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Classroom. Case reports

Non-pharmacological therapies for postpartum analgesia: a systematic review

Adherence to fibromyalgia treatment: challenges and impact on the quality of life

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Effects of hydrokinesiotherapy in pain, trophism and muscle strength in a child with juvenile idiopathic arthritis. Case report

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INSTRUCTIONS TO AUTHORS
The biomedical literature grows exponentially, and knowledge about molecular biology and immunology is expanding more rapidly. Early diagnoses, the use of effective and safe therapies with favorable results are current requirements. This means that the advances in areas related to symptoms control and clinical decisions should be incorporated into the new modes of knowledge transmission and care of patients with pain. The improvement of health education programs does not occur at the same speed in which knowledge multiplies. Many schools include descriptive themes in their curricula rather than analytical subjects and critical and logical thoughts. However, since the publication of the model of medical graduation based on the Flexner report of 1912, the teaching of health sciences has incorporated biocentric and technocentric visions. We started to study the human body by parts. The diseases are now considered biological, cellular and molecular malfunctioning. Medical schools were organized to train students in diseases, to be specialists working in hospitals but not trained to care patients and, consequently, physicians were stimulated and trained to perform physical or chemical interventions to normalize the functioning of the body with an insufficient notion of the individual as a whole and in the society. Some medical and paramedical concepts and practices are kept alive and widely disseminated and performed because they are truly useful, safe and effective. However, many are still used and will remain indefinitely, even without any evidence, substrates or grounds justifying their applicability because they sustain, adapt and surreptitiously propagate themselves based on poorly elaborated concepts about their realities. This means that the awareness, dissemination and strategic use of good quality information can make a significant contribution so that, in future, the procedures that aim at the prevention and control of pain are used in a rational way and without the biases of traditions and interests other than the benefit of those who suffer from pain. The meaning of medicine in the society and the relationship between health professionals, health policymakers and patients undergo constant change. The content and dissemination of medical curricula also evolve to ensure consistent delivery of high-quality medical services. Therefore, having the curriculum as an institutional educational proposal with the objective of informing, executing and evaluating educational programs with an ordered sequence of contents, and making appropriate use of the media to make public the scientific achievements and the rational application of health policies can contribute to revert this trend, both for the general population and for the professionals involved in the planning, prevention and treatment of pain. We see progress in the areas of education, training, accreditation of professionals and care services in parallel with advances in pharmacology, rehabilitation, psychotherapy, and interventional pain procedures. Practitioners working in environments designated for primary care currently have the opportunity to receive good quality training on more common issues related to pain in undergraduate courses and symposiums organized by official and associative entities, without the influence of entities concerned only with profit. The creation of the Pain Leagues, the incorporation of the theme of pain in the undergraduate and graduate medical and paramedical curricula and in the university extension courses, the organization of internship programs in pain in the areas of medicine, dentistry, veterinary and psychology, fulfilled, in part, the needs of technical pain training with comprehensive information, provided that interventions are not the predominant or exclusive focus. Professionals dedicated to the treatment of pain working in clinics, isolated units, clinics or specialized centers should more significantly incorporate mental health, rehabilitation and education programs in the treatment, especially of chronic wild pain. For specialized professionals, simulation techniques have been developed to improve the skills to perform invasive or non-invasive procedures and, at the same time, better-founded guidelines have been developed for the application of prophylactic methods, drugs and invasive or non-invasive interventions in patients with pain. There is an increasing number of studies on health education and controlled research with random samples on prevention, effectiveness of new drugs and therapeutic models, combinations of treatments with other interventions, the connection of therapeutic models with the mechanisms of pain responsible for different pain syndromes, identification of predictors of therapeutic responses, adequacy of treatments or characteristics of treatments to the individual characteristics of patients, and long-term maintenance of the positive responses to treatment of appropriately selected patients.
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Chronic pain in the elderly, associated factors and relation with the level and volume of physical activity

Dor crônica em idosos, fatores associados e relação com o nível e volume de atividade física

ABSTRACT

BACKGROUND AND OBJECTIVES: Chronic pain is associated with functional limitations in the elderly, negatively affecting the health of this population. The activity and/or physical exercise has been proposed as a non-drug intervention with positive effects in the treatment of chronic pain. Thus, this study aimed to identify the prevalence of chronic pain in the elderly, analyze the factors associated with pain and its relationship with the level and volume of physical activity practice.

METHODS: Quantitative and cross-sectional research with 385 elderly (67.3% women and 32.7% men) who were evaluated regarding the level and volume of physical activity practice, the presence of chronic diseases, presence and intensity of chronic pain.

RESULTS: The prevalence of chronic pain in the sample was 58.2% and was associated with the gender and the presence of chronic diseases (p<0.001). The median pain intensity was higher in sedentary women (p=0.005), as they presented a lower volume of physical activity practices (p<0.001).

CONCLUSION: The prevalence of chronic pain among the evaluated elderly is high and associated with the presence of chronic diseases and to gender, being more prevalent among women. Sedentary or insufficiently active elderly women report higher pain intensity than active and very active women. There is poor correlation indicating that the level of physical activity decreases with increasing pain intensity and the number of chronic diseases. Elderly people with chronic pain have significantly lower volumes of physical activity practice than those who do not.

Keywords: Chronic disease, Chronic pain, Elderly, Physical activity.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A dor crônica está associada a limitações funcionais em pessoas idosas, afetando negativamente a saúde dessa população. A atividade e/ou exercício físico tem sido proposto como uma intervenção não farmacológica com efeitos positivos no tratamento da dor crônica. Assim, este estudo objetivou identificar a prevalência de dor crônica em idosos, analisar os fatores associados à dor e sua relação com o nível e volume de prática de atividades físicas.

MÉTODOS: Pesquisa quantitativa e transversal com 385 idosos (67,3% mulheres e 32,7% homens) que foram avaliados quanto ao nível e volume de prática de atividades físicas, presença de doenças crônicas, presença e intensidade de dor crônica.

RESULTADOS: A prevalência de dor crônica na amostra estudada foi de 58,2% e foi associada com o sexo e com a presença de doenças crônicas (p<0.001). A mediana da intensidade da dor foi mais alta em mulheres sedentárias (p=0,005), assim como elas apresentaram menor volume de prática de atividades físicas (p<0,001).

CONCLUSÃO: A prevalência de dor crônica entre os idosos avaliados é alta e está associada à presença de doenças crônicas e ao sexo, sendo mais prevalente entre as mulheres. Mulheres idosas sedentárias ou insuficientemente ativas relatam maior intensidade da dor do que as ativas e muito ativas. Há fraca correlação indicando que o nível de atividade física diminui com o aumento da intensidade da dor e o número de doenças crônicas. Idosas com dor crônica apresentam volumes de prática de atividade física significativamente menores do que as que não possuem.

Descritores: Atividade física, Doença crônica, Dor crônica, Idoso.

INTRODUCTION

Brazil is experiencing a demographic transition characterized by the aging of its population. Data from the Brazilian Institute of Geography and Statistics (IBGE) indicate that the population in the country is approximately 188 million inhabitants, of which 20 million are elderly and projections suggest that in 2030 the elderly will reach 41.5 million Brazilians. This picture has reflected changes in the morbidity and mortality profile, with a higher occurrence of chronic diseases, with a higher prevalence among women.

Among chronic conditions, pain is one of the most common and is associated, in most cases, with musculoskeletal dysfunction and tissue injury, negatively interfering with the health of the elderly. Chronic pain is characterized as persistent events with
a duration of at least three months, of a biopsychosocial nature, which constitute an important public health problem, whose coping requires a multidisciplinary approach. In general, associated with chronic pathological processes that last for months or years, chronic pain has become the main complaint and cause of functional limitations in the elderly, strongly affecting their independence in the accomplishment of daily tasks.

On the one hand, sedentarism has been associated with an increase in chronic diseases, the practice of mild, moderate or intense physical activity has been positively associated with the positive perception of the health of the elderly. In general, the elderly Brazilian population has been concerned with maintaining a healthier, more active and independent life. The incentive to practice physical activities and/or exercises have been listed as an objective of different public policies and programs in the health area, with the potential to promote a healthy quality of life, especially if they are performed in a systematic way. This study aimed to identify the prevalence of chronic pain in the elderly, analyze the factors associated with pain and its relation with the level and volume of physical activity (PA) practice.

METHODS

This is a quantitative, analytical and cross-sectional research. The sample consisted of 385 elderly living in the urban area of the city of Chapecó/SC. The sample size was calculated based on a finite population of 13,606 elderly of both genders, considering a 95% confidence interval and a margin of error of 5%.

The study included individuals of both genders over 60 years old, who had preserved cognitive ability, tested by the Mini-Mental State Examination (MMSE) (adopted as a criterion score equal to or greater than 24, corrected for 17, when education was less than four years).

Elderly who were absent from the home on two visits by the researcher, or who were bedridden, or making use of ancillary devices for locomotion, such as wheelchairs were excluded from the sample.

The researchers who participated in the data collection were trained to use the instruments and conducted a pilot study that involved the collection, extraction, and tabulation of the data. The data collection was organized from the census map of the municipality, which includes 38 tracts. 11 census tracts were randomly selected. The maps of these tracts were printed so that researchers could plan the collection from the streets of each neighborhood. Every two houses, the first one was drawn and when the place was a building, all people over 60 years old were interviewed. Lots and commercial establishments were excluded and, when pulled, moved to the next home – and so on, in every street until reaching the sample. The visits were carried out from June to August of 2016 in all the residences of the tracts and streets drawn. Each researcher recorded the collection done at the elderly’s home on the map that was previously received. The research team met every Friday to assess the progress of collections, check the streets covered, enter the data on the worksheet, and plan the following week.

Each elderly in the home was informed about the purpose of the research, its relevance, objectives, methods, expected benefits, potential risks associated with study participation, and how data would be collected and used later. All subjects who agreed to participate in the study signed an Free and Informed Consent Form (FICT).

All participants signed the FICT. Each participant was assessed in relation to their cognitive ability through the MMSE. If the defined score for the inclusion criteria was reached, the participant moved to the next step that included the General Data questionnaire for the Elderly, adapted from Morais, the pain assessment using the visual numeric scale (VNS) and the Physical Activity Level (PAL) Assessment questionnaire, the International Physical Activity Questionnaire (IPAQ) - short version.

The study followed all the recommendations of Resolution 466/2012/CONEP/CNS/MS and was approved by the Human Research Ethics Committee of the institution under number CAAE n.613611160.0000.0116.

Statistical analysis

The data was organized and tabulated initially in the Microsoft Excel spreadsheet. The descriptive statistics of the data were initially used. The statistical test of Shapiro-Wilk was used to verify the normality of the data. The measures of factors associated with chronic pain were analyzed by the chi-square test. The Spearman correlation was used to check the correlation between the variables physical activity (PA) volume with the number of chronic diseases and the intensity of pain by gender. The Mann-Whitney U-test was used for the comparison of the median of the pain rating data by PAL of the elderly by gender, and the median of the volume of PA in the elderly with and without chronic pain by gender. The data were analyzed by the Statistical Package for Social Science for Windows - SPSS version 20.0, and the significance level was set at p<0.05.

RESULTS

Table 1 presents the characterization data of the study sample as age, gender, presence or absence of chronic pain and its intensity.

The presence of chronic pain in the studied sample was 58.2% and presented a statistically significant association (p<0.05) with gender and the presence of chronic diseases (Table 2).

Comparison of the median of the pain rating data by PAL among the elderly by gender shows significant results only for women (Table 3).

There was a weak correlation between the PA volume and the number of chronic diseases only for women (M-rs=0.168 p=0.007/H-rs=-0.45 p=0.615) and with pain intensity (M-rs=-0.230 p=0.001/H-rs=-1.15 p=0.198).

The comparison of the medians of the PA volume in the elderly with and without chronic pain by gender is shown in table 4 and shows statistically significant results only for women (p<0.05).
DISCUSSION

In this study, there was a predominance of the female gender, represented by 67.3% (n=259) and 60 to 69 years old in 45.5% (n=175), which is similar to the data presented by IBGE for this region of Brazil. Literature already shows the feminization of old age, a factor associated with the greater care and awareness that women have regarding their health, which leads them to seek more health services and preventive programs.

One of the results of this study was the presence of chronic diseases in 86% of the sample (n=331). These data are superior to that of the study by Silva and Catão carried out with 230 elderly in the state of Paraíba, where 69.5% of the population reported having a chronic disease. Another study with 1,062 elderly showed that 74% reported the presence of chronic diseases. These data show the high occurrence of these diseases in the elderly. Healthy habits practice physical exercises and access to health care can minimize the suffering that these diseases produce in the elderly's life.

In this sample 58.2% (n=221) presented chronic pain and in 28.3% (n=109) the intensity was moderate. A research conducted by Dellaroza and Pimenta with 451 elderly in the state of Paraná, found a prevalence of pain in 51.4%, with 38.43% reporting moderate intensity, and a study by Landmark et al. conducted in Norway with 10,249 elderly identified that 35.13% reported chronic pain of moderate intensity. It was observed in these studies that chronic pain affected more than 50% of the population. The fact that the elderly live with painful conditions can cause suffering and different intercurrences in the health and quality of life of this population.

In the two elderly groups, with pain and without chronic pain, there was a predominance of active and very active elderly, representing 50% (n=112) and 57.1% (n=92), respectively. Another important finding in the study was the low sedentary classification in the elderly group with chronic pain, representing 10.7% (n=24) and without chronic pain 3.7% (n=6). When considering the total sample, the percentage was less than 10% (7.8%), with 30 sedentary elderly. A research of 367 elderly women (60 years old or older) from the cities of Presidente Prudente-SP and Uberaba-MG, who sought to assess the PA level and the anthropometric variables of these

Table 1. Sample characteristics according to age group, gender, the presence of chronic diseases, number of chronic diseases, chronic pain and its intensity, 2017

<table>
<thead>
<tr>
<th>Variables</th>
<th>Classification</th>
<th>n= 385 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years old)</td>
<td>60-69</td>
<td>175 (45.5)</td>
</tr>
<tr>
<td></td>
<td>70-79</td>
<td>154 (40.0)</td>
</tr>
<tr>
<td></td>
<td>≥ 80</td>
<td>56 (14.5)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>126 (32.7)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>259 (67.3)</td>
</tr>
<tr>
<td>Chronic diseases</td>
<td>Yes</td>
<td>331 (86.0)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>50 (13.0)</td>
</tr>
<tr>
<td>Number of diseases</td>
<td>None</td>
<td>50 (13.0)</td>
</tr>
<tr>
<td></td>
<td>Up to 3</td>
<td>304 (79.0)</td>
</tr>
<tr>
<td></td>
<td>4 or more</td>
<td>31 (8.0)</td>
</tr>
<tr>
<td>Chronic pain (VNS)</td>
<td>None</td>
<td>161 (41.8)</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>40 (10.4)</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>109 (28.3)</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>75 (19.5)</td>
</tr>
</tbody>
</table>

VNS = visual numeric scale (0 = no pain; 1-3 = mild; 4-7 = moderate; 8-10 = severe).

Table 2. Factors associated with the presence of chronic pain in the elderly, 2017

<table>
<thead>
<tr>
<th>Variables</th>
<th>Presence of chronic pain</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes n (%)</td>
<td>No n (%)</td>
</tr>
<tr>
<td>Gender</td>
<td>57 (45.2)</td>
<td>69 (54.8)</td>
</tr>
<tr>
<td>Male</td>
<td>167 (64.5)</td>
<td>92 (35.5)</td>
</tr>
<tr>
<td>Female</td>
<td>112 (69.9)</td>
<td>69 (38.1)</td>
</tr>
<tr>
<td>Age (years old)</td>
<td>157 (59.5)</td>
<td>107 (40.5)</td>
</tr>
<tr>
<td>60 to 74</td>
<td>67 (55.4)</td>
<td>54 (44.6)</td>
</tr>
<tr>
<td>75 or more</td>
<td>112 (54.9)</td>
<td>92 (45.1)</td>
</tr>
<tr>
<td>Physical activity level</td>
<td>208 (62.1)</td>
<td>127 (37.9)</td>
</tr>
<tr>
<td>Sedentary or insufficient active</td>
<td>16 (32.0)</td>
<td>34 (68.0)</td>
</tr>
<tr>
<td>Active or very active</td>
<td>208 (62.1)</td>
<td>127 (37.9)</td>
</tr>
<tr>
<td>Chronic disease</td>
<td>112 (69.9)</td>
<td>69 (38.1)</td>
</tr>
<tr>
<td>Presence</td>
<td>0 (0-4)</td>
<td>5 (0-8)</td>
</tr>
<tr>
<td>Absence</td>
<td>2 (0-5.5)</td>
<td>2 (0-7)</td>
</tr>
</tbody>
</table>

p = Pearson’s Chi-square statistic. * Significance level: p<0.05.

Table 3. Comparison of the medians of the pain scale of the elderly by the level of physical activity and gender, 2017

<table>
<thead>
<tr>
<th>Group</th>
<th>PAL</th>
<th>Male (n=126)</th>
<th>p-value</th>
<th>Female (n=259)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary or insufficient active</td>
<td>ME (IQR)</td>
<td>0 (0-4)</td>
<td>0.132</td>
<td>5 (0-8)</td>
<td>0.005*</td>
</tr>
<tr>
<td>Active or very active</td>
<td>ME (IQR)</td>
<td>2 (0-5.5)</td>
<td></td>
<td>2 (0-7)</td>
<td></td>
</tr>
</tbody>
</table>

PAL = physical activity level; ME = median; IQR = interquartile range; p = Mann-Whitney U-statistic. * Significance level: p<0.05.

Table 4. Comparison of the medians of the physical activity volume of the elderly with and without chronic pain by gender, 2017

<table>
<thead>
<tr>
<th>Variables</th>
<th>PAVol (min/week)</th>
<th>Male (n=126)</th>
<th>p-value</th>
<th>Female (n=259)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of chronic pain</td>
<td>ME (IQR)</td>
<td>180 (77.5-242.5)</td>
<td>0.338</td>
<td>130 (75-240)</td>
<td>0.001*</td>
</tr>
<tr>
<td>Absence of chronic pain</td>
<td>ME (IQR)</td>
<td>150 (100-300)</td>
<td>210 (132.5-297.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAVol (min/week) = physical activity volume in minutes per week. ME = median; IQR = interquartile range; p = Mann-Whitney U-statistic. * Significance level: p<0.05.
women, found a similar result to that of this study (80.4%) were considered active and participated - on average, 1 year and 3 months - of PA programs. Other results diverge from the results of this study. A study by Lima et al. found an index of 66.9% of sedentary women in 220 senior women. The results of the study by Macedo et al. with 173 elderly showed that 33.72% (n=57) of the sample were sedentary. The results found in the study show that the surveyed elderly are less sedentary than the elderly studied in the cited studies.

This divergent reality between the data of this research and those found in the literature, regarding the percentage of active and sedentary ones, can be explained by the fact that in the municipality where the research was carried out, the place for specific PA practices for the elderly was implanted for more than a decade, called “City of the Elderly”. In this place, visitors have access to medical consultation with a geriatrician, supervised PA practice, such as bodybuilding, dance, Pilates, soil and water aerobics, as well as living space, games room, cinema, among other benefits. The place is intended for all the elderly in the municipality and activities are carried out frequently twice a week. This public policy may have encouraged the elderly to remain more active. On the other hand, those with chronic pain of mild and moderate intensity, seek in physical exercise, the minimization of painful conditions, especially those resulting from postural alterations.

On the other hand, when the intensity of chronic pain is high, it becomes one of the main factors limiting the performance of PA in the elderly. Leijon et al. when researching 1,358 patients enrolled in primary health care settings in Sweden, observed that pain was the most common reason for non-adherence to the practice of PA among older patients. A study in Germany that analyzed the barriers to PA in 1,937 elderly with a mean age of 77 years old, observed that the three most cited barriers were poor health (57.7%), lack of company (43.0%) and lack of interest (36.7%). Ensuring an active life, regardless of whether or not he/she has pain, can minimize painful conditions. Preventive programs that create mechanisms of adhesion and stimulation to the PA practice need to be strengthened.

The comparison of the PA level with the intensity of pain showed that sedentary or insufficiently active old women presented higher pain intensity than the active and very active ones. The results of the correlation between the variables indicate that the PA volume decreases with the increased pain intensity and the number of chronic diseases for women, although the correlation was considered weak (below -0.3).

Another fact observed in the study was related to the PA volume in the elderly with or without chronic pain. This aspect was observed in women, where the PA volume is significantly lower in those with chronic pain. A study by Sawatzky et al. examined PA as a mediator of the impact of chronic conditions in the elderly in Canada. The authors found that the elderly with chronic conditions are less likely to engage in leisure PA of at least 1,000 Kcal per week. This association partially explained some negative consequences of chronic conditions, including limitations of mobility, pain and emotional problems.

Another study conducted in Norway with 10,249 elderly over 65 years old that increased frequency, duration, and intensity of recreational exercise was associated with lower chronic pain. Elderly who exercise at least two to three times a week have a 27% lower prevalence of chronic pain compared to those who do not practice physical exercises, and the associations were stronger among women than in men. Therefore, even with pain, physical exercise is effective, if planned according to the specificities of each clinical picture. The increase of chronic diseases during aging is a factor that reduces the PA level among the elderly. A study by Lopes et al. stated that the advancement of age might be accompanied by a higher number of chronic diseases, which has limited the PA practice.

The decrease in the PA practice in the elderly with limitations or chronic diseases may be associated with the fear that PA can increase painful condition or increase the onset of other lesions. A study by Larsson et al. analyzed the influence of pain and kinesophobia characteristics (excessive fear of injury or re-injury) as predictors of failure to perform PA in 1,141 elderly with chronic self-reported pain. The study revealed that the PA level was significantly lower among the elderly with chronic pain and significantly associated with kinesophobia.

A study carried out in Brazil, by Silva, Abreu and Suassuna with 30 elderly women with chronic pain, who sought to identify the occurrence of kinesophobia, observed a presence of 80% of them experiencing this condition. There was a moderate significant correlation between physical performance and kinesophobia (r=0.541; p=0.002), revealing that the high incidence of kinesophobia in the elderly assessed compromised their physical performance.

Encouraging a healthy lifestyle with regular PA practices reduces the risk of developing chronic diseases in this population. The promotion of PA associated with better living conditions can positively impact the quality of life of the general population. Within this context, the health team must plan health actions not only with a view to treating the clinical conditions of this phase of life, but also to carry out interventions aimed at preventing, maintaining and promoting the health and functional independence of the elderly to enjoy life with longevity.

CONCLUSION

The presence of chronic pain is associated with a higher number of chronic diseases, by gender (women) and sedentary lifestyle. Sedentary or insufficiently active elderly women report greater intensity of pain when compared to active and very active. There was also a weak negative, and statistically significant correlation between the PA volume practiced with the intensity of pain and the number of chronic diseases in elderly women, and the PA level decreased with increasing pain intensity and the number of chronic diseases. Regarding the PA practice volume, the study identified that elderly women with chronic pain have significantly lower volumes of PA practice than those who do not have chronic pain.
REFERENCES


Chronic pelvic pain portraits: perceptions and beliefs of 80 women

Retratos da dor pélvica crônica: percepções e crenças de 80 mulheres

João Elias de Godoi¹, Dário Rafael Macêdo dos Reis¹, Jakeline Resende Carvalho¹, José Miguel de Deus²

ABSTRACT

BACKGROUND AND OBJECTIVES: Because of its expressive prevalence and difficult clinical management, chronic pelvic pain is an important cause of morbidity, disability, and reduction of quality of life in women. Psychological factors influence the perception of pain and can interfere in the medical approach, justifying the application of projective tools, such as the pain portrait, previously not applied in women with chronic pelvic pain. The objective of this study was to obtain a greater clarification about the psychological component in the assessment of the chronic pelvic pain by applying the pain portrait in women with chronic pelvic pain.

METHODS: This is an exploratory cross-sectional study conducted with 80 women with chronic pelvic pain. It was applied a pre-structured interview to collect sociodemographic, behavioral and clinical data. The pain portrait was applied to investigate the perceptions and beliefs about pain. The drawings were classified by content analysis and consensus among the authors.

RESULTS: The average age of the participants was 39.40±9.21 years, average pain intensity of 7.03±2.58 and average pain duration of 8.84±7.65 years. The main portraits referred to negative feelings (37.50%), harmful instruments (33.75%) and geometric forms (25%), with a predominance of cold colors (63.70%). More than 60% of the participants put hope only in medical procedures, while 25% believed that there was no solution to their pain.

CONCLUSION: Women represented their chronic pelvic pain in an affective way, with the use of few and cold colors. They considered themselves having a passive role in their treatment and related their pain to family losses.

Keywords: Chronic pain, Pain assessment, Pelvic pain, Psychosocial effects of the disease, Women.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Por sua expressiva prevalência e difícil manuseio clínico, a dor pélvica crônica é importante causa de morbidade, incapacidade e redução da qualidade de vida em mulheres. Fatores psicológicos podem influenciar a percepção da dor e interferir na abordagem médica, justificando a aplicação de recursos projetivos, como o retrato da dor, anteriormente não aplicado em mulheres com dor pélvica crônica. Objetivou-se trazer maior esclarecimento sobre a influência do componente psicológico na avaliação da dor pélvica crônica, por meio da aplicação do retrato da dor em mulheres com dor pélvica crônica.

MÉTODOS: Trata-se de um estudo de corte transversal exploratório realizado com 80 mulheres com dor pélvica crônica. Utilizou-se de entrevista pré-estruturada para coletar dados sociodemográficos, comportamentais e clínicos e, para investigar percepções e crenças sobre a dor, aplicou-se o retrato da dor. Os desenhos foram avaliados e classificados por meio de análise de conteúdo e consenso entre os autores.

RESULTADOS: As participantes tinham média de idade de 39,40±9,21 anos, intensidade algólica média de 7,03±2,58 e duração média de 8,84±7,65 anos. Os principais retratos remetiam a sentimentos negativos (37,50%), instrumentos lesivos (33,75%) e formas geométricas (25%), com predominio de cores frias (63,70%). Mais de 60% das participantes depositavam esperança apenas em procedimentos médicos, enquanto 25% delas acreditavam não haver solução para sua dor.

CONCLUSÃO: As mulheres retrataram sua dor pélvica crônica de modo afetivo, com uso de poucas cores e cores frias. Considerraram-se em papel passivo no tratamento, além de relacionar a sua dor a perdas familiares.

Descritores: Avaliação da dor, Dor crônica, Dor pélvica, Efeitos psicossociais da doença, Mulheres.

INTRODUCTION

Chronic pelvic pain (CPP) is understood as a continuous or intermittent non-menstrual pain, lasting for six months or more, located in the lower or pelvic abdominal region, interfering in daily activities and requiring clinical or surgical intervention. It is an important cause of morbidity, functional disability and reduction of women’s quality of life (QoL), involving 5.7 to 26.6% of women worldwide. In Brazil, Silva et al. reported a CPP prevalence of 15.1% in women in childbearing age, while Coelho et al. reported a prevalence of 19% in women aged 14-60 years. In addition, it accounts for about 10% of outpatient gynecological consultations, as...
well as 40 to 50% of gynecological laparoscopies and 12% of hysterectomies\(^{10,11}\).

It has been demonstrated that in a significant share of women with CPP there are no changes in physical examination and ultrasonography, and in many cases, no organic diagnosis is found\(^{12,13}\). Furthermore, more than 70% of the patients related some remarkable or traumatic event to the onset of the symptom\(^{13}\). It is known that several psychological factors, which constitute the affective dimension of pain, have a potential influence on pain perception and may interfere with diagnosis and treatment\(^{14,15}\).

A psychological domain can be represented and interpreted subjectively through art. A great example of this is the artist Magdalena Carmen Frieda Kahlo y Calderón, who portrayed in her paintings a personal and unique vision of chronic pain, composing a visual narrative with diagnostic and therapeutic potential\(^{16}\).

In this context, Loducca and Samuelian\(^{15}\) reported the development of the Portrait of Pain (PoP) in 1998, a projective resource in which the patient uses creativity to translate his/her pain in the form of a drawing. This, coupled with a brief survey, seems to be an interesting method to identify the patient's perception of his/her pain and the associated suffering\(^{14,15}\). Also, Eliot and Maier\(^{17}\) concluded that even the handling of colors has an important influence on affection, cognition, and behavior and can bring important information.

The PoP analysis has not yet been specifically applied in women with CPP, an entity that is clinically difficult to handle. The objective of this study was to clarify the influence of the psychological component in the evaluation of the CPP by analyzing its graphic expression in women with CPP and investigating their perceptions and beliefs about pain.

**METHODS**

An exploratory cross-sectional study was conducted with 80 patients from the CPP Outpatient Clinic of the Gynecology Service of the Hospital das Clínicas da Universidade Federal de Goiás (HC-UFG/EBSERH) from March 2017 to January 2018. Patients diagnosed with CPP, aged 18 and above and who volunteered to participate in the study were included. The exclusion criteria were cancer patients, pregnant women, patients with cognitive deficits and severe psychiatric disorders, or those who refused to participate.

Through a pre-structured interview, sociodemographic data (age, ethnicity, formal schooling, paid labor activities, spouse, family conflicts, physical and sexual violence); behavioral (regular physical activity, alcohol consumption, smoking) and clinical (intensity and duration of pain, worsening with the menstrual cycle, drug relief, children, abortions, overweight and obesity, hypertension, diabetes and previous surgeries) were collected.

The variables related to sociodemographic data and clinical data (children, abortions, hypertension, diabetes and previous surgeries) were obtained by self-report. Data related to weight and height were obtained by measurement in the interview and were used to calculate the body mass index (BMI) for the overweight (BMI $\geq 25.0$) and obesity (BMI $\geq 30.0$) classification. The following questions were asked: Do you have any family conflicts? Have you ever experienced physical or sexual violence? Regarding the behavioral variables, it was considered as a regular physical activity the practice of exercises at least twice a week; alcohol consumption at least twice a week, and smoking at the time of the interview.

The pain intensity was obtained with the pain visual analog scale (VAS), where zero represents no pain and 10 the worst imaginable pain. The PoP was used to study the perceptions and beliefs\(^{15}\).

The PoP was applied as proposed by Loducca and Samuelian\(^{15}\), and each patient was instructed to imagine that her pain had a shape and to draw it on a sheet of paper. Color pencils (12 colors), crayon (12 colors) and blue ballpoint pen were available and used with no restrictions. Then, the patient wrote a succinct phrase to characterize the portrait, to facilitate the understanding of the drawing. To expand the knowledge about the patient’s pain and beliefs, a brief questionnaire was applied with the following questions: “Give a name to your pain”; “How old is it?”; “Can anyone help or can anything be done to lessen your pain?”; “And can you do anything?”; “There ever has been a time in your life that the pain was the same or worse than this?”\(^{15}\).

Throughout the interview time, at least one of the researchers was available to clarify the patient’s questions about the questionnaire, without interfering in her responses and in the graphic representation of pain.

The drawings collected by the PoP were qualitatively evaluated and categorized in groups that were not mutually exclusive, due to their main characteristics and shared traces, through content analysis\(^{18}\) and consensus among the authors. To form these groups, the groups already described in the literature\(^{14,15}\) were taken into account and the others were formulated from the authors’ perception.

The sample size was defined after observing the overlap of the PoP forms represented by the participants. After being categorized, all groups reached at least six representations, which was considered the saturation point. Then, the drawings were objectively evaluated for the predominant use of warm colors (variants of the red-yellow spectrum) and cool colors (variants of the green-blue spectrum including neutral colors of the gray spectrum), adapted from the classification made by Johann Wolfgang von Goethe in his work “Theory of Colors”\(^{17,20}\). Also, by agreement between the authors, the drawings were classified as to the use of few or many colors, and the use of three or more colors is the criterion to be classified as many colors. Finally, each name attributed to pain by the patient was separated into groups.

This study was approved by the Committee on Ethics in Research of the HC-UFG/EBSERH, under the opinion No. 1,957,243/2017, and all patients signed the Free and Informed Consent Form (FICT).

**Descriptive analysis**

The Epi Info™ 7.2.2.6 software was used for data tabulation and subsequent calculations of mean, standard deviations and absolute and relative frequencies presented in this paper.
RESULTS

The mean age of the 80 participants was 39.40±9.21 years. Sociodemographic, behavioral and clinical data collected are listed in table 1. The mean pain intensity was 7.03±2.58 by VAS; mean duration of 8.84±7.65 years, and in 72.50% of cases, it worsened with menstruation. About 85% were using drugs, with a mean of pain relief of 59.60±33.70%.

The analysis of the portraits resulted in the formation of eight main groups: negative feelings (37.50%); damaging instruments (33.75%); geometric shapes (25%); body parts (16.25%); scribbles and/or amorphous (13.75%); people and scenes (10%); monsters (8.75%) and smiles (7.50%). The great majority of patients (91.25%) used few colors; 63.70% used cool colors, and 36.30% used warm colors; 46.20% used blue, 32.50% used red and 32.50% used black.

Eight groups were arranged by the analysis of the names described by the participants for their pain: symptoms or characteristics of pain (20%); miscellaneous (17.50%); bad feeling (10%); vent (6.25%); repetitive and strong, evidenced by the breaking of the red crayon. During the investigation, the patient named her pain as impulsively and strongly, evidenced by the breaking of the red crayon. She used many colors with a predominance of the warm ones, and 36.30% of patients (91.25%) used few colors; 63.70% used cool colors, and 36.30% used warm colors; 46.20% used blue, 32.50% used red and 32.50% used black.

Table 1. Sociodemographic, behavioral and clinical profile of 80 women with chronic pelvic pain attended between March/2017 and January/2018 *

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
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<tr>
<td>Brown</td>
<td>44</td>
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</tr>
<tr>
<td>White</td>
<td>24</td>
<td>30.00</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
<td>15.00</td>
</tr>
<tr>
<td>Schooling (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;8</td>
<td>22</td>
<td>27.50</td>
</tr>
<tr>
<td>≥8≤11</td>
<td>19</td>
<td>23.75</td>
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<tr>
<td>&lt;11</td>
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</tr>
<tr>
<td>Paid employment</td>
<td>42</td>
<td>52.50</td>
</tr>
<tr>
<td>Had a spouse</td>
<td>65</td>
<td>81.25</td>
</tr>
<tr>
<td>Had some family conflict</td>
<td>26</td>
<td>32.50</td>
</tr>
<tr>
<td>Suffered physical violence</td>
<td>28</td>
<td>35.00</td>
</tr>
<tr>
<td>Suffered sexual violence</td>
<td>23</td>
<td>28.75</td>
</tr>
<tr>
<td>Behavioral data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practiced regular physical activity</td>
<td>29</td>
<td>36.25</td>
</tr>
<tr>
<td>Alcohol consumption</td>
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<td>2.50</td>
</tr>
<tr>
<td>Smoking</td>
<td>6</td>
<td>7.50</td>
</tr>
<tr>
<td>Clinical data</td>
<td></td>
<td></td>
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<tr>
<td>Had children</td>
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<tr>
<td>Had abortions</td>
<td>19</td>
<td>23.75</td>
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<tr>
<td>Body mass index (kg/m²)</td>
<td></td>
<td></td>
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<tr>
<td>Normal weight</td>
<td>36</td>
<td>45.00</td>
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<tr>
<td>Overweight (≥25.0 &lt;30.0)</td>
<td>29</td>
<td>36.25</td>
</tr>
<tr>
<td>Obesity (≥30.0)</td>
<td>15</td>
<td>18.75</td>
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<tr>
<td>Hypertension</td>
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<td>24.00</td>
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<tr>
<td>Diabetes</td>
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<td>6.20</td>
</tr>
<tr>
<td>Previous abdominal or pelvic surgeries</td>
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<td>86.25</td>
</tr>
<tr>
<td>Previous surgeries for disease investigation and/or treatment</td>
<td>21</td>
<td>26.25</td>
</tr>
</tbody>
</table>

*Chronic pelvic pain outpatient clinic at Hospital das Clínicas - Empresa Brasileira de Serviços Hospitalares/Universidade Federal de Goiás.

Concerning the beliefs and perceptions regarding pain, 25% of patients reported that nobody could help, or nothing could be done to reduce their pain; 32.50% of them could do nothing to lessen their own pain. Most (62.50%) believed that only doctors and medical procedures could mitigate their pain. In addition, 81% answered that there was some moment in their lives that they felt equal to or worse than that pain, with a large proportion (48%) referring to the loss of a relative, such as father or mother. Each of the eight groups formed by the PoP categorization was illustrated by the selection of a representative portrait, along with a brief interpretative description and the characteristics of the participants who created them.

1. **Negative feelings**: Included 30 portraits. This was the most prevalent category, represented by images of loneliness, hurt heart, scream, darkness, people crying and tears, these being the most frequent. Figure 1.A is the representation made by a 35-year-old patient, with VAS=8, lasting for eight years. One can note that few colors were used, and mostly cool ones. The participant characterized her drawing as “Isolation and humor variation. Life is passing by and you are stuck”.

2. **Damaging instruments**: Included 27 portraits, represented by knife, tear, burning, weight and/or lancets, these being the most prevalent. Figure 1.B shows the drawing of a 26-year-old woman, with VAS=10, lasting for three years. There are few colors and predominance of warm color (red). The drawing was described “as if there was a knife cutting inside and out. And I feel blood falling”.

3. **Geometric shapes**: 20 portraits represented by squares, triangles, spirals and circles, these being the most prevalent. Figure 1.C was made by a 32-year-old patient, with VAS=10, lasting for 20 years. She used a few colors and with a predominance of warm color, red. During the investigation, the patient named her pain as “Infamous.”

4. **Body parts**: This category had 13 portraits with images of eyes, pelvis, bellies, uterus, legs, hearts and/or heads, these being the most prevalent. Figure 1.D shows a uterus being injured with the use of a needle and a hammer, representing the pain like a stab and weight, respectively. The 40-year-old participant, with VAS=3, lasting for 8 years, said “this is how I feel in my body.” She used many colors with a predominance of the warm ones.

5. **People and scenes**: Eight portraits represented by images of scenes and people, these being more prevalent. In Figure 1.E, for example, a 45-year-old woman with VAS=5, lasting for 17 years, represented her pain as “person on top of me.” She used few colors with a predominance of the cool ones, but she used warm colors in the painful points.

6. **Scribbles and/or amorphous**: With 11 portraits, it mainly shows scribbles images. Figure 2.A shows the representation of a 40-year-old patient, with VAS=10 with CPP for 27 years. She used many colors with a predominance of the warm ones, impulsively and strongly, evidenced by the breaking of the red crayon. During the investigation, the patient named her pain as “Decreasing.”
7. **Monsters**: Seven portraits. Figure 2.B represents the pain of a 40-year-old patient, VAS=10, lasting for 19 years. She used many colors with a predominance of the warm ones. During the investigation, the patient named her pain as “Witchcraft.”

8. **Smiles**: Six portraits. In Figure 2.C, for example, a 37-year-old participant with VAS=5, lasting for six years, drew three smiling people. She used a few colors, with a predominance of the cool ones. During the investigation, the patient named her pain as “Day by day.”

**DISCUSSION**

The sociodemographic characteristics of the patients in this study are similar to those of previous publication of the same service. However, the history of physical violence was more prevalent in this sample (35%) than in the mentioned article (15.80%). The same applied to the history of sexual violence (28.75 versus 11%, respectively). This can probably be explained by differenc-
es in the data collection technique and number of interviewers, type of study or because this is a different sample. These results have been associated with CPP in the literature²¹ and may have an impact on the patient’s perceptions and beliefs.

When drawing figures that refer to negative feelings, patients used their emotions as a tool to express their pain. The perception is that in these patients, CPP is associated with emotional pictures with externalization through bad feelings, hopelessness, catastrophization and abandonment to their own fate as shown in figure 1.A.

In the category of damaging instruments, the use of old experiences and bad sensations is perceived as comparative to the CPP. In these portraits, we see objects that can cause some injury or bad feeling that often have a direct relationship with the character of the CPP. Loduca et al.¹⁴ have described this type of PoP as objects that can express physical discomfort. In figure 1.B, for example, the warm color suggests intense suffering and heat in the blood-dripping drawing and the written representation by the patient.

Geometric shapes were primarily used to represent pain behavior, such as expansion, irradiation and location. In addition, as reported by Loduca et al.¹⁴, it can illustrate the idea of a vicious cycle (pain-stress-pain). In figure 1.C, concentric circles may externalize the behavior of their CPP as a pain that starts at a well-located epicenter and spreads throbbing, protruding itself through or even beyond the body.

The act of drawing body parts was understood as the attempt to justify, in a biological way, what the body has expressed. It is, therefore, the externalization of the CPP into two cores from two parts, psychological and body. In addition, it should be noted the association with damaging instruments and negative feelings (tears). It is noted that the biological image portrayed in figure 1.C can indicate her facial and emotional image. This participant’s case is a good illustration that the use of VAS alone does not reach the real dimension of the patient’s suffering.

In portraying people and scenes, patients expressed both the characteristics of pain and emotional states. In figure 1.E, it is noted that the patient’s pain is well-directed to the characteristic of her psychological integrity, with the loss of autonomy, giving the idea of carrying an extracorporeal and relational weight, which would not be hers. Loduca et al.¹⁴ also described scenes as significant PoP; illustrated by something external, negatively influencing the person’s autonomy. Scribbles and/or amorphous can mean both subjectivity in interpreting one’s own pain and the strength and difficulty of living with something that influences one’s life. Figure 2.A, as well as the impulsive form by which it was made, may suggest anger at someone, angry with herself or with her fate for her intense and enduring suffering. In addition, the term “Decreasing” is inconsistent with the clinical picture and the PoP, which can mean a progressive reduction of her resilience.

Portraits of monsters may represent pain as something unfamiliar, terrifying and inexplicable, reflecting the suffering and fear in living daily with CPP. As an example, the portrait of figure 2.B associated with the name “Witchcraft” may symbolize evil, fear, and loss of autonomy.

Smiles, on the other hand, suggest an effective way to face, hide and even reduce the intensity of pain, which can mean resilience. These findings were also observed by Custódio et al.¹⁹ when studying the pain of children with sickle cell anemia. Figure 2.C, for example, was interpreted as the phases in which the patient has been experiencing CPP in the last years.

According to Goethe²⁰, cool colors, originally described as “minus” colors, are directly related to negative feelings such as restlessness, anxiety and cold, which corroborates the higher prevalence (63.7%) of this color spectrum in this study, especially in the drawings of the “negative feelings” group. Thus, the drawings of this group, of the “monsters” group and some of the “people and scenes” group showing pessimistic feelings, as well as the great use of cool colors may be related to a lower response to treatment and worse prognosis. Such a phenomenon, found in the literature as pain catastrophizing, as well as its negative consequences for the prognosis of CPP-patients, were reported by prospective cohort²², and its relation with higher intensity of CPP and worse QoL were emphasized by Sewell et al.⁵. In different medical contexts, optimistic people have better QoL compared to people with low optimism levels or pessimistic people. Optimism may even provide less sensitivity to pain and better adaptation to chronic pain²³.

In addition, Wiech²⁴ confirms that the concept of pain as an actively constructed experience is determined by expectations and beliefs. The demonstration of negative beliefs and the lack of coping resources by the participants of this study are evident in the drawings and questionnaires, since more than 60% of them put their hopes only in medical procedures and 25% denied solutions to their pain. Such facts suggest great passivity in coping with pain. Patients’ active participation contributes to the treatment effectiveness, as highlighted by Brünahl et al.²⁵,²⁶ and by Alappattu and Bishop²⁷ who have demonstrated the presence of clinically relevant psychosocial and psychiatric factors among patients with CPP and encouraged the investigation of psychopathologies among them.

It is noteworthy that modern research on pain is still beginning to unravel the pathophysiological details of the affective domain of pain²⁸. This fact, associated with the variability of the characteristics of this domain from patient to patient¹⁵ and the lack of knowledge by clinicians of the few tools adapted for use in the Portuguese language²⁹ may contribute to the misdiagnosis of the CPP psychological aspects among Brazilian women. The disconnection between VAS=3 and the drawing of figure 1.D in this study is a good illustration. This is a limiting factor of the physician’s action, who needs to understand the nuances of the patients’ view of their morbidity, recognizing their active role in their clinical improvement, as well as promoting interdisciplinary treatment²⁹.

This study, with the PoP, can favor the understanding of patients’ beliefs and perceptions about their pain, which can expand the possibilities of intervention. The research of these factors may offer a therapeutic return to patients since other authors state that negative beliefs and expectations can be modified through learning²⁴,³⁰. This makes room for interdisciplinary and multimodal approaches to promote coping strategies and reduce pain catastrophizing²²,²⁶,³¹,³². According to Neubert³³, the therapist’s role is to deconstruct those beliefs considered inadequate and understand pain as a subjective process linked to the subject and his/her social world. The importance of this process is further reinforced by the lack of benefit of the laparoscopic treatment over the clinical and psychotherapeutical, as reported by de Deus et al.¹³. Despite the
paucity of controlled studies on the psychotherapy efficacy in CPP, several authors reinforce their importance, especially due to their performance on psychosocial variables, which increases the relevance of the present study. Recent evidence has highlighted the assessment of pain in the broad social context. Neuroscience research has observed the interconnection between physical and social experiences of pain. Resilience and vulnerability were highlighted by Alschuler, Kratz, and Ehde as impacting factors in the perception of chronic pain, especially those more psychosocially focused. The resilience capacity can be inferred by the PoP. More positive or negative emotional states were observed as well as the presence or absence of significant social and family ties. In addition, active interventions based on resilience and the patient-physician-patient relationship itself focused on patient-centered care may be resources to increase the resilience of women with CPP.

This article has intrinsic limitations to the method. Data collection involved a subjective approach, and some patients showed difficulty or resistance to represent their pain graphically. This may be a result of the more synthetic and objective approach provided by other services and professionals, as well as the promotion of a more skeptical view of patients regarding the psychosocial component of their pain. Also, it was a cross-sectional descriptive study, not able to guarantee a causal relationship or results in generalization, but it makes room for new prospective and analytical studies on the subject.

CONCLUSION

Women with CPP have portrayed their pain drawing negative feelings, damaging instruments, geometric shapes, body parts, scribbles and/or amorphous, people and scenes, monsters and smiles. They used few and cold colors and named their pain with the emotional load. Besides, they considered themselves unable to contribute to the reduction of their pain and made an analogy between their pain and family losses. Such characteristics suggest the patients’ pain catastrophizing and their vulnerability, which may compromise the prognosis.

ACKNOWLEDGMENTS

To the women who have offered their time in moments of pain, to help in our education and to provide a better understanding about those who suffer and about science.

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Knowledge, attitude and practice regarding pharmacological methods of labor analgesia

Conhecimento, atitude e prática em relação aos métodos farmacológicos de analgesia de parto

Bianca Ruschel Hillmann¹, Ana Maria Nunes de Faria Stamm²

ABSTRACT

BACKGROUND AND OBJECTIVES: Labor pain is caused by several physiological changes and may cause psychological damage to the parturient and her relatives and, therefore, must be relieved. The objective of this study was to evaluate the knowledge, attitude, and practice of obstetricians concerning pharmacological methods of labor analgesia.

METHODS: Cross-sectional study (38 obstetricians working at public maternity hospitals). A structured questionnaire was applied about knowledge, attitude and practice concerning systemic and regional pharmacological methods. The agreement magnitude was assessed by kappa coefficient.

RESULTS: We observed adequate knowledge about the indications of all methods (31 to 86%), the contraindications of opioids (92%) and the adverse effects of non-opioid analgesics /antispasmodics on the fetus (76%). Concerning attitude, they agree that non-opioid analgesics/antispasmodics do not minimize labor pain (98%) but should be available at the maternity wards (89%) and that epidural analgesia is effective (100%) and should be available (94%). In practice, the indication of non-opioid analgesics/antispasmodic and epidural analgesia prevailed. In most of the requirements in each dimension (knowledge: K=-0.092 to 0.158; p=0.057 to 1.0 and attitude: K=-0.005 to 0.472; p=0.004 to 1.0), there was minimal agreement with practice, except for the non-opioid analgesics/antispasmodics (K=0.421, p=0.009), and epidural analgesia (K=0.472, p=0.004), with a moderate agreement.

CONCLUSION: Knowledge was heterogeneous. The attitude was unanimous concerning the effectiveness and the need of having epidural available, and the ineffectiveness of non-opioid analgesics/ antispasmodics, and the practice of prescribing them. There was a minimal agreement between knowledge and practice, and between attitude and practice on most of the other requirements in each dimension.

Keywords: Analgesia, Attitude and practice in health, Childbirth pain, Knowledge, Medical education, Obstetric analgesia, Pharmacological treatment.
INTRODUCTION

Childbirth pain is caused by a number of physiological changes that occur in the body of the woman in labor, such as cervical dilatation, strain of the uterine fibers and the birth canal, traction of the ovaries and peritoneum, and compression of pelvic structures and roots of the lumbar-sacral plexus. This pain leads to anxiety and apprehension, with increased secretion of cortisol and catecholamines, which may alter contractility and uterine flow, affecting the course of labor and fetal well-being. Pain can also cause psychological stress to the woman in labor and her relatives, making it difficult to interact with the newborn and, therefore, requiring relief.

The major challenges of analgesia during labor are adverse effects on the fetus and the need to avoid excessive sedation of the patient so that she is cooperative, and the mother-baby bond can be established after birth. Considering these limitations, several analgesic methods have been developed for pain control, including systemic and regional non-pharmacological and pharmacological methods.

Among the pharmacological methods, the systemic can be administered intravenously, intramuscularly or by inhalation, and the parenteral analgesia can be performed with non-opioid drugs (antihistamines, antispasmodics, non-opioid analgesics, and anti-inflammatories) or opioids (such as morphine, dolantin, and remifentanil). However, the regional methods - pudendal nerve block, spinal analgesia, and epidural analgesia - are often preferred as they do not affect fetal well-being.

Considering the pharmacological systemic and regional methods, their indications, contraindications and adverse effects, one can notice the decision-making complexity, as well as the need to monitor the mother-baby binomial during their use. Despite these potential difficulties, it is essential for the obstetrician to handle them since many women in labor do not present a satisfactory degree of pain relief when submitted only to non-pharmacological methods.

Therefore, we propose a study to evaluate the knowledge, attitude, and practice (KAP) of obstetricians working in public maternity hospitals in southern Brazil, with regard to the main current pharmacological methods of childbirth analgesia. We believe that this type of research can capture what a group knows about a particular subject (knowledge), feelings and preconceived ideas in relation to the topic (attitude) and how they demonstrate this knowledge and attitude in their actions (practice).

The study also aims at describing the characteristics of the study population, the degree of agreement between these three dimensions, relating them to age and length of service in the delivery room, and the satisfaction of these professionals with the labor analgesia offered to their patients.

METHODS

A cross-sectional, observational, descriptive and analytical study conducted from July to November 2016. Fifty obstetricians working in three public maternity hospitals in southern Brazil, which are part of the program Hospital Amigo da Criança (Children's Friend Hospital), were invited to participate in the research. Of these, 38 professionals made up the convenience sample.

A structured questionnaire with open and closed questions and space for comments at the end was prepared based on studies on KAP, the theoretical basis on the subject and research. The questionnaire was divided into three parts:

1. Characteristics of the study population, including questions about prototypes of pharmacological methods of labor analgesia.
2. Dimension of knowledge, attitude and practice of obstetricians regarding these methods. Theoretical knowledge related to the subtopics indications, contraindications and potential adverse effects on the woman in labor and the fetus, with open questions. Attitude, encompassing three subtopics - Does it work in relieving labor pain? Do the benefits outweigh the risks? Should it be available for use in the maternity ward? - with answers in Likert scale (5 options), and practice with one subtopic – Do you prescribe the method or not?
3. The level of satisfaction of these professionals with the pharmacological labor analgesia offered to the patients in these health institutions.

The instrument was evaluated by two experts in this area, who analyzed the form of presentation and the content, relating these elements to the tool's ability to capture the phenomenon under study. The suggested changes were accepted.

The research was approved by the Human Research Ethics Committee of the university to which the researchers are affiliated - project number 51673515.2.0000.0121 - and carried out after signing the Free and Informed Consent Term (FICT), in accordance with the resolution 196/96/MS of the Brazilian National Health Council.

Statistical analysis

It was performed using IBM’s Statistical Package for Social Sciences (SPSS) software, version 23.0.

Responses regarding age and length of service were considered in full years. As for the prototypes mentioned by the participants, the order in which they were written was respected. In the knowledge dimension, for each participant's response to the subtopics, we assigned either the grade “appropriate” - when there were at least 30% of correct answers and no incorrect answer - and “inappropriate”, in the remaining cases. This evaluation was made using as reference a template developed from the literature review. The level of knowledge of the study population was considered excellent (when more than 75% of the participants showed adequate knowledge on that question), good (between 50 and 75%), moderate (between 25 and 50%) and low (less than 25%).

In the attitude dimension, the answers were dichotomized into “yes” and “no” and, in the practice dimension, into “prescribes” and “does not prescribe”.

The categorical variables were expressed in absolute numbers and proportions, while the continuous variables with normal distribution (measured by the Kolmogorov-Smirnov test) were expressed as mean and standard deviation (SD).

The magnitude of agreement between knowledge and practice, and between attitude and practice was evaluated by Cohen's kappa coefficient, using the cut-off points proposed by Landis and Koch.
The relationship between continuous variables (age and length of service in the delivery room) and categorical variables (knowledge, attitude and practice) was assessed by the Student’s t-test. A p<0.05 was considered significant.

RESULTS

Of the 50 obstetricians who work at three public maternity hospitals in southern Brazil, 76% (38) participated in the study. The mean age was 44±9 years and the mean length of time practicing in the delivery room was 16±9 years. All of them have postgraduate degrees in gynecology and obstetrics residency, and one third (33%, 13/38) has a second specialization.

When asked to inform three pharmacological methods of childbirth analgesia (prototypes), the most cited methods were epidural analgesia (42%, 16/38), antispasmodic drugs (31%, 12/38), and parenteral opioids (15%, 6/38). The majority (68%; 26/38) expressed dissatisfaction with the quality of labor analgesia offered to patients in the maternity ward where they work, with 26% (10/38) partially satisfied and only 5% (2/38) satisfied.

We observed a good knowledge of simple and antispasmodic analgesics in terms of indications (73%, 28/38), and excellent in terms of adverse effects on the fetus (76%, 29/38). In the opioid category, knowledge was excellent in terms of indications (86%, 33/38) and contraindications (92%, 35/38); as for nitrous oxide, we observed a moderate degree of knowledge regarding indications (31%, 12/38) (Figure 1).

As for regional methods of labor analgesia, the degree of knowledge was excellent regarding the indications of epidural analgesia (84%, 32/38) and pudendal nerve block (79%, 30/38) (Figure 2).

As for non-opioid analgesics and antispasmodics, approximately half of the participants (47%, 18/38) believe that the benefits outweigh the risks in most cases, and that they should be available in maternity wards (89%, 34/38), knowing that they do not relieve labor pain. As for opioids, even though the majority of the participants indicate that opioids should be available (92%, 35/38), 39% (15/38) believe that this method is effective. In the case of nitrous oxide, 29% (11/38) indicate that it should be available in maternity wards (Figure 3).

With regard to epidural analgesia, the participants were unanimous about its effectiveness (100%) and the need to be available in maternity wards (94%), with 47% believing that the benefits outweigh the risks. As for pudendal nerve block, merely an attitude that it should be available in the maternity wards prevails (63%) (Figure 4).

The prescription of non-opioid analgesics and antispasmodics (50%, 19/38) was similar to that of epidural (47%, 18/38), followed by pudendal nerve block (21%, 8/38) and opioids (21%; 8/38). There was no reference to the prescription of nitrous oxide.
Analytical statistics

The Kappa analysis showed reasonable agreement for opioids (κ=0.281, p=0.043) and moderate agreement for non-opioid analgesics and antispasmodics (κ=0.421, p=0.009) and epidural (κ=0.472, p=0.004), between ATTITUDE - question “Do benefits outweigh risks in most cases?” and medical PRACTICE. Reasonable agreement (κ=0.211; p=0.034) was also observed for non-opioid analgesics and antispasmodics between ATTITUDE - question “Should they be available in maternity wards?” and PRACTICE. In most other questions, in each dimension (knowledge: κ=0.092 to 0.158; p=0.057 to 1.0; and attitude: κ=0.005 to 0.472; p=0.004 to 1.0), there was minimum degree of agreement with practice.

When assessing opioids and relating knowledge, attitude and practice to the age of the participants, there was a statistically significant difference between the mean ages in the ATTITUDE dimension – question “Do you believe they should be available in maternity wards?”, with a mean of 45 and 34 years for positive and negative responses, respectively (mean difference=11 years, Student’s t = 2.068; 95% CI=0.215 – 22.128, p=0.046). In the PRACTICE dimension, the mean age was 38 and 45 years for positive and negative responses, respectively (difference=7 years, Student’s t=-2.064; 95% CI=-14.690 – 0.120; p=0.047).

There was also a significant difference in ATTITUDE related to pudendal nerve block – question: “Do you believe it relieves labor pain?” – with the mean age being 52 years and 43 years for positive and negative responses, respectively (difference=9 years; Student’s t=3.002; 95% CI=1.918 – 14.582; p=0.017). The relation between the average length of time working in the delivery room and knowledge, attitude and practice, showed a statistically significant difference regarding opioids in the dimension KNOWLEDGE - question “adverse effects on the fetus” - with an average of 7 years in the “adequate” responses and 17 years in the “inadequate” response (difference=10 years; Student’s t=-2.040; 95% CI=-20.295 – 0.058; p=0.049). In the dimension ATTITUDE - question “Do you believe it should be available in maternity wards?” – there was an average of 17 years in those with a positive response and 5 years in those with a negative response (difference=12 years; Student’s t = 2.062; 95% CI=0.193 – 23.198; p=0.046).

There was also a statistically significant difference in relation to the length of time working in the delivery room regarding pudendal nerve block, in the dimension ATTITUDE - “Do you believe it relieves labor pain?”, with an average of 23 years in participants with a positive response, and 15 years with a negative response (difference=8 years; Student’s t=3.330; 95% CI=3.002 – 14.069; p=0.005).

Comments

Among the 13 participants (34.2%, 13/38) who made comments, 6 mentioned it was difficult to have access to pharmacological methods in general, 6 mentioned epidural analgesia was unavailable due to the absence of an anesthesiologist in the obstetric center or their refusal to provide it, and 2 participants cited the professionals’ and patients’ lack of knowledge about analgesia methods.

DISCUSSION

It is important that the patient in labor is offered pain relief methods to avoid trauma and increase the degree of satisfaction in order to facilitate the interaction of the baby with the family. In two studies conducted on the African continent, it was observed that most professionals believe that pain relief is necessary during childbirth, but approximately half of them did not administer any analgesic method (48%), and of these, more than half (54%) did not mention reasons for this, while some still believe that analgesia is not necessary because childbirth pain is a natural process.

In this scenario, we can still consider that the patient may have different needs throughout labor – and may use more than one method of analgesia – which highlights the importance of the obstetricians to have knowledge, attitude and confidence in the use the pharmacological methods available at their workplace, choosing the best method in each situation. This is evidenced in the comments of the participants, because hospitals from the Brazilian public healthcare system (SUS) do not always have professionals to perform epidural analgesia.

The literature has shown that non-opioid analgesics and antispasmodics cannot be considered methods of labor analgesia because they are not effective. Although 98% of participants believe in their ineffectiveness, this method is one of the prototypes of labor analgesia in the minds of these obstetricians and one of the most prescribed methods. This ambivalence among knowledge, attitude and practice may be because these drugs show a low risk to the fetus and low interference on the course of labor and, although they do not relieve pain, they increase the satisfaction with the care provided and with the delivery when compared to placebo.

Adequate knowledge about the indications and contraindications of opioids was observed, but only 40% of the participants believe in their effectiveness, regardless of what research on this topic shows. Most assure that the risks do not outweigh the benefits, an attitude that is corroborated by practice, by not prescribing them (4/5 of the participants), which is in agreement with the guidelines of the Brazilian Department of Health that they should not be used routinely.

The mean age of participants who prescribe opioids is lower than that of non-prescribers, which may be due to an accumulation of negative experiences with the use of these drugs over time. Nitrous oxide, which has been used in labor analgesia in many countries for decades, for its effectiveness and low risks, is a method unknown to participants, who also consider that its risks do not outweigh the benefits and do not prescribe it. This may reflect the Brazilian reality because, although this gas is commonly available for use in general anesthesia, few hospitals use it during childbirth.

The degree of knowledge about the indications for epidural analgesia was adequate, with a positive attitude regarding its effectiveness (100% of respondents), benefits that outweigh risks (45%), and availability in maternity wards (95%), besides being one of the most prescribed methods and the most cited prototype. There was also a tendency for the attitude of believing...
that benefits outweigh risks leading to the practice of prescribing it. Currently, this is the most effective method of analgesia and, therefore, it should be available in all maternity wards. Of the pharmacological methods, it is the only one that is administered by anesthesiologists, and not by obstetricians, but it is crucial that the knowledge of whoever indicates it is extended to its contraindications and adverse effects, to avoid the bias of patient selection and inadequate monitoring of its adverse effects.

Regarding pudendal nerve block, we observed that the physicians also had adequate knowledge about its indications and, although most believe that it should be available, the attitude of believing in its ineffectiveness prevails, and that its benefits do not outweigh the risks. In practice, those who do not prescribe it prevail (4/5 of the participants).

It was also observed that obstetricians with a higher mean age and longer time working in the delivery room tend to believe in the effectiveness of pudendal nerve block more frequently than younger obstetricians with less time working in this area. This relationship may reflect a decrease in the indication for episiotomy and an increase in the use of the vacuum extraction over forceps in recent years, having an impact on its indication as a method of labor analgesia.

The convenience sample of this study highlights the qualification of professionals working in public maternity wards and hospitals, who in order to get a position in these healthcare institutions had to be approved in a selection process and demonstrate experience in the delivery room. This allows us to infer the competence of these obstetricians in their respective fields of work. Nevertheless, it is clear that among the available methods, knowledge does not always cover the range of questions and, in practice, the most prescribed methods are simple analgesics, antispasmodics and epidural analgesia.

We observed a minimum degree of agreement between knowledge and practice, and between attitude and practice in most of the subtopics of each dimension, and reasonable to moderate in the others, this fact being common to other studies that take this methodology into account.

The lack or absence of public policies in the regulation of labor analgesia methods, combined with what the Department of Education and Culture advocates as a proposal for a medical residency program, in which this topic is neither emphasized nor addressed, and the possibility of memory bias when sampling the data, are potential limitations to be considered. Considering that most of the participants are not satisfied with the childbirth analgesia provided to patients, which may reflect the difficulties encountered for performing epidural analgesia, we suggest studies on the perception of women in labor concerning the analgesia received.

CONCLUSION

Regarding knowledge, attitude and practice of obstetricians working at three public maternity hospitals in southern Brazil, we concluded that good to excellent knowledge prevailed in relation to the indication of regional pharmacological methods, opioid contraindications, and adverse effects of simple and antispasmodic analgesics, while it was low in the other subtopics of this dimension.

In general, participants have a positive attitude regarding epidural and non-opioid analgesics and antispasmodics, and a negative attitude regarding the remaining methods.

The most prescribed methods by obstetricians are non-opioid analgesics/ antispasmodics and epidural, with less expressive numbers or absence of other methods.

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Knowledge, attitude and practice regarding pharmacological methods of labor analgesia


Access of men with sickle cell disease and priapism in emergency services

Acesso de homens com doença falciforme e priapismo nos serviços de emergência

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ABSTRACT

BACKGROUND AND OBJECTIVES: Priapism is one of the complications of sickle cell disease characterized by a persistent and painful erection, which can lead to erectile dysfunction and sexual impotence. The objective of this study was to understand how men with sickle cell disease and priapism access emergency care.

METHODS: A qualitative study conducted in a reference healthcare unit to people with sickle cell disease in the second largest city in Bahia. Seven adult men with sickle cell disease who had experienced priapism participated in the study. The data were collected by semi-structured interview and thematic story designs and submitted to content analysis.

RESULTS: Priapism is seen as a lack of genital health. Participants use strategies to manage it at home to avoid embarrassment, which ends up in cocooning. Access to emergency services is motivated by persistent and relentless pain; and limited by the fear of priapism being mistaken for sexual deviance, lack of knowledge about the complication as a urologic emergency and financial shortfall, which confers a worse prognosis about erectile function. Men are embarrassed and discriminated by healthcare and support professionals, which discourages them from accessing these services in the future.

CONCLUSION: This study emphasizes the importance of early diagnosis of sickle cell disease, the orientation of family members and the need for healthcare professionals to educate young boys and men with sickle cell disease and their caregivers about priapism in advance to allow adequate self-care and prevent complications.

Keywords: Erectile dysfunction, Priapism, Sickle cell disease.

ORIGINAL ARTICLE

JUSTIFICATIVA E OBJETIVOS: O priapismo é uma das complicações da doença falciforme caracterizada por ereção persistente e dolorosa, podendo levar à disfunção erétil e impotência sexual. O objetivo deste estudo foi compreender como os homens com doença falciforme e priapismo acessam os cuidados nos serviços de emergência.

MÉTODOS: Estudo qualitativo realizado em unidade de saúde referência para pessoas com doença falciforme no segundo maior município baiano. Participaram do estudo 7 homens adultos com doença falciforme que já vivenciaram priapismo. Utilizou-se entrevista semiestruturada e desenhos-história com o tema, analisados por análise de conteúdo.

RESULTADOS: O priapismo é visto como uma falta de saúde genital. Os participantes usam estratégias para seu manuseio em domicílio para evitar constrangimentos, o que acaba isolando-os socialmente. O acesso aos serviços de emergência é motivado pela dor persistente e irredutível; e limitado pelo temor do priapismo ser confundido como resultado de desvio sexual, desconhecimento da complicação como emergência urológica e carência financeira, o que confere pior prognóstico sobre a função erétil. Os homens sofrem constrangimento e discriminação pelos profissionais de saúde e de apoio das unidades, o que os desmotiva a acessar esses serviços no futuro.

CONCLUSÃO: Este estudo ressalta a importância do diagnóstico precoce da doença falciforme, da orientação de familiares e da necessidade de os profissionais de saúde educarem os meninos/homens jovens com doença falciforme e seus cuidadores sobre o priapismo de forma prévia, para permitir o adequado autocuidado do futuro e prevenção de complicações.

Descritores: Disfunção erétil, Doença falciforme, Priapismo.

INTRODUCTION

Priapism is the total or partial continuous erection of the penis for more than four hours accompanied or not by sexual stimulation and orgasm. It is considered a urologic emergency requiring urgent care or even surgical procedure to avoid complications such as irreversible erectile dysfunction.
Sickle cell disease (SCD) is one of the causes of priapism. SCD is more common among Afrodescendants, affecting about 3,500 births per year in Brazil. The incidence is related to the percentage of Afrodescendants in each region. The state of Bahia has the highest incidence of the disease: it affects 1:655 live births and 1:17 live births carries the trace.

SCD interferes in man’s life, delays sexual maturation, compromises physical development and causes limitations in several levels due to the clinical variability of this disease. Priapism is among the SCD complications and retrospective data points out that it affects approximately 30% of men with SCD. SCD causes ischemic priapism, with time-dependent hypoxia, hypercapnia, and acidosis. It is a condition analogous to the compartment syndrome, which occurs due to the stagnation of blood in the sinuses of the corpus cavernosum during physiological erections, obstructing venous drainage. In 12h histological changes occur - interstitial edema, progressive endothelium destruction, basement membrane exposure - and thrombocyte adhesion in 24h. Within 48 hours, there are thrombi in the sinusoidal space, muscle necrosis and fibroblast transformation, culminating in erectile dysfunction.

Priapism compromises the quality of life of a man with SCD, causing financial, affective, social and sexual impacts. Men with SCD say that priapism brings feelings like shame, humiliation, and fear. The fear of becoming sexually impotent hurts the principle of virility and deconstructs man’s masculinity with priapism. Such a scenario develops a refusal of intimacy and difficulties in affective relationships.

The access to healthcare is impaired in men with priapism and SCD due to the barriers in the access to primary care. People with SCD are encouraged to seek secondary care directly, especially the emergency services. However, in these services, the body may be in a homeostatic imbalance, imposing obstacles that limit life goals, triggering feelings of fear, insecurity, anxiety, and the expectation of quick and effective assistance by the healthcare team.

People with SCD seek services more frequently than the general population, and about 29% of these visits result in hospitalization. In the U.S., people with SCD reported dissatisfaction with the quality of care provided in urgent care units in addition to the excessive waiting time in comparison with other groups of patients, even when they presented higher levels of pain and were screened as higher priority. In Brazil, the access to emergency services is hampered due to overcrowding, inadequate physical structure, the distance between the patient’s residence and the unit, and lack of financial resources for commuting. This study is justified by the importance of SCD as a public health issue in Brazil, with neglected history and high impact in the affected populations and the territories they live due to the lack of knowledge about the implications of the disease. In addition to exploring the health events in patients with SCD, giving more visibility to the subject. Likewise, it favors health professionals’ reflection about the structure of the emergency services that assist men with SCD complications, such as priapism, allowing for evaluation and redirection of healthcare actions to better care practices reducing the damages to the sexual health of these men.

This study was guided by the following question: how do men with SCD and priapism access care in emergency services? The overall objective is to understand how men with SCD and priapism access care in emergency services.

METHODS

A qualitative, descriptive, exploratory study conducted in a Hemoglobinopathies Specialized Center (HSC) in the city of Feira de Santana, Bahia, Brazil. This study is linked to the master project “Representations about the body and SCD: repercussions on daily life, care, and sexuality”.

The present study and its master project met the ethical principles for research with human beings. The recommendations of the National Research Council, according to Resolution 466/2012 of the National Health Council, were adopted. Seven men participated in this study with a confirmed diagnosis of SCD, asymptomatic, in an outpatient setting, aged over 18 years, having already experienced priapism at some point in their lives and are frequent visitors of the HSC. The participants were informed about the study’s objectives, the voluntary and anonymous character of their participation, and that their acceptance to participate had no relation to their visits to the HSC. Then, they signed the Free and Informed Consent Form (FICT).

The number of participants was established by the data saturation criterion. As “priapism” refers to the Greek god of fertility, Priapus, to ensure anonymity and secrecy, names of Greek deities were drawn and attributed to portray the participants.

The projective technique of story-theme drawing was used to produce the data. First, the intention and purpose of this technique were explained. Then, the participants received a sheet of paper in blank and pencil, and they were asked to create a drawing on the topic “man with SCD and priapism in the urgent care unit”. They were also asked to tell a story about the drawing and give it a title. Subsequently, a semistructured interview was conducted with closed sociodemographic questions and open questions about the priapism experience in the context of emergency services.

The data was collected between November 2016 and February 2017 by a qualified male interviewer, in a closed and private environment (consulting rooms) of the HSC where the participants felt comfortable to share their experiences. The interviews were recorded and transcribed in full immediately after their completion. The average duration of the interviews was 40 minutes, and they were closed when reached the content saturation. The story-theme drawing has two stages: the creation of the drawing and the production of a story from the drawing created, which allows a subjective and discursive interpretation of the material produced, in which the two stages complete one another. The model proposed by Coutinho was used to analyze this material. It consists of systematic observation and superficial reading of the drawings and stories to know the data; select the material by graphic similarity or proximity of themes. Then, followed the other steps, a more in-depth and targeted reading; the analysis and interpretation of the thematic contents grouped by
categories and subcategories, and finally, the graphic interpretation of the drawings. The content analysis method proposed by Bardin's was used to treat the data, which aims to obtain indicators that allowed the inference of knowledge regarding the conditions of production/reception of these messages. There are three analysis phases: pre-analysis, with the purpose to organize the material, select the documents to be analyzed, formulate hypotheses or guiding questions, elaborate indicators that support the final interpretation. Then the exploitation of the material, where the decisions made in the pre-analysis phase are systematically applied. And then the treatment of the results, where inferences are made and the gross results are transformed into meaningful and valid results, proposing interpretations about the expected objectives or other unexpected discoveries.

RESULTS

Seven men with ages between 27 and 48 years participated in this study. Three were black, three were brown, and one yellow. Four were married; 4 retired; 4 catholic; 5 with limited formal schooling (did not reach high school) and 5 with low income (≤1 minimum wage).

Among their clinical characteristics, 5 had type HbSS, and 2 had type HbSC. The SCD diagnosis was late in 4 men. The first episode of priapism varied from 15 to 27 years old. The average duration of the episodes for 5 men was ≤4h, usually occurring at night. Three men had no episodes of priapism in the last 6 months, while one man reported daily occurrence.

All participants reported pain crises as the reason to seek the emergency (ER). Two men have never sought the ER for priapism. They go from home to the ER by bus, bicycle, taxi or the neighbors give them a ride, and sometimes they walk. The experiences of men with priapism were organized into three categories which will be presented below:

Interpretation of priapism and strategies to handle it at home

Men with SCD interpret priapism as an injury to health, a disability, or a lack of genital/sexual health. They see it as an involuntary painful erection experience, unpredictable, more frequent at night, that makes urination difficult.

It's complicated to have a long-lasting erection, and moreover, it hurts. What is more difficult in priapism is not the erection, but the pain – Zeus.

It is usually at night, at dawn. I'm sleeping and then I wake up with the erection and already feeling pain – Hades.

In its first occurrences, due to the lack of knowledge of this complication and its connection with SCD, prolonged involuntary erection is attributed to sexual desire and/or greater virility. The worry, fear, and lack of knowledge about how to handle the situation bring thoughts of insecurity and fear of future sexual performance.

I felt like a lucky guy because having an erection for two, three hours ... who can get it? Almost nobody. I did not know that priapism was generated by SCD. I thought it was just me. Only after I had the first crises, I started to read about what SCD was; I could see that priapism came from SCD […]. In a man's head, what does it mean when you're erect? What do you want? – Zeus.

When it is the first time, he thinks he has a problem, that his health is precarious, and the concern is: what to do? It is bad because he keeps on thinking he will not be able to get laid normally with his wife or girlfriend, he is afraid of failing … – Hercules.

The experience is also permeated by shame and embarrassment. These situations occur unexpectedly, whether at work, in places with friends and with the family. In general, people around the man with SCD do not know about the priapism complication and its relation to the disease, acting in a prejudiced way and exposing the man with SCD to embarrassing situations.

For those who go through this problem every day, (priapism), it is complicated; it is shame, shyness, prejudice, shameful, you are embarrassed, you cannot explain to someone if you do not have someone close to you to talk, explain your problem – Theseus.

Thus, men with SCD are secluded at home and use strategies to revert the prolonged erection and pain with the use of teas, cold water bath with medicinal plants on the penis, distraction, walking (Figure 1), try to urinate, to masturbate, or seek discreet partners for intercourse in an attempt not to be mistaken or judged as sexual abusers.

When I was not oriented, I took showers, got wet, put ice; I was told to bathe my penis with arvoreira (a plant), they said that it was good … I drank sugarcane tea; I stayed under the shower for long periods until that feeling of numbness passed, it seemed that he was numb. It did not pass, it relieved. It passed with time; we also kept it out of mind – Hercules.

It is not telling anyone, to prevent from inventing a story, a gossip, chitchat, so that the people do not create a trap, an invention of something worse, like rape or something, prejudice, you have to talk to someone close to you, who will support you – Theseus.

You wake up at dawn, like that (with priapism), you get up, go to the bathroom, urinate, it continues, what comes to your mind? Oh, I have to get a woman […] those who don’t understand, will throw water, stay under the shower, watch porn, try to masturbate […] in the man’s head, what comes up is to watch a porn movie, masturbate until it diminishes – Zeus.

The strategies for handling priapism are modified based on the guidelines given by health professionals when the man with SCD is able to share his experience with them.

Factors that motivate and limit the access to emergency services

Among the motivating factors to access emergency services, is the failure of home treatment strategies combined with pain becoming unbearable. This fact demonstrates that emergencies, in general, are seen as the last resource to solve priapism. Another factor that helps a man to access these services is that he has a reliable person who offers him support and transportation to the service.

I usually did not go to anyone. Because I was afraid. The last time I had (priapism), I was with my wife, she took me to the ER, but before that, I’ve never asked for help to anyone – Hermes.
It was not working (the strategies), the pain was constant and what I was doing was not working [...] depends on the pain, the situation at the moment, if it’s light, we wait, if it’s not possible to go immediately (the ER) not to have complications – Hades.

Shame presents itself in multiple ways among the factors that limit/impair the access: omit to tell the parents about the episodes of priapism in adolescence, predict that he will be attended by a female health professional or predict embarrassing/negative situations because they have already heard negative reports of other men with SCD and priapism. Such aspects affect the image of man as an invulnerable person.

The man has to take care of himself, but it’s a shame. He feels ashamed to get there in this embarrassing situation. Getting there running the risk of being attended by a woman, it is more difficult to talk about the subject, priapism, I’ve heard from a patient who went and felt abashed – Poseidon.

Since the penis is in an advanced erection, there is an embarrassment because people notice it, it is visible, and usually, the person takes the hand to the place because of the pain – Hermes.

She (the mother) scolded me, asking why I did not say anything, why did I hide, I shouldn’t, I should have told her, and she would have taken me straight to the hospital – Zeus.

The lack of early diagnosis of SCD, the lack of knowledge of priapism as a complication of SCD and its urologic emergency character (when over 2 hours of duration), and its intermittent occurrence – recurrent episodes of short duration also contribute the delay in seeking care.

The lack of knowledge about the relationship with SCD is mediated by health professionals who, even when assisting the man with SCD since childhood, do not inform the child and its caregivers (usually women) about the possibility of future occurrence and how to handle the event. Young and adult men also feel ashamed in telling the health professional that they have experienced priapism, which highlights the difficulty of discussing sexuality issues during medical visits.

We need to learn. We do not learn this in our daily routine. I have SCD since I was seven, and I learned about it (priapism) only when I was almost 20 [...] Since it (priapism) is part of SCD, we should know about recurrence, symptoms [...] we had to have this conversation with the doctor in charge of the case, the specialist, but in our entire lives we have not had this conversation, nobody ever told me that it could happen – Hermes.

Another factor that makes it difficult to access emergency services is the transportation to arrive at these services. This depends on the financial resources of the individuals, usually scarce, and with the need to hide the erection (Figure 2) in the priapism crisis during commuting.

I went walking (to the ER), which is not so far, and as I walked from home until there ... about 15 minutes, as I was walking the blood was circulating better, and when I arrived, there was no more (in priapism) – Hades.

Experiences of men with sickle cell disease and priapism in emergency services

In the emergency services, there are embarrassing experiences caused by health professionals and other members of the support staff, such as receptionists and stretcher-bearer. Such experiences are based on prejudice due to the lack of knowledge about SCD and priapism, professional ignorance of genital cases and to keep the privacy of the person. The association of priapism with sexual psychological disorders, masturbation practice, and also the connection of the image of a man with erection in public situations to the stereotype of sexual abuser are extremely embarrassing.

[...] When I was leaving the operating room, the boy carrying the stretcher joked; he said: “you had a lot of hand job, hasn't you?” (Masturbation), I was quiet: “No, that was not it” – Zeus.
He was a health professional, he was joking, relaxing, but we were tense... For other people, it was an offense, and because of this, the person did not want to go to the doctor anymore, because he was ashamed, unable to talk, “Your penis is numb? What have you done, boy?” – Hercules.

The lack of knowledge of the diagnosis of SCD by the man who experiences the first priapism events, added to the ignorance of health professionals, contribute to a possible unwillingness to be attended by these professionals, which causes even more embarrassment in men and delayed care.

Previously, when we did not know it was SCD, “we were ping-ponged from one to another (professionals)”, but today when you say that you have SCD, it’s better, it’s not perfect, but it improved a lot. They did this to me, they transferred me back and forth, “it is not with this one, refer to another, Dr. John Doe, ah, but he is not here, he is coming,” they played this ping-pong game – Hercules.

After establishing the relationship between priapism and SCD, there is a greater level of clarification due to the information of the health professionals about SCD, priapism, how to handle it, and its complications. Some professionals calm the person and provide a humanized care, encourage the man with priapism to seek discretion and when possible, isolate him as a way to keep his privacy. Care is also given through analgesia, hydration and in severe cases, with the aspiration of the content of the penis (Figure 3).

The professionals tried to calm me down, the doctor saying it was normal, the urologist, he knew what was happening, so he tried to calm me down, that it was not a voluntary but an involuntary issue. He told me to relax and wait for the procedure. After the procedure (aspiration of the penis), I began to understand a little more what was happening – Hermes.

---

**Figure 2. The painful walking**

*Story:* “… he called his mother, and his mother called him to go to the bus stop to go to the hospital... to ask the doctor what was that: the penis was hard, and nothing could soften it. The mother was a little angry because she wanted him to take the bus, but he didn’t want to get on the bus because he was ashamed and soon it started to rain. She insisted so much that he got on the bus and went to the hospital under the rain” – Theseus.

**Figure 3. Priapism of the desert**

*Story:* “When I got to the emergency, I realized that what I thought was good for me was actually bad - I ended up going to surgery, with my penis full of needles, painful sensation - not to mention shame. That’s why I drew the cactus, that was how I felt stuck by needles, like thorns, that marked me. Priapism, after the pain crisis, is the worst thing one can have” – Zeus.
The expectation of the aspiration of the penis content procedure together with the knowledge of the possibility of complications from priapism, such as erectile dysfunction, evoke feelings of fear and concern. In our country, there is still a shortage of professionals able to perform the procedure of aspiration of the penis, which exposes men with SCD and priapism to a higher risk of complications due to delay in treatment. The risk of erectile dysfunction increases as seeking help and treatment is delayed. This complication scares the man with SCD, reflecting his vulnerability to depression and the possibility of committing suicide. Although most of them fear sexual impotence, one of the participants reported that it is possible to live with erectile dysfunction provided there is a re-significance of sexual relation, so that pleasure for a man is not only linked to penetration.

It was a very difficult and painful procedure. I ended up with a sequel (erectile dysfunction), sex is not just penetration. So I learned to deal with it, make do with what you have, at first it was complicated, I will not lie, because the erection is an asset to man that you can’t take away, you take whatever you want from a man, but do his erection, he gets mad, even suicidal – Zeus.

DISCUSSION

The sociodemographic and clinical profile of the participants in this study is consistent with the literature, that is low schooling, unemployment, low family income\textsuperscript{14} and age range of the first episodes of priapism\textsuperscript{15}. The higher frequency of late diagnosis of SCD in this study can be explained by the fact that mandatory early diagnosis is still recent in Brazil (National Neonatal Screening Program - 2001)\textsuperscript{16}. The duration of priapism episodes of less than 4h characterizes intermittent priapism, usually nocturnal and handled successfully with home-based strategies and allows normal erectile function between episodes\textsuperscript{17}. However, there is an association between the increase in frequency and duration of the episodes of intermittent priapism preceding major acute attacks (>4h) of greater severity\textsuperscript{1}.

The use of strategies to handle priapism at home is an attempt to avoid long waits and attendance by female health professionals - services seen as a last option. However, in more severe cases of priapism, the ineffectiveness of home strategies leads to the idea that priapism is an insoluble problem\textsuperscript{18}. Themes that involve the patients’ sexuality, such as priapism, face silence from health professionals. Education for parents/caregivers on priapism is necessary since the childhood of boys with SCD, just as it is routine to approach the warning signs, teaching spleen palpation to recognize splenic sequestration, use of special drugs and vaccines, and other recommendations by health professionals\textsuperscript{6}.

Care is not seen as a male, but female practice, which leads men to subdue their health needs. Health services are often perceived as feminine and fragile spaces, attended and composed by women, generating in men a sense of not belonging to that space\textsuperscript{19}. In addition, the exposure to nudity in emergency services creates discomfort in men and a sense of expropriation of their body, which makes them relinquish their innermost, physical and psychological sphere\textsuperscript{20}. Resistance to public transportation and financial restrictions leads to the use of their own car, or friends/family car, or even walking as a means of protection and privacy. In a study carried out in the United States\textsuperscript{8}, 79% of the patients with SCD and pain crisis admitted to the emergency arrived went there walking.

Health professionals and support staff in emergency services generate situations of discrimination and embarrassment to men with SCD in priapism. The body language and the eyes communicate feelings that denote the act of caring. It is important to be careful with the posture and facial expression to avoid embarrassment to the patient\textsuperscript{21}.

The emergency environment in this study was configured as a space to obtain the first information of priapism as a complication. Health education in the hospital setting may include the spouse or the parents of the hospitalized person, discuss the impact of the disease on the family life, and encourage the adoption of healthy behaviors\textsuperscript{22}.

Men with SCD and priapism expressed feelings of fear regarding the surgery to emptying the penis, which converges with the results of a study\textsuperscript{23} in which the surgical procedure was related to a kind of abandonment, yet temporary. This interferes with the feeling of life continuity, it appears as something unexpected and unwanted and can be related as the last chance to keep the erectile and sexual function. Erectile dysfunction is predictable in 90% of the ischemic priapism cases lasting more than 24 hours\textsuperscript{1}, and the duration interferes with the preservation of the function\textsuperscript{13}. Waiting for a spontaneous resolution of priapism and the delay in seeking professional help in emergency units were common in the reports, indicating the need for investment in education to understand the disease, its complications and the self-care of these men since their childhood, when the first episodes of priapism occur, in addition to informing their families to provide support.

In the present study, reports of men with SCD and erectile dysfunction after priapism stated that they try to keep their sexual life active with their partners, varying positions during intercourse, without any specific strategy. Some of the participants do not have partners, and they did not report any practice of seeking individual pleasure, probably for fear of stimulating new crises. A study\textsuperscript{24} emphasized that participants mentioned the impact on sexual life as the most distressing aspect of priapism; saying that they had nothing to offer their partners in the affective-sexual perspective and felt unable to attract or keep partners, generating loneliness, loss of self-esteem and hope.

CONCLUSION

The experiences of men with SCD and priapism are permeated by feelings of shame and embarrassment, whether at home, in social situations or healthcare service units, undermining access to care. Priapism is a complication that occurs in the adolescence and early adulthood of man, a period in which many still live
with their parents and hide the occurrence of the episodes, making it difficult to seek help.

The attribution of different meanings to priapism by men with SCD is influenced by the access to the early diagnosis of SCD, so that not knowing the etiological relation of priapism to the disease, men can understand it as a demonstration of virility and sexual potency. Even attributing positive meanings, the man with priapism adopts measures at home to induce the relief of pain and the detumescence of the organ. The persistence of pain, associated with the failure of these measures, motivates the man with SCD and priapism to seek emergency services late and in general, supported by people whom he trusts.

Access to care in emergency services is hampered by the embarrassment imposed by priapism and by the financial situation of men with SCD. The embarrassment is present in every moment of the journey to access specialized care. It is present at the moment of asking for help, when using a means of transportation to go to the emergency unit (reason why some prefer to walk) and is also anticipated when the man with SCD assumes that he will be attended by female health professionals, which hurts his masculinity. And, finally, it is materialized when attended by unskilled professionals.

The lack of knowledge of priapism as a urological emergency, its consequences and the recurrent character of shorter duration of intermittent priapism also discourage the search for emergency care help by men with SCD.

In the emergency care units, the man with SCD and priapism still faces embarrassing situations when interacting with health professionals and support staff (reception, stretcher bearers, janitors, among others). This is based on the lack of knowledge about the disease and its complications, not to mention the association of the man in a situation of erection in public with the stereotype of sexual abuser and of people with sexual deviations. In spite of these limitations, in these emergency care units, the man with priapism obtains professional information about the SCD and the care measures required in new occurrences of priapism, and its consequences.

Because of the delay in seeking help and being treated at the emergency care units, it is often necessary to move more invasive and complex procedures such as penis emptying surgeries, which generates feelings of fear and uncertainty for the man with priapism over his future sexual performance due to the possibility of erectile dysfunction. In this sense, this study indicates that it is necessary to review the existing protocols to define the waiting time to treatment, taking into account the particularities of each country; such as the mobility conditions of the means of transportation and the quality and efficiency in being promptly cared at the emergency care units in each location.

This study emphasizes the importance of early diagnosis of the sickle cell disease, the education of family members and the need of health professionals to early educate boys and young men with SCD and their caregivers about priapism to allow adequate self-care in the future and avoid complications.

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ABSTRACT

BACKGROUND AND OBJECTIVES: Interferential current is widely used in clinical practice for the treatment of low back pain, but there is no literature consensus regarding its parameters. The objective of this study was to analyze the immediate effect of the 2KHz interferential current in chronic low back pain.

METHODS: This randomized controlled clinical trial was previously approved by the Research Ethics Committee of the Federal University of Paraná, with the participation of 105 individuals with chronic low back pain (>12 weeks) of both genders. Participants were randomized in 3 groups: placebo group (PG, n=35), electrical stimulus off; interferential current1 (IG1, n=35), carrier frequency 2KHz, AMF of 2Hz, motor intensity level and IG2, n=35, carrier frequency 2KHz, AMF of 100Hz, sensory intensity level. All groups were subjected to a single application for 30 minutes with 4 electrodes in a crossed-shape position in the lumbar region.

RESULTS: The visual analog scale, McGill pain scale, Oswestry Low Back disability questionnaire, Roland Morris disability questionnaire and Algometria of pressure were used for evaluation and reevaluation.

CONCLUSION: It may be noticed that by the visual analog scale and questionnaires, the interferential current provided an immediate analgesic effect in chronic lumbar pain regardless of the mode of stimulation.

Keywords: Analgesia, Chronic pain, Electric stimulation therapy, Low back pain.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A corrente interferencial é amplamente utilizada na prática clínica para o tratamento da dor lombar, porém não há consenso na literatura sobre seus parâmetros. O objetivo deste estudo foi analisar o efeito imediato da corrente interferencial de 2KHz na dor lombar crônica.

MÉTODOS: Ensaió clínico, controlado randomizado, foi previamente aprovado pelo Comitê de Ética em Pesquisa da Universidade Federal do Paraná. Participaram 105 indivíduos com dores lombares crônicas (n12 semanas), de ambos os sexos. Os participantes foram randomizados em 3 grupos: grupo placebo (GP, n=35), estímulo elétrico desligado, grupo interferencial1 (GI1, n=35), frequência portadora de 2KHz, AMF de 2Hz, intensidade a nível motor e grupo interferencial2 (GI2, n=35), frequência portadora de 2KHz, AMF de 100Hz, intensidade a nível sensorial. Todos os grupos foram submetidos a uma única aplicação durante 30 minutos, com 4 eletrodos posicionados de maneira cruzada na região lombar.

RESULTADOS: Para avaliação e reavaliação, foi utilizada a escala analógica visual, escala da dor de McGill, Questionário de dor lombar de Oswestry, Questionário de Incapacidade de Roland-Morris e Algometria de pressão.

CONCLUSÃO: Pode-se perceber que, pela escala analógica visual e pelos questionários, a corrente interferencial proporcionou efeito analgésico imediato na dor lombar crônica independentemente do modo de estimulação.

Descritores: Analgesia, Dor crônica, Dor lombar, Terapia por estimulação elétrica.

INTRODUCTION

Lower back pain (LBP) is a multifactorial clinical condition, related to biopsychosocial, sociodemographic and economic factors13, affecting approximately 84% of the world population. Around 30 to 33% of the population presenting acute episodes of LBP end up developing chronic lower back pain (CLBP), i.e., persistent pain for more than 12 weeks. Most of CLBP causes are non-specific and may be associated with increased central sensitization7 and inefficiency in the control of pain endogenous8. Prolonged pain may increase the excitability of afferent neurons (hypersensitivity) which may lead to changes in their plasticity, resulting in an exaggerated response to pain7.
Identifying effective non-invasive and non-pharmacological treatments for CLBP can lead to significant gains and substantial results in morbidity and costs related to this population. Treatments for CLBP primarily aim to reduce pain and disability. The analgesic approaches used in CLBP raise a lot of discussions and sometimes are controversial. However, it is known that physiotherapy is an excellent support in its treatment through therapeutic exercises, health education and also by means of electrotherapy.

Electrotherapy uses electrical currents for therapeutic purposes, such as analgesia. Interferential current (IC) is an electric current of medium frequency, modulated at low-frequency, capable of penetrating deeper in tissues compared to other low-frequency currents. The guidelines on CLBP treatment mention IC as a non-pharmacological treatment for pain reduction, and may be advantageous in relation to other types of procedures, such as surgery. However, they highlight the low evidence level in the studies, suggesting the need for more research related to the topic. Fuentes et al. found in their systematic review that despite the musculoskeletal pain reduction observed after IC, these results are inconclusive due to the reduced number of studies and the methodological heterogeneity.

IC equipment allows the adjustment of the medium frequency (carrier frequency) according to the therapeutic objective. The literature indicates that carrier frequencies (CF) of 2KHz are more appropriate for muscle contraction and 4KHz for analgesia. However, these data are only found in books and are not evidenced in scientific studies. There is still a lot of controversy in the literature regarding adequate IC parameters for both CF and frequency modulation to promote analgesia.

Only two studies evaluated the immediate IC effects on pain. Fuentes et al. studied the IC acute effect associated or not to the therapist interaction in CLBP. They observed greater analgesia in the IC-treated groups but did not indicate the CF used, only the 0Hz frequency modulation and the treatment time (30 min). Corrêa et al. measured the CF analgesic effect between 1 and 4KHz of IC in individuals with CLBP after the first session, after 12 sessions and after 4 months, and saw that IC provided an immediate analgesic effect after the first session, regardless of CF. These two studies show that the 2KHz CF was not used, despite the more satisfactory analgesic results with lower carrier frequencies showed in the literature.

So, this study aimed at analyzing the immediate analgesic effect of 2KHz IC in CLBP through the subjective and objective perception of pain, as well as evaluating the functional capacity of these individuals.

METHODS

A randomized, controlled clinical trial in which were selected male and female participants older than 18 years with CLBP (longer than 12 weeks), of non-specific origin and with visual analog scale (VAS) pain greater than 1. After oral invitation, those who accepted to participate signed the Free and Informed Consent Form (FICT) (Resolution 466/2012 of National Health Council).

Exclusion criteria were: disc herniation or another disc disease, no lower back pain on the evaluation day, use of drugs within 24 hours before the instrument application and surgical procedure in the abdominal and lumbar regions.

The data was collected at the Physiotherapy laboratory of the Federal University of Paraná and Prevention and Functional Rehabilitation Service of the Hospital de Clínicas in Curitiba from March 2017 to March 2018.

Intervention

Participants were randomized in 3 groups, into blocks of 5: low-frequency interferential group (IG1), high-frequency interferential group (IG2) and placebo group (PG).

For IC application, the participant was positioned in the prone position. Four silicone electrodes (9x5cm) with conductor gel were arranged crosswise, fixed by adhesive tape, 3cm away from the L3 and L5 spinous processes, to the right and the left.

CF of IC used was of 2KHz and frequency variation (AF) of 0Hz. In IG1, the chosen amplitude modulation frequency (AMF) was 2Hz and motor level intensity. In IG2, the AMF was 100Hz and sensory level intensity. AMF selection was based on the frequencies used in Transcutaneous Electrical Neural Stimulation (TENS). According to Robertson et al., high-frequency and low-intensity electrical pulses produce an analgesic effect through the theory of pain gates while those of low frequency and high intensity stimulate the endorphin release. PG was subjected to the equipment application but in the off mode. All groups received a single application lasting 30 minutes.

Evaluation

Participants were assessed through a specific record containing data of identification, anamnesis, pain evaluation (VAS and McGill Pain Questionnaire), pressure algometry and Oswestry Low Back Pain Questionnaire (OLBPQ) and Roland Morris Disability Questionnaire (RMDQ), validated in Portuguese. VAS consists of a horizontal line with 10cm in length, numbered from zero to 10, with zero indicating no pain and 10 maximum pain. Participants indicated the point representing the intensity of their pain at the time of evaluation.

The McGill Pain Questionnaire (MPQ) validated in Portuguese evaluates several aspects of pain through words (descriptors) chosen by the participant to express his/her pain. The 78 descriptors (words qualifying pain) are divided into four categories: sensory-discriminative, affective-motivational, evaluative-cognitive and mixed, and also in 20 subcategories each containing 4 to 6 words. The individual should choose none or a word from each subcategory. The numerical index of the descriptors was calculated by the number of words chosen by the participant to characterize their pain, being 20 the maximum value.

The pressure algometer (EMG System do Brasil) is a mechanical device to apply point-pressure to cause pain, with
an indication of the force exerted (known pressure exerted, constant area). It has a display showing mean value and maximum peak, V/Kg/cm² calibration report with signal conditioning, power supply, analog output via BNC connector allowing the external synchronization with other signal acquisition systems and with a system of integrated signal acquisition. It was applied before and immediately after the IC application to compare the intensity of pain in kilograms/force (KgF) by the same previously trained examiner (ICC=0.95). For the evaluation, 2 points were marked for control in the anterior tibial, one in the right and the other in the left, 4 points in the lumbar region: 5cm away from the third and fifth lumbar vertebra, both on the right and the left side. The algometer tip (1cm in diameter) was pressed at each point perpendicularly to the participant’s skin, which was instructed to warn when he/she could no longer withstand the pressure. The development rate was 0.3kgf/s. Three collections were performed at each point with a 1-minute interval. Then, the arithmetic mean was taken to define the pressure pain threshold (PPT). OLBPQ is the most recommended instrument to measure the functional impact of LBP and has been translated and validated into Portuguese. It consists of 10 sessions referring to daily activities that can be interrupted or impaired due to LBP. Each of them contains six statements, which progressively describe a greater degree of difficulty in activity than the preceding statement. The statements are scored from zero to five, resulting in a maximum score of 50. The dysfunction degree given by OLBPQ was classified as no dysfunction (0%), minimal dysfunction (1 to 20%), moderate dysfunction (21 to 40%), severe dysfunction (41 to 60%) and disability (above 60%)23. For results comparison, the total questionnaire score and the dysfunction degree were used.

The Brazilian RMDQ24, which is widely used to evaluate the functional performance associated with LBP, is composed of 24 questions related to activities of daily living, pain, and function. For each affirmative question, 1 point was assigned. The score is the sum of the values, being possible to get a minimum score of “0” and a maximum score of “24”. The individuals assessed with a score equal to or greater than “14” were classified as functionally disabled. The reassessment began shortly after the application.

The sample calculation was defined taking a difference of two points in the pain intensity through VAS, using the Gpower 3.0 program. The statistical power of 0.95 was considered; alpha of 0.05 and effect of 0.4; totaling 102 participants, being 34 per group. This study selected 105 participants, being above the desired sample size.

The randomization was performed in blocks. Nine blocks were established with 15 participants in each, that is, in the draw envelope, there were 5 pieces of paper with IG1 written on them, 5 with IG2 and 5 with PG. The draw was blind to the participant.

The Ethics and Research Committee in Human Beings of the Health Sciences Department of the Federal University of Paraná approved this study under number 1145540 and registered in the clinical trial records with number RBR 59YGR8.

**Statistical analysis**

For statistical analysis, the results were expressed as mean ± standard deviation and submitted to the normality analysis and variances homogeneity using the Shapiro Wilk and Levene tests, respectively. For parametric variables, paired t Student test was performed in the pre- and post-comparison, and Tukey’s *post hoc* ANOVA in the comparison between the groups. The study adopted p<0.05 value for statistical significance.

**RESULTS**

One hundred and five patients were evaluated, divided into 3 groups: IG1 (n=35), IG2 (n=35) and PG (n=35) (Figure 1). There was no sample loss. The recruitment period comprised between March and November 2017.

**TABLE 1.** Clinical and sociodemographic characteristics of the studied population

<table>
<thead>
<tr>
<th>Group</th>
<th>Sex</th>
<th>Age</th>
<th>Occupation</th>
<th>BMI</th>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>IG1</td>
<td>M</td>
<td>25</td>
<td>Student</td>
<td>23</td>
<td>170cm</td>
<td>60kg</td>
</tr>
<tr>
<td>IG2</td>
<td>F</td>
<td>35</td>
<td>Businessman</td>
<td>30</td>
<td>165cm</td>
<td>70kg</td>
</tr>
<tr>
<td>PG</td>
<td>M</td>
<td>45</td>
<td>Engineer</td>
<td>28</td>
<td>180cm</td>
<td>80kg</td>
</tr>
</tbody>
</table>

**TABLE 2.** Results of the intergroup differences

<table>
<thead>
<tr>
<th>Group</th>
<th>IC Desligada</th>
<th>IC Ligada</th>
</tr>
</thead>
<tbody>
<tr>
<td>IG1</td>
<td>2KHz</td>
<td>2KHz</td>
</tr>
<tr>
<td>IG2</td>
<td>2KHz</td>
<td>2KHz</td>
</tr>
<tr>
<td>PG</td>
<td>2KHz</td>
<td>2KHz</td>
</tr>
</tbody>
</table>

**Figure 1. Study Design**

IC = interferential current; CF = carrier frequency; AMF = amplitude modulation frequency.

Table 1 shows the clinical and sociodemographic characteristics of the studied population.

Pain intensity decreased significantly in the three groups, and in IG1 and IG2 there was a decrease of more than 3 points on the scale (zero to 10). In intergroup comparison, a difference was found between IG1 and IG2 with PG, but with no difference between IG1 and IG2 (Table 2).

Regarding the algometry result in the lumbar region, significance was only found in L3R and L3L in the IG2 intragroup (Table 3).

Table 4 refers to the results found through the questionnaires applied. Regarding MPQ, the pain index was reduced in the three groups during the analysis of intragroup data. In OLBPQ and RMDQ, there was a significant reduction in the three groups when compared to the initial evaluation. However, when the groups were compared, no difference was found between IG1 and IG2 and placebo.

Table 5 presents the results of the intergroup differences.
Table 1. Clinical and sociodemographic characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>IG1 (n=35)</th>
<th>IG2 (n=35)</th>
<th>PG (n=35)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean±SD) (years)</td>
<td>43.3 ± 15.3</td>
<td>42.2 ± 14.3</td>
<td>32.9 ± 15.6</td>
</tr>
<tr>
<td>Gender (n, %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>23 (65.7)</td>
<td>23 (65.7)</td>
<td>21 (60)</td>
</tr>
<tr>
<td>Male</td>
<td>12 (34.3)</td>
<td>12 (34.3)</td>
<td>14 (40)</td>
</tr>
<tr>
<td>Education (n, %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete elementary school</td>
<td>1 (2.9)</td>
<td>0 (0)</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>Complete elementary school</td>
<td>0 (0)</td>
<td>2 (5.7)</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>Incomplete secondary school</td>
<td>7 (20)</td>
<td>6 (17.1)</td>
<td>3 (8.6)</td>
</tr>
<tr>
<td>Complete secondary school</td>
<td>9 (25.7)</td>
<td>7 (20)</td>
<td>3 (8.6)</td>
</tr>
<tr>
<td>Incomplete higher education</td>
<td>11 (31.4)</td>
<td>10 (28.6)</td>
<td>20 (57.1)</td>
</tr>
<tr>
<td>Complete higher education</td>
<td>7 (20)</td>
<td>10 (28.6)</td>
<td>7 (20)</td>
</tr>
<tr>
<td>Lifestyle habits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoker (n, %)</td>
<td>2 (5.7)</td>
<td>4 (11.4)</td>
<td>2 (5.7)</td>
</tr>
<tr>
<td>Alcohol consumption (n, %)</td>
<td>7 (20)</td>
<td>1 (2.9)</td>
<td>4 (11.4)</td>
</tr>
<tr>
<td>Sedentary (n, %)</td>
<td>17 (48.6)</td>
<td>14 (40)</td>
<td>17 (48.6)</td>
</tr>
<tr>
<td>Time of pain (years) (mean, min, max, median)</td>
<td>5.81; 3; 34; 3</td>
<td>6.54; 3; 31; 3</td>
<td>4.46; 3; 17; 3</td>
</tr>
<tr>
<td>Location of pain (n, %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralized</td>
<td>12 (34.3)</td>
<td>8 (22.9)</td>
<td>10 (28.6)</td>
</tr>
<tr>
<td>On the right</td>
<td>7 (20)</td>
<td>9 (25.7)</td>
<td>5 (14.3)</td>
</tr>
<tr>
<td>On the left</td>
<td>1 (2.9)</td>
<td>1 (2.9)</td>
<td>4 (11.4)</td>
</tr>
<tr>
<td>Bilateral</td>
<td>15 (42.9)</td>
<td>17 (48.6)</td>
<td>16 (45.7)</td>
</tr>
<tr>
<td>Period of the day when pain worsens (n, %)</td>
<td>14 (40)</td>
<td>12 (34.3)</td>
<td>8 (22.9)</td>
</tr>
<tr>
<td>Morning</td>
<td>6 (17.1)</td>
<td>7 (10)</td>
<td>7 (10)</td>
</tr>
<tr>
<td>Afternoon</td>
<td>15 (42.9)</td>
<td>16 (45.7)</td>
<td>20 (57.1)</td>
</tr>
<tr>
<td>Activities that exacerbate pain (n, %)</td>
<td>9 (25.7)</td>
<td>14 (40)</td>
<td>12 (34.3)</td>
</tr>
<tr>
<td>Walking</td>
<td>13 (37.1)</td>
<td>17 (48.6)</td>
<td>11 (31.4)</td>
</tr>
<tr>
<td>Sitting</td>
<td>9 (25.7)</td>
<td>19 (54.3)</td>
<td>15 (42.9)</td>
</tr>
<tr>
<td>Getting down</td>
<td>8 (22.9)</td>
<td>11 (31.4)</td>
<td>10 (28.6)</td>
</tr>
<tr>
<td>Standing up</td>
<td>5 (14.3)</td>
<td>12 (34.3)</td>
<td>11 (31.4)</td>
</tr>
<tr>
<td>Climbing stairs</td>
<td>31 (88.6)</td>
<td>28 (80)</td>
<td>31 (88.6)</td>
</tr>
</tbody>
</table>

IG1 = low-frequency interferential group; IG2 = high-frequency interferential group; PG = placebo group.

Table 2. Evaluation of pain by visual analog scale

<table>
<thead>
<tr>
<th>VAS (mean ± SD)</th>
<th>IG1 (n=35) Before</th>
<th>After</th>
<th>IG2 (n=35) Before</th>
<th>After</th>
<th>PG (n=35) Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.3 ± 2.1</td>
<td>2.0 ± 1.9#</td>
<td>4.7 ± 1.8</td>
<td>1.0 ± 1.4#</td>
<td>4.9 ± 2.3</td>
<td>3.0 ± 2.0*</td>
</tr>
</tbody>
</table>

IG1 = low-frequency interferential group; IG2 = high-frequency interferential group; PG = placebo group; VAS = visual analog scale. # p<0.05 - intragroup (paired t test). *p<0.05 comparing with PG.

Table 3. Results of pressure pain threshold

<table>
<thead>
<tr>
<th>PPT (mean ± SD)</th>
<th>IG1 (n=35) Before</th>
<th>After</th>
<th>IG2 (n=35) Before</th>
<th>After</th>
<th>PG (n=35) Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATL</td>
<td>4.6 ± 2.7</td>
<td>4.5 ± 2.6</td>
<td>5.5 ± 1.8</td>
<td>5.3 ± 1.6</td>
<td>5.6 ± 1.9</td>
<td>5.1 ± 2.1</td>
</tr>
<tr>
<td>ATR</td>
<td>4.7 ± 2.4</td>
<td>4.5 ± 2.4</td>
<td>5.9 ± 1.8</td>
<td>5.6 ± 1.6</td>
<td>4.4 ± 1.7</td>
<td>5.3 ± 1.9</td>
</tr>
<tr>
<td>L3L</td>
<td>4.6 ± 2.8</td>
<td>4.9 ± 2.9</td>
<td>4.8 ± 1.4</td>
<td>5.3 ± 1.7*</td>
<td>4.4 ± 1.7</td>
<td>4.5 ± 1.8</td>
</tr>
<tr>
<td>L3R</td>
<td>4.8 ± 2.9</td>
<td>4.8 ± 2.9</td>
<td>4.6 ± 1.4</td>
<td>5.1 ± 1.4*</td>
<td>4.4 ± 1.8</td>
<td>4.7 ± 1.8</td>
</tr>
<tr>
<td>L5L</td>
<td>4.6 ± 2.6</td>
<td>4.9 ± 3.0</td>
<td>4.7 ± 1.5</td>
<td>5.1 ± 1.6</td>
<td>4.5 ± 1.8</td>
<td>4.6 ± 1.8</td>
</tr>
<tr>
<td>L5R</td>
<td>4.7 ± 2.9</td>
<td>5.1 ± 2.7</td>
<td>4.7 ± 1.8</td>
<td>5.1 ± 1.4</td>
<td>4.9 ± 2.4</td>
<td>4.9 ± 2.3</td>
</tr>
</tbody>
</table>

PPT = pressure pain threshold; IG1 = low-frequency interferential group; IG2 = high-frequency interferential group; PG = placebo group; AT = anterior tibial; L3 = 3rd lumbar vertebra; L5 = 5th lumbar vertebra; L = left; R = right. *p<0.05.
Table 4. Results from the McGill, Oswestry pain questionnaires for lower back pain assessment and Roland Morris Disability Questionnaire

<table>
<thead>
<tr>
<th></th>
<th>IG1 (n=35)</th>
<th>IG2 (n=35)</th>
<th>PG (n=35)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MPQ (mean±SD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensory</td>
<td>7.7 ± 2.6</td>
<td>4.0 ± 3.3*</td>
<td>8.5 ± 2.2</td>
<td>4.0 ± 3.3*</td>
<td>8.3 ± 3.3</td>
<td>5.4 ± 2.7*</td>
</tr>
<tr>
<td>Affective</td>
<td>3.0 ± 1.8</td>
<td>0.7 ± 1.3*</td>
<td>3.8 ± 1.7</td>
<td>0.9 ± 2.1*</td>
<td>3.5 ± 1.9</td>
<td>1.8 ± 1.5</td>
</tr>
<tr>
<td>Evaluative</td>
<td>1.4 ± 0.7</td>
<td>0.4 ± 0.7</td>
<td>1.1 ± 0.3</td>
<td>0.4 ± 0.6*</td>
<td>1.2 ± 1.3</td>
<td>0.9 ± 1.4</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3.0 ± 1.7</td>
<td>1.4 ± 1.3*</td>
<td>3.5 ± 1.6</td>
<td>1.1 ± 1.5*</td>
<td>3.2 ± 1.1</td>
<td>2.0 ± 1.4*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15.2 ± 4.9</td>
<td>6.6 ± 6.0*</td>
<td>17 ± 4.7</td>
<td>6.4 ± 6.8*</td>
<td>16.2 ± 6.1</td>
<td>10.2 ± 4.9*</td>
</tr>
<tr>
<td><strong>OLBPQ</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11.4 ± 4.4</td>
<td>5.2 ± 3.9**</td>
<td>13.7 ± 6.0</td>
<td>5.6 ± 5.7**</td>
<td>11.1 ± 5.7</td>
<td>7.0 ± 4.5*</td>
</tr>
</tbody>
</table>

**Dysfunction level n (%)**

<table>
<thead>
<tr>
<th></th>
<th>IG1</th>
<th>IG2</th>
<th>PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dysfunction</td>
<td>0 (0)</td>
<td>3 (8.6)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Minimal dysfunction</td>
<td>17 (48.6)</td>
<td>28 (80)</td>
<td>12 (34.3)</td>
</tr>
<tr>
<td>Moderate dysfunction</td>
<td>17 (48.6)</td>
<td>4 (11.4)</td>
<td>17 (48.6)</td>
</tr>
<tr>
<td>Severe dysfunction</td>
<td>1 (2.9)</td>
<td>0 (0)</td>
<td>6 (17.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>IG1</th>
<th>IG2</th>
<th>PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMDQ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9 ± 4.2</td>
<td>5.1 ± 3*#</td>
<td>11.2 ± 5.3</td>
</tr>
</tbody>
</table>

**FD (n, %)**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 (11.4)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>9 (25.7)</th>
<th>1 (2.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 (28.6)</td>
<td>3 (8.6)</td>
</tr>
</tbody>
</table>

IG1 = low-frequency interferential group; IG2 = high-frequency interferential group; PG = placebo group; MPQ = McGill Pain Questionnaire; OLBPQ = Oswestry Low Back Pain Questionnaire; RMDQ = Roland Morris Disability Questionnaire; FD = functional disability. *p<0.05 - intragroup (paired t test). # p<0.05 - comparing with PG.

Table 5. Intergroup difference (IG1, IG2 and PG) of the analyzed variables after the interferential current application

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Differences between interventions with a 95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IG1 versus PG</td>
</tr>
<tr>
<td><strong>VAS (0-10)</strong></td>
<td>1.4 (0.5 to 2.3)</td>
</tr>
<tr>
<td>MPQ Sensory</td>
<td>-1.0 (-2.1 to 0.1)</td>
</tr>
<tr>
<td>Affective</td>
<td>-0.7 (-1.5 to -0.0)</td>
</tr>
<tr>
<td>Evaluative</td>
<td>-0.1 (-0.4 to 0.1)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>-0.4 (-1.0 to 0.2)</td>
</tr>
<tr>
<td>Total (0-20)</td>
<td>-2.3 (-4.6 to 0.0)</td>
</tr>
<tr>
<td>OLBPQ (0-50)</td>
<td>-2.1 (0.2 to 4.0)</td>
</tr>
<tr>
<td>RMDQ (-24)</td>
<td>2.9 (1.0 to 4.8)</td>
</tr>
<tr>
<td>Algometry ATR</td>
<td>0.86 (-0.5 to 0.6)</td>
</tr>
<tr>
<td>ATL</td>
<td>0.8 (-0.5 to 0.6)</td>
</tr>
<tr>
<td>L3R</td>
<td>-0.3 (-0.8 to 0.2)</td>
</tr>
<tr>
<td>L3L</td>
<td>0.2 (-0.3 to 0.7)</td>
</tr>
<tr>
<td>L5R</td>
<td>-0.1 (-0.7 to 0.5)</td>
</tr>
<tr>
<td>L5L</td>
<td>0.1 (-0.4 to 0.7)</td>
</tr>
</tbody>
</table>

IG1 = low-frequency interferential group; IG2 = high-frequency interferential group; PG = placebo group; ATR = anterior tibial; L3 = 3rd lumbar vertebra; L5 = 5th lumbar vertebra; L = left; R = right. *Significant difference (p<0.05). MPQ = McGill Pain Questionnaire; OLBPQ = Oswestry Low Back Pain Questionnaire; RMDQ = Roland Morris Disability Questionnaire.
DISCUSSION

This study showed that the IC caused a decrease in the subjective perception of pain and also an improvement in the functionality in relation to PG.

Assessing the short-term (immediate) analgesic effect, not only long-term after IC application, is essential for clinical practice. Often CLBP-patients are unable to perform kinesiotherapy because of the high pain or, in some cases, kinesiotherapy may lead to the exacerbation of this condition. So, IC can be used to minimize or suppress pain before or after exercise.

Few studies have evaluated the immediate analgesic effects after IC application in CLBP. Most studies evaluated the long-term effects of this equipment on healthy individuals\(^{10,27}\), CLBP-individuals\(^{12,27}\); or associated with other therapies and currents\(^{28,30}\). This study is the first one to evaluate the frequency of 2KHz in CLBP-individuals with two different AMF, one of high frequency (AMF=100Hz) and one of low frequency (2KHz).

The results found in the subjective measurement of pain presented strong effects of 2KHz IC treatment, regardless the AMF chosen. This result is reinforced by Corrêa et al.\(^{12}\), who found more significant effects on the immediate reduction of pain after IC application with lower frequencies (1KHz), and also by Fuentes et al.\(^{28}\), who found satisfactory results of IC in relation to placebo, but did not indicate the CF used, only the frequency modulation of 0Hz. Only the study by Pereira et al.\(^{31}\) evaluated the IC immediate effects in the frequency of 2KHz and found no significant results in changing the pain threshold for cold and heat. However, this study evaluated healthy individuals and not CLBP ones. It was emphasized that there was no difference between the groups that applied IC, i.e., there was no interference of the chosen AMF. Johnson and Tabasam\(^{32}\) and Claro et al.\(^{33}\) also found no difference in the groups treated with different AMFs in healthy subjects.

It was observed that in the objective pain evaluation, through algometry, no immediate analgesic results were found (only in L3R and L3L of IG2), unlike the study by Corrêa et al.\(^{12}\) and Venancio et al.\(^{19}\), who observed PPT increase immediately after the intervention, but at the frequency of 1KHz. It was expected that, along with the significant decrease inVAS, the PPT increase occurred, but this did not happen. Perhaps this was due to the IC electrical stimulus that have momentarily blocked the mechanoreceptors stimulus through the Aδ fibers excitability which may have decreased the PPT, or by the interference of the individual himself who may not want to feel the strong pressure (as much as he/she could) of the algometer after having his/her lumbar region pain diminished by the treatment.

Although no therapeutic exercises have been performed in this protocol, significant improvement in the functional performance of the individuals could be observed through OLBPQ and RMDQ with a substantial treatment effect in IG2 and moderate in IG1. These data are reinforced by Facci et al.\(^{29}\), who used IC as an intervention form, but with CF of 4KHz. However, Corrêa et al.\(^{12}\) also used the RMDQ to evaluate the functional performance of their participants after applying the 1KHz and 4KHz IC and did not find satisfactory results. Albornoz-Cabello et al.\(^{28}\), on the other hand, used 4000Hz IC, 65Hz frequency modulation, 95Hz frequency variation, and 1/1 slope during ten sessions and saw improvement in the functional capacity of the individuals with CLBP.

Venancio et al.\(^{10}\) emphasized that lower frequency carrier currents, such as 1 and 2KHz, are more uncomfortable, but have higher analgesic effects than higher CF, such as 8 and 10kHz. This study corroborated these data since there were significant improvements after IC application with 2KHz CF. Despite this assertion, most studies used the 4KHz frequency\(^{12,15,27,29}\).

It should be emphasized that the study has some limitations, such as failure to perform it double-blinded and the lack of functional tests in the evaluation instruments. However, it should be noted that the study was carried out with a large number of participants, in a blinded way and with all the evaluation instruments validated and culturally adapted for the Brazilian population. Moreover, pressure algometry is considered the gold standard for measuring pain sensitivity by pressure\(^{35}\).

CONCLUSION

It was found that the IC provided an immediate analgesic effect in CLBP. However, further studies should be performed with other protocols to define the best parameter of this current for CLBP treatment.

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BrJP. São Paulo, 2019 jan-mar;2(1):27-33


Health professionals’ barriers in the management, evaluation, and treatment of neonatal pain

Barreiras dos profissionais de saúde no manuseio, avaliação e tratamento da dor neonatal

Mariana Moreira Christoffel¹, Danielle Lemos Querido¹, Ana Luiza Dorneles da Silveira², Bruna Nunes Magesti¹, Ana Letícia Monteiro Gomes¹, Ana Claudia Coelho Santos da Silva¹

ABSTRACT

BACKGROUND AND OBJECTIVES: Despite the solid results on pain management strategies in neonatology, it is necessary to identify and explore the barriers that may hamper the attention to pain and the implementation of the scientific evidence widely disseminated in the literature in the care practice. The objective of this study was to describe the barriers encountered by the health-care professionals of a neonatal intensive care unit regarding the management, evaluation, and treatment of newborn pain.

METHODS: Descriptive, exploratory, quantitative study carried out in a maternity hospital in the city of Rio de Janeiro. Forty-two nursing technicians, 22 nurses, 20 physicians, and 2 physiotherapists participated in the study. The data was collected in an interview using a form and the data was analyzed by descriptive statistics.

RESULTS: Among the barriers found it stands out the lack of training on neonatal pain, no use of scales, the absence of routine and protocols for the treatment of pain, and the need for greater safety for the evaluation and treatment of pain. It was also observed that there is a gap between knowledge and care practice in the unit.

CONCLUSION: The identification of these barriers is essential to establish strategies based on knowledge-transfer to overcome the obstacles and improve the care given to newborns in the neonatal intensive care unit.

Keywords: Neonatal intensive care units, Newborn, Pain.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Apesar de resultados solidificados sobre as estratégias de gestão da dor em neonatologia, faz-se necessário identificar e explorar as barreiras que dificultam a atenção à dor e a implementação na prática assistencial das evidências científicas amplamente difundidas na literatura. O objetivo deste estudo foi descrever as barreiras encontradas pelos profissionais de saúde de uma unidade de terapia intensiva neonatal em relação ao manuseio, avaliação e tratamento da dor de recém-nascidos.

MÉTODOS: Estudo descritivo exploratório, quantitativo, realizado em uma maternidade do município do Rio de Janeiro. Participaram 42 técnicos de enfermagem, 22 enfermeiros, 20 médicos e 2 fisioterapeutas. Foi realizada uma entrevista utilizando-se um formulário para coleta de dados e estes foram analisados com uso de estatística descritiva.

RESULTADOS: Entre as barreiras encontradas destacam-se a ausência de treinamento sobre dor neonatal, a não utilização de escalas, ausência de rotina e protocolos para o tratamento da dor e a necessidade de maior segurança para a avaliação e o tratamento da dor. Observou-se, também, que existe uma lacuna entre o conhecimento e a prática assistencial na unidade.

CONCLUSÃO: A identificação dessas barreiras torna-se essencial para que se busquem estratégias fundamentadas na transferência de conhecimento para vencer os obstáculos e melhorar a assistência prestada aos recém-nascidos na unidade de terapia intensiva neonatal.

Descritores: Dor, Recém-nascido, Unidades de terapia intensiva neonatal.

INTRODUCTION

Currently, health professionals responsible for the treatment and diagnosis of newborns (NB) admitted in the neonatal intensive care unit (NICU) recognize pain as a result of the procedures performed. However, there are barriers related to the knowledge of the pain management process, including the identification of the signs, evaluation, and treatment, that prevent its practice.¹²

International³⁴ and national¹ studies about the knowledge, attitudes and practices of health and nursing professionals on the management of neonatal pain show important gaps in the understanding of fundamental neurobiological mechanisms that rule the development of the somatosensory system and its
response to potentially painful stimuli, pain assessment, and non-pharmacological and pharmacological interventions to relieve the pain during ongoing NB care. NB’s in NICU’s that require longer hospitalization undergo several daily painful procedures. There is strong evidence for the use of non-pharmacological interventions (skin-to-skin contact, breastfeeding, and non-nutritive sucking) as well as analgesic methods that are available but are not yet incorporated into the NICU care practice.

Untreated pain can have negative effects on the newborn, especially on premature infants who are exposed to pain and stress during a phase that is undergoing rapid brain development with the nerve pathways in the process of development. In addition, it has long-term consequences such as slower postnatal growth and neurological development, high cortical activation and changes in brain development, the temperament of negative affectivity, cognitive and motor deficit.

The health professional must act as an advocate of the NB’s rights not to feel pain when there are means to avoid it. Therefore, it is critical that the evidence available on the use of effective measures to manage pain be used to improve the quality of care provided to the NB.

Pain prevention should be the goal of the team that assists the NB, not only because it is legal and ethical care, but also to avoid the exposure of these babies to repeated procedures that negatively impact their neurodevelopment.

Despite the solid results on pain management strategies in neonatology, it is necessary to identify and explore the barriers that undermine the attention to pain and the implementation of the scientific evidence widely disseminated in the literature in the care practice.

The objective of this study was to describe the barriers encountered by health professionals of a NICU regarding management, assessment, and treatment of pain in newborns.

METHODS

This is a descriptive, cross-sectional study with a quantitative approach, carried out at the NICU of a teaching maternity ward in the city of Rio de Janeiro, which provides multi-professional assistance offering specific care to pregnant women and high-risk newborns.

The health professionals of the unit who provide direct assistance to the NB were included, and the others were excluded. The study population comprised 96 health professionals working in the institution. After the invitation to participate, the non-probabilistic sample was of 86 interviewees, among them 42 nursing assistants/technicians, 22 nurses, 20 physicians, and two physiotherapists.

Data collection was from February to April 2013. Each participant received a copy of the semistructured questionnaire with open and closed questions after signing the Free and Informed Consent Term (FICT). Each questionnaire was in a sequentially numbered brown envelope, ensuring the participant’s anonymity.

The participants had three days to return the questionnaire, with the envelope sealed and put in a box identified with the name of one of the researchers, who remained in the sector during the collection period.

The variables extracted from the questionnaire referred to the profile of the health professionals, including gender, age, educational background, professional qualification, functional link with the unit, work regime and number of employment relationships, job satisfaction, qualification/orientation in neonatal pain and knowledge, practices and attitude in pain management. The last question was the description of five barriers related to the pain management process of the NB in the NICU, in order of priority.

The study was approved by the Research Ethics Committee of the Maternity School of the Federal University of Rio de Janeiro, opinion number 186.719 of 01/18/2013, following all the ethical principles determined in Resolution 466/12 of the National Health Council.

Statistical analysis

The data were organized in Microsoft Excel spreadsheet software, version 2010 and double typing with the correction of divergences and inconsistencies was used as the reliability criterion. The analysis was done by descriptive statistics.

RESULTS

Of the 86 professionals interviewed, the majority were female (89.5%). Of the male professionals, six (7.0%) were nursing technicians and three (3.5%) doctors. The average age of the participants was 34.1 years, with a standard deviation of 7.4.

Regarding the educational background, among nursing technicians, three (3.5%) had an academic degree, one (1.2%) had neonatal nursing specialization, and four (4.7%) were attending the undergraduate course. The majority (81.8%) of nurses, all the physicians, and all the physiotherapists had a lato sensu postgraduate degree or were attending stricto sensu postgraduate course.

Regarding the functional link in the study unit, 25 (29.1%) were civil servants, and 54 (62.8%) had a cooperative link/ were hired. Regarding the work regime, the majority (92.8%) of the nursing technicians and 63.7% of the nurses worked on a 24-hour duty by 120-hour rest format, being possible to run extra shifts. Regarding the other professionals, it was observed that 35% of the physicians had a 20h-weekly work journey and 100% of the physiotherapists a 24h-weekly work journey.

Most of the professionals (76.7%) had more than one job. Nine (21.4%) technicians, 8 (36.4%) nurses, 10 (50%) physicians, and one (50%) physiotherapist did not work in the neonatal unit in their other job. When evaluating the working conditions in the unit surveyed, 33 (78.6%) nursing technicians, 18 (31.8%) nurses, seven (35%) physicians, and one (50%) physiotherapist said they were satisfied with those conditions.

Although the majority of the health professionals (66.3%) having said that they obtained information about neonatal pain during their vocational, undergraduate or lato sensu graduate training, the most cited source of information was the man-
management directions and/or guidance from other healthcare professionals.

Concerning the knowledge of care routine related to pain management, 10 (23.8%) technicians, seven (31.8%) nurses and one (5%) physician reported that there is a pain protocol that included neonatal pain scales.

Regarding the barriers pointed out by the health professionals related to the process of pain management, such as assessment and treatment, we identified the individual and teamwork connection with the complexity of the care of the newborn and with the institutional system.

The barriers related to the individual and teamwork that most stood out were the need for training on the subject of pain, followed by lack of communication among health professionals (Table 1).

The barriers related to the complexity of NB care highlighted the hostile, noisy and overly bright environment of the NICU, the need for different care procedures and consequent excessive manipulation, the clinical state of the NB, the use of drugs such as sedatives and opioids and the valorization of heavy over light technology (Table 2).

Finally, the barriers related to the institutional system that outstood were the lack of routine and protocol to assess and treat neonatal pain, followed by overcrowding (Table 3).

**DISCUSSION**

The barriers pointed out by health professionals in the pain management process that mostly stood out touched individual

---

**Table 1. Distribution of barriers identified by health professionals from the perspectives of the individual and teamwork**

<table>
<thead>
<tr>
<th>Barriers identified</th>
<th>TEC n(%)</th>
<th>NR n(%)</th>
<th>MD n(%)</th>
<th>PT n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for training on the subject of pain</td>
<td>39 (24.0)</td>
<td>11 (15.0)</td>
<td>07 (10.0)</td>
<td>02 (25.0)</td>
</tr>
<tr>
<td>Need for training to use pain assessment scales</td>
<td>02 (1.3)</td>
<td>05 (7.0)</td>
<td>05 (7.0)</td>
<td>-</td>
</tr>
<tr>
<td>Lack of professional knowledge about pain assessment and treatment</td>
<td>-</td>
<td>07 (10.0)</td>
<td>04 (6.0)</td>
<td>01 (12.5)</td>
</tr>
<tr>
<td>Professional's uncertainty regarding pain assessment and treatment</td>
<td>08 (4.9)</td>
<td>03 (4.0)</td>
<td>03 (4.0)</td>
<td>--</td>
</tr>
<tr>
<td>Insufficient notes and remarks in medical records</td>
<td>-</td>
<td>-</td>
<td>01 (1.0)</td>
<td>-</td>
</tr>
<tr>
<td>Professional demotivation</td>
<td>03 (1.8)</td>
<td>01 (1.0)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>I don’t see barriers</td>
<td>01 (0.6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lack of communication among health professionals</td>
<td>21 (13.0)</td>
<td>08 (11.0)</td>
<td>05 (7.0)</td>
<td>01 (12.5)</td>
</tr>
<tr>
<td>Relationship among professionals</td>
<td>05 (3.0)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Beliefs and attitudes of health professionals</td>
<td>04 (2.0)</td>
<td>04 (6.0)</td>
<td>03 (4.0)</td>
<td>-</td>
</tr>
</tbody>
</table>

**Table 2. Distribution of barriers identified by health professionals based on the complexity of the newborn care**

<table>
<thead>
<tr>
<th>Barriers identified</th>
<th>TEC n(%)</th>
<th>NR n(%)</th>
<th>MD n(%)</th>
<th>PT n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal intensive care unit environment (noise, brightness)</td>
<td>07 (4.3)</td>
<td>01 (1.0)</td>
<td>04 (6.0)</td>
<td>-</td>
</tr>
<tr>
<td>Procedures (intubation, CPAP, bath, drug administration)</td>
<td>12 (7.3)</td>
<td>02 (3.0)</td>
<td>01 (1.0)</td>
<td>-</td>
</tr>
<tr>
<td>Minimal handling/excessive handling</td>
<td>08 (4.9)</td>
<td>04 (4.0)</td>
<td>03 (3.0)</td>
<td>-</td>
</tr>
<tr>
<td>Clinical status of the newborn (extreme premature, neuropathies)</td>
<td>08 (4.9)</td>
<td>02 (3.0)</td>
<td>03 (4.0)</td>
<td>02 (25.0)</td>
</tr>
<tr>
<td>Newborn in humidified incubator</td>
<td>01 (0.6)</td>
<td>-</td>
<td>01 (1.0)</td>
<td>-</td>
</tr>
<tr>
<td>Newborn using drugs (sedatives, opioids)</td>
<td>02 (1.3)</td>
<td>04 (6.0)</td>
<td>03 (4.0)</td>
<td>-</td>
</tr>
<tr>
<td>Valorization of heavy technology over light technology</td>
<td>-</td>
<td>02 (3.0)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Table 3. Distribution of barriers identified by health professionals regarding the institutional system**

<table>
<thead>
<tr>
<th>Barriers identified</th>
<th>TEC n(%)</th>
<th>NR n(%)</th>
<th>MD n(%)</th>
<th>PT n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of routine and protocol to assess and treat neonatal pain</td>
<td>20 (12.0)</td>
<td>07 (10.0)</td>
<td>13 (19.0)</td>
<td>02 (25.0)</td>
</tr>
<tr>
<td>Overcrowding</td>
<td>13 (8.0)</td>
<td>04 (6.0)</td>
<td>07 (10.0)</td>
<td>-</td>
</tr>
<tr>
<td>Human Resources</td>
<td>08 (4.9)</td>
<td>01 (1.0)</td>
<td>05 (7.0)</td>
<td>-</td>
</tr>
<tr>
<td>Working hours</td>
<td>-</td>
<td>01 (1.0)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Absence of parents</td>
<td>01 (0.6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Institutional culture</td>
<td>01 (0.6)</td>
<td>04 (6.0)</td>
<td>01 (1.0)</td>
<td>-</td>
</tr>
</tbody>
</table>

**TEC = nursing technician; NR = nurse; MD = physician; PT = physiotherapist.**
issues, teamwork, the complexity of the NB care and institutional issues.

The pain management process goes from the identification of the signs of pain manifested by the NB, the assessment using scales, action plan, and treatment. When referring to pain management, health professionals emphasized the need for training on the subject of pain due to the lack of knowledge regarding pain assessment and treatment, showing its impracticability.

Gaps in the knowledge of the team regarding the assessment, treatment, and management of neonatal pain have already been identified as obstacles in the effective management of pain. Professional educational and training strategies translate to theoretical knowledge that is transferred to the practice of care, driving changes in this practice, and providing tools for these professionals. The presence of continuous education based on scientific evidence helps professionals to adopt effective and safe measures to control pain.

Insufficient notes and remarks in the medical records also appeared as a barrier in this study. The professional should feel motivated and value his/her work by always registering it. However, it is worth mentioning that due to the lack of knowledge regarding the subject, the record is frail since the management of pain has not been translated as recognized care.

This record is part of the health information system, enables the ethical and legal support of the assistance, works as auditing and development instrument of the teaching and research in the nursing area. The scientific deficiency in relation to pain makes the professional insecure and demotivated which can be leading factors to other problems.

The team that works in NICU can suffer from stress and lose motivation to work, which is pointed out as a factor that makes difficult the assessment, treatment, and management of neonatal pain in the present study.

From terms of teamwork, the lack of communication among health professionals is pointed out as a barrier to the implementation of evidence in practice, as well as the group’s beliefs and attitudes. This gap is present both among managers and care workers and among health workers on a shift generating lack of interprofessional collaboration and difficulty in sharing information.

To humanize the care, it is necessary to establish adequate communication among the members of a team, resulting in greater proximity of the workgroup with consequent standardization of tasks. Failure in communication among different categories can lead to professional stress.

Regarding the beliefs and attitudes that the group uses in relation to neonatal pain, it can be noted that some behaviors may be linked to the obsolete myths that due to the immaturity of the NB systems, especially premature NB, the perception of pain in this population would be negligible.

The newborns in NICUs are exposed to innumerable invasive procedures and a stressful environment that brings a series of negative consequences to their neurodevelopment, making them susceptible to pain and stress. In fact, the care of NBs admitted in the NICU involves complex care, surrounded by technologies that aim to reduce the morbidity and mortality of the NBs, seeking their survival with quality of life.

In this sense, it is up to the professionals who work in the unit to develop mechanisms to overcome these barriers, elaborating strategies to minimize the impact of this environment on the NB recovery. Some suggestions such as the need to identify these difficulties and the implementation of a team or committee responsible for neonatal pain issues were pointed out.

Regarding the barriers of the institutional and organizational system, the lack of routines and protocols to assess and treat neonatal pain were pointed out.

It is recognized that the healthcare based on protocols, especially those built with the participation of healthcare professionals, is likely to have a positive impact on the quality of pain assessment and its treatment. Structured guidelines and protocols provide a systematization for the treatment of neonatal pain and boost the outcomes, being useful instruments for the multifaceted management of pain, contributing to professional qualification and decision-making, as well as facilitating the incorporation of new technologies and the dissemination of knowledge.

Issues regarding the working hours of the professionals and the optimal number of human resources also appeared as difficulties. Since there are professionals with more than one job, it is possible that the working hours have also appeared as a difficulty for the management of pain, as this fact is reflected in an excessive workload.

In this sense, although there are tools to calculate the adequate number of professionals to the needs of the service, there is still shortness of professionals in health institutions, and it is recommended the elaboration of studies that correlate the sizing of personnel to the workload and the development of quality indicators associated with this issue.

This observation by the participants can be an opportunity to review the amount of personnel that despite being in accordance with the current resolutions, need to carry out multifaceted care tasks. Thus, due to the complexity and the relevant nature of care in an entire and humanized way to the seriously or potentially seriously ill newborn, it becomes necessary a larger number of professionals to perform this work.

The absence of the parents was identified only by one of the professionals as a difficulty to assess, treat and manage pain. It was noticed that the lack of parents’ involvement during the painful experience of hospitalized NB undermines the partnership between the professionals and the parents.

Therefore, it is recommended to involve the parents in the management of the infant’s pain, contributing to a more humanized care. However, the work culture and the organizational characteristics of a NICU make this process very difficult.

It is up to the health professional to brief the parents about the signs of pain, especially the mothers who most often experience the hospitalization of their children. Besides the briefing, these mothers should be invited to participate in care to be able to call the team at the first sign of discomfort or stress of their NB.
One limitation of the study was the non-participation of the unit service managers in the presentation of a good practice policy in pain management, bringing current evidence for changes in the clinical practice, consistently and systematically, in the continuous care of the newborn. Also, there is a need to discuss the competencies of each healthcare professional regarding the use of more complex pain scales and non-pharmacological and pharmacological measures in the relief of neonatal pain. The identification of the barriers in this study led to the execution of a training course to build collective knowledge, the disclosure of the institutional material and incorporation of the practice in NB care. Thus, institutional actions were implemented crowned with the protocol for the non-pharmacological management of neonatal pain, currently available online and printed in a separate folder in the unit.

CONCLUSION

The present study showed that there are barriers and that neonatal services need to have educational programs to improve the clinical practice in the relief of neonatal pain.

ACKNOWLEDGMENTS

To the National Council for Scientific and Technological Development\CNPq. Brasília-DF, Brasil, for the support to conduct the study with the Postdoctoral Senior Fellowship (Process number 158257\2011-1).
Validation of an educational booklet for people with chronic pain: EducaDor

ABSTRACT

BACKGROUND AND OBJECTIVES: Socio-educational tools aimed at the population with chronic pain can help in the knowledge about trigger mechanisms, beliefs, and attitudes towards pain that may be useful in their control. In addition to developing them, it is necessary to evaluate whether these tools are valid for therapeutic use. The objective of this study was to describe the validation process of an educational booklet for people with chronic pain.

METHODS: This study was developed in three stages: questionnaires for the evaluation of the booklet by patients and professionals, interview, and content validation. The sample consisted of 60 patients with chronic pain and six professionals specialized in your treatment. For validation, the Content Validity Index per items was used considering a score greater than or equal to 80%.

RESULTS: All six domains evaluated in the booklet obtained a Content Validity Index per items score greater than 80%. The Content Validity Index per items overall rate of the domains evaluated by the patients was 88% while for the health professionals it was 92%.

CONCLUSION: The EducaDor booklet showed to be valid for use in the education of patients with chronic pain.

Keywords: Chronic pain, Health education, Validation study.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Ferramentas socioeducativas voltadas para a população com dor crônica podem auxiliar no conhecimento sobre mecanismos desencadeantes, crenças e atitudes frente à dor, que podem ser úteis no seu controle. Além de desenvolvê-las, se faz necessário avaliar se essas ferramentas são válidas para o uso terapêutico. O objetivo deste estudo foi descrever o processo de validação de uma cartilha educativa para pessoas com dor crônica.

MÉTODOS: Este estudo foi desenvolvido em três etapas: construção de questionários para avaliação da cartilha por pacientes e profissionais, entrevista e validação de conteúdo. A amostra consistiu de 60 pacientes com dor crônica e seis profissionais especializados no seu tratamento. Para validação, foi utilizado o Índice de Validade de Conteúdo por itens considerando um escore maior ou igual a 80%.

RESULTADOS: Todos os seis domínios avaliados na cartilha obtiveram escore do Índice de Validade de Conteúdo por itens maior que 80%. A taxa global do Índice de Validade de Conteúdo por itens dos domínios avaliados pelos pacientes foi de 88% enquanto que para os profissionais de saúde foi de 92%.

CONCLUSÃO: A cartilha EducaDor mostrou-se válida para o uso na educação de pacientes com dor crônica.

Descritores: Dor crônica, Educação em saúde, Estudo de validação.

INTRODUCTION

Chronic pain (CP) is defined as “a stressful experience associated with an actual or potential tissue injury with sensory, emotional, cognitive and social components” that lasts for more than six months, with daily or almost daily frequency. In Brazil, CP is considered a public health problem with a high incidence and prevalence. CP impacts more than 40% of the Brazilian population.

The multifactorial nature of CP calls the need for new preventive and therapeutic modalities for its control. Thus, the use of multidimensional approaches involving biological, psychological, and social aspects, as well as health education activities that address these biopsychosocial aspects may result in immediate and late benefits. This effect was superior to those obtained with conventional interventions, such as drugs and physiotherapy.

Making people aware of the meaning of pain, how it behaves, its common causes, risk factors, and how to prevent or treat it effectively may contribute to control the symptoms and optimize the use of health services.
Different methods have been adopted to carry out educational processes in the health area, including the distribution of booklets, personal construction studies, videos, group activities, and lecture. However, the literature is scarce on approaches that use written educational materials, such as booklets involving guidelines for the treatment of patients with CP. Through booklets, patients, family, and caregivers can get the knowledge about the situations that trigger pain and what to do to help minimize it. Thinking about this, Mendez et al. developed a booklet for education in CP, called EducaDor, which goes beyond the purely biomedical model of their approach. The booklet explains pain from its concept to its processing, simply and objectively, and proposing coping strategies. Aiming at the use of the booklet in an extended way in clinical practice, the objective of this study was to validate a socio-educative booklet on CP by patients and health professionals.

METHODS

This is a study to validate a light technology in health, conducted at the Pain Outpatient Clinic of the University Hospital Professor Edgar Santos (HUPES) of the Federal University of Bahia (UFBA), from June 2015 to November 2016. Semi-structured questionnaires were elaborated and applied in a voluntary sample of patients with CP and health professionals with experience in assisting this profile of patients to validate the booklet. Among the professional team of the outpatient clinic, six professionals who met the eligibility criteria were selected as judges, as suggested by Joventino et al. The validation by the target audience was done with 10 patients per health professional, totaling 60 patients.

Patients enrolled in the HUPES/UFBA Pain Outpatient Clinic were included, with a diagnosis of CP, literate, aged between 18 and 60 years. Those who did not understand the evaluation instrument were excluded. We included healthcare professionals with a minimum of 5 years of experience in the care of patients with CP. This work consisted of three steps: elaboration of the questionnaires for validation of the booklet by the judges, interview, and validation of the content.

Elaboration of the questionnaires

The questionnaires were elaborated based on the evaluation criteria to validate educational material, the Suitability Assessment of Materials (SAM). This method consists of evaluating the written content in terms of understanding, described as the relative difficulty in understanding the meaning. For this, the questions applied had as answer option the degree of understanding, and these answers were graded in the Likert scale from “1” to “4”, corresponding to “no,” “little,” “considerable” and “totally,” respectively.

Interview

Four members of the research group conducted the interview. Initially, the purpose of the study and a brief introduction about the content of the booklet was presented to the volunteers by agreeing to participate and being in compliance with the inclusion and exclusion criteria, the volunteer signed the Free and Informed Consent Form (FICT) and received a copy of the booklet to read. The reading occurred in a waiting room and the time available to do it was according to the individual need of each judge. The evaluation questionnaire was applied immediately after. The evaluators guaranteed the confidentiality of the answers by not identifying the judges, and the answers were filed for later analysis.

Content validation

The Content Validity Index (CVI) was used to validate the educational pain booklet by items considering a cut-off point for approval of equal or above 78% when there are seven or more judges and 86% for six judges. The CVI evaluates the proportion of evaluators who judged certain aspects of the booklet as satisfactory, which were assessed through the structured questionnaire. The items of the questionnaires that had a score of 1 and 2 were classified as unsatisfactory answers, and those with a score of 3 or 4 were classified as satisfactory. The final score was calculated from the number of evaluators who judged each item as satisfactory, divided by the number of evaluators:

\[
CVI = \frac{\text{number of answers 3 or 4}}{\text{total number of evaluators}}
\]

This study was approved by the Research Ethics Committee of the Institute of Health Sciences of UFBA of 2015 with number 44318415.7.0000.5662. All the recommendations of Resolution 466/12 of the National Health Council that comply with the Declaration of Helsinki have been expressly complied with.

RESULTS

For the validation process of the booklet, 60 patients with CP and six health professionals with experience in the care of this population were interviewed. Table 1 shows the level of education and gender of the judges interviewed. Most of the interviewed patients were female (83.3%) with complete elementary school (38.3%) and secondary school (38.3%). As for the health professionals, 83.3% had complete higher education (Table 1), while only 6 (10.0%) patients had this level of education.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Patients (n and %)</th>
<th>Health professionals (n and %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete elementary school</td>
<td>4 (6.6)</td>
<td>-</td>
</tr>
<tr>
<td>Complete elementary school</td>
<td>23 (38.3)</td>
<td>-</td>
</tr>
<tr>
<td>Incomplete secondary school</td>
<td>4 (6.6)</td>
<td>-</td>
</tr>
<tr>
<td>Complete secondary school</td>
<td>23 (38.3)</td>
<td>-</td>
</tr>
<tr>
<td>Complete higher education</td>
<td>6 (6.10)</td>
<td>5 (83.3)</td>
</tr>
<tr>
<td>Complete vocational course</td>
<td>-</td>
<td>1 (16.6)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10 (16.6)</td>
<td>2 (33.3)</td>
</tr>
<tr>
<td>Female</td>
<td>50 (83.3)</td>
<td>4 (66.6)</td>
</tr>
<tr>
<td>Total</td>
<td>60 (100)</td>
<td>6 (100)</td>
</tr>
</tbody>
</table>
Structured questionnaires were prepared for the validation of the educational booklet by the judges. One questionnaire was directed to patients and one to health professionals.

The questionnaire for patients (Figure 1A) had five domains: content, presentation of the literature, illustration, readability, printing, and overall evaluation. The questionnaire for health professionals (Figure 1B) had six domains, the ones already cited plus scientific accuracy. The questionnaires for patients and health professionals had 22 and 24 questions, respectively. After the questions of each domain, there was some space available for comments and suggestions for adjustments by the judges.

The final score of the questionnaires was based on CVI. The total number of answers that categorized the items of the booklet as satisfactory were recorded. The analysis was performed for each domain of the questionnaire, and at the end, the value of the total CVI was calculated, obtaining the value of 88 and 92% for patients and health professionals, respectively (Table 2).

### Table 2. Values of the Content Validity Index by item by domain

<table>
<thead>
<tr>
<th>Domains</th>
<th>Patients (%)</th>
<th>Health professionals (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scientific accuracy</td>
<td>NA</td>
<td>100</td>
</tr>
<tr>
<td>2. Contents</td>
<td>87</td>
<td>92</td>
</tr>
<tr>
<td>3. Presentation of the literature</td>
<td>86</td>
<td>90</td>
</tr>
<tr>
<td>4. Illustration</td>
<td>84</td>
<td>88</td>
</tr>
<tr>
<td>5. Readability and printing</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>6. Overall evaluation</td>
<td>88</td>
<td>100</td>
</tr>
<tr>
<td>Total CVI</td>
<td>88</td>
<td>92</td>
</tr>
</tbody>
</table>

NA = not applicable.

**DISCUSSION**

This study aimed to validate a socio-educational material on CP in the format of a booklet that have been developed in a previous study14, to check if it could be applied as a health education resource, from the perspective of patients and specialized professionals. The final scores of the evaluation reached a level of excellence in the agreement of the judges and indicated that the EducaDor booklet is valid and can be used as a therapeutic resource.

Several factors have been pointed out as predictors of CP, among them, be female and have a low level of schooling20,21. Differences in pain perception between genders are well evidenced in the literature22-25. Experimental studies with animals26,27 and humans28, support the hypothesis that women have higher pain perception because they are more exposed to specific situations such as dysmenorrhea and childbirth. The education level lower than 11 years has been pointed out as the major risk factor for this condition29. The sociodemographic characteristics of the sample of patients interviewed were compatible with the profile cited in these previous studies. Precisely because of this profile, the use of socio-educational materials may be fundamental for health literacy, which may have an impact on pain relief30.

The professionals interviewed attributed 100% scientific accuracy to the material evaluated. This score gives confidence for the immediate adoption of the material by other professionals in clinical practice. Careful professionals have uncertainties in reinforcing erroneous beliefs commonly found in websites and instruction materials not based on science. Due to the multifactorial characteristic of the CP and the information available on the internet, coping with the problem has been a challenge for health professionals3. The knowledge about pain with a scientific basis comes as a supporting strategy for the treatment of people with CP. Pain education programs use approaches that allow providing information on pain etiology, nosology and...
pain pathophysiology. This type of approach makes it possible to equip patients for greater awareness of the different causal and aggravating factors. The knowledge acts in the social representations and the experiences of the disease, facilitating its recovery. Ease of reading and printing were the best-evaluated items, both by professionals and patients. This result shows the importance of careful preparation of the printed material so that it has sufficient durability to be consulted several times and fulfill its purpose. A systematic review pointed out that socio-educational programs have an influence on the improvement of pain and movement, and in minimizing disabilities and reducing the utilization of health services. The recognition of the quality of the “EducaDor” booklet may indicate that this tool can be an aid in the treatment of CP in Brazil, due to the biopsychosocial aspects involved.

The elaboration of printed educational material is a means of communication between the health professional and the patient that not only requires a clear identification of the target audience but a direct and intuitive way to convey the content addressed. To raise and keep the interest of the reader, one must consider the language, layout, and illustration. However, it is the illustration that will, by far, ensure the readability and the comprehension of a text. In the “content” domain of the questionnaire, patients and professionals were asked about the clarity of the purpose of the booklet, the comprehension of the text, the order of the texts and the need for information. Approximately 87% of the patients and 92% of the professionals judged the content to be satisfactory. However, the illustration had the lowest score in the patients’ view (84%). Although it is a satisfactory level, future editions should consider the possibility of improving the illustrations. Limit the number of illustrations, make them simpler and more representative, emphasizing important points in the text description, listing real-life events are strategies that facilitate the communication of content to the reader. Thus, people with low schooling can benefit from these materials and types of language.

“EducaDor” tried to explain the concept of pain in a clear and detailed way, addressing acute and chronic pain, their characteristics and differences, processing, coping approaches and misbeliefs that patients and caregivers have concerning pain. So far, there are no validated educational booklets for patients with CP in Brazil. However, several educational materials are available on websites for this population. In addition to addressing concepts, these materials also discuss sleep quality, anxiety, and pharmacological and non-pharmacological treatments. Increasing evidence shows that knowing the neurophysiology of pain helps to reduce the incapacity and catastrophization of patients with CP, improving physical movements and compliance with several therapies. Although the “EducaDor” does not address the treatments for CP, the themes are explained from the stories, questions, and fears reported by this population. The text presents reports of experiences of people who live with pain, allowing the reader to identify himself with the content exposed. As a limitation, we can mention that this booklet is validated for only one reference pain center, located in Salvador, Bahia, that has specific sociocultural characteristics. Moreover, the small number of health professionals interviewed may not express what the experts from other regions would consider relevant. It is suggested that the EducaDor booklet is validated in other pain centers in other Brazilian regions and its effect on the intensity and other phenomena related to CP be tested in a randomized clinical trial.

CONCLUSION

Patients suffering from chronic pain and health professionals specialized in its treatment validated the content, the adopted language, the topics covered and the illustrations of the EducaDor booklet.

REFERENCES

Incidence of chest pain as a symptom of acute myocardial infarction in an urgent care unit

Incidência da queixa de dor torácica como sintoma de infarto agudo do miocárdio em uma unidade de pronto-atendimento

Andreia Valeria de Souza Miranda¹, Luis Fernando Rampellotti²

ABSTRACT

BACKGROUND AND OBJECTIVES: Chest pain is one of the main reasons why individuals seek urgent and emergency services. It is a symptom that may suggest several pathologies, among which the acute coronary syndrome, which makes differential diagnosis difficult. The objective of this study was to identify the incidence of chest pain confirmed as acute myocardial infarction in an urgent care unit in the city of Joinville; and specifically to describe the epidemiological profile of patients with chest pain due to acute myocardial infarction, regarding gender, age, type of acute myocardial infarction and cardiac enzyme alterations; identify how individuals described the symptom; to recognize other factors causing chest pain and to know the incidence of chest pain related to non-cardiac causes.

METHODS: Documentary study, descriptive and quantitative approach.

RESULTS: The incidence of chest pain as a symptom of acute myocardial infarction corresponded to 1% of the sample, affecting males. Several other causes were pointed out, stemming from the international code of diseases to seek care for this complaint.

CONCLUSION: The study evidenced the relevance of this complaint in emergency and urgent care units and the need to recognize the clinical manifestations and acute myocardial infarction screening for differential diagnosis.

Keywords: Angina, Chest pain, Infarction.

INTRODUCTION

Chest pain is one of the most frequent causes of the search for medical care in urgent and emergency units. However, such a symptom referred to in many different ways is not always related to the manifestation of the acute coronary syndrome (ACS). The relevance and magnitude of the subject have been expressed in world statistics. In the United States, for example, chest pain was the complaint of 5.8 million individuals, out of the 113 million admitted in urgent care units (UCU). According to the world scenario, there are 4 million cases of patients assisted with chest pain complaints per year. Cardiovascular diseases (CVD) represent a group of diseases that can cause chest pain symptom, which incidence has
Increased in the last decades. In 2011 alone, there were approximately 20 million people affected by CVD worldwide, out of which 12 million died. In Brazil, CVD is the leading cause of mortality, and in 2009 there were 1 million hospitalizations, costing 1.9 billion reais to the Unified Health System (SUS)\textsuperscript{3-5}.

Regarding the complaint, it may or may not be suggestive of ischemic coronary disease, in which segment angina and acute myocardial infarction (AMI) are included. Therefore, chest discomfort may lead to a cardiological approach or point to other causes. Needless to say that the suspicion of ACS will require a specific clinical approach\textsuperscript{1-2}.

Regarding the ACS characteristics, it is worth mentioning that angina indicates the involvement of the heart muscle by ischemia. Therefore, there are two main forms of manifestation, unstable and stable angina. While in the first the pain intensity is progressive and does not relieve at rest, the latter presents constant intensity, being perceived under efforts, and relieved by rest. Due to diabetic neuropathy, subjects with \textit{diabetes mellitus} may have an AMI without mentioning pain, and the sweating may be interpreted as hypoglycemia\textsuperscript{2}. AMI occurs when the blood supply to the myocardium through the coronary arteries is inefficient to its demands, leading to ischemia and tissue necrosis. In the United States, AMI affects 1 million people per year and is accounts for 466,000 deaths\textsuperscript{3-3}.

Regarding clinical screening for the diagnosis of AMI, changes in myocardial necrosis markers, especially an increase in troponin combined or not with changes in the electrocardiographic pattern of the ST-segment or pathological Q wave, define the diagnosis and characterize the disease as ACS with or without ST-segment elevation, which occurrence or not, are indicators of the extent of myocardial injury\textsuperscript{1}.

Together with the ACS as a cause of chest pain, there are others of musculoskeletal, gastrointestinal, psychiatric and pulmonary origin, and they are, in general, benign. On the other hand, there are specific diseases such as acute aortic dissection, pulmonary thromboembolism, hypertensive pneumothorax, cardiac tamponade, and esophageal rupture and perforation, which cause higher mortality than the first\textsuperscript{4}.

Therefore, given the diversity of diseases and clinical conditions that are manifested by chest pain, the differential diagnosis is difficult and, at the same time, essential to establish the proper approach for the ACS treatment. Consequently, professionals working in urgent care units need to know and recognize the causes, incidence, epidemiological aspects and characteristics of the clinical manifestations of the main causes of chest pain that leads to seeking of medical care\textsuperscript{1}.

Thus, the overall objective of the study was to identify the incidence of chest pain confirmed as AMI in a UCU. The specifics were to trace the epidemiological profile of patients with AMI-related chest pain regarding gender, age, type of AMI and cardiac enzyme alterations; identify how subjects described the symptom; recognize other factors that cause chest pain, and to know its incidence related to non-cardiac causes.

**METHODS**

This study was carried based on the graduate thesis of the Nursing course in Urgent Care Unit the School of São Fidélis (CENSUPEG). To develop this study, we used descriptive, documentary research, with a quantitative approach\textsuperscript{4}. The research was carried out in an urgent care unit (UCU) in the city of Joinville, SC.

The city of Joinville was founded on March 9, 1851. Today, it has more than 500 thousand inhabitants and one of the highest \textit{per capita} income of Brazil, besides being a big industrial hub.

The city offers urgent and emergency care at two first-aid units (FA) and one UCU, in addition to two public hospital emergency rooms, one pediatric, one obstetric and two privates. The study was carried at the East UCU, located at Rua Mafalda Laurindo, in the Aventureiro district. The unit is part of the city network of urgent care and is subordinated to the city department of health and maintained with municipal and federal resources. The Aventureiro district is the most populous of the city of Joinville, home to about 40 thousand inhabitants working in the industry, retail and services.

The UCU performs about 500 medical care every 12h, 24h a day, 7 days a week. It provides medical care in internal medicine, general surgery, pediatrics, and dentistry to citizens in a situation of illness or health problem that characterizes urgency and emergency. The Institution adopts the Manchester Classification model.

The study was conducted based on the urgent care records (UCR), filed at the unit and the registry of patient classification in the of \textit{Microsoft Excel Spreadsheet} - 2000, in which all patients, their complaints and the flowchart were inserted.

The medical records of the users who visited the unit from March 1 to 31, 2017, reporting chest pain were selected, and they were classified according to the flowchart number 25 - chest pain. All UCR records from individuals over 18 years of age were selected, with no age limit. The records with incomplete medical care data were excluded.

It was a retrospective study with the purpose of analyzing all UCR records that met the inclusion criteria described. Thus, the initial sample consisted of 310 records.

The data was collected on a spreadsheet (Microsoft Excel 2016), in which the data has been inserted. The variables were: identification (initials), gender (M - male and F - female), age (Arabic numerals) in years, complaint (by numbers representing three major categories of the chest pain complaint [complaint = 1) chest pain, 2) chest pain and left upper limb (LUL) and right upper limb (RUL); 3) chest pain and other symptoms], International Classification of Diseases (ICD - 10), electrocardiogram (A - alteration, S - no alteration, R - performed, NR - not performed) and troponin ([+] altered, [-] unaltered, R- performed and NR - not performed).

The data were analyzed by simple statistical analysis, arithmetic mean, median, percentage, and mode that gave origin to the tables. The incidence of the chest pain complaint was obtained from the total universe of patients who sought the service during
the study month. The calculations were performed using the Microsoft Excel (2016) software, and the data were organized in descriptive charts.

One year was established for the storage of the forms used in data collection, under the responsibility of the researchers. After this period the forms were shredded to make the information unusable. Any form of scientific disclosure was carried out without the identification of participants.

This research followed the legal requirements. This project was submitted to the Development and Structure Program of the Unified Health System - ProgeSUS, - of the City Secretary of Health of Joinville, to request admission to the study site, having been approved (Official Letter 118/2017 / SMS/GAB/GGE/NARAS).

RESULTS

The study analyzed 300 UCR that met the proposed inclusion criteria in March. Ten records were excluded due to ICD-10 non-observance.

Regarding the epidemiological characteristics of patients who sought care for chest pain in a UCU, the majority were women (58.66%). Regarding age, there was an expressive demand from young adults between 18 and 30 years with this complaint, accounting for 83 (27.66%) of the total visits.

The age group between 31 and 50 years and above 51 accounted for 112 (37.33%) and 105 (35%) respectively, with a mean age of 43 years (Table 1).

Concerning the description of the complaint among the three categories in which chest pain was grouped, according to the description of the classifier in the UCR record, complaint 1, chest pain, had a frequency of 139, while complaint 2, chest pain and RUL or LUL had a frequency of 32, and complaint 3, chest pain and other symptoms appeared 129 times. It was observed that only 32 individuals presented typical chest pain, while 129 (43%) patients had, besides chest pain, associated symptoms such as dizziness, palpitation, sweating, nausea, vomiting, among others.

As for the management of the complaint during the clinical care, 135 electrocardiogram tests were requested, and the cause of 165 (55%) chest pain cases was determined without the need of additional diagnostic exams. In addition, cardiac enzyme collection was requested for 74 (24.66%) individuals.

Among the medical assistance, there were three cases of AMI, corresponding to 1% of the sample. Still on the findings, among the AMI, two were diagnosed by the alteration in the electrocardiographic tracing, namely ST-segment elevation and one case by elevated troponin level.

Table 1. Epidemiological characterization of patients with complaints of chest pain assisted in the East urgent care unit in March 2017

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age group (years)</th>
<th>Electrocardiogram</th>
<th>Enzymes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>124</td>
<td>43.30</td>
<td>135</td>
</tr>
<tr>
<td>Female</td>
<td>176</td>
<td>43.30</td>
<td>165</td>
</tr>
</tbody>
</table>

R = performed; NR = not performed; A = altered.
Source: authors (2018).

As for the symptoms, none of them had chest pain radiating to the LUL. Two had only chest pain, and one had chest pain associated with other symptoms. Regarding gender, the three cases were male. On the other hand, there was age dispersion in the selected categories. Therefore it was not possible to relate this data to the findings of other authors. Table 2 shows the data on the diagnosis of AMI.

Table 2. Epidemiological profile of patients diagnosed with acute myocardial infarction in March 2017 in the urgent care East unit

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (years)</th>
<th>Complaint</th>
<th>Electrocardiogram</th>
<th>Troponin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>41</td>
<td>1*</td>
<td>SST</td>
<td>NR</td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>1**</td>
<td>SST</td>
<td>NR</td>
</tr>
<tr>
<td>Male</td>
<td>65</td>
<td>3**</td>
<td>Normal</td>
<td>Altered</td>
</tr>
</tbody>
</table>

*chest pain; ** chest pain and other symptoms; SST = ST-segment elevation; NR = not performed.
Source: authors (2018).

The study also identified other causes for chest pain complaints, grouped according to ICD-10, described by the organic systems affected by these diseases in the following order of incidence: respiratory/pulmonary, musculoskeletal, nervous and gastrointestinal, shown in table 3.

Table 3. Main causes of chest pain grouped by organic systemic groups according to ICD-10 of patients with chest pain attended in March 2017 in the urgent care East unit

<table>
<thead>
<tr>
<th>Organic systems</th>
<th>Frequency (n and %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory/pulmonary</td>
<td>54 / 18</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>39 / 13</td>
</tr>
<tr>
<td>Nervous</td>
<td>33 / 11</td>
</tr>
<tr>
<td>Cardiac</td>
<td>14 / 4.7</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>10 / 3.3</td>
</tr>
<tr>
<td>Cases described as symptoms and not as diagnosis</td>
<td>150 / 50</td>
</tr>
</tbody>
</table>

Source: authors (2018).

The cases described by the ICD-10 corresponding to symptoms and/or did not have the cause defined accounted for half of the sample and may be related to the ICD-10 non-observance of the diagnostic conclusion or the diagnostic vagueness of this complaint at the moment of care.

DISCUSSION

The predominance of female subjects who seek the urgent care units because of chest pain complaint found in the study cor-

Table 3. Main causes of chest pain grouped by organic systemic groups according to ICD-10 of patients with chest pain attended in March 2017 in the urgent care East unit

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Source: authors (2018).
roborsates the study by Araújo and Marques,\(^2\) in which chest pain was also predominantly female, accounting for 70% of the sample.

Regarding chest pain as an AMI symptom, Mussi, Ferreira and de Menezes\(^3\) pointed out that the AMI treatment in women usually starts later than in men, since they relativize the symptoms from resistance to pain and because professionals, in general, attribute to a psychological factor. In the present study, there were no women affected by AMI, although this was the largest group with this pain complaint.

As for age, the expressive demand for young adults was also observed in the study by Missaglia, Nerins and Silva\(^3\) in which this frequency reached 50%. Similar studies, such as Araújo and Marques\(^2\), Missaglia, Neris and Silva\(^3\) showed frequencies of 40% for individuals aged between 50 and 59 years and 49% for individuals between 41 and 50 years, respectively. These authors also noted that the age above 60 years is the age group with the highest incidence, a fact that in this study is statistically close to the described studies, although the largest number was not in this age group.

Reggi and Stefanini\(^1\) suggest that associated symptoms like dizziness, palpitation, sweating, nausea, vomiting, among others, are more frequent than chest pain radiating to the LUL, a fact pointed out as useful for the differential diagnosis, as well as a sentinel for old or diabetic patients who may have an AMI and not present the typical symptoms.

Similar studies by Missaglia, Neris and Silva\(^3\) and Araújo and Marques\(^2\) have shown that about 10% of chest pain complaints are confirmed as AMI. Thus, in this unit, this mean was lower than in other studies since it indicated an incidence of 1% in the sample. Although 74 individuals (24.7%) have been submitted to cardiac enzyme test, only 3 (1%) were confirmed as AMI, out of which only one individual required laboratory tests to confirm the diagnosis, and all the other 73 patients had this non-related ACS complaint.

A study by Barbosa et al.\(^4\) states that many patients are submitted to the ACS protocol due to diagnosis limitations, some of which could be overcome by more detailed and accurate clinical screening and the patient's history. The higher incidence of AMI in males, corresponding to the three cases confirmed in this study, corroborate the studies described.

Besides the male predominance, Dessotte, Dantas and Schmidt\(^9\) showed an average age of 55.8 years of patients diagnosed with AMI, the youngest being 25.4 years old and the oldest 79.4 years. This data is very similar to those obtained in this study, an average of 42.6, and ages of 22 years for the youngest and 65 for the oldest. These authors identified that most of the patients with AMI also had risk factors for coronary artery disease, such as hypertension, smoking, obesity, and dyslipidemia, which were not analyzed in this study.

Regarding clinical manifestation, none of the patients diagnosed with AMI reported typical pain. In the study, there were two cases of patients who reported only chest pain and one case (33.3%) of atypical complaint frequency, which is similar to the frequency reported by Reggi and Stefanini\(^1\).

About 50% of the AMI cases showed a change in the ECG tracing with ST-segment elevation. In this study, of the three confirmed cases, two had altered electrocardiograms, that is, 66.7%, similar to the study by Mansur et al.\(^10\). The same authors\(^10\) stated that there was a 91% specificity of the diagnosis by this method, which may justify why no tissue necrosis markers test, also called cardiac enzymes, was performed in the UCU.

The study showed that the cardiac causes are not the first cause of chest pain, and among the cardiac causes AMI is one of the diseases, but there are others, as also identified in a study by Barbosa et al.\(^4\). From the perspective of the diversity of etiologies for this complaint, the performance and attention of the healthcare professional as the patient arrives at the emergency service are determinant for the proper clinical approach. The knowledge about the ACS symptoms and the patient's history by the risk classification nurse to identify the predisposing factors determine the prioritization of the care, the approach, and early intervention when necessary\(^11\).

Therefore, although the great majority of the chest pain complaints are not confirmed as AMI, the morbidity and mortality associated with chest pain attributed to cardiac etiologies drive the care in the clinical screening of this symptom.

On the other hand, in the study by Missaglia, Neris and Silva\(^3\), cardiac causes accounted for a significant part of the sample. It is worth mentioning that that study was performed in a reference cardiology emergency room, which may justify the dissonance with this and other similar studies in which the so-called “unspecifed” or “unknown” causes were also more frequent than coronary causes, although there was no agreement for the incidence of various diseases\(^4,12,13\).

**CONCLUSION**

Chest pain is a frequent complaint in the UCU with prevalence in female subjects.

The complaint of chest pain as an AMI symptom represented a small portion of the sample, below the incidence in similar studies.

There was a significant vagueness of the cause of the chest pain complaint. This may be related to the non-observance of the ICD-10 with the diagnostic conclusion or diagnostic vagueness of this complaint at the time of care.

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Palliative care: epidemiological profile with a biopsychosocial look on oncological patients

Cuidados paliativos: perfil com olhar biopsicossocial dentre pacientes oncológicos

Karoline Sampaio Castôr1, Ed Carlos Rey Moura2, Emanuel Cabral Pereira3, Deborah Costa Alves3, Thamires Sales Ribeiro3, Plínio da Cunha Leal2

ABSTRACT

BACKGROUND AND OBJECTIVES: Palliative care is a set of practices that encompasses patients with life-threatening diseases which approach is no longer curative, but comforting, including care for the family. The objective of this study was to verify the epidemiological profile of cancer patients in palliative care.

METHODS: We interviewed 100 cancer patients in palliative care, as well as the sociodemographic and biopsychosocial variables, using the Karnofsky index, Palliative Performance Scale and Edmonton Symptom Assessment Scale.

RESULTS: The prevalent age group was between 51-60 years (34%), more than half female (77%), incomplete elementary school (40%) and resident in the interior of Maranhão (73%). Concerning the use of pain drugs, 52% reported not forgetting to take their pain drug, while 56% took drug on their own. As to the diagnosis, only 13% of the interviewees were aware of a palliative diagnosis, and more than half of them were aware of primary or oncological diagnosis (65%). Regarding the evaluation of functional capacity, 52% had the Karnofsky index between 70 and 90%; Palliative Performance Scale, 62% between 80 and 90%, and Edmonton Symptom Assessment Scale the following most significant variables in tiredness, (60%); sadness, (84%); anxiety, (73%); lack of appetite, (51%) and absence of well-being (79%).

CONCLUSION: Knowing the profile of patients is key to identify the obstacles to the effective implementation of palliative care, making it possible to implement targeted measures.

Keywords: Epidemiological profile, Oncology, Palliative care.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Os cuidados paliativos são um conjunto de práticas que abrangem pacientes portadores de doenças ameaçadoras da vida e cuja abordagem deixa de ser curativa e passa a ser baseada em conforto, incluindo cuidados com a família. O objetivo deste estudo foi verificar o perfil epidemiológico de pacientes oncológicos em cuidados paliativos.

MÉTODOS: Foram entrevistados 100 pacientes oncológicos em cuidados paliativos quanto às variáveis sociodemográficas e biopsicossociais, utilizando-se o índice de Karnofsky, a Escala de Performance Paliativa e a Escala de Avaliação de Sintomas de Edmonton.

RESULTADOS: Observou-se faixa etária mais prevalente entre 51 e 60 anos (34%), mais da metade do sexo feminino (77%), nível escolar fundamental incompleto (40%) e residente no interior do Maranhão (73%). Quanto ao uso de analgésicos, 52% relataram não esquecer de tomar o fármaco para dor; enquanto 56% tomam fármaco por conta própria. Quanto ao diagnóstico, apenas 13% dos entrevistados conhecem o diagnóstico paliativo, e mais da metade conhece o diagnóstico primário ou oncológico (65%). Quanto à avaliação da capacidade funcional, 52% tem índice de Karnofsky avaliado entre 70 e 90%; Escala de Performance Paliativa, 62% estão entre 80 e 90% e Escala de Avaliação de Sintomas de Edmonton as seguintes variáveis mais significantes em cansaço, (60%); tristeza, (84%); ansiedade, (73%); falta de apetite, (51%) e ausência de bem-estar (79%).

CONCLUSÃO: Conhecer o perfil de pacientes é relevante para a identificação pontual de obstáculos na implementação efetiva dos cuidados paliativos. Possibilitando assim, a implementação de medidas direcionadas.

Descritores: Cuidados paliativos, Oncologia, Perfil epidemiológico.

INTRODUCTION

According to the Brazilian National Academy of Palliative Care (ANCP), in its manual of 2012,1 palliative care has historically been associated with the term Hospice. This word comes from the start of the Christian age when these institutions played a role in the spread of Christianity through Europe. The original Hospices were shelters (like hostels) which would welcome and take care of pilgrims and travelers,
and the first report on these dated from the 5th Century when Fabiola, a disciple of St Jerome, would care for travelers coming from Asia, Africa, and other Eastern countries, at the Hospice of the Port of Rome. Etymologically, the word ‘palliative’ comes from the verb palliare, which means cloak or mantle (protection); hence the verb ‘paliar’ has acquired many meanings, such as: to make something less hard, to remedy, to soothe or relieve. The concept of palliative care (PC) is based on this notion, as palliative treatment is a kind of treatment that ‘gives a momentary remedy for the solution of a problem yet does not solve the problem permanently’.

According to the definition of the World Health Organization (WHO), reviewed in 2002, Palliative Care is an approach which implements and promotes quality of life (QoL) of patients and their families, when the patients have illnesses that threaten the continuity of their lives, through prevention and relief of suffering. This approach requires early identification, evaluation, and treatment of pain and any other problems of physical, psychosocial and spiritual nature’. PC is based on principles, rather than protocols. Nowadays, no one talks about ‘terminality’, but rather of ‘illness that threatens life’. Care right from the moment of diagnosis is also recommended, expanding this field of action. Similarly, no mention shall be made of the impossibility of cure; instead, one shall mention the possibility of ‘treatment to modify the illness’, thereby removing the concept that ‘nothing else can be done’. For the first time ever, an approach includes spirituality as one of the dimensions of the human being. The family is also remembered, and therefore provided with assistance, even after the death of the patient, during the period of mourning.

Ideologues and palliative professionals believe that those who work exclusively towards a cure end up not realizing the true limits of their practical activities, as also the limits applicable when dealing with the patient, his or her feelings, and his or her reactions. The main criticisms show that this excess of medical power produces what has been defined as “therapeutic imprisonment,” perceived by those who argue that this excess of medical power produces what has been described as ‘the practice of cure’ (‘curative treatment’), thereby removing the concept that ‘nothing else can be done’. For the first time ever, an approach includes spirituality as one of the dimensions of the human being. The family is also remembered, and therefore provided with assistance, even after the death of the patient, during the period of mourning.

The new Brazilian Code of Medical Ethics, approved by Resolution 1.931/09 of the Federal Medical Council (CFM), has helped towards greater dissemination of the philosophy of Palliative Care and advises the doctor to avoid therapeutic obstinacy for terminally ill patients.

“Good death” should respect the 12 aspects identified by a British group studying the health of the elderly. For a “good death”, the patients need to know that death is nigh and understand what can be expected, be able to maintain control over what is happening; be given due privacy and dignity; have control over pain relief and other symptoms; be able to choose where death occurs (whether at home or in some other location); have access to any kind of information or knowledge; have access to spiritual and emotional support; have access to PC anywhere, and not just in hospital; have control over who is present, and who the end shall be shared with; be able to issue advance guidance so that the patient’s wishes may be respected; have time to say goodbye and have control over other time issues; and be able to leave at the right time, not having life prolonged uselessly.

The purpose of this study was to check the epidemiological profile of cancer patients in PC, attended to by a cancer hospital in the Brazilian state of Maranhão. By constructing the profiles of the patients, it is possible to develop new implementation strategies and patient care.

**METHODS**

This is a longitudinal, prospective, observational and quantitative study. One hundred patients under PC were interviewed at the ‘Aleonor Bello’ cancer hospital in the city of São Luís, capital of the state of Maranhão, Brazil. The sample was found by free demand in the outpatient pain unit of this hospital, or during hospitalization, and was chosen at random up to n=100. The calculation of the sample within a population of 156 people, with a confidence rate of 90%, with an error margin of 5%. The formula for the calculation of the size of the sample for a reliable estimate of the mean for the population (μ) is given by:

\[ n = \left( \frac{Z_{\alpha/2} \sigma}{E} \right)^2 \]

In this formula, n is the number of individuals in the sample, \( Z_{\alpha/2} \) is the critical value which corresponds to the degree of confidence as requested, and \( \sigma \) is the standard deviation (SD) of the variable studied. E is the margin of error or the maximum error for estimation. This identifies the maximum difference between the sample mean (X) and the true mean of the whole population.

The criteria for exclusion were patients undergoing curative treatment; patients from the private hospital network; patients who were cognitively unable to answer the questions; patients who did not agree to participate in the research or who decided not to participate in the research later on. The main criteria of inclusion were cancer patients in PC in the public health sector of the hospital here identified, from March 2017 until the required number of patients (n) for the sample was obtained. There were no cases of people who decided not to participate or refused to be interviewed. All the patients who took part in this study signed the Free and Informed Consent Form (FICT).

The material used for data collection was a closed questionnaire with socio-demographic questions including age, gender, ethnicity, educational level, and origin; and also, objective questions about awareness of the patient’s diagnosis and prognosis, and validated scales of functional and psycho-affective evaluation. The instruments or scales used in the said questionnaire were the Karnofsky score, the Palliative Performance Score (PPS) and the Edmonton Symptom Assessment (ESAS), all these having been validated.

The Karnofsky score describes the growing levels of activity and independence, with values ranging from zero to 100, where zero corresponds to death, and 100 represents a normal level of physical performance and aptitude to carry out normal activities, especially those involving self-care. In adaptation, the lowest index is 10, meaning that the patient is about to die, and in a process where death is rapidly progressing. This is the instrument most commonly used in the prognosis of cancer therapy, as this is a measure of performance for the classification of a person’s skills to carry out activities, by evaluating the progress...
of the patient after therapeutic procedures or establishing the patient's capacity of receiving therapy. PPS is an instrument that has been validated and is widely used within PC to follow and monitor the evolutive curve of the illness, thereby establishing grounds for decision-making, expectations of prognosis, and definition of terminality. Among other factors, the PPS evaluates the severity of the disease, and the patient's capacity to take care of himself. An accurate estimate of the prognosis helps to plan the medical action, and also establishes the best moment to prioritize PC rather than curative measures, also identifying when this first type of medical action, and also establishes the best moment to prioritize PC as early as possible. A correct estimate of the prognosis helps to plan the medical action, and also establishes the best moment to prioritize PC, rather than curative measures, also identifying when this first type of medical action, and also establishes the best moment to prioritize PC as early as possible. PPS is an instrument that has been validated and is widely used within PC to follow and monitor the evolutive curve of the illness, thereby establishing grounds for decision-making, expectations of prognosis, and definition of terminality. Among other factors, the PPS evaluates the severity of the disease, and the patient's capacity to take care of himself. An accurate estimate of the prognosis helps to plan the medical action, and also establishes the best moment to prioritize PC, rather than curative measures, also identifying when this first type of medical action, and also establishes the best moment to prioritize PC as early as possible.

Statistical analysis
All the data collected were tabulated and then statistically analyzed using Microsoft Excel 2013. The results were shown in the descriptive and tabular form. Initially, the analysis using descriptive statistics was made through frequency tables for the variables as analyzed, we estimated the mean, standard deviation, and maximum and minimum of the numerical variables. The level of significance to reject the hypothesis of nullity was 5%, which means that any p-value less than 0.05 (p<0.05) was considered statistically significant.

RESULTS

The evaluation was carried out on 100 patients under PC at a specialized cancer hospital in the capital of the state of Maranhão, through the application of a quantitative questionnaire, considering social and demographic data. We observed that in the population prevailed the age group from 51 to 60 years (34%), females (77%), brown (51%), black (28%) and white (21%). Regarding marital status, 67% reported having a fixed partner. Sixty-two percent of the sample population were Evangelical Christians. Forty percent did not finish their primary education; 73% lived in the interior of the state of Maranhão, and 92% did not work. Out of the patients in the sample, 54% were unaware of the legal rights of patients with cancer; 94% had a caregiver, whether a family member or not; 82% did not know how to use the Internet to learn more about their diagnosis. Regarding the use of medication for pain relief, we observed that 52% of the subjects mentioned that they never forget to take their medicines for pain relief; 57% mentioned that they do not stop taking medicine for pain relief when they feel better; 56% reported self-medication, and 78% said they never set their alarm clocks to remind them about medication times (Table 1). We also observed that 13% of the people interviewed knew about palliative diagnosis, while 87% did not (Table 2).

Concerning primary diagnosis, we noticed that 65% are aware of the diagnosis of cancer, while 35% are not. Regarding the advanced healthcare directive, 100% of the sample was unaware. Another fact observed is the fact that 92% of subjects did not have any physical exercise activity.

Table 1. Distribution of patients under palliative care evaluated according to their regular use of drugs. São Luís, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sample n=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forget to take medication for pain relief</td>
<td>Yes 48 No 52</td>
</tr>
<tr>
<td>Stop taking medication when feeling better</td>
<td>Yes 43 No 57</td>
</tr>
<tr>
<td>Take medicines through self-medication</td>
<td>Yes 56 No 44</td>
</tr>
<tr>
<td>Set the alarm clock to ring at medicine times</td>
<td>Yes 22 No 78</td>
</tr>
</tbody>
</table>

Table 2. Distribution of patients under palliative care evaluated according to the knowledge of palliative diagnosis and primary diagnosis. São Luís, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sample n=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aware of primary or oncological diagnosis</td>
<td>Yes 65 No 35</td>
</tr>
<tr>
<td>Aware of palliative diagnosis</td>
<td>Yes 13 No 87</td>
</tr>
</tbody>
</table>

Considering the evaluation of functional capacity, we saw that 52% of the patients had a Karnofsky score between 70% and 90%; a total of 9% of these correspond to a Karnofsky score of 70%: there is no need for assistance for personal care, but the person is unable to carry out normal activities such as household chores and active tasks. A further 12% had a Karnofsky score of 80%, which means that these people can carry out normal tasks, albeit with effort. These people also showed some signs and symptoms of the illness, but incapacity is only present for activities requiring a lot of effort. Finally, 31% of the sample shows a Karnofsky score of 90%, meaning a capacity to carry out normal tasks; signs and symptoms of the disease are minimal among these people (Table 3).

Table 3. Distribution of patients under palliative care evaluated based on their functional capacity, according to the Karnofsky scale. São Luís, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sample n=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional capacity of 80%</td>
<td>12%</td>
</tr>
<tr>
<td>Functional capacity of 90%</td>
<td>31%</td>
</tr>
<tr>
<td>Functional capacity of 70-90%</td>
<td>52%</td>
</tr>
</tbody>
</table>

Turning now to PPS, we saw that 62% of the subjects had PPS scores between 80 and 90% of these, 34% have a PPS of 80%: total ambulation, activities with effort, some evidence of the disease, carries out full...
The demographic transition in Brazil started with the decline in mortality rates and then, after some time, with a decrease in birth rates, thereby bringing about significant changes in the age structure of the Brazilian population. According to Carneiro et al., with the recent aging process among the population, which predicts an exponential growth in the number of elderly people, it is also possible to predict that there will be a sharp increase in the prevalence of cancer and other chronic degenerative diseases such as hypertension, diabetes mellitus, and diseases of the bones and joints. The values corresponding to the age, gender and level of consciousness preserved (see Table 4).

**Table 4.** Distribution of patients under palliative care evaluated by functional capacity according to PPS, São Luís, 2018.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sample (n=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPS 80%</td>
<td>34%</td>
</tr>
<tr>
<td>PPS 90%</td>
<td>28%</td>
</tr>
<tr>
<td>PPS 80-90%</td>
<td>62%</td>
</tr>
</tbody>
</table>

Moving on to ESAS, we saw that the following variables showed: pain (53% between 2 and 5); fatigue (60% between 6 and 9); nausea (58% between 1 and 4); sadness (84% between 6 and 9); anxiety (73% between 6 and 9); drowsiness (55% between 4 and 7); lack of appetite (51% between 6 and 9); lack of well-being (79% between 6 and 9), and shortage of breath (61% between 1 and 4). Others not reported (Table 5).

**Table 5.** Distribution of patients under palliative care, evaluated by their functional capacity, using ESAS, São Luís, 2018

<table>
<thead>
<tr>
<th>Variables ESAS</th>
<th>Sample n=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point score from zero to 10</td>
<td>53%</td>
</tr>
<tr>
<td>Pain, score between 2 and 5</td>
<td>60%</td>
</tr>
<tr>
<td>Fatigue, between 6 and 9</td>
<td>58%</td>
</tr>
<tr>
<td>Nausea, between 1 and 4</td>
<td>84%</td>
</tr>
<tr>
<td>Sadness, between 6 and 9</td>
<td>73%</td>
</tr>
<tr>
<td>Anxiety, between 6 and 9</td>
<td>55%</td>
</tr>
<tr>
<td>Drowsiness, between 4 and 7</td>
<td>51%</td>
</tr>
<tr>
<td>Lack of appetite, between 6 and 9</td>
<td>79%</td>
</tr>
<tr>
<td>Shortage of breath, between 1 and 4</td>
<td>61%</td>
</tr>
<tr>
<td>Others</td>
<td>0%</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The higher occurrence among females is also the expected profile for emerging countries, where the number of cases of cancer among women is higher than among men. Here it is also worth pointing out that the female population is also the segment of the population that goes to the doctor earlier and more often, which could be one reason why cancer appears to be more common among women. In this perspective, in most cases, men tend to suffer more from severe and chronic health conditions than women do and also die earlier than they do.

Over half the population studied reported a fixed partner and a specific caregiver. The literature shows that support from the spouse or other family members is, indeed, very important for people with a life-threatening disease. It is also evident that a person with cancer tends to adapt better to situations of life-threatening diseases and the stress that this condition brings when there is a high level of social and family support.

On the other hand, the burden overload on the caregiver is often linked to episodes of depression, anxiety, physical and mental fatigue, stress, and worse QoL for the patient, which could even generate risks for the patient's physical and psychological health. The family members and caregivers, whether these are part of the family or not, should be part of the medical and multiprofessional assistance involved in palliative care. The human being is not isolated but leads a life that is inserted in a biological, psychological and social context. Therefore, looking in one direction is not just a flaw in care for the patient-family axis, but is also a flaw in the formation of the medical and professional concepts behind health issues, which propose the defense of life.

The State of Maranhão has publicly owned Oncology Centers in the regions around the cities of Caxias and Imperatriz, in a move to reduce the flow of patients at Cancer Hospitals in the state capital. However, most of the people surveyed live in the countryside of the State of Maranhão, which could lead to an overload of the health system under study, and maybe the most seriously ill patients may not even be able to get to the hospital. Another relevant fact is that nearly all the patients interviewed do not have paid work, and most of them do not even know the rights of the cancer patient, such as retirement on the grounds of invalidity, and a financial bonus for illness (sick pay).

The continuous travel involved generates costs, inconvenience, and emotional problems involving the treatment of the patient, including the family, leading to absences at outpatient appointments or cases where only a representative appears. According to Carvalho and Parsons, the goals of CP include the provision of comfort to the patient; reduction of emotional stress; better QoL, and lower quantity (or complete absence) of invasive intervention. This means that the physical distance between the care team and the patient is also a relevant factor for the implementation of a PC in an efficient manner.

Most of the population under study has not completed primary education. According to some studies related to the diagnosis of cancer, a low educational level, linked to low income, is a factor that affects access to health services, thereby leading to a delay in seeking health care, and to a reduction in the number of preventive examinations such as mammograms and pap smears and prostate tests. The low educational level is also linked to the late diagnosis of cancer and, hence, to higher mortality, not to mention the association to worse standards of health care. Indeed, the higher the educational level, the greater shall be the patient's understanding of QoL, basic sanitation, and health criteria. Therefore, people with more elaborate concepts of health shall have a better perception of painful situations, while people with less knowledge about what an ideal state of health is shall have greater “tolerance” to pain. They can be less demanding in this appraisal of their own state of health, thereby delaying the act of seeking a health service and possibly also delaying the diagnosis.
This fact is a major cause for concern, as the patient and/or the caregiver should understand as much as possible, to correctly implement the guidance related to health and specific treatment. This data can be even more alarming if we consider the quality of education, a factor that can underestimate the true social and cultural level of this population. The understanding is directly related to greater participation in treatment and to the involvement of the person as an active participant in decision-making with regard to self and proposed interventions. According to Carvalho e Parsons2, autonomy is one of the pillars of PC, making the subject become more participant in making decisions, thereby establishing a better relationship between doctor and patient22,23.

In this study, we saw a very fine line drawn between those patients who made adequate use of drugs for pain and those who did not. It was also observed that a substantial part of the sample said that they do not forget to take the drugs for pain relief, and neither do they stop taking the medication when they feel better. More than half said that they make use of self-medication, and similarly, the overwhelming majority do not have the habit of setting their alarm clock to go off at medication times, mentioning that they take their medication at times close to those recommended by the doctor.

The main disadvantage in not treating oncological pain, or in treating this pain incorrectly, is that the prognosis is then poor, and there could be a rise in complications arising from the disease, which in turn raises the occurrence of deterioration of the general clinical health of the patient. Treatment of pain brings a significant relief of the associated symptoms24,25. It is well known that untreated pain leads to anxiety and depression, thereby worsening such losses and harming cognitive functions, daily activities, social activities and sleep patterns26.

We also see that over half the population studied in this research had a Karnofsky score between 70 and 90% and PPS between 80 and 90%. Percentages corresponding to the ability for self-care, the perfor-

On the ESAS scale, we found variables with intensity levels greater than 5, on a scale ranging from zero to 10. The following variables were observed over the median: fatigue (60% with scores of 6 to 9); sadness (84% between 6 and 9); anxiety (73% between 6 and 9); loss of appetite (51% between 6 and 9) and lack of well-being (79% between 6 and 9). These values agree with the findings of the literature that the prevalence of anxiety and depression among patients living with cancer is higher than that in the general population29. Other authors comment on the fact that a diagnosis of cancer brings many doubts and lack of security and could even lead to psychiatric disorders. These disorders are usually considered as belonging to one of two basic groups, namely anxiety, and depression. Depression is one of the psychiatric disorders that is hardest to diagnose in cancer patients, due to the similarity of symptoms between cancer and the adverse effects of their treatment, which often prevail over the symptoms of this disorder30.

Chronic inflammation is also shown as a pro-tumoral factor, leading to a tumor’s aggressive growth and spread. Many inflammatory factors that trigger tumor growth are also responsible for syndromes such as anorexia and cachexia, pain, and shortened lifespan31. Pedros, Araújo and Stevanato32 said that this chronic inflammation is related to the increased mass of body fat, with the adipose tissue being an important source of circulatory pro-inflammatory cytokines. In this way, the loss of weight would reduce the production of pro-inflamma-
tory cytokines (IL-6, TNF) and increase the production of anti-inflammatory agents (IL-10, IL-1ra). For this, the reduction in calorie intake and an increase in physical exercise would work as effective strategies for the general reduction of inflammation.

In the sample, we saw that a minority of people interviewed (13%) were aware of the palliative diagnosis, while the majority of the subjects (87%) we not aware of. When the issue turns to the primary diagnosis, we saw that over half the subjects were aware of the diagnosis of cancer, and 35% did not know about it. Several factors could play a part in the non-encoding of the message on the doctor-patient axis32,33. The doctor must pay attention throughout his or her discourse to behaviors such as the use of technical jargon and constant interruptions while the patient is speaking. Technical terms should only be used when absolutely necessary, together with a clarification as to why they are used. And interruptions should be discouraged, using another method, which is that of guiding the conversation to what is most relevant.

Simpson et al.34, identified problems with the language used by medical professionals, generally related to lack of clarity, excessive use of jargon, and restricted sharing of meanings of expressions used, between the doctor and patient. In the opinion of Beckman and Frankel35, the continuous interruption of the patient’s talk causes some inhibition and retraction when the patient has something else to say.

Communication between doctor and patient should offer conditions so that there may be the promotion of health, making the user/caregiver autonomous to negotiate with regard to treatment and to conditions that favor self-care36. When caring for cancer patients, we often come across communication of bad news (BN) which can involve not only the unveiling of the actual diagnosis but also the worsening of the disease and the need to be sent for PC and home care. Most doctors agree that the best way to give BN is through a patient-centered approach, in which the information is given gradually and steadily, while also, at the same time, encouraging them to talk about their feelings and concerns, both now and in the future. This kind of communication needs professional preparation and training37.

Another justification for the data found in this study is when patient and family have different ideas about the treatment to be given, or about life-end issues, making communication ineffective. The family meets challenges, and not only the requirements of the caring role but also the
pain caused by the possibility of the death of the family member. As an important element in the last days of the patient’s life, sometimes in a move to protect the patient from additional suffering, they ask the doctor not to give all the information about diagnosis and prognosis, thus establishing the “conspiracy of silence” or the “pact of silence.” The pact or conspiracy of silence is described as an implicit or explicit agreement between family members, friends, and professionals, to hide the information that is passed on to the patient, to hide the diagnosis or the severity of the situation.

On the other hand, in some countries, the reality of advance health-care directives is already present and has been so for some time. In Brazil, there is no specific legislation on this matter, but this is made known within the medical environment, through a Resolution passed by the Federal Medicine Council (CFM). It was observed that the whole sample (100%) is not aware of advance health-care directives. To address this issue with the patient, it is necessary that the doctor should first address issues that are so often procrastinated, such as prognosis, death and PC, facing social issues such as low educational level, and cultural issues, which often help to make communication more difficult. However, these factors should not prevent communication and knowledge from the patients.

Another relevant item of data is the fact that over half the sample (82%) does not use the Internet to find out more about their diagnosis. The Internet is a significant tool for information and communication and has become more and more readily available to the general population. Information about advance health-care directives, diagnoses, and medical conduct can easily be found on the e-world.

CONCLUSION

The present study showed a significant lack of awareness that still affects patients in PC. Information such as diagnosis and treatment are not yet clear. Factors such as educational level, origin, improper use of drugs for pain relief: these are just some of the factors that have a direct influence on the implementation of PC. Habits such as lack of physical exercises could make the illness worse, or limit the prognosis of the client within his or her biological, psychological or social context.

REFERENCES

Relationship between the perceived social support and catastrophization in individuals with chronic knee pain

Relação entre suporte social percebido e catastrofização em indivíduos com dor crônica do joelho

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ABSTRACT

BACKGROUND AND OBJECTIVES: Catastrophization and social support influence health outcomes in people with chronic pain. However, there is still no consensus regarding the relationship between these factors, and the information available in what relates to chronic pain in the knee joint is even scarcer. The objective of this study was to describe and understand the relationship between the perceived social support and pain catastrophization in adults with chronic knee pain.

METHODS: Sociodemographic data were collected, and the West Haven-Yale Multidimensional Pain Inventory and Pain Catastrophizing Scale were completed by the participants. The sample included 28 participants attending daycare institutions in Aveiro, Braga and Leiria districts (Portugal).

RESULTS: Seventy-five percent of the participants presented clinically significant catastrophization, and 64.3% reported high perceived social support. There is a direct relationship between high catastrophization and frequent solicitations and distraction responses. Conversely, an inverse association between high catastrophization levels and infrequent negative responses was observed in the collected sample.

CONCLUSION: Useful social support contributes to a mal-adaptive response to pain by increasing catastrophization levels, and the catastrophic response may be a way to ask for support. There is a direct association between the perceived social support and the catastrophization of chronic knee pain in the participants. However, the association between these variables was poor/low evidencing the need to consider other factors in the catastrophization study.

Keywords: Catastrophization, Chronic pain, Perceived social support.

INTRODUCTION

Chronic pain (CP) is a world public health problem1,2. Currently, CP is defined by lasting longer than three months, not considering other aspects2. In Portugal, 37% of the adult population suffers from CP, resulting in a strong personal and social impact1,2. Chronic pain in the knee in adults is common around the...
world, with the highest percentage attributed to osteoarthritis, a chronic, progressive condition strongly correlated with aging. Considering the several physiological mechanisms that contribute to musculoskeletal CP, the current conceptual pain models include a biopsychosocial approach that involves reciprocal interactions between biological, psychological and social factors.

In the context of psychological factors, catastrophization is defined as an overly negative and unreal mental state that arises during the CP experience or its anticipation. Catastrophization encompasses three dimensions: rumination or obsession related to pain; magnification or exaggeration in valuing the threat it represents; and devaluation of the capacity/resources to control and manage the painful experience.

Regarding the relevant social factors in the conceptual models of pain, social support is of crucial importance. Social support is characterized as a multifactorial concept, defined as the provision of resources between provider and receiver, to promote the welfare of the latter. Perceived social support is defined as the support that the individual perceives as available in case of need, while the social support received describes the support that was effectively provided.

Two contradictory perspectives explain the relationship between social support and catastrophization in individuals with CP. According to the Communal Coping Model, catastrophization arises as a way of the individual to request assistance and empathic responses from people of their social environment. These responses, especially when given by the spouse, can maintain or reinforce the expression of pain. On the other hand, other studies have shown that, when provided by individuals who do not belong to the marital relationship, higher levels of social support result in lower frequency and intensity of pain.

Thus, it is fundamental to develop and contribute to new studies in this area in order to clarify the contradictory relationship among these factors that influence the health outcomes of individuals with CP.

This study aimed to answer the question “What is the relationship between perceived social support and catastrophizing in individuals with CP in the knee”?

METHODS

A cross-sectional, descriptive study conducted with the participation of old people living in a daycare center of 3 institutions of the districts of Aveiro, Braga, and Leiria (Portugal). The inclusion criteria to participate in this study was age over 65 years and CP in the knee. The subjects were included in the sample after the explanation of the study procedure and completing the Free and Informed Consent Form (FICT), according to the Declaration of Helsinki. The cognitive impairment that prevented the coherent completion of the instrument was the exclusion criterion. The process of data collection included the authorization request to the institutions to collect the data and to the subsequent direct contact with the participants. Considering the probabilistic and statistical inference rules that ensure the trend to normality in samples that include 25 to 30 individuals, 30 individuals were recruited, but only 28 had stable health conditions during the direct contact of data collection. After selecting the 28 individuals that fulfilled the criteria, the sociodemographic questionnaire for characterization of the sample and pain, previously constructed by the researchers, was applied. Of the pain-characterizing criteria, only the values for pain intensity were not obtained from the sociodemographic questionnaire, based on item 1 of part A of the West Haven-Yale Multidimensional Pain Inventory (WHY-MPI), validated to the Portuguese population.

The evaluation of social support was also based on the WHY-MPI, an instrument composed of 52 items, with scores from zero to six, distributed in three distinct parts. Parts A, 10 and 15 of part A were used to obtain the data on the evaluation of the support received by the participant. In addition, part B, which is subdivided into negative responses (items 1, 4, 7, 14), solicitous responses (items 2, 3, 5, 8, 11 and 13) and distractive responses (items 6, 9, 12 and 14), allowed to obtain data related to the perceived social support. In the case of the predominance of negative responses, the perceived social support is said to be punitive, and when the frequency of solicitous and distractive responses is greater, the perceived social support is useful.

The introductory part of this scale provided data on the significant person and the cohabitation of the participant and this person. To evaluate pain catastrophizing, the Portuguese version of the Pain Catastrophizing Scale (PCS) was used. This instrument consists of 13 items, with scores from zero to 4, with a total scoring between zero and 52. Higher scores determine higher levels of catastrophic thoughts. The level of catastrophization was considered clinically relevant when the total PCS score was greater than or equal to 30. The 13 items of the PCS are grouped in the following dimensions: rumination (items 8, 9, 10 and 11), magnification (items 6, 7 and 13), and helplessness (items 1, 2, 3, 4, 5 and 12).

Statistical analysis

A descriptive analysis was performed of the data obtained from the sociodemographic questionnaire, WHY-MPI and PCS through the distribution of absolute and relative simple frequencies, central trend measures, such as the arithmetic mean, and dispersion measures as the standard deviation.

Table 1 shows the variables used for the analysis of the results regarding the perceived social support. For the variables perceived social support, negative responses, solicitous responses, distractive responses, rumination, magnification and helplessness, two levels of values were defined, based on the midpoint of the amplitude of values of the total score in each variable. For example, below and above the midpoint are considered, respectively, few and many negative, solicitous, or distractive responses. Regarding the pain catastrophizing data, the total PCS score was analyzed, as well as the catastrophization level defined based on the cut-off value of the scale.

The relationship between social support and pain catastrophization was assessed using the Pearson correlation coefficient between the total PCS score and the various dimensions of the part B of the WHY-MPI scale (negative, solicitous and distractive...
Relationship between the perceived social support and catastrophization in individuals with chronic knee pain

Additionally, the correlation between pain intensity and the total PCS score, with the various dimensions of part B of the WHY-MPI scale, was analyzed by calculating the Spearman correlation coefficient (r). To interpret the values obtained, the following standard intervals were considered: poor correlation (r<0.30), weak (r: 0.30-0.50), moderate (r: 0.50-0.70), strong (r: 0.70-0.90) and very strong (r>0.90).18

Based on the Communal Coping Mode, a cross-tabulation was constructed between the variables marital status (married, unmarried) and catastrophization level (clinically significant and not significant), to understand if the catastrophization of pain is superior among married individuals11.

All statistical procedures were performed with the IBM® SPSS® Statistics software, version 23.

RESULTS

The sample consisted of 78.6% females and 21.4% males, with an average age of 79.25 years. Of the 28 individuals, 39.3% are widowers, and the percentage of married individuals (25%) was

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Variables</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociodemographic questionnaire</td>
<td>Marital status</td>
<td>Married; not married</td>
</tr>
<tr>
<td>WHY-MPI</td>
<td>Pain intensity</td>
<td>zero to 6</td>
</tr>
<tr>
<td></td>
<td>(Part A - Item 1)</td>
<td>(zero - No pain; 6 - Very intense pain)</td>
</tr>
<tr>
<td></td>
<td>Perceived social support</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>(Part A - Items 5, 10 and 15)</td>
<td>Level of perceived social support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low (zero to 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High (10 to 18)</td>
</tr>
<tr>
<td></td>
<td>Negative responses</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>(Part B - Items 1, 4, 7 and 14)</td>
<td>Level of negative responses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Few (zero to 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Many (13 to 24)</td>
</tr>
<tr>
<td></td>
<td>Solicitous responses</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>(Part B - Items 2, 3, 5, 8, 11 and 13)</td>
<td>Level of solicitous responses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Few (zero to 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Many (19 to 36)</td>
</tr>
<tr>
<td></td>
<td>Distractive responses</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>(Part B - Items 6, 9, 12 and 14)</td>
<td>Level of distractive responses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Few (zero to 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Many (13 to 24)</td>
</tr>
<tr>
<td></td>
<td>Significant person</td>
<td>Father/mother, child, another relative; spouse; neighbor, friend, partner/companion; house colleague; others</td>
</tr>
<tr>
<td>PCS</td>
<td>Total score</td>
<td>zero to 52</td>
</tr>
<tr>
<td></td>
<td>Catastrophization level</td>
<td>Clinically not significant (zero to 29)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinically significant (30 to 52)</td>
</tr>
<tr>
<td></td>
<td>Rumination</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>Items 8, 9, 10 and 11</td>
<td>Rumination level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Little (0 to 8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A lot (9 to 16)</td>
</tr>
<tr>
<td></td>
<td>Magnification</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>Items 6, 7 and 13</td>
<td>Magnification level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Little (zero to 6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A lot (7 to 12)</td>
</tr>
<tr>
<td></td>
<td>Helplessness</td>
<td>Total score</td>
</tr>
<tr>
<td></td>
<td>Items 1, 2, 3, 4, 5 and 12</td>
<td>Helplessness level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Little (zero to 12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A lot (13 to 24)</td>
</tr>
</tbody>
</table>

WHY-MPI = West Haven-Yale Multidimensional Pain Inventory; PCS = Pain Catastrophizing Scale.
also significant. Also, 64.3% of the respondents had only the first schooling cycle (4 years).
In relation to the characterization of pain, the localized pain (71.4%), anterior (60.7%) and continuous (60.7%) predominated, being more frequent in the right knee or bilateral (35.7%). Concerning pain intensity, 39.3% of the participants had significant pain, evaluated in 4 on a scale from zero to 6.
More than half of the participants (57.14%) identified their father, mother, child or another relative as their significant person, and the percentage of the sample who mentioned the spouse (25%) is still considerable. About 75% of the participants live with the significant person.

Regarding the evaluation of the social support received by the participant, 64.3% said they have a lot of support (Table 2). Regarding the responses by the significant person, the majority said that they had few negative responses (89.3%), many solicitous responses (67.9%) and few distractive responses (60.7%).

The total PCS score showed an average of 35.14, a value that is a predictor of a clinically significant level of catastrophization (Table 3). It is worth mentioning that 75% of the participants presented a clinically significant catastrophization.

Concerning the different dimensions of the PCS scale (Table 4), the majority of the participants indicated much rumination (67.9%), much magnification (71.4%) and much helplessness (78.6%), with no specific trend to any of the dimensions.

The data of the present study showed a poor correlation \( r=0.219 \) between: (i) pain intensity and total PCS score; (ii) pain intensity and negative \( r=0.001 \), solicitous \( r=0.191 \) and distractive \( r=0.120 \) responses of the significant person. There was also a positive correlation between the total PCS score and the solicitous and distractive responses, poor \( r=0.209 \) and weak \( r=0.342 \), respectively, with higher values for the distractive responses. The correlation between the total PCS score and the negative responses was poor and negative \( r=0.162 \). Concerning the relation between the various dimensions of part B of the WHY-MPI scale, there was a moderate positive correlation \( r=0.624 \) between the solicitous and distractive responses and a moderate negative correlation \( r=-0.591 \) between the solicitous and negative responses (Table 5).

In order to understand the data trend regarding catastrophization among married individuals, and knowing that they identified the spouse as the significant person, the marital status and the level of catastrophization were cross-checked showing an evident trend between the analyzed variables (Table 6).

### Table 2. Perceived social support

<table>
<thead>
<tr>
<th>Classes</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHY-MPI - Part A (items 5, 10 and 15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of social support received</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>10</td>
<td>35.7</td>
</tr>
<tr>
<td>Much</td>
<td>18</td>
<td>64.3</td>
</tr>
<tr>
<td>WHY-MPI - Part B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>25</td>
<td>89.3</td>
</tr>
<tr>
<td>Many</td>
<td>3</td>
<td>10.7</td>
</tr>
<tr>
<td>Solicitous responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>9</td>
<td>32.1</td>
</tr>
<tr>
<td>Many</td>
<td>19</td>
<td>67.9</td>
</tr>
<tr>
<td>Distractive responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>17</td>
<td>60.7</td>
</tr>
<tr>
<td>Many</td>
<td>11</td>
<td>39.3</td>
</tr>
</tbody>
</table>

WHY-MPI = West Haven-Yale Multidimensional Pain Inventory.

### Table 3. Pain catastrophization

<table>
<thead>
<tr>
<th>Catastrophization</th>
<th>n=28</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total PCS (mean±SD)</td>
<td>35.14±10.28</td>
<td></td>
</tr>
<tr>
<td>Catastrophization level - frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinically significant (≥30)</td>
<td>21 (75%)</td>
<td></td>
</tr>
<tr>
<td>Clinically not significant (&lt;30)</td>
<td>7 (25%)</td>
<td></td>
</tr>
</tbody>
</table>

PCS = Pain Catastrophizing Scale.

### Table 4. Catastrophization dimensions

<table>
<thead>
<tr>
<th></th>
<th>Frequency (n=28)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruminatio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>9</td>
<td>32.1</td>
</tr>
<tr>
<td>Much</td>
<td>19</td>
<td>67.9</td>
</tr>
<tr>
<td>Magnification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>8</td>
<td>28.6</td>
</tr>
<tr>
<td>Much</td>
<td>20</td>
<td>71.4</td>
</tr>
<tr>
<td>Helplessness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Few</td>
<td>6</td>
<td>21.4</td>
</tr>
<tr>
<td>Much</td>
<td>22</td>
<td>78.6</td>
</tr>
</tbody>
</table>

### Table 5. Correlation between pain intensity and the total score of the Pain Catastrophizing Scale and the dimensions of the social support and the correlation between the total score and the dimensions of the perceived social support

<table>
<thead>
<tr>
<th>Spearman correlation</th>
<th>Total PCS</th>
<th>Negative responses</th>
<th>Solicitous responses</th>
<th>Distractive responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain intensity</td>
<td>0.219</td>
<td>0.001</td>
<td>0.191</td>
<td>0.120</td>
</tr>
<tr>
<td>Pearson correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain intensity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total PCS</td>
<td>-0.162</td>
<td>0.209</td>
<td>0.342</td>
<td></td>
</tr>
<tr>
<td>Negative responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solicitous responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distractive responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PCS = Pain Catastrophizing Scale; * The correlation is significant at the 0.05 level (bilateral); ** The correlation is significant at the 0.01 level (bilateral).
Table 6. Cross-check between the cutoff value of the Pain Catastrophizing Scale and married status

<table>
<thead>
<tr>
<th>Cross-tabulation</th>
<th>Marital status: married (n=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catastrophization level</td>
<td></td>
</tr>
<tr>
<td>Clinically significant</td>
<td>4</td>
</tr>
<tr>
<td>Clinically non-significant</td>
<td>3</td>
</tr>
</tbody>
</table>

DISCUSSION

Most of the studies in this area state that the perceived social support has been identified as influential in the management of pain in chronic situations and that catastrophization negatively affects the health outcomes of people with pain. However, the relationship between the perception of social support and the catastrophizing levels in individuals with chronic knee pain is not consensual in the literature.

From the results obtained in this study, it was possible to observe that the majority of the sample presented clinically significant catastrophization (Table 3), with a greater impact on the helplessness dimension. These results are consistent with a study that investigated the associations among the catastrophizing dimensions, concluding that helplessness plays a predominant role in catastrophization in individuals with CP. Regarding the perceived social support, it can still be observed that most of the participants had a greater frequency of solicitous and distractive responses in comparison with the frequency of negative responses (Table 2). The same was seen in a study conducted by Gauthier et al. that showed a greater frequency of solicitous and distractive responses. In addition, more than half of the sample of this study referred to the social support received as frequent.

According to the literature, catastrophization is associated with the activation of the brain areas involved in response to pain, being a non-adaptive behavior aiming at the attainment of social support, capable of increasing the intensity of pain. However, the literature points out that the higher the intensity of pain, the greater the inhibition of the activated brain areas. Accordingly, the results of this study showed a positive but poor relationship between catastrophization and pain intensity, which can be explained by the significant level of pain intensity. Thus, one can conclude that the reading and interpretation of catastrophization by health professionals should be performed considering two axes: the level of social support and the quantification of the perceived pain, the latter using the analog scales frequently used in the clinical context.

In the present study, the results showed a directly proportional relationship between high catastrophization and frequent solicitous and distractive responses as well as an inversely proportional association between a high catastrophizing level and less frequent punitive responses. Individuals with more frequent solicitous and distractive responses had more catastrophization and individuals with more frequent negative responses had less catastrophization. Previous studies in this area have found a similar data trend explaining that in the context of CP, solicitous and distractive responses to pain behaviors and absence of negative responses may reinforce catastrophization. Thus, in the cases analyzed, useful social support, in which solicitous and distractive responses predominate, predisposes to a non-adaptive response to pain due to the increase in catastrophization levels. Taking into account the characteristics of the sample of this study, where more than 80% of the participants identified the significant person as a relative, the data obtained seem to reinforce that the care provided by a family member reinforces the expression of pain, answering the original question of this study. If the health professional is aware of this reality and some coping strategies and caregiver education, he/she can play a relevant role in the management of pain catastrophization.

This study had some limitations. On the one hand, since it was a cross-sectional study, it did not allow to state the directionality of the relations. On the other hand, the size of the sample and the concentration of ages in a high and narrow age group can also be a limitation to the study, not allowing to generalize the conclusions obtained for the remaining population. Also, the disparity between the number of married individuals and individuals of other marital status did not allow conclusions to be compared with the Communal Coping Model. In addition, with only self-reported data from participants about social support, it was not possible to know if the catastrophization of pain was associated with the perceived support responses or its actual provision by the significant person. Therefore, in a clinical context, it should be considered not only the patient's perspective but also of the significant person to understand the quality of the relationship between them and the level of support effectively provided in the real context of the individual's life.

CONCLUSION

In this study, the association between the perceived social support and the catastrophization of knee CP was directly proportional but low.

REFERENCES

Pain curricular guidelines for Psychologists in Brazil

RESUMO

JUSTIFICATIVA E OBJETIVOS: É amplamente reconhecido que há subtratamento da dor, em grande medida determinado pela reduzida formação acadêmica e profissional sobre o tema. O presente artigo visou propor e apresentar diretrizes curriculares em dor para psicólogos em nível de graduação e pós-graduação no Brasil.

CONTEÚDO: A partir de extensa revisão de literatura sobre o tema educação e dor, e baseados em diretrizes nacionais e internacionais, foram desenvolvidas diretrizes curriculares que contemplam a formação do psicólogo. As habilidades e competências abordadas na formação do psicólogo devem contemplar a sua natureza multifatorial, importância da avaliação multidimensional, modelos teóricos e técnicas para as intervenções e manejos da condição dolorosa e os aspectos referentes à pesquisa e aspectos éticos.

CONCLUSÃO: Os conteúdos propostos no currículo de dor para psicólogos podem e devem ser integrados considerando-se as características e demandas regionais, das instituições de ensino e a disponibilidade de profissionais habilitados para ministrá-lo, podendo ser aplicado tanto aos cursos de graduação quanto aos de pós-graduação. Entende-se que o ensino desse tema a partir dessas diretrizes curriculares, não só amplia a compreensão do psicólogo sobre o processo de saúde-doença, como aumenta suas possibilidades de atuação profissional em diversos níveis de atenção à saúde de forma multi, inter e transdisciplinar.

Descritores: Currículo, Diretrizes curriculares, Dor, Educação, Psicologia.

INTRODUCTION

Psychology as a science and profession, besides having several areas of activity, presents different theoretical models about certain phenomena, including those that are opposed. It is important to recognize that in psychology the dominant theoretical models of health until the mid-1980s were strongly based on mentalist psychology, influenced by the Cartesian assumptions that contemplate in their pillars the body/soul dichotomy (res cogitans - res extensa)\(^1\,\)\(^2\). These models propose the understanding of the body in a way analogous to the machine, in which the functioning of the components or organs determines the final product. Alterations of external origin in a given structure or organ (e.g., bacteria, viruses, accidents) or due to abnormalities of the organ determine shifts in its function. The treatments based on the perspective in question consist in identifying the cause of the dysfunction and correcting it, eliminating the pathogenic agent, and/or alleviating its symptoms. It is a dualistic and reductionist model,
the body/mind split is total, and the subject understood as the patient is nothing more than the host of the pathology or disorder. However, the evolution of the biomedical model of Cartesian nature when compared with previous explanatory models, such as the magical representations of primitive peoples up to the 2nd century, where health and disease were mediated by supernatural forces, is evidenced. For Sevalho and Sciarà, the history of representations of health and disease was always based on the relationship between the bodies of men and the environment that surrounds them in their various dimensions. Under the present perspective, the environment must be understood in its social and historical context, which is determinant in the construction of overlapping beliefs, values, and health-disease representations that contributed to the development of health practices.

The biomedical model seems to result in part from the evolution of paradigms proposed by Galen (2nd century), the contributions of Greco-Roman medicine and Arabic medicine, which transmitted some of these concepts to the Middle Ages. On the other hand, the biomedical model in force since the 16th century, where health and disease were mediated by supernatural forces, is evidenced. For Sevalho and Sciarà, the history of representations of health and disease was always based on the relationship between the bodies of men and the environment that surrounds them in their various dimensions. Under the present perspective, the environment must be understood in its social and historical context, which is determinant in the construction of overlapping beliefs, values, and health-disease representations that contributed to the development of health practices.

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On the other hand, the biomedical model undeniably left behind a legacy of positive heritages, such as technological and therapeutic advances (e.g., the microscope, isolation of bacilli and viruses, isolation of chemical substances) and allowed the treatment of several diseases, some acute diseases, some central features may be challenged as a scientific paradigm. It presents a du alistic conception, with a materialist and reductionist orientation, as well as a lack of satisfactory explanation for the etiology or development of several diseases by denying the social determination involved in the health-disease process, especially the chronic ones, a central problem in the health sphere from the mid-20th century. In addition, excessive technicality and biomedical-oriented clinical practice have contributed to the development of the impersonal character of the therapeutic relationship and disqualification or inattention to the subjective experience of the patient, aspects that significantly interfere with the patient’s painful experience and have important implications.

On the other hand, in the mentalist model, the concept of conversion and the contributions of the psychosomatics may mark a moment of psychology in the understanding of the psychic etiology of diseases. In the imaginary of most psychologists, there are still remnants of this semiological model that seeks the psychic etiology of organic diseases. From the mid-1980s these theoretical models of eminently clinical orientation began to be challenged and lost their hegemony. Another important theoretical moment of the conceptual health models is marked by the development of the biopsychosocial model proposed by Engel that emphasized the dynamic relationship between biological, psychological and social factors in the understanding of the health-disease binomial. Among the main critiques of Engel and other authors to the biomedical model, it can be highlighted the criticism of the understanding of the disease based on the causality model. The fact that the presence of a biological disorder does not always clarify the meaning of the symptoms presented by the patient. The little importance attributed to the psychological variables considered by the authors as more important than biological variables in determining the susceptibility, severity, and course of a disease. The fact that according to the biomedical model, the role assumed by the patient is little or nothing related to the pathological agent or biological disorder “causer” of the disease; the existence of evidence that treatment success is influenced by psychosocial aspects (e.g., placebo effect) and that the doctor-patient relationship affects clinical outcomes (e.g., adherence). The critics and assumptions of the biopsychosocial model opposed the objectivity and exemption of the observer in the understanding of the phenomenon, the mind-body reductionism, and dualism, dogmas proposed by the biomedical model. Concomitantly with the movement of conceptual paradigm shifts in health started in the mid1970s, Health Psychology begins to develop its identity as an area of activity. In the late 1970s, the American Psychological Association created the Health Psychology Division, which initially had four objectives: to study the causes and origins of certain diseases scientifically, to promote health, to prevent and treat diseases, promote public policies. Moreover, since the last two decades of the twentieth century, there has been a greater insertion of psychologists in the health area, particularly in hospital institutions. Thus, the 1980s can be characterized as the frame of the insertion of the psychologist in the area of health. Therefore, it would be natural that over the years a redefinition of the theoretical models, an object of study, objectives, practices, and places of attention.

Health psychology can be defined as the application of psychological knowledge and techniques to health, diseases and health care. Matarazzo defines health psychology as “… the set of scientific, educational and professional contributions that the different psychological disciplines make to the promotion and maintenance of health, to the prevention and treatment of the disease, to the identification of etiological correlates and health diagnoses, disease and related dysfunctions, improvement of the health system and the formation of a health policy.”

Regarding the objectives, health psychology practices aim to contribute to the improvement of psychological well-being and quality of life, as well as contribute to the reduction of hospital admissions, optimize the use of drugs and the adequacy of the search for services, care and health resources by users. In addition to the aspects already described, some authors emphasize the importance of distinguishing the object of study of health psychology. For Teixeira, the object of study of health psychology is the understanding of how biological, behavioral and social factors influence health and disease. Other authors point out the
construction of knowledge and practices directed to the social pro-
duction of health as the object of the study and intervention\textsuperscript{13-15}. Starting from the idea described, it is necessary to initially context-
ualize the area of action in pain, as a subspecialty of the psycholo-
gist's performance, inserted in the field of health psychology. It should also be pointed out that neurosciences have also contrib-
uted greatly to the production of evidence that has broadened the understanding of the interactions between physiological, behavioral,
cognitive, emotional and illness aspects. These advances include the discovery that the brain has an active role in the development of the painful condition, be it acute or chronic, filtering, selecting and modulating the determinant inputs\textsuperscript{16}. Such advances and discoveries have led to other relevant advances, among them the consideration of the affective-motivational and cognitive-evaluative dimensions as fundamental aspects of the pain experience, as important as the sensory-discriminative aspect\textsuperscript{17}. Finally, the notion that the pain experience is formed from the complex interaction of different brain areas related to factors such as sensations, emotions, memories, and thoughts, among some aspects of the psychological sphere\textsuperscript{18}.

Having said it, it is possible to delimit common theoretical frame-
works of Health Psychology shared by the Psychology of Pain that in terms of theoretical models has quite solid bases. And, as far as the understanding of the participation of psychological aspects in the health-disease process is concerned, the production of knowledge is also very consistent. In terms of evidence of the efficacy of psychological interventions, there are also significant results\textsuperscript{16,17} published in scientific circles of excellence. However, the applicability of this knowledge is not contemplated in the training of the psychologist during his or her graduation, as has also been occurring in other areas of practice\textsuperscript{18}.

Jensen and Turk\textsuperscript{17} argue that the topic of pain should be part of the curriculum in the training of the psychology professional, not only because of the seminal contributions made by psychologists to the current understanding of this important public health problem, but also because of the importance of identifying the instances of primary care that could benefit the users of the health system through preventive interventions that have already demonstrated effectiveness in reducing or alleviating it, as well as its impact on psychological and physical functioning. Based on these assumptions, the cited authors establish some guidelines and propose suggestions for future developments in research and clinical practice, since they credit the relevant role of psychology in improving and understanding the pain condition and its treatment. The authors further provide a model of how psychologists exert significant influence in different fields of action because different theoretical models and approaches have been developed and put into practice for the understanding and treatment of pain that are useful for psychologists working in other areas of action. Thus, the authors think that chronic pain is an important area of study that offers information on translational research for “all” psychologists.

Considering the high global prevalence of pain and that there is currently a wealth of solid knowledge about psychology on the top-
ic; that there is solid evidence on the participation of psychological factors in both their chronification and the resulting incapacity and suffering interfering in the outcome of medical interventions; that there is a lack of multidisciplinary interventions; that there is a shortage in the training of psychologists about the problem and that there is a need to propose curricular guidelines that can guide their practice; there is sufficient reason for institutions such as the Brazilian Association of Psychology Education (ABEP), the Council system - Federal Council and Regional Councils of Psychology, Educational Institutions, coordinators of psychology undergraduate courses, teachers and students, and others involved with the topic of this article understand the relevance of the minimum training in pain that seems to be of extreme interest both for the category of psychologists and for the other professional categories of health in the national panorama of the pain problem.

This article does not pretend to speak deeply about the different theoretical models of health in psychology or health concepts, but to highlight some theoretical and historical assumptions aimed at establishing curricular guidelines for the formation of the psychol-
ognist in the area of pain.

The intention to propose the curriculum in pain for psychologists was to stimulate the approach of the topic in the undergraduate and graduate degrees, providing subsidies for the integration of the topic into curriculum frameworks, as well as to stimulate reflections on the psychologist’s training and praxis in the area.

**CONTENTS**

With the purpose of proposing the curriculum in pain for psychologists, a committee was formed composed of members of the Brazilian Society for the Study of Pain (SBED), members of the Pain and Mental Health Education Committees, Board Members and specialists of remarkable knowledge in the area. The commission consulted the specialized literature through database research, identifying several relevant articles on the topic\textsuperscript{18-21}. Some IASP guidelines also served as a guiding medium\textsuperscript{22} for the achievement of the task, as well as aspects described congruent with the Core Curriculum for Professional Education in Pain\textsuperscript{23} and with the IASP Core Curriculum in Pain for Psychologists\textsuperscript{24}.

Since pain is a stressful experience associated with possible tissue damage with sensory, emotional, cognitive and social compo-
nents\textsuperscript{25} and despite the conceptual evolution of this pheno-
menon, scientific development and the expansion of clinical pain care, there are still enormous challenges for the adequate treat-
ment of pain.

To describe the advances made in the area succinctly, Sessle\textsuperscript{20} described some central aspects to be addressed:

- Recognition of the multidimensionality of pain and the importance of biopsychosocial factors in the expression and behavior of pain;
- Identification of peripheral and central nociceptive processes;
- Discovery of various endogenous neurochemical and intrinsic pathways in the brain and their nociceptor influences, transmis-
sion and behavior;
- Development of concepts and insights about the neuroplasticity of pain processing that can lead to chronification;
- Advances in the field of brain imaging and molecular biology and their applicability relevant to the field of study;
- Improvements in surgical, pharmacological, and behavioral procedures in pain management, where such improvements in-
clude developing drug delivery systems, offering a broader range
of analgesics and other drugs for patient management, use of interventional procedures, physical rehabilitation and cognitive-behavioral therapy, among some. These aspects would depend to a great extent on the reorganization of the Unified Health System (SUS) to treat pain more adequately since, in private clinics in some services, this occurs more frequently when compared to public services, especially when considered the primary and medium complexity levels of health care. The synthesis of the mentioned aspects allows glimpsing the evolution of the available resources and the great variety of procedures or resources developed in the last 30 years for the understanding and treatment of pain. However, in two other major areas still need further development: pain education for professionals working with patients with pain such as education in pain for patients themselves. The area dedicated to the development of public policies that includes adequate budgets for research subsidies and regulates the practices of health promotion and appropriate treatment directed to pain relief still needs to be further developed due to the lack of information on the cost-effectiveness of adopting psychological interventions. Pain education for health professionals at all levels has been repeatedly identified as an important step towards shifting ineffective pain management practice. Given this context, this curriculum in pain for psychologists based on the core curriculum of IASP was aimed at:

1. Provide students and psychology professionals with an overview of the multidimensional nature of pain based on clinical aspects and basic sciences;
2. Introduce strategies for the assessment and measurement of the various dimensions of pain for use in clinical practice and research;
3. Provide support for understanding the contribution of psychosocial aspects to pain, physical incapacity, functional capacity, and psychic suffering;
4. Understand the role of evidence-based therapies and psychological treatments;
5. Contribute to the development of multidisciplinary, interdisciplinary or transdisciplinary interventions in the treatment of patients with pain.

These objectives were drawn from the principle that pain treatment requires an integrated biological, psychological, behavioral and social approach, based on the understanding of the participation of psychological and social factors, as well as the central and peripheral nervous system in mediating and modulating the pain experience. To achieve the objectives, students and professionals should familiarize themselves with theoretical and intervention models based on empirical evidence, considering their epistemological aspects and social determinants, so that the provisional and fleeting nature of the concept of pain can be considered, bearing in mind that knowledge is constantly being built. Teachers and opinion makers in the area should be encouraged to adopt a critical assessment perspective for decision-making in reviewing the scientific evidence, available resources, benefits and limitations of interventions.

**CURRICULAR CONTENTS**

In proposing the contents to be addressed in a curriculum in pain for psychologists faces the challenge of contemplating the various biopsychosocial aspects of pain and its feasibility. In this sense, in a way, instead of an ideal and extensive curriculum, the purpose was to delineate minimum curricular guidelines, which do not fully satisfy the dense training that a specialist psychologist should guide in the context of the complexity of pain. To better understand these issues, or to have a glimpse in their breadth, curriculum in pain for psychologists proposed by the IASP will be presented first, citing only its axes and topics and some subtopics. Subsequently, the curriculum guidelines in pain for Brazilian psychologists that seem more appropriate at the moment will be presented.

The Multidimensional Nature of Pain axis should contemplate five topics: A. Introduction and conceptual aspects of pain, B. Neurophysiology and mechanisms of pain; C. Theories and models of pain (considering its implications for treatment); D. Ethical aspects; E. Assessment of interventions and research. The Pain Assessment and Measurement axis should contemplate the following aspects: A. Experimental pain; B. Clinical assessment of pain; C. Assessment of dimensions associated with pain; D. Epidemiological assessment; E. Psychological and behavioral assessment of the individual with chronic pain or pain associated with cancer; F. Assessment of other psychological aspects and mental disorders; G. Assessment of treatment results. The pain management axis should address: A. Motivational aspects; B. Early intervention; C. Operant treatment; D. Cognitive-behavioral treatment; E. Relaxation and Biofeedback; F. Hypnosis; G. Psychological treatment of childhood pain; H. Family therapy for chronic pain; I. Interdisciplinary interventions. The axis relating to clinical conditions should contemplate aspects such as A. Classification according to the criteria of the Statistical Manual of Mental Disorders (DSM), International Classification of Diseases (ICD) and IASP; and B. Comorbidities. All the contents described in the IASP Core Curriculum have been briefly described, considering only the central topics without describing the subtopics addressed. Based on these assumptions and contents outlined by the IASP and other previously mentioned topics, including national productions in this area, the proposal of a minimum curriculum on pain for Brazilian psychologists proposes a discipline on biopsychosocial aspects of pain, with a minimum workload of 30 hours, in order to prepare the psychology students and professionals for a better understanding of the painful phenomenon in their biopsychosocial aspects and to act effectively in a multidisciplinary team or individually in interface with the other health areas considering the human subjectivity. The proposed curriculum should be supported by a consistent basis of scientific literature that addresses the following thematic axes and contents:

- I. Multidimensional nature of pain;
- II. Multidimensional pain assessment;
- III. Pain management and interventions;
- IV. Research and ethical aspects.
Multidimensional nature of pain
The unit should contemplate the contents minimally:
a. Definition and classification of pain;
b. Epidemiology of pain;
c. Nociceptive and neuropathic mechanisms of pain;
d. Theories and models of pain;
e. The biopsychosocial perspective of pain.

Multidimensional pain assessment
The aspects addressed in this unit should address the following topics:
a. Assessment of the sensorial dimension of pain;
b. Assessment of cognitive and neuropsychological aspects of pain;
c. Assessment of emotions;
d. Assessment of mental disorders;
e. Assessment of coping strategies;
f. Assessment of quality of life and related measures;
g. Assessment of family and occupational aspects;
h. Elaboration of psychological documents.

Pain management and interventions
The contents addressed in this axis should contemplate:
a. Clinical approaches: contributions of the various evidence-based psychological approaches in the treatment of pain;
b. Interdisciplinary interventions and adherence;
c. Education of the patient with pain, relaxation techniques, meditation;
d. Palliative care;
e. Health promotion;
f. Spirituality.

Research and ethical aspects
The ethical aspects should be part of this thematic axis:
a. Rights of patients with pain;
b. Racial, ethnic and sociodemographic disparities;
c. Legal issues;
d. Ethical principles of research;
e. Research design.
The curriculum design based on these guidelines should include evidence-based topics and sub-topics, regional needs and the availability of resources and well-trained professionals.

DISCUSSION
It was decided to elaborate a shorter version of the curriculum in pain for psychologists, considering that the curriculum proposal for IASP psychologists is quite extensive and would require a great deal of time, a large number of professionals, to approach the proposed content, being little feasible before the Brazilian reality.
The proposal to build a minimum curriculum for psychologists aims to stimulate the teaching of pain and delineate its parameters in undergraduate and graduate courses. It is understood that the contents of the curriculum will be adapted according to the human resources available in the region in which it is applied and whose workload for the topic can and should be disseminated through various means, preferably supported by an institution that houses consistent knowledge to do so. The contents described in the curriculum should also be inserted in the Pain Leagues. The participation of psychologists in their professional body, stimulating the involvement of Psychology students and professionals in their organization, and according to the IASP, pain clinic offers effective care. The teams should be composed of at least 4 professionals specialized in pain treatment: a doctor, a nurse, a physical therapist and a mental health professional, or psychologist or psychiatrist, provided they have adequate training in non-pharmacological and psychotherapeutic treatments.
The contents addressed in the curriculum in pain for psychologists, as well as for other professionals, should take into account the following five principles23: 1) Every health professional has an obligation to be empathic, accessible and work with patients and family members in pain management; 2) Professional learning opportunities provide students with the understanding and appreciation of the experience of other professionals besides their own; 3) Comprehensive assessment and management of pain are multidimensional (i.e., sensory, emotional, cognitive, developmental, behavioral, spiritual, cultural) and requires the collaboration of various health professionals; 4) Effective results in the pain management occur when health professionals work with patients, relatives, community and health care providers (such as insurers and medical covenants); 5) Interprofessional education in pain is more successful when it reflects real-world practices and is integrated at the beginning of the educational experience. Once there are qualified professionals, broader educational actions can be structured, expanding the range of training repertoires and not restricted to professional training, but also active in other sectors, subsidizing partners and users of health systems. These actions may include addressing the following aspects23:
• Inform the public, government/policymakers, the media, communicate with the intent to leverage knowledge about the issue by disseminating possibilities for treatments aimed at preventing chronification;
• Synthesize new information related to pain for the general public, as well as health professionals and other public and private spheres of action;
• Develop educational materials on pain for patients, health professionals, governments/policymakers aiming at opinion-making about pain prevention and intervention;
• Collaborate and subsidize public and private entities interested in initiatives that foster the development and dissemination of scientific psychological information;
• Inform and support the mobilization of patient advocacy groups as well as support initiatives of organized patient groups for support.

CONCLUSION
The curricular proposal for pain training of the psychology professional and student can provide the development of skills and competencies to perform diagnoses that contemplate the various dimensions of the painful experience, allowing the planning and the accomplishment of interdisciplinary psychological interventions whenever possible.
ACKNOWLEDGMENTS

To Psychologist Dr. Cristiani Kobayashi, Professor at the Paulista (UNIP) and Psychologist Dr. José Aparecido da Silva, Professor of Psychology department at the University of São Paulo (USP) Ribeirão Preto for the important and valuable contributions made during the elaboration of the Guidelines for the Curriculum in Pain for Psychologists in Brazil.

REFERENCES

Difficulties faced by nurses to use pain as the fifth vital sign and the mechanisms/actions adopted: an integrative review

Dificuldades enfrentadas pela enfermagem na aplicabilidade da dor como quinto sinal vital e os mecanismos/ações adotados: revisão integrativa

Allana Fernandes Valério, Karina da Silva Fernandes, Grazielle Miranda, Fábio de Souza Terra

ABSTRACT

BACKGROUND AND OBJECTIVES: Pain was recognized as the fifth vital sign in 1996, and many nurses have difficulty in evaluating it. Since it is necessary to know the difficulties to use pain as a fifth vital sign, this study aims at acquiring a better knowledge about pain, assessment methods and strategies/actions to guarantee its control. The objective of this study was to identify and analyze, in the Brazilian and international literature, the difficulties faced by nurses to use pain as the fifth vital sign and the mechanisms/actions adopted.

CONTENTS: It is an integrative review in which the search for scientific articles was carried out in LILACS, BDENF, Scielo, Pubmed, Scopus and Web of Science databases, using the descriptors nursing, pain, and pain and vital signs management in Portuguese, English, and Spanish. The selection criteria were the period from 1995 to 2017 in the three languages mentioned. After searching and reading the articles, nine studies were included. Two categories were listed after reading the articles: 1) difficulties faced by nurses to use pain as a fifth vital sign and 2) mechanisms/actions adopted to minimize the difficulties faced by nurses to use pain as a fifth vital sign.

CONCLUSION: It was evidenced that it is important that nurses consider/assess pain as the fifth vital sign, therefore aiming at better care, which, consequently, will influence the quality of care provided, improving patient’s health and quality of life.

Keywords: Nursing, Pain, Pain management, Vital signs.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A dor foi reconhecida como quinto sinal vital em 1996 e muitos enfermeiros têm dificuldades em avaliá-la. Mediante a necessidade de conhecer as dificuldades na aplicabilidade da dor como quinto sinal vital, justifica-se este estudo com o intuito de conhecer a dor, os métodos para avaliação e as estratégias/ações para garantir seu controle. O objetivo deste estudo foi identificar e analisar, na literatura brasileira e internacional, as dificuldades enfrentadas pela enfermagem na aplicabilidade da dor como quinto sinal vital e os mecanismos/ações adotados.

CONTEÚDO: Trata-se de uma revisão integrativa em que a busca de artigos científicos foi realizada nas bases e bancos de dados: LILACS, BDENF, Scielo, Pubmed, Scopus e Web of Science. Utilizou-se os descritores enfermagem, dor, manuseio da dor e sinais vitais nos idiomas português, inglês e espanhol. Definiu-se como critérios de seleção o período de 1995 a 2017 e os três idiomas citados; e após a busca e a leitura dos artigos foram incluídos nove estudos. Com a leitura dos artigos foram elencadas duas categorias: 1) dificuldades enfrentadas pela enfermagem na aplicabilidade da dor como quinto sinal vital e 2) mecanismos/ações adotados para amenizar as dificuldades enfrentadas pela enfermagem na aplicabilidade da dor como quinto sinal vital.

CONCLUSÃO: Evidenciou-se que é necessário que os profissionais de enfermagem atentem para a importância de considerar/avaliar a dor como quinto sinal vital, visando um melhor atendimento que, consequentemente, influenciará na qualidade da assistência prestada, melhorando a saúde e a qualidade de vida do paciente.

Descritores: Dor, Enfermagem, Manuseio da dor, Sinais vitais.

INTRODUCTION

Pain was first recognized and cited as the fifth vital sign in 1996 by James Campbell (President of the American Pain Society)1. One of Campbell’s goals was to raise health professionals’ awareness about the beneficial effects of proper pain assessment and early management2.

Since the nursing team is close to the patients, as well as other health professionals, such as physicians, it is crucial that the nursing leadership recognizes their responsibility with the individual with pain, so that the nurse can systematize the nursing care and identify the appropriate interventions for pain relief. This may minimize its effects, contribute for better
evolution of the patient and, consequently, provide an effective treatment to pain\(^4\).

Once the professional is able to evaluate and record the person’s complaint, he/she can improve the care of the patient with pain\(^4\). But in the professional practice, the nursing team may face some difficulties in using pain as the fifth vital sign\(^4.5\)

Given the above, the present study is justified by the need to know the difficulties encountered by these professionals in the assessment of pain as the fifth vital sign. Also, to present the mechanisms and actions adopted in the attempt to solve or reduce these difficulties to improve the management, the control, assessment, and care for patients who complain of pain. Thus, pain assessment is of great relevance to nurses as well as to other health professionals, and it is important that they have the knowledge and implement it in health institutions.

The objective of this study was to identify and analyze, by an integrative review in the Brazilian and international literature, the difficulties faced by the nursing team to use pain as the fifth vital sign and the mechanisms and actions adopted.

**CONTENTS**

It is an integrative review of the literature, and the methodological reference was adopted to conduct this review\(^6\). This framework addresses six phases to be followed: elaboration of the guiding question, search or sampling in the literature, data collection, analysis of the studies included, discussion of the results and submission of the integrative review.

The guiding question of this survey was: what are the difficulties faced by the nursing team to use pain as the fifth vital sign? The search for scientific articles was carried out in the following databases: LILACS, BDENF (Nursing Database), Scielo, Pubmed, Scopus and Web of Science.

The Health Sciences Descriptors (DeCS) were used to locate the articles that composed the sample: nursing, pain, pain management, and vital signs in Portuguese, Spanish and English; and the MESH Database descriptors: nursing, pain, pain management, and vital signs. The Boolean operator represented by the connector term AND was used, and associations between all the selected descriptors.

As the selection criteria, the cut-off period from 1995 to 2017 was defined. Articles in Portuguese, Spanish, and English in the searched databases that answered the proposed question were selected. Publications in duplicate in the databases were excluded.

An integrative review data collection instrument was used that included variables such as study identification data (article title, periodical, authors, year, country of publication and language) and study characterization (objectives, type of study, subjects of the study, results, and conclusions)\(^7\).

The database search found 65,203 articles. There were 21 eligible articles in LILACS, 15 in Scielo, 13 in BDENF, seven in Pubmed, 14 in Scopus and 16 in Web of Science, totaling 86 eligible articles. Nine articles were in duplicate in LILACS, 15 in Scielo, 13 in BDENF, three in Scopus and eight in Web of Science, totaling 48 duplicate articles. Of these, 29 articles were excluded post-duplication and reading in full. Thus, in the critical and analytical reading, nine articles were selected, five from LILACS, one from Pubmed, and three from Scopus (Figure 1).

Table 1 shows the synthesis of the results obtained from the selected articles regarding the variables of the title of the article, periodical, authors, year and country of publication and language.

Of the articles selected, only one has been published in the last five years; five articles in the last 10 years and three articles published more than 10 years ago. Most were published in Brazil (five articles), the Portuguese language predominated (five articles), and four were described in English (Table 1).

Regarding the type of study, the predominance was quantitative research (five articles), but it is worth mentioning the development of qualitative, mixed, and theoretical reflection studies. Of the subjects evaluated in the selected studies, the nurses prevailed, but there was also the participation of nursing technicians/assistants and patients. Regarding the level of evidence of the investigations analyzed in this review, eight studies are classified as evidence level VI and one with no level, indicating studies with low evidence levels.

Two categories were listed after analyzing the results and conclusions of the articles selected: 1) difficulties faced by the nursing team to use pain as the fifth vital sign; and 2) mechanisms and actions adopted to minimize the difficulties faced by nursing in using pain as the fifth vital sign.

**Difficulties faced by nursing to use pain as the fifth vital sign**

The most reported difficulty in the articles included in this review was the lack of knowledge of the nursing team professionals. Some authors have mentioned that nurses have little knowledge of acute pain. Many said that they had a superficial knowledge in school and others report that they have never had access to this information, being something new\(^15\).

![Figure 1. Flowchart of articles identification and selection](source: Prepared by the authors.)
Another difficulty mentioned in the articles was communication among professionals. In this respect, it should be noted that in some situations, the preference of health professionals for an autonomous practice may lead to a lack of communication with nurses, thus disregarding their opinions or decisions. Communication, many times complex and ineffective between the nurse and the physician, is associated with patients undesired outcomes, specifically prolonged hospital stay and injuries resulting from delays and errors in treatment. The work overload of the nursing professionals was also a difficulty mentioned in the studied material. It should be emphasized that the nurse task is not only to assist the patient. It also includes the training and qualification of nursing professionals, the management of materials and supplies, to interface with other health and administration professionals, providing information to patients and family members, therefore promoting a multiprofessional management for the benefit of the patient. Very often, these professionals have more than one job with a high turnover in the workplace due to the low remuneration and the high level of stress.

Another difficulty found in the present review was to understand the patient’s pain. Health professionals, including the nursing staff, may, in some situations, undervalue the patients’ pain reports, thereby stimulating them to tolerate a little more pain. There is a lack of openness in listening to them and these factors interfere in the measurement and assessment of pain. Considering that pain is a unique, subjective and individual experience, it is up to the healthcare team to respect this condition, to interpret and intervene accordingly. Other complicating factors found in the articles included in this study were the lack of understanding of the intensity scale by patients and professionals, and many times, the professionals believes that the patients overestimate their pain and have difficulty to express it. Professionals also find it difficult to use evaluation scales, either due to lack of knowledge or difficulty in interpreting the pain measurement instruments. It was also noted that many patients are reluctant to talk about pain because they fear being classified as frail and grouchy.

In the context about the use of instruments to assess pain, other difficulties stood out as the lack of these instruments and the absence of notes and interventions of the nursing staff. As a result, knowledge deficits and the lack of pain measurement instruments are barriers for these professionals to provide effective care with quality to patients. Some professionals are unaware of the instruments to measure pain and, therefore, they rely on common sense, religious beliefs, and practices experienced by other professionals in the management of pain.

The absence of nursing notes related to the patient’s pain may compromise the assistance. Therefore, improving the records is a goal to be achieved. These notes are also considered a way of communication between the teams and the different shifts, enabling better assistance.

Other difficulties found in the articles include the lack of time to assess pain, failure to remember to assess pain, their saying that pain cannot be measured, not considering pain as a vital sign, and inadequate pain assessment. The lack of time of these professionals, especially of the nursing team that performs several activities during the work shift, the lack of knowledge of pain measurement techniques, and the language used when questioning pain, which may be difficult to understand by the patient, are also factors that contribute to an inadequate assessment.

According to a study, the results showed that the nurses of the studied hospital had incipient knowledge about the ways
to assess pain and did not consider pain as the fifth vital sign since their practice did not include its systematic assessment\textsuperscript{15}. Continuing with the other difficulties found in the present review, we noticed that nursing staff often provides pain management care in a limited way, not mastering the mechanism of the painful picture. Handling pain in a limited way may lead to inadequate management of the pain symptom and may cause harm to the patient. Frequently, nursing professionals rely on verbal and non-verbal reports to identify patients’ pain\textsuperscript{14}.

Mechanisms and actions adopted to minimize the difficulties faced by the nursing staff to use pain as the fifth vital sign

The most cited mechanism/action was to establish educational processes with continuous pain management courses, and, sometimes, in a state of emergency. The literature shows the need to train nurses and the entire nursing team about several topics related to professional practice. Thus, to promote education in favor of care ensuring the development of differentiated and more qualified assistance. Education is the base that may encourage the nurse to adopt approaches that are beneficial to his/her own knowledge and to the patient who is being assisted\textsuperscript{29}.

Another mechanism/action found in the articles is the reorganization of the curriculum of the graduate program, including pain and subjects alike. It should be noted that some undergraduate courses are not properly preparing future nurses for pain management, that is, the subject is superficially addressed in the academic environment. Thus, it is necessary to mobilize efforts to prepare future nursing professionals with a focus on pain as the fifth vital sign, connecting the holistic care to the development of technical and behavioral skills that recognize teamwork and interdisciplinarity\textsuperscript{30}.

Among other mechanisms/actions found in the articles, it is worth mentioning the understanding about the importance of the working relationship among health professionals, which can have a significant effect on the barriers to manage pain better. Therefore, it is necessary to improve education in communication in the undergraduate course to enrich their understanding of the role of each of them in front of the patient. In this way, it will be possible to broaden their skills to convey appropriate and important information about patient care with verbal and non-verbal communication\textsuperscript{31}.

Other points mentioned refer to realizing the importance of the multidimensional knowledge on pain management, and a more holistic approach to care. The nurse and all healthcare professionals play a fundamental role in the control of pain performing a diagnostic evaluation, intervention, monitoring of the results of the treatment and communicating the information about pain. Therefore, the theoretical and practical knowledge should be associated with the purpose of providing more qualified care to the patient with pain, that is providing humanized care\textsuperscript{10,15}.

Some articles mentioned the nurses’ participation in the implementation of pain as the fifth vital sign in their work environment as a mechanism/action to minimize these difficulties, in partnership with all health professionals and with the use of case studies. The professional should encourage the team to rethink their roles and attributions, based on the reference of care with the purpose of achieving efficiency in the nursing work\textsuperscript{32}. The nurse should also guide, perform and encourage the team about the need to carry out case studies, to evaluate the issue of pain in their professional practice so that the results of these studies are used as parameters that can be adopted in the assistance provided\textsuperscript{33}.

Finally, the mechanism/action regarding the use of scales is of great relevance for the clinical practice. It should be emphasized, therefore, that medical and nursing educational institutions should offer disciplines or courses with the objective of teaching and disseminating the use of instruments and/or scales to measure and assess pain with a humanistic perspective\textsuperscript{10}.

CONCLUSION

There are few studies in this subject, and many nurses have difficulties in using pain as the fifth vital sign, but some mechanisms/actions can be adopted by all health professionals to minimize these difficulties.

Due to the difficulties presented in this study about the use of pain as the fifth sign, it is recommended to establish a continuous education program for health professionals in the workplace. Other actions recommended are to conduct more research, to restructure the undergraduate program curriculum to include the subject of pain, and the use of a more holistic perspective in care, as well as the use of scales in the clinical practice.

There is also the need to raise the awareness of the nursing team and all health professionals about the importance of their commitment. Together with the multidisciplinary team, they can be successful in controlling and managing the patient’s pain, addressing it as the fifth vital sign, provide a humanized care that may influence the improvement of patients’ health and quality of life.

REFERENCES

Difficulties faced by nurses to use pain as the fifth vital sign and the mechanisms/actions adopted: an integrative review

Non-pharmacological therapies for postpartum analgesia: a systematic review

Terapias não farmacológicas para analgesia no pós-parto: uma revisão sistemática

Larissa Ramalho Dantas Varella Dutra\textsuperscript{1}, Alane Macatrão Pires de Holanda Araújo\textsuperscript{1}, Maria Thereza Albuquerque Barbosa Cabral Micussi\textsuperscript{1}

CONTENTS: Searches were carried out in the main databases from September to October 2017 using the following descriptors: “treatment” AND “pain” AND “postpartum”; “Treatment” AND “pain” AND “postpartum” AND “analgesics” AND “non-pharmacological”. Controlled and randomized clinical trials published between January 2007 and August 2017, in Portuguese, English, and Spanish were included. Of the 1737 studies found in the databases, 42 were selected by the title. According to the eligibility criteria, 13 studies were included. The total sample size of the studies ranged from 21 to 266. In the intervention groups, the sample ranged from 11 to 126 women who underwent cryotherapy, transcutaneous electrical stimulation, LASER, acupuncture and ear acupressure.

CONCLUSION: Intervventional practices such as transcutaneous electrical nervous stimulation and cryotherapy presented significant data relevant to the reduction of abdominal and pelvic pain. The techniques of acupuncture and ear acupressure still present inconclusive data. Despite the relief of perineal pain, laser therapy showed no statistically significant effect on pain relief when compared to the placebo group.

Keywords: Analgesics, Cesarean section, Pain, Physiotherapy.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Dor abdominal e pélvica são condições prevalentes entre as puérperas no período pós-parto. As terapias não farmacológicas nesses casos são de grande importância, tendo em vista a ausência de efeitos adversos sistémicos, tais como sonolência, irritabilidade e modificações no leite materno. O objetivo deste estudo foi identificar e avaliar a eficácia das terapias analgésicas não farmacológicas utilizadas no puerpério imediato na dor abdominal e pélvica.

CONTEÚDO: Realizou-se buscas nas principais bases de dados, no período de setembro a outubro de 2017, utilizando-se as combinações: “treatment” AND “pain” AND “postpartum”; “treatment” AND “pain” AND “postpartum” AND “analgesics” AND “non-pharmacological”. Foram includidos ensaios clínicos controlados e randomizados, publicados no período de janeiro de 2007 a agosto de 2017, nos idiomas português, inglês e espanhol. Dos 1.737 estudos encontrados nas bases de dados, 42 foram selecionados pelo título. De acordo com os critérios de elegibilidade, incluiu-se 13 estudos. O tamanho total das amostras dos estudos variou entre 21 e 266. Nos grupos com intervenção, a amostra variou entre 11 e 126 mulheres que foram submetidas a crioterapia, eletroestimulação elétrica nervosa transcutânea, LASER, acupuntura e auriculoterapia.

CONCLUSÃO: As práticas intervencionistas como a eletroestimulação elétrica nervosa transcutânea e a crioterapia apresentaram dados significativos relevantes na redução da dor abdominal e pélvica. As técnicas de acupuntura e auriculoterapia ainda apresentam dados inconclusivos. Apesar de provocar alívio da dor perineal, a laserterapia não mostrou efeito estatisticamente significativo para alívio da dor quando comparada com o grupo placebo.

Descritores: Analgesia, Cesariana, Dor, Fisioterapia.

INTRODUCTION

In the immediate puerperium, abdominal and pelvic pain are prevalent conditions among women\textsuperscript{1,2}. A cohort study of 1,288 women who underwent cesarean section and vaginal birth\textsuperscript{3}, identified a prevalence of pain of 10.9% in the first 36 hours after birth. The literature shows that women who underwent cesarean section reported 2.4 more complaints of pain compared to women undergoing vaginal birth\textsuperscript{4}. Other research conducted in Brazil showed that women who had vaginal birth were 82% less likely to experience intense pain in the immediate puerperium\textsuperscript{4}. Another study reveals that postpartum pain may persist for up to one year and is more common after cesarean section\textsuperscript{5}.
In the postpartum after a vaginal birth, perineal pain was observed due to an episiotomy or spontaneous perineal trauma that trigger a local inflammatory process with the presence of acute pain. In the cesarean section, surgical wound pain is considered the main complaint in women, which impedes functionality in the immediate puerperium. Regardless of the mode of birth and local tissue trauma, abdominal pain may also be present in most women as a result of uterine contractions.

The discomfort caused by painful condition relieves the quality of life, mobility, self-care, breastfeeding and eliminatory functions of puerperium. Pharmacological treatment is often prescribed for analgesia, favoring patient recovery, reducing maternal distress and increasing the mother’s interactions with the newborn.

Despite advances in the knowledge of pathophysiology, treatment for pain and the availability of new drug systems, it is still possible to find patients who are unable to use drugs, making this therapy unfeasible. In addition, Steen et al. reported that the use of drug alone has not been enough to promote analgesia in these women. It is possible to identify in the literature several non-pharmacological analgesic therapies used in acute processes of tissue trauma, discussing the low cost for application and the wide possibility of indications.

In view of the painful symptoms in distinct regions such as the abdomen and pelvis due to the parturition process, whether by vaginal birth or cesarean section, present in the first days of the puerperium, it is necessary to identify and assess the effectiveness of the non-pharmacological analgesic therapies used in this period, to better guide the clinical and scientific practice of health professionals working directly in obstetric care.

**CONTENTS**

This study was characterized as a systematic review, carried out in the main databases Pubmed; LILACS, Ovid EMBASE, Scielo, CAPES, IBRCS, SCOPUS, SCIENCE DIRECT and CAPES thesis bank. The searches were carried out from September to October 2017, using the following combinations: “treatment” AND “pain” AND “postpartum”; “treatment” AND “pain” AND “postpartum” AND “analgesics” AND “non-pharmacological”.

Inclusion criteria were complete articles published between January 2007 and August 2017 in the Portuguese, English and Spanish languages; studies with the methodological design of randomized controlled clinical trial presenting a quantitative analysis of the outcome pain; articles that presented in the title and abstract approach of a non-pharmacological intervention for analgesia in the immediate puerperium. In cases where the title and the abstract were not enlightening, the search for the article was carried out in full to avoid the inclusion of important studies.

The articles identified by the initial search strategy were independently assessed and covered by two authors, strictly adhering to the eligibility criteria defined in the research protocol and assessed methodologically based on the PEDro scale. Duplication studies were excluded from the databases.

The systematic review was performed according to the guidelines of the Cochrane Reviewer’s Handbook and the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analysis). The steps of the research are demonstrated in the flowchart (Figure 1), according to the methodological procedure proposed in the study.

**Selection of studies**

The results of the research are shown in figure 1. Initially, 1,737 studies were found in the databases, 13 of which were selected according to the eligibility criteria.

**Characteristics of the studies**

The total sample size of the studies ranged from 21 to 266 with the size of the intervention group ranging from 11 to 126 women. In the assessment of the methodological quality, an average score of 7 (range of 5 to 10) was verified, as shown in table 1. The resources found were cryotherapy, TENS, laser therapy, auriculotherapy and acupuncture and are described in table 2.
Table 1. Characteristics of included articles

<table>
<thead>
<tr>
<th>Authors</th>
<th>Methodological/blind design</th>
<th>Non-pharmacological resource used</th>
<th>Methodological quality (PEDro scale)</th>
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<td>Randomized controlled/unblinded clinical trial</td>
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<td>Kayman-Kose et al.\textsuperscript{19}</td>
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<td>TENS</td>
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<tr>
<td>Santos et al.\textsuperscript{23}</td>
<td>Pilot, randomized clinical trial</td>
<td>Low-level laser therapy</td>
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<tr>
<td>Santos et al.\textsuperscript{21}</td>
<td>Pilot placebo trial</td>
<td>Acupuncture</td>
<td>5</td>
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<tr>
<td>Leventhal et al.\textsuperscript{17}</td>
<td>Randomized, controlled, parallel-group/single-blind trial (evaluator)</td>
<td>Cryotherapy</td>
<td>8</td>
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<tr>
<td>Marra et al.\textsuperscript{25}</td>
<td>Pilot placebo trial</td>
<td>TENS</td>
<td>10</td>
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<tr>
<td>Morais et al.\textsuperscript{18}</td>
<td>Randomized controlled/double-blind clinical trial</td>
<td>Cryotherapy</td>
<td>9</td>
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</table>

\textsuperscript{TENS = transcutaneous electrical nerve stimulation.}

Table 2. Non-pharmacological analgesic resources for abdominal-pelvic pain relief in the immediate puerperium

<table>
<thead>
<tr>
<th>Authors</th>
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<tr>
<td>Lu et al.\textsuperscript{15}</td>
<td>To assess the effect of a cold compress on episiotomy pain reduction/ n=70.</td>
<td>The study was performed with two groups containing 35 women in each.</td>
<td>The IG underwent the application of ice pack in the perineal region with temperature ranging from 12 to 15°C, lasting from 15 to 20 minutes and encouraged to perform ice pack as many times as possible in the first 4 hours postpartum. For the next three days, they should use at least 3 times a day. All IG and CG participants received routine care, consisting of nonsteroidal anti-inflammatory and hot-seat baths after 24 hours postpartum.</td>
<td>For both groups, the pain was measured in 4 moments through BPI: 4h (immediately before the intervention), 12, 24 and 48h after birth. It was also assessed the interference of pain in the ADL, through a questionnaire developed for the research.</td>
<td>BPI: significant reduction of pain 48 h after birth in the intervention group (p=0.002). DA questionnaire: significant reduction of pain interference on daily activities (p=0.001).</td>
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</table>

<p>| Oliveira et al.\textsuperscript{16} | To compare the effect of applying ice pack for 10, 15 and 20 minutes in the perineal region in pain reduction/ n=114. | The research was done with three groups containing 35 patients each: Group underwent 10 min intervention with ice packs; Group underwent 15 min intervention with ice packs. Control group underwent 20 min of ice. | Single application of ice pack in the perineal region at -10°C between 2 and 56 hours postpartum after vaginal birth, in women with pain ≥3 assessed by visual analog scale (VAS). | The pain was measured in 4 moments through the VAS: before, immediately after, 20 minutes and 40 minutes after the intervention. | The three groups presented significant pain reduction (p=0.001), with no statistical difference between them (p=0.066). Application of 10 minutes and 15 minutes of ice pack has the same benefits in reducing pain like that of 20 minutes. |</p>
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<td>Leventhal et al.</td>
<td>To assess the effectiveness of an ice pack applied for 20 minutes to relieve perineal pain after spontaneous vaginal birth / n=114.</td>
<td>Participants included nulliparous women divided into 3 groups (n = 38 per group): Experimental group underwent intervention with ice pack in the perineum; Placebo group underwent intervention with water packs at room temperature; Control group without intervention.</td>
<td>The packages were applied in a single instance for 20 minutes in the perineal region, between 2 and 48 hours postpartum. The package consisted of a plastic bag 8cm wide by 16cm long, filled with 250mL of water. For the experimental group, the pack was placed in the freezer and removed as ice for the intervention. The ice and water packs were wrapped in 20×20 cm fine cotton fabric to avoid direct contact with the perineum.</td>
<td>The data were collected daily by 4 evaluators between 11:00 and 15:00. They were collected in the following sequence: interview, initial assessment of perineal pain, randomization, body temperature measurement, and perineal trauma length measured by the use of Perirule™. A numerical scale (zero to 10) was used for the assessment of pain.</td>
<td>The use of an ice pack in the perineum is useful in the treatment of perineal pain after vaginal birth. A comparison of mean pain at baseline and after 20 minutes showed significant pain reduction (p&lt;0.001) in the 3 groups and the experimental group had a lower average pain score compared to the control group (p=0.032).</td>
</tr>
<tr>
<td>Morais et al.</td>
<td>To assess the clinical effectiveness of cryotherapy to control pain and perineal edema after humanized vaginal birth / n=80</td>
<td>The volunteers were divided into 2 groups containing 40 volunteers in each: Experimental menatal group underwent cryotherapy; Group without cryotherapy.</td>
<td>The experimental group underwent 6 applications of ice pack crushed in the perineum region, for 20 minutes, reducing the temperature between 10 and 15 °C, with 60 minutes between the applications. The group without cryotherapy received a water pack, which did not reduce the temperature at that level, respecting the same protocol of application of the experimental group.</td>
<td>They were assessed: perineal pain and perineal edema with assessments performed immediately before and at the end of each application in each group to determine the immediate effects of the therapy and were reassessed at 24 hours postpartum to verify the late effects of cryotherapy. The combined pain assessment scale (CSAP) was used to assess pain level.</td>
<td>There was no significant difference for perineal pain and edema scores between groups with or without cryotherapy up to 24 hours after birth. There was no difference between groups when repeated measures were analyzed in all assessments, considering the median pain scores (p=0.3) and perineal edema (p=0.9). Perineal cryotherapy did not influence the amount of analgesics used (p=0.07) and no adverse effects were recorded.</td>
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<td><strong>TENS</strong></td>
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<td>Kayman-Kose et al.</td>
<td>To assess the efficiency and reliability of TENS in the treatment of uterine pain and surgical incision after birth/n = 200.</td>
<td>Participants were randomized into four groups: Cesarean section group underwent intervention with TENS switched off; Cesarean section group underwent intervention; Vaginal birth group underwent intervention with TENS switched off; Group of vaginal birth underwent intervention.</td>
<td>All participants in the intervention groups received the application of TENS immediately after birth. A frequency of 100Hz and intensity according to the patient’s sensitivity were used for the intervention groups. No pulse width and time of application were reported. For vaginal birth patients, the electrodes were positioned in the region of the lower abdomen corresponding to the fundus of the uterus. For those who underwent a cesarean section, the electrodes were positioned above and below the OW.</td>
<td>Pain was assessed before and immediately after application through VAS and VNS.</td>
<td>TENS is effective for uterine pain relief and operating wound. Pain reduction was significant for the groups that underwent TENS intervention. For cesarean section: VAS and visual numerical scale (VNS) (p&lt;0.001), For vaginal birth: VAS (p=0.022) and VNS (p=0.005).</td>
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</table>
Table 2. Non-pharmacological analgesic resources for abdominal-pelvic pain relief in the immediate puerperium – continuation

<table>
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<tr>
<td>Pitanguí et al.</td>
<td>To assess the effectiveness of low-intensity TENS and high-intensity TENS in episiotomy pain reduction / n = 33.</td>
<td>The volunteers were randomized into three groups: Group underwent intervention with TENS of 5Hz; Group underwent intervention with TENS of 100Hz; Placebo group on intervention with the device switched off.</td>
<td>The intervention was performed for all groups between 6 and 24 hours postpartum with the electrodes in parallel, close to the episiotomy, following a pudendal and femoral nerve region. The intensity of the device was programmed according to the sensitivity of the patient, and the pulse width was 100μs. The intervention lasted 30 minutes.</td>
<td>The pain was assessed through the NRS before intervention, post-intervention, 30 minutes post-intervention and 60 minutes post-intervention.</td>
<td>TENS of low and high intensity are effective in reducing perineal pain after episiotomy in the first 24 hours postpartum. Significant reduction of pain between intervention and placebo groups immediately after resting (p=0.046) and sitting (0.008). Significant reduction in pain between intervention and placebo groups at rest after 30' (p=0.001) and after 60' (p=0.001).</td>
</tr>
<tr>
<td>Olsen et al.</td>
<td>To compare the effects of low and high-intensity high-frequency TENS in reducing abdominal pain caused by uterine contractions during breastfeeding/n = 21.</td>
<td>Participants were randomized into two groups: Group underwent intervention with TENS using intensity less than 50mA performed in 13 volunteers; Group underwent intervention with TENS using intensity of 10 to 15mA in eight volunteers.</td>
<td>The intervention was performed in all groups 24 hours after vaginal birth without complications. The device has been programmed for a frequency of 70 to 100Hz and a pulse width of 0.2ms. For the high-intensity group, the application was performed for 1 'and repeated if there was still a report of pain. For the low-intensity group, the time of therapy was not reported.</td>
<td>The assessment of the pain was done through VAS before and after the application of TENS.</td>
<td>High-intensity high-frequency TENS had a better outcome in reducing pain. The high-intensity group presented a pain decline of 49 (CI = 66.5 - 33.2), and the low-intensity group had a decline of 21 (CI = 39.0 - 20.0).</td>
</tr>
<tr>
<td>Pitanguí et al.</td>
<td>To assess the effectiveness of high-frequency TENS as a pain relief resource for postpartum women with episiotomy/n=40.</td>
<td>The volunteers were randomized into two groups with 20 participants each: Group underwent intervention with TENS with high frequency; Group without intervention.</td>
<td>All were between 6 and 24 hours after a vaginal birth and had a mediolateral episiotomy.</td>
<td>The pain was assessed through NRS before initiating the intervention, 60 minutes post-intervention and 120 minutes post-intervention. MPQ and PRI were also used at baseline and 60 minutes after the current.</td>
<td>The high-frequency TENS showed good results in the reduction of perineal pain in the postpartum period with episiotomy. For MPQ, PRI and NRS assessment, a significant decrease (p &lt;0.001) in the scores in the intervention group.</td>
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<tr>
<td>Lima et al.</td>
<td>To assess the analgesic effect of TENS modulation in high (100Hz) and low (4Hz) frequency in post-cesarean section pain / n = 34.</td>
<td>The patients were randomly assigned, in three treatment groups: G100: underwent TENS of 100Hz; G4: underwent TENS of 4Hz; GP: placebo group underwent TENS switched off.</td>
<td>The participants were placed in dorsal decubitus position and remained in rest throughout the experiment so that there were no interferences that interfered in the results. TENS was applied by medium of two channels with 4 siliconized rubber electrodes (5x3 cm) for individual use located 1 cm above and below the surgical incision, a pulse duration of 100 μs and intensity according to the sensorial threshold of each patient. The total TENS application time was 30 minutes and performed in a single session.</td>
<td>Pain intensity was assessed by NRS before, immediately after and at 20-minute intervals (20, 40 and 60') after the electrostimulation period. The initial assessment was performed respecting a minimum interval of 8 hours postpartum to avoid acute interferences of postanesthetic recovery.</td>
<td>The results demonstrated a significant decrease of the NRS in the G100 only in relation to the pre-treatment condition (p&lt;0.05). In the post-treatment intervals, the G100 presented a significant decrease in pain during all the intervals (p&lt;0.05). G4 showed a significant decrease only in the 40 'and 60' intervals; and GP, only in the range of 60' (p&lt;0.05). TENS modulation at a high pulse rate had a greater analgesic effect than low-frequency TENS in post-cesarean section, postpartum women.</td>
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### Table 2. Non-pharmacological analgesic resources for abdominal pelvic pain relief in the immediate puerperium – continuation

<table>
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<td><strong>LASER</strong></td>
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<tr>
<td>Santos et al. 24</td>
<td>To assess the efficiency of low-intensity laser in the treatment of perineal pain after episiotomy (n=114).</td>
<td>Participants were randomized into three groups with 38 participants each: Group underwent intervention with LASER of 780nm wavelength; Group undergoing laser intervention with 660nm wavelength; Group underwent intervention with LASER switched off.</td>
<td>All volunteers were in the range of 6 to 56 hours after vaginal birth with mediolateral episiotomy and had pain greater than 3 on VAS. The device used in the volunteers underwent the intervention was programmed at a dose of 8.8J/cm² a spot of 0.04 cm², power of 35mW, energy per point of 0.35 and applied punctually in the upper, the middle and lower point of the episiotomy for 10 seconds per application point.</td>
<td>The pain was assessed before, immediately after 3 and 30 minutes after the application through VAS.</td>
<td>The low-intensity laser was not efficient in mediolateral episiotomy pain reduction. There was a reduction in pain in the intervention groups 30 and 60 minutes after LASER application, but when compared to placebo, no difference was observed (p=0.234 and p=0.111, respectively).</td>
</tr>
<tr>
<td>Santos et al. 23</td>
<td>To assess the effects of low-intensity laser therapy for perineal pain and healing after episiotomy / n=52.</td>
<td>Participants were randomized into two groups with 26 participants each: LASER intervention group with 660nm wavelength; Group underwent intervention with LASER switched off;</td>
<td>All underwent vaginal birth with mediolateral episiotomy. The LASER application was performed in three moments: up to 2 hours after birth, between 20 and 24 hours after birth and between 40 and 48 hours postpartum. The device used in the volunteers underwent the intervention was programmed for a dose of 3.8J/cm², a spot of 0.04 cm², the power of 15mW energy per point of 0.15 and applied punctually in the episiotomy for 10 seconds per application point.</td>
<td>The pain assessment was done through VAS before and after each session.</td>
<td>LASER did not reduce pain in the episiotomy. Up to 2 h after birth: p=0.999 Between 20 and 24 hours postpartum: p=0.758 Between 40 and 48 hours postpartum: p=0.662.</td>
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<td>Auriculotherapy and Acupuncture</td>
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<td>Kwan and Li 14</td>
<td>To assess the effects of auricle pressure in reducing acute perineal pain in the first 48 hours postpartum / n=266.</td>
<td>Participants were randomized into two groups: Intervention group with 126 women; Group without intervention with 130 women.</td>
<td>Participants could take pain medication (500mg paracetamol/4 hours) if necessary. In the two groups, the following stimulation points were chosen: “Apex of the auricle, Anus, external genital organs, Shenmen.” The volunteers should press the points for 30”, 1x / 4h. In the intervention group, a seed adhesive was used while in the control group a seedless adhesive was used.</td>
<td>The pain was assessed through VDPS and VAS: 12, 24 and 36 h after birth. Also, the average consumption of paracetamol was analyzed.</td>
<td>Apparently, there are no positive results regarding the use of auricle pressure. No difference in pain was observed through AVA in the first two assessments (p=0.11, p=0.30, respectively). In the third assessment, there was pain difference between the groups (p=0.02). In the analysis of pain through VDPS no difference was observed between the groups at any time (p=0.49, p=0.27, p=0.06). As for paracetamol consumption (p=0.13, p=0.42, p=0.37).</td>
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Non-pharmacological resource

1) Transcutaneous electrical nerve stimulation - TENS

Of the studies found, five (38.4%) treated TENS as an effective therapy for the abdominal and pelvic pain relief in postpartum women\(^{13,19-22}\). Of these, three analyzed abdominal pain, and post-cesarean section wound\(^{13,19,22}\) and two in an episiotomy region.\(^{20,21}\)

Two of these studies assessed the effectiveness of TENS at high frequency\(^{19,21}\). One\(^{13}\) also assessed the high frequency comparing different intensities. The other two studies\(^{20,22}\) compared the effectiveness of high and low frequency for pain reduction. Table 2 shows the protocols used in each study. From these studies it is evidenced that the TENS presents a satisfactory result in the control of the pain in postpartum women, being the two intensities able to produce benefits in the reduction of the painful condition.

It is possible to find described in the literature different types of TENS, for example conventional, burst, acupuncture, and brief-intense. According to the frequency, high (10 to 200Hz), or low (2 to 4Hz), its application is indicated for acute and chronic pain, respectively\(^{26}\).

The use of high-frequency TENS is based on the pain gate theory proposed by Melzack and Wall in 1965\(^{27}\). This theory explains that the electrical stimulus emitted by the device causes excitation of the A\(\beta\)-afferent nerve fibers in the posterior horn of the spinal cord and it rapidly inhibits the transmissions of painful impulses by the nerve conductors of pain through the spinal cord. Therefore, its indication for the management of acute and postoperative pain may be justified, as the higher the intensity of the TENS current, the more units of receptor fibers will be recruited. In turn, the use of low-frequency TENS acts on the stimulation of the release of endogenous opioids by the brain to promote the analgesic effect. In this case, it is more recommended for chronic painful condition\(^{28}\).

In the literature can be found a study comparing the application of TENS in the immediate postoperative period of gynecological surgery with the use of opioids. In this study\(^{29}\), women were randomly divided into two groups, in which they underwent pain reduction intervention after surgery. One group received high-frequency TENS and the other group, opioids. Both groups presented satisfactory pain relief results (p<0.001), indicating that non-pharmacological therapy is an excellent alternative for these patients, minimizing the adverse and systemic effects of pharmacological resources.

2) Laser therapy

Two studies (15.5%) investigated low-level laser therapy (LLLT) for analgesia in an episiotomy region in postpartum women. In the intragroup assessment, a statistical difference was found before and after the intervention. However, no difference was found in the comparison between the intervention group and placebo\(^{23,24}\).

It is possible that this difference in results occurred due to the protocols used in the studies in question. The first published study\(^{23}\) was a pilot used as the basis for the second article\(^{25}\). Santos et al.\(^{24}\) presented results that did not provide accurate information on the effect of LLLT on episiotomy using parameters with a wavelength of 660nm, a dose of 3.8J/cm\(^2\) in three sessions with a range of 20 to 24 hours between them. The authors concluded that the effect might not have occurred due to the application of laser therapy since the control group also presented significant results. Subsequently, one more group was added to the study using a dosage of 8.8J/cm\(^2\); the groups with different wavelengths (660nm and 780nm) were compared to the placebo.
group\textsuperscript{21}. The authors identified that regardless of wavelength applied the primary outcome was not different between the groups. It is believed that the result can be justified by the natural process of tissue recovery favoring the improvement of phlogistic signs/pain, as well as by the Hawthorne phenomenon, in which there is a change in the patient's perception due to the special attention given by the team at the time of research\textsuperscript{23,24}.

Despite the statistically insignificant results of laser therapy in the reduction of pain in perineal trauma of postpartum women presented by the studies\textsuperscript{23-24}, there is an article\textsuperscript{25} that already shows promising results, indicating the effectiveness of laser therapy in perineal recovery and reduction of acute pain. An experimental study\textsuperscript{26} demonstrated the analgesic effect after the application of laser therapy. The application of LLLT is expected to promote changes in cell membrane permeability, wound healing, muscle relaxation, immune system modulation, and nerve regeneration. In addition, it is also expected that in the intracellular environment a state of cellular hyperpolarization occurs that may inhibit the transmission of painful stimuli to the central nervous system\textsuperscript{31}. As a consequence of the change of polarity added to the release of histamine, serotonin, bradykinin and prostaglandins, there will be a reduction of the inflammatory process and pain relief\textsuperscript{32}. For such effects to occur, wavelengths between 600 and 1000nm have been suggested and powers of 1mW to 5W/cm\textsuperscript{2}. The authors also emphasize that very low (2.5 W/cm\textsuperscript{2}) or very high (25 W/cm\textsuperscript{2}) potencies can cause inverse effects\textsuperscript{33}.

Few studies address LLLT in the immediate puerperium phase with the aim of analgesia. Thus, it is prudent to suggest new studies with different wavelengths, time and duration of application, dose and potency, before establishing any guidelines on the effectiveness of LASER in the treatment of pain in the region of episiotomy in postpartum women.

3) Cryotherapy

Of the studies on analgesic resources for postpartum women, four (30.7\%) investigated the use of cryotherapy for the perineal pain relief after vaginal birth. Of these, three\textsuperscript{15-18} presented statistically significant results of the analgesic effect whereas only one showed the non-effectiveness of the use of ice for the pain relief in postpartum women\textsuperscript{18}.

The divergence of the result found by Morais et al.\textsuperscript{18} in relation to the other studies is explained throughout the study. The authors emphasized that initially, the patients presented very low levels of pain due to the absence of tissue injury, which may have interfered in the final statistical result. The other studies\textsuperscript{15-17} assessed patients who presented some degree of perineal lesion and, consequently, developed an inflammatory picture, generating initially greater pain scores.

The application of cryotherapy varied among the studies. Three used ice pack\textsuperscript{16-18}, and one applied ice packs with temperature ranging between 12°C and 15°C\textsuperscript{21}. All articles applied cryotherapy in the perineal region. Regarding the time of therapy, three\textsuperscript{15,17,18} studies used 20 minutes of application and one\textsuperscript{16} compared different times: 10’, 15’ and 20’. Oliveira et al.\textsuperscript{16} identified that there was no difference in the effects caused by cryotherapy with the time of application of 10’, 15’ and 20’, that is, from the 10’ of application, the effect was the same for the three groups. However, it is understood that the 20’ time is well established in the literature, bringing the expected benefits of cryotherapy over perineal pain\textsuperscript{15,17,18}.

Regarding the frequency of application, in the studies by Lu et al.\textsuperscript{15} and Morais et al.\textsuperscript{18} participants were encouraged to apply compresses at least 3 times a day. The objective of these studies was to investigate the long-term effect, and there are divergences between the results, unlike the studies by Leventhal et al.\textsuperscript{17} and Oliveira et al.\textsuperscript{16} that investigated the immediate effect and found significant results for pain relief after the achievement of a single application. Similar to the study by Morais et al.\textsuperscript{18}, Lu et al.\textsuperscript{17} also assessed the patient 24 hours after birth and found no significant reduction of pain at that time, however, they demonstrated a good result 48h after birth. It is known that in the first hours after the tissue injury the inflammatory process is higher, causing an increase in local metabolism, the release of inflammatory factors and a greater painful condition\textsuperscript{16}. In this context, despite decreasing the local metabolism, it is believed that the single application of cryotherapy, is not able to decrease the pain after 24 hours of birth. However, the use of several compresses in the first few hours postpartum\textsuperscript{15-18} may lead to an increase in the patient’s pain threshold due to a decrease in metabolism and a decrease in the sensitivity of nerve endings\textsuperscript{34}, a fact that justifies long-term analgesia (48 hours).

According to the review performed by Malanga, Yan and Stark\textsuperscript{35}, cryotherapy acts in the reduction of pain after injury by several mechanisms of action. Initially, it promotes a decrease in the local temperature, provokes the sympathetic reflex of vasoconstriction with consequent diminution of the local circulation that culminates with the reduction of the inflammatory agents and reduction of the secondary hypoxia. The local temperature reduction also causes localized anesthesia through a neuropraxia induced by a decrease in the activation threshold of the nociceptors and a decrease in the conduction velocity of the pain signal; a good result of cryotherapy for postoperative.

Based on the data described, it is evident that cryotherapy provides good results in the momentary relief of perineal pain in the immediate postpartum period and is, therefore, a good resource to be used in the treatment of puerperal pain. It is still important to note that the compresses should be made for approximately 20 minutes and repeated times throughout the day, given their local physiological effect.

4) Acupuncture and Auriculotherapy

Two studies (15.3\%) analyzed the effects of Chinese medicine techniques, acupuncture\textsuperscript{33} and auriculotherapy\textsuperscript{32} on reducing pain in postpartum women. According to the review by Murakami, Fox and Dijkers\textsuperscript{36} auriculotherapy has shown good immediate results in reducing pain, has few adverse effects, is quick and easy to apply, and is a low-cost therapy that must, therefore, be stimulated for use and research by health professionals.

In the study of Kwan and Li\textsuperscript{14}, after an adjusted analysis of the data, a significant result of auriculotherapy was observed in the reduction of pain 36h postpartum, but there was no reduction after 12 and 24h. The study data are not conclusive about the effectiveness of auriculotherapy in the treatment of pain. No
A statistical difference was found regarding paracetamol consumption and pain analysis through the Verbal Descriptive Pain Scale (VPDS) in the placebo and intervention groups. Thus, more studies on the application of auriculotherapy to postpartum women are recommended.

Auriculotherapy is a method of treatment of physical and psychosomatic dysfunctions that acts by stimulating specific points in the ear, promoting repercussions on neurological reflexes, neurotransmitters, cytokines, immune system, and inflammatory processes. According to a review, the technique has good results in pain control in different situations; however, analgesia after operative procedures still has a controversial effect. This data corroborates the study by Kwan and Li that argues that vaginal birth with episiotomy can be considered a type of surgical intervention. Regarding acupuncture, one study used the wrist-ankle region to treat perineal pain after vaginal birth with episiotomy, and the results were significant. The stimuli were performed in region 1 of the right ankle, local to pain located in the lower part of the body. The study presented a significant result in the reduction of perineal pain assessed through the reduction of oral analgesic use. Despite the positive result, the study did not present quantitative data on pain in the perineal region, the primary outcome of the study. The use of analgesic during the puerperal period may be associated with other complaints such as uterine or breast pain. Thus, although the study presents good results, it is prudent to perform further studies analyzing the effect of the technique on perineal pain.

CONCLUSION

Several non-pharmacological analgesic resources/methods used in postpartum woman care in the immediate postpartum period were assessed in this systematic review. Of these, only TENS and cryotherapy presented well-established data regarding the significant effect on the reduction of abdominal/pelvic pain in postpartum women.

REFERENCES

Adherence to fibromyalgia treatment: challenges and impact on the quality of life

José Oswaldo de Oliveira Júnior 1, Júlia Villegas Campos Ramos 2

ABSTRACT

BACKGROUND AND OBJECTIVES: Fibromyalgia is a chronic and idiopathic syndrome, characterized by a general distributed pain, more prevalent in women. Its pathophysiology remains unclear. Its chronicity implies an exclusively symptomatic treatment, often unsatisfactory. The lack of adherence to the established treatment is quite common. The objective of this study is to present a review of the adherence to the fibromyalgia syndrome treatment.

CONTENTS: The concept of adherence to the fibromyalgia syndrome treatment, its classification, the identification of its measurement options, and the detection of its causes are detailed, revised and updated.

CONCLUSION: The review of the literature regarding the adherence to the fibromyalgia syndrome treatment points to a large number of nonconformity of prescription, in general with the prevalence of the adoption of the reduction of the recommended dose and the interruption of the treatment, over possible overdoses and self-medication. The study of the causes that led to the non-adherence to the treatment elects the characteristics of the syndrome as the great villain for its occurrence. However, other associated factors such as the age of the subject with fibromyalgia, the intensity of the pain, the established polypharmacy, the quality of the doctor-patient relationship, and the socioeconomic variables were also listed. The patient’s quality of life was always higher in patients with higher adherence to treatment and persistence. Patients’ quality of life indices may indicate the level of commitment to treatment adherence, and vice versa.

Keywords: Adherence, Compliance, Fibromyalgia, Nonpharmacologic treatment, Persistence, Pharmacologic treatment, Therapeutic conformity.

INTRODUCTION

Fibromyalgia (FM) is a chronic pain syndrome with complex, multifactorial, and yet not fully understood etiopathogenesis. The most striking FM feature is generalized musculoskeletal pain, associated with a sleep disorder, fatigue, cognitive alterations, and psychiatric disorders. FM prevalence ranges from 0.2 to 6.6% in the general population, with women more affected than men, in a ratio of 9:1, being more frequent in the age group between 40 and 55 years. The prevalence of psychiatric disorders, especially depression, among FM patients ranges from 49 to 80%.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A fibromialgia é uma síndrome crônica e idiopática, caracterizada por queixa dolorosa de distribuição generalizada, mais prevalente em mulheres. A sua fisiopatologia continua não totalmente esclarecida. Sua cronicidade implica em tratamento exclusivamente sintomático e muitas vezes insatisfatório. A falta de adesão ao tratamento instituído é bastante comum. O objetivo deste estudo foi apresentar uma revisão sobre a adesão do tratamento da síndrome fibromialgica.

CONTEÚDO: O conceito de adesão ao tratamento da síndrome fibromialgica, sua classificação, a identificação das opções de sua mensuração, e a detecção de suas causas são detalhados, revisados e atualizados.

CONCLUSÃO: A revisão da literatura referente à adesão ao tratamento da síndrome fibromialgica mostra um grande contingente de inconformidade de prescrição, em geral predominando a adoção da redução da dose orientada e a interrupção do próprio tratamento, sobre possíveis sobredoses e automedicações. O estudo das causas que levaram à falta de adesão ao tratamento elege as características da própria síndrome como a grande vilã para sua ocorrência; embora, tenham sido também elencados outros fatores associados como a idade do portador da síndrome fibromialgica, a intensidade da dor, a polifarmácia instituída, a qualidade da relação médico-paciente, e as variáveis socioeconômicas. A qualidade de vida dos pacientes sempre foi maior naqueles cuja adesão e persistência ao tratamento foram maiores. Os índices de qualidade vida dos pacientes podem indicar o nível de comprometimento com a adesão ao tratamento, e vice-versa.

Descritores: Adesão, Conformidade, Conformidade terapêutica, Fibromialgia, Persistência, Tratamento farmacológico, Tratamento não farmacológico.
Treatment adherence of fibromyalgia syndrome (FMS) can be defined as the extent to which the patient's behavior is in line with the recommendations of the health care professional (or group of professionals) regarding drug use, a proper diet up or changes in lifestyle. Such recommendations aim at the remission or control of the syndrome, and the consensual obedience can make the difference between success or failure.

THE CONCEPT OF ADHERENCE AND ITS EVOLUTION

Research and discussion on adherence have evolved from a one-dimensional approach limited to the follow-up of a pharmacological regimen, to the understanding of the factors involved in the treatment success or failure. The focus has been extended beyond the patient. Nowadays, it is widely recognized that several factors mediate the treatment of a disease or health condition.

The adherence model proposed by the World Health Organization (WHO) illustrates the participation of some factors in the adherence process, namely aspects related to the health care team, factors related to the treatment itself, aspects related to the disease, the patient and socioeconomic factors.

Fibromyalgia characteristics and the importance symptoms refractiveness

Aspects related to fibromyalgia are particularly crucial factors in adherence to its treatment.

The acceptance of the diagnosis of a non-curable disease is far from tacit and is often associated with the denial of both the disease and its treatment. Even in the medical field, there are still questions about considering FM as an isolated entity. The remarkable FM prevalence in 2% of the world population, associated with the suffering attributed to it, to its pathophysiology not yet completely revealed, to the prognosis regarding the possibility of cure, and to the unsatisfactory results in the control of its symptoms, especially painful ones.

The remarkable FM prevalence in 2% of the world population, associated with the suffering attributed to it, to its pathophysiology not yet completely revealed, to the prognosis regarding the possibility of cure, and to the unsatisfactory results in the control of its symptoms, especially painful ones, make it a huge challenge when it comes to treatment adherence.

Adherence to pharmacological treatment in fibromyalgia

Inadequate adherence and persistence in pharmacological treatment are old problems. When the patient fails faithful obedience and adherence to the prescribed dosage, changes may occur, consequently changing the relationship between probable benefits and respective risks. In FM, there is a large gap to be shared with the patient about his/her diagnosis, illness, possible risks, and benefits on whether or not to adhere to a proposed treatment. Patient has in mind that whatever is the treatment, pharmacological or not, he will not be cured; and moreover, although making him suffer, it will not kill him: “He will die with it, not because of it”. In this scenario, the possible benefits and risks inherent to adherence seem to lose relevance from the point of view of the treatment target. It is important to invest in the education of the medical care team to clarify each prescribed item. An example is an orientation not to use a particular drug which, although providing identifiable analgesia, may pose a risk to the integrity of vital organs.

Several studies agree that partial or total failure of adherence to pharmacological prescription regimes results in increased morbidity and mortality due to a wide variety of diseases, as well as increased costs involved with the respective medical care.

Measuring the adherence to the fibromyalgia treatment by patients

A number of non-compliance modalities have been compiled, among them, the lack of pharmacological compliance (also known as lack of adherence to pharmacotherapy), which corresponds to the disobedience to the recommendations made by the prescriber regarding time, dose and/or frequency of one or a set of drugs. Thus, on the other hand, pharmacological adherence can be defined as “the extent to which a patient respects the use (by the expressly oriented route) of the drug (without substitutions, even if by similarity), at the recommended dose and in the respective time interval prescribed”.

Adherence, or compliance, can be measured over a period and reported as a percentage. The definition is operationalized in prospective dose assessments and relates them to what was originally prescribed. The standardization of compliance is prepared for a patient whose prescription conceives the once-daily administration of the drug.

Electronic monitoring provides sufficient detail to calculate the number of doses taken daily, as well as whether doses have been taken at appropriate intervals (e.g., approximately 12 hours for a dose twice a day). Additional details can be obtained, such as the number of days with extra doses or the number of days in which none of them were administered.

Persistence in adherence

Another non-compliance modality is the abandonment of a particular treatment before the end of the prescribed period. So, the persistence of pharmacological adherence can be defined as “the time duration from the beginning of the therapy to its discontinuation”.

The continuity in taking any amount of drug is consistent with the definition of persistence. This definition can be operationalized in prospective and retrospective assessments, determining the beginning of the treatment (or a point in time during a chronic treatment), and another point in the timeline defined as the end of the observation period.

Patients with FM can receive drugs whose stable analgesic effects are expected only after a relatively long period of administration. The therapeutic outcome obtained by these drugs should consider the persistence of treatment adherence.
Often, patients need clarification about the drug and are unaware of the elapsed time between start taking the drug and the analgesic effect. After a short period without the desired relief, they end up quitting the treatment. The history data provided by those patients in future medical visits erroneously reports such drugs as ineffective, not being considered for further testing. Persistence, by definition, is reported as a continuous variable in terms of the number of days for which the therapy was available. Persistence can also be reported as a dichotomous variable measured at the end of a predefined period (e.g., 12 months), considering patients as “persistent” or “non-persistent”.

Definitions and standardizations for persistence assessment and treatment adherence
Clinical results of treatment are affected not only by how patients take their drugs but also by the period they are taken. Thus, adherence from one side and persistence from another should be defined and measured separately to characterize the behavior of comprehensively taking a prescribed drug. The adherence and persistence approaches provide a richer understanding of behavior versus drug treatment. The adoption of the proposed definitions focuses on the promotion of consistent terminology and methodology that may assist the conduct, analysis, and interpretation of scientific data collected in studies on pharmacological adherence.

Definitions focus on future standardization in surveys to allow comparisons between reports and use of adherence and persistence data for drug-economic analyzes. Standardization may contribute to future health policy decisions based on consistent evidence. The definition is operationalized in retrospective assessments such as the number of doses dispensed in relation to the dispensing period. Conformity with prescription is assumed when the drug is dispensed.

Advantages of supervised home-administration regimens
Compliance with drug regimens and follow-up visits of psychiatric patients was evaluated, and the criteria for good adherence were met in less than one-third of them. Adherence was significantly related to the positive belief about the drug usefulness, treatment duration shorter than five years, pharmacological dosage once or twice a day and drug supervision at home. When those with low adherence received the same dosage regimen, home supervision and when they received convincing counseling about the drug usefulness and possible efficacy, there was an improvement in adherence and a consequent reduction in the rate of relapse, significantly lower than in the controlled group at the end of one-year follow-up. The importance of family support and understanding the patients’ cultural histories to ensure compliance were highlighted.

The probable prognosis of the treated disease or syndrome and adherence
Even in diseases with potentially deadly outcomes such as cancer, there is a significant non-compliance rate of the prescription, especially when the patient administers the drug. Treatment duration, with no fixed time as in the case of FM, seems to have significant influence for the discontinuation or lack of adherence. The non-compliance transcends the limit of the categories of diseases and age group. However, this is more prevalent during adolescence, when the transition process from parents’ dependence to autonomy produces confusion over who is responsible for administering the drug.

Non-compliance may result in misjudgment of the efficacy of a drug or regimen that may require additional testing, dose modification, treatment course, and hospitalization. Currently, in oncology referral centers, such as the AC Camargo Cancer Center and the MD Anderson Cancer Center, a large percentage of pediatric cancer patients are treated according to research protocols. In these scenarios, non-conformity may result in erroneous or inconsistent discoveries, potentially affecting the survey results and consequently its conclusions.

With the availability of venous accesses and sophisticated but easy-to-operate pumps, it is increasingly possible to administer parenteral drugs at home. This adds a new dimension to self-administration that previously involved primarily oral therapy.

Several factors relating to patient, disease, health providers and treatment characteristics determine how well a given regimen is followed. As it involves a significant number of determinants, it is not often possible to identify non-compliant patients or to predict the patient’s level of adherence to treatment with any degree of certainty. The main factors in any successful therapy include the availability of effective drugs and adherence to the therapeutic regimen.

With the advent of more successful treatments for cancer in childhood and adolescence, the compliance factor is becoming more important because today, therapy has a curative rather than palliative intent. However, this does not apply to FM, where therapies remain exclusively symptomatic. The availability of questionnaires, tests, and devices can help, to some degree, to examine the patient’s degree of adherence.

Characteristics of the treated disease or syndrome and adherence
Family and social support, individualized programs, reminders to reduce forgetfulness, personalized needs assessment and education can reduce non-compliance. Compliance is a complex and multifaceted issue that is still poorly understood and requires additional research.

Regarding the aspects related to the disease, it is possible to highlight the symptoms magnitude, the disease characteristics and its evolution, chronicity and the impact on the patient’s life. Regarding chronic pain, a recent literature review showed that the rate of non-adherence to prescriptions for chronic pain ranged from 8 to 62%. It is in this universe that FMS falls. Underuse was more frequent than overuse and was associated with active coping strategies and self-medication in most studies. Age, pain intensity, dosage, polypharmacy, quality
of the physician-patient relationship, the class of drugs pre-
scribed and the perception of the need for a continuous anal-
gesic drug were factors associated with non-adherence19. Socioeconomic variables also interfere with adherence. Among the several factors, we can list the cost of the drug, health policies, access to health service, waiting time versus service time, gender, educational level, and social class. Factors associated to the patient include lifestyle, social network, family context, age group, emotional state, associated diseases, cognitive aspects (e.g., dysfunctional beliefs and disbeliefs) to previous experience with the disease. Regarding beliefs, many patients resist the use of opioids, antidepressants, and anticonvulsants by the associated myths or stigmas.

The aspects related to the healthcare team are the team-patient relationship, communication, professionals’ beliefs, among others. This myriad of elements clearly indicates the complexity of the adherence process. Regarding treatment, its positive or undesirable effects, access to treatment, and complex therapeutic schemes are important factors to be highlighted.

The communication skills of the physician and the healthcare team are essential in this context. The operation and effects of the drug or procedure should be clearly explained and the prescriptions clear and legible.

Despite the importance of the theme, and although theoretical discussions have been taking place since the 1950s, the subject is little investigated14 and it is even less investigated when it comes specifically to FM, whose consensus and unified terminological adoption occurred only in the late 1980s.

Chronic pain is a public health problem and is classified as a difficult-to-control pain, characterized by frequent treatment failure. In the clinical context of the patients with FMS it is possible to more easily perceive some elements, among them the reduced effect of the drug, in many cases not occurring the complete remission of the symptoms, the adverse effects (e.g. drowsiness, loss of libido, numbness, constipation), and its high cost17.

Impact on the quality of life of patients with fibromyalgia

Patients with FM have a tremendous negative impact on their quality of life (QoL), they feel a high degree of disability, even in daily tasks. This increase or predisposes to symptoms of depression and anxiety, which in turn worsens pain and closes the chronicity cycle. This impact on QoL is directly related to the general economic cost of the disease. Compared to other chronic diseases, FM has been shown as a condition that mostly demands health care. The high costs generated by this condition are indirect. They involve loss of productivity, decrease in the number of hours and days worked, unemployment and early withdrawal from the labor market. Direct and indirect costs increase according to the severity of the disease15.

Adherence and persistence to the pharmacological treatment of fibromyalgia

FM treatment includes non-pharmacological and pharmacological approach. The non-pharmacological approach consists of a physical activity program and, in those patients with mood disorder, or without coping strategies, the cognitive-behavioral therapy13. Pharmacological treatment includes pain moderators such as selective serotonin reuptake inhibitor antidepressants (alone) and so-called dual (serotonin and noradrenaline), non-selective tricyclic agents (such as amitriptyline and cyclobenzaprine) and anticonvulsant agents (such as pregabalin and gabapentin)13,19.

Adherence to FM pharmacological treatment is considered low worldwide, and varies among the different drugs, with tricyclic agents being the most rapidly abandoned, and adherence was higher in the group that received more selective antidepressants18,20,22. Among the more selective, noradrenaline and serotonin reuptake inhibitors, also known as dual inhibitors, similar to tricyclics, produce central analgesia acting on descending inhibitory nerve pathways. In general, duals have a better tolerability and adverse effects profile than tricyclics, which may explain their adherence and persistence rates1.

The discontinuity rate in the general use of the standard tricyclic, amitriptyline (AMT), is around 35%, and the greatest motivator for discontinuity is its adverse effects. However, these studies included high doses of AMT, as in the case of treatment for depression. Also, in the case of very low doses, the unit dose method may overestimate the low adherence19. Another motivator for discontinuation or non-initiation of AMT use and other tricyclics for analgesic purposes is the absence of official label documentation for this particular indication. The exclusive label of antidepressant may induce the potential reader to interpret that the prescriber may consider the pain, therapeutic targets, as of primary or predominantly psychoactive origin. Despite scientific evidence of the tricyclics’ analgesic effect, in many countries, the leaflet remains obsolete, unchanged, due to costs of a review and update, incompatible with the low unit marketing price of these drugs.

The FDA approved only three drugs for the FM treatment. One is pregabalin, and the other two are dual antidepressants: duloxetine and milnacipran. Duloxetine has the best efficacy evidence for FM treatment, usually in a single daily dose of 60mg (ranging from 30 to 120mg), mainly when there is depressive morbidity associated, with or without anxiety. In addition to anxiety, depression is also another morbidity that can prevent the patient to adhere to treatment. Di Matteo et al.4 concluded that the risk of non-adherence is 27% higher in this group, regardless the underlying disease to be treated.

Cui et al.20 evaluated the adherence of patients with fibromyalgia to the treatment with duloxetine and showed that one-third of them had a strong adherence, and among them, the predictive factors for better adherence were age above 35 years and previous use of selective antidepressants (serotonergic inhibitors or serotonergic and noradrenergic). The same group of investigators, in a study involving more than 18,000 patients, concluded that adherence and persistent use of duloxetine were similar in groups of patients with depressive disorder, FM and osteoarthritis, and significantly higher than the results found for patients with chronic lower back pain21.
A group of anticonvulsants called gabapentinoids are useful as analgesics in several situations. They act on the alpha2-delta subunits of receptors that control channels of dynamic permeability to voltage-dependent calcium. Inhibitory action in these subunits reduces the release of excitatory neurotransmitters in painful pathways, resulting in analgesia. The approval provided by the official US Food and Drug Administration (FDA) for these drugs in the FM treatment allowed the inclusion of that indication in the leaflet and the lay advertisement. Sanchez et al.23 recorded data on the adherence and persistence of patients with FM, post-herpetic painful neuropathy and diabetic peripheral polyneuropathy treated with gabapentinoid known as pregabalin. Sanchez et al.23 showed that the majority of patients prescribed with pregabalin received lower doses than those considered ideal for the best response (450mg). Costs with the pharmacy were lower due to the use of lower doses. However, both the therapeutic result and adherence were significantly lower in the same group. The total medical costs among the group using recommended doses and those using lower doses were comparable, suggesting that the prescription of the recommended therapeutic dose can increase adherence without increasing the costs involved.

Adherence to the treatment of fibromyalgia and the physician-patient relationship

Dobkin, Sita and Sewitch23 evaluated 142 patients with FM recruited from tertiary and community centers. They measured adherence, pain, psychological changes, coping, the perception of social support, and the number of associated diseases. They also compared the physician’s and the patient’s interpretation regarding the state of health of the FM-carrier. The results showed that the greater adherence to treatment is related to the lower psychological changes degree and the lower physician/patient disagreement regarding the patient’s health state23. Data on health status differed between therapist and patient perspectives. The physician generally attributed less attention to the patient’s emotional well-being in relation to the note he/she attributed to himself/herself in his/her own assessment. Such discrepancy may lead to a lack of confidence by the patient, believing that the physician attributed his/her symptoms not to an organic cause but to an “emotional problem”23. Regarding the presence of psychological changes such as depression and anxiety, the study is in agreement with others that also showed the negative association of these factors with the adherence. Lack of hope and self-motivation, present in these cases, may impair the patient’s commitment to any change, including treatment23.

Patient’s faithfulness or achievement and his/her adherence to treatment

The challenge of “win the patient” for his/her own disease’s treatment in the case of FM begins with the diagnosis. Fibromyalgia, or fibromyalgia syndrome, is a diagnosis of exclusion, and it is only given after thorough medical history and physical examination, and a series of unchanged complementary tests. It is not uncommon for the fibromyalgia patient to feel frustrated by not finding the expected explanation for his/her symptoms. In an attempt to reduce such frustration, Hyland et al.24 studied an original narrative to explain to the patient the FM’s dysfunctional pain. Hyland et al.24 studied the physician-patient relationship in the chronic pain research context of Kenny25, which stated that potentially curative interactions between physicians and their patients, which are not based on the biogenic model of the visible body or the psychogenic model of invisible pain, are needed to aid communication between patients with chronic pain and their physicians. The narrative proposes that the patient’s body is comparable to a computer, with FM being a predominant problem of programming (or “software”) rather than structure (or “hardware”). This narrative invites the patient with FM to engage in non-pharmacological measures that may contribute to reprogram the “computer”. The strategy also favors the patient by communicating that he/she can be the protagonist in a struggle that he/she will continue to face despite the difficulties. The authors evaluated the patients’ opinions regarding the proposed narrative and found great acceptance with a welcome perception25-27.

Several studies on adherence to treatment agree on the importance of the physician-patient relationship. The multidisciplinary team should clearly and patiently explain the diagnosis, the limitations of the medicine regarding the FM etiopathogenesis and the treatment of other chronic diseases. The flexibility of access to the physician for clarification of questions that may arise regarding the dosage or adverse effects of the prescribed drug is a safety factor that may increase adherence to the treatment.

The proportion of patients who show significant improvement (reduction of at least 50% in pain) with currently available pharmacological treatment is low, generally 10 to 25% higher than placebo, and it is necessary to treat 4 to 10 patients to obtain the mentioned improvement. Therefore, dose optimization and the emphasis on the association of non-pharmacological therapy may motivate persistence when obtaining better results.

Quality of life of patients with fibromyalgia

QoL indicates the level of the basic and supplementary conditions of the human being. These conditions involve physical, mental, psychological and emotional well-being, social relationships such as family and friends, as well as health, education and other parameters affecting human life. The economist Galbraith created the concept in 1958, which conveys a different view of the priorities and effects of quantitative economic objectives. According to Galbraith, political-economic and social goals should not be marked in terms of quantitative economic growth and material growth in living standards, but rather in qualitative improvement of human living conditions, which would be possible only through a better development of social infrastructure and the elimination of disparities, both regional and social, and to the defense and preservation of the environment.
Obtaining a good QoL depends on the adoption of healthy habits, body care, balanced nutrition, healthy relationships, time for leisure and several other habits that make the individual feel good. As a consequence, the individual can use humor to deal with stressful situations, giving the sense of control over his/her own life.

QoL is different from the standard of living, although there is confusion between these two terms. Standard of living is a measure that quantifies the quality and quantity of goods and services that a particular person or group may have access to. FM, as already described, is a condition that is not yet fully understood, persistent, without cure, with an exclusively symptomatic treatment and that certainly does not promote a good level of QoL.

Pharmacological and non-pharmacological measures to minimize pain, relieve depression and improve sleep, provide limited success and are associated with adverse effects. Even alternative forms of treatment do not bring great relief. Many people have never experienced complete relief from their symptoms, even ephemerally. Thus, what remains for those who suffer from FM is limited to managing the syndrome, i.e., learning to live and dealing with a wide variety of symptoms including diffuse pain, fatigue, non-restorative sleep, depression, anxiety, irritable bowel syndrome, multiple chemical sensitivity syndrome, premenstrual syndrome, stiffness, cognitive impairment, and restless legs syndrome.

Several studies have examined the QoL of patients with FM and found that their QoL is extremely low compared to other groups. In Brazil, a sample of women with FM was studied and revealed a lower pain threshold and worse QoL than a control group of healthy women, although no correlation was found between pain measurements and QoL. Not only the lack of adherence to pharmacological treatment schemes occurs and implies a worse FM control, but physical activity programs are also affected by the lack of commitment in its execution and assiduity.

People with FM seem to have smaller social support networks than patients with other chronic diseases, which probably contribute to lower QoL rates. The ability to work also has an impact on QoL. People with FM lose it due to their symptoms. Such patients report a considerable negative impact on their QoL, and their level of perceived disability also seems to be influenced by their mental health condition. The psychological distress is greater compared with patients with other pain conditions.

A significant number of fibromyalgia patients may use alcohol or other drugs in an attempt to obtain a bearable distance from reality, while others, unfortunately, choose suicide. The risk of these outcomes can be predicted and at least reduced with the evaluation and multiprofessional follow-up during patients’ monitoring.

**Fibromyalgia patients’ needs under their own perspectives**

The satisfaction or non-satisfaction of patients in relation to their healthcare providers can have an impact on their attitudes and on how they deal with the disease, and thus have a negative impact on QoL and the ability to manage their symptoms effectively.

When asked what they expected from their professional caregivers (physicians, nurses, physiotherapists, psychologists, technicians, and attendants), more than half expected their support and access to further and better information about their illness. Nearly a third of FM patients simply wanted to know if they actually believed that the disease with which they were diagnosed really existed. These desires took precedence over the development of more effective drugs, more funding for research and better diagnosis.

Patients are more satisfied when their physicians adopt a therapeutic set, not limited to the prescribed drugs, and use a greater variety of methods to deal with FM symptoms, showing more concern with them. The use of positive coping strategies can be therapeutic and reduce the severity of symptoms. Exercises and stress management techniques such as relaxation exercises, meditation, prayer, hobby, and conversation with friends, family, or healthcare professionals are forms of therapy for FM.

The detection of the possibility of the domino effect or even a “vicious circle” that QoL problems can produce, and their clear communication, have a positive impact. For example, these effects are felt in the restrictions of daily activities caused by FM symptoms, which in turn can lead to a state of depression, and depression can progressively limit their activities, producing an even more pronounced depression.

The lack of support and trust between FMS patients and their healthcare providers only increases the stress. When comparing other chronic pain conditions, the population suffering from FM is the one that receives less professional and social support. Support groups, whether traditional or using modern electronic means, can help.

Fibromyalgia patients plead and need to be empowered to manage their symptoms. Such empowerment involves providing support, teaching on how to deal with strategies, and also opportunities to explore nontraditional therapies to manage their syndrome.

**CONCLUSION**

The current review of the literature regarding adherence to FMS treatment shows a large contingency of prescription non-conformity, with the predominance of target dose reduction and discontinuation of treatment when compared to the rare cases of overdoses and self-medication.

The study of the causes leading to the lack of adherence and persistence to the treatment selects the characteristics of the syndrome itself as the great villain for its occurrence; although other associated factors such as the age, pain intensity, the polypharmacy instituted, the quality of the physician-patient relationship and the socioeconomic variables were also listed.

The QoL of the patient was always higher in those whose adherence and persistence to the treatment was higher. Patients’ QoL indexes may indicate the level of commitment to adhere to treatment, and vice versa.
REFERENCES


Effects of hydrokinesiotherapy in pain, trophism and muscle strength in a child with juvenile idiopathic arthritis. Case report

Efeitos da hidrocinesioterapia na dor, no trofismo e na força muscular de uma criança com artrite idiopática juvenil. Relato de caso

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ABSTRACT

BACKGROUND AND OBJECTIVES: Juvenile idiopathic arthritis is a childhood rheumatic disease, which can interfere with the trophism and muscular strength of the individual due to persistent pain. Hydrokinesiotherapy may be an alternative in the management of this disease. The objective of this study was to verify the effects of hydrokinesiotherapy on pain, trophism and muscular strength of a child with juvenile rheumatoid arthritis.

CASE REPORT: Female patient, 12 years old, diagnosed with juvenile rheumatoid arthritis one year ago. The pain was evaluated by the visual analog scale and the body pain map, the muscular trophism by the perimetry of the arms and thighs, and the muscular strength by isokinetic dynamometry at a speed of 240°.

The hydrokinetic therapeutic intervention program (adaptation, warm up, mobility and flexibility, muscle strengthening, cardio-respiratory fitness, balance and proprioception, and relaxation) was carried from October to December 2017, once a week, for 1 hour, totaling 10 sessions. At the end, there was a decrease in pain by 2.7 points (moderate to mild), an increase in muscle trophism of the arms and right thigh in 1cm and an increase in the torque peak (progress ranging from 12.3 to 37.9%) and total work (progress ranging from 18.6 to 76.7%) in all muscle groups analyzed in both knees.

CONCLUSION: The hydrokinetic therapeutic intervention plan shown to be an effective strategy to alleviate the pain and increase trophism and muscle strength of the individual with juvenile idiopathic arthritis.

Keywords: Chronic pain, Hydrotherapy, Juvenile arthritis, Muscle strength, Musculoskeletal system, Physiotherapy.

INTRODUCTION

Juvenile idiopathic arthritis (JIA) is a pediatric rheumatic disease characterized by persistent inflammation of the joints, with onset before the child reaches the age of 16. The annual occurrence varies from 2 to 20 cases per 100,000 people, with a prevalence of 15 to 150 cases per 100,000 people. Even though its etiology is as yet unknown, evidence points to genetic predisposition. The clinical conditions may include systematic manifestations, together with fever and inflammatory musculoskeletal bouts, including...
evidence of inflammation of the joints (pain, heat, redness, swelling, and loss of function), stiffness, cramp, tenosynovitis, contractures, atrophies, and muscular weakness, thereby leading to functional incapacity and general malaise. As a rule, these patients also show dysfunctions and defects of the lower limbs, especially on the knees, the ankles, the hips, and the minor joints of hands and feet. Approaches seeking the rehabilitation of children and teenagers with JIA have been explored, but lack standardization in their protocols. Hydrokinesiotherapy is considered one of the most promising interventions, bringing relief of pain, muscular relaxation, flexibility, and preservation or restoration of the functional capacity. The properties of water allow movement of the painful musculature, mobilizing and strengthening it through specific exercises, being considered a safe strategy for this segment of the population. The purpose of this study was to check the effects of hydrokinesiotherapy on pain, trophism, and muscular strength, in a child with JIA.

CASE REPORT

This is a longitudinal and interventionist case report which is part of a project named “The Effects of Physiotherapeutic treatment in patients with rheumatic diseases.” The study was approved by the Research Ethics Committee for Research with Human Subjects, at the University of Passo Fundo, State of Rio Grande do Sul, Brazil, under protocol number 348,381, as established by resolution No. 466/2012 passed by the Brazilian National Health Council (CNS) and the Helsinki Declaration. The Free and Informed Consent Form (FICT) was signed by the girl’s mother, after an explanation of the procedure and elucidation of any questions. Next, the participant was referred to the Rheumatology Physiotherapy Department of the Physiotherapy Clinic, which is part of the School of Physical Education and Physiotherapy of the University of Passo Fundo (UPF), in the city of Passo Fundo, State of Rio Grande do Sul, Brazil. Female patient, aged 12, and diagnosed with JIA a year ago. She lived in the city of Passo Fundo, State of Rio Grande do Sul and was attending the 7th year of primary education. At the initial evaluation, her mother reported that “the child started with fever, pain, and swelling in her joints, back in October 2016. At that time, she was hospitalized for five days and diagnosed with JIA. In May, she had a crisis and almost lost her ability to walk due to the pain and the swelling” (according to information collected). The child also complained of pain in her right foot, of the “pressing” type, with a score of 7, which got worse during the night and then improved during movement (according to information collected). She was taking five different drugs of continuous use: Predsim®, Methotrexate®; folic acid; calcium; vitamin D; and Omeprazole®). She did not show any associated diseases, and neither any family history of rheumatic disease.

The pain was analyzed through the visual analog pain scale (VAS) and also through the map of body pain. The first consists of a horizontal straight line numbered from zero (no pain) to 10 (the worst pain you can imagine). The pain is classified as light (zero to 2), moderate (3 to 7) or intense (8 to 10). The latter is an instrument that included a graphic representation of the human body from anterior and posterior view, where the patient identifies the points where he or she feels pain at the moment of the evaluation. Muscular trophism was evaluated through perimetry, a test which uses a measuring tape to establish the circumference of a specific body segment. In the study, the muscular trophism in the arms (10 and 15cm above the olecranon) and the thighs (10 and 15cm above the center of the patella), standards mentioned in another study conducted on an individual with rheumatoid arthritis. Muscular strength was analyzed by isokinetic dynamometry, using the Biodex® Multi-Joint System 3 Pro computerized isokinetic dynamometer, which is considered to be the gold standard for evaluation of muscular strength. Preliminary studies have shown that this equipment could even be used among the pediatric population, as it shows good reliability and can be easily applied for this procedure, with its limitations being easily overcome. Initially, the child had a five-minute pre-warming up session on a Movement BM 2700 electromagnetic bicycle, with no load, and with the seat adjusted to the appropriate height for the child. Next, the child received information about the procedure that would be carried out. The dynamometer was moved along the horizontal plane and positioned on the external side of the unaffected lower limb. The accessory of the knee was then connected to the dynamometer, and the rotation axis of the subject’s knee was brought into alignment with the axis of the dynamometer. The height of the seat was also adjusted, in the direction of the dynamometer. The patient was then stabilized by a pair of elbow belts, a pelvic belt, and a belt for the contralateral thigh. After the preparation, the child performed three movements of extension and bending of the knee, at the speed of 180° to learn the test procedure. The action took place through a series of five movements of extension and bending of the knee, in a concentric way, always assessing the extensor and flexor muscles of the knee, considering the average peak torque (maximum strength) and the total value of isokinetic muscular work, at a speed of 240°. The procedure was repeated, on the other side. After evaluations, the child was then subjected to 10 individual sessions of hydrokinesiotherapy of approximately one hour (10 weeks), from October to December 2017. The intervention took place in a therapeutic pool, heated to a temperature of 36°C, based on referenced studies, to produce effects on the situation of pain, trophism, and the muscular force of the individual. Table 1 shows the hydrokinesiotherapy schedule. The patient was advised to exhale during muscular contraction, to better recruitment of muscle fibers, which improves the performance of the exercise. There was an interval of 30 seconds to one minute between the series or cycles, but the patient could interrupt the activity for a rest whenever needed, conduct adopted in a previous study. After the 10 sessions of hydrokinesiotherapy, all parameters were reassessed. Table 2 shows the reference values for the child’s pain, in phases before and after hydrokinesiotherapy. There was a reduction of the score and the intensity of the pain, after the intervention. However, pain started to be reported in more than one place. Table 3 shows the reference values for the muscular trophism of the patient, before and after intervention with hydrokinesiotherapy. After the physiotherapy, the patient showed an increase of 1cm in all measurements of muscle trophism of the arms, and 15cm above the anatomical reference point of the right thigh, after the
**Table 1.** Hydrokinesiotherapy schedule, Passo Fundo, Rio Grande do Sul, Brazil, 2018

<table>
<thead>
<tr>
<th>Phases</th>
<th>Exercises</th>
<th>Progression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1 – Adaptation</td>
<td>Walking around the pool, facing forward, sideward and backward.</td>
<td>3 rounds, in each direction</td>
</tr>
<tr>
<td>(from the 1st to the 3rd</td>
<td>Diaphragmatic respiratory exercise, where the individual</td>
<td>3 series with 5 repetitions each.</td>
</tr>
<tr>
<td>session)</td>
<td>should exhale under water.</td>
<td></td>
</tr>
<tr>
<td>Phase 2 – Warming Up</td>
<td>Slow muscular stretching, maintained, in either an active-assisted or</td>
<td>30 seconds for each muscle group</td>
</tr>
<tr>
<td></td>
<td>passive mode, using the main muscular groups of the upper limbs, lower</td>
<td></td>
</tr>
<tr>
<td></td>
<td>limbs, lower limbs, and trunk.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circular movements of shoulders, neck, wrists, and ankles</td>
<td>30 seconds for each joint</td>
</tr>
<tr>
<td>Phase 3 – Mobility and</td>
<td>Rotation of trunk with floaters around the arms</td>
<td>1st to 5th session: 2 series with 10 repetitions each → 6th to 10th session:</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3 series with 5 repetitions each.</td>
<td>3 series with 8 repetitions each.</td>
</tr>
<tr>
<td></td>
<td>Mobilization of wrists (active movements of flexion and extension) with</td>
<td>1st to 5th session: 2 series with 10 repetitions each → 6th to 10th session:</td>
</tr>
<tr>
<td></td>
<td>floaters</td>
<td>3 series with 8 repetitions each.</td>
</tr>
<tr>
<td></td>
<td>Mobilization of ankles (movements of dorsiflexion and plantar flexion)</td>
<td>1st to 5th session: 2 series, with 10 repetitions each → 6th to 10th session:</td>
</tr>
<tr>
<td></td>
<td>on a submerged step</td>
<td>3 series with 8 repetitions each.</td>
</tr>
<tr>
<td>Phase 4 – Muscular strengthening</td>
<td>Strengthening of the hands (movements of manual prehension and also</td>
<td>1st to 5th session: 2 series, with 10 repetitions each → 6th to 10th session:</td>
</tr>
<tr>
<td></td>
<td>finger tweezers) with a “mild” proprioceptive ball (1st to 5th session)</td>
<td>3 series with 8 repetitions each.</td>
</tr>
<tr>
<td></td>
<td>and “moderate” (6th to 10th session)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strengthening of the adductor and abductor muscles of the elbows, with</td>
<td>1st to 5th session: 2 series, with 10 repetitions each → 6th to 10th session:</td>
</tr>
<tr>
<td></td>
<td>floaters</td>
<td>3 series with 8 repetitions each.</td>
</tr>
<tr>
<td></td>
<td>Minicrouches on bipedal support (1st to 7th session) and unipodal support</td>
<td>1st to 5th session: 2 series, with 10 repetitions each → 6th to 10th session:</td>
</tr>
<tr>
<td></td>
<td>(8th to 10th sessions)</td>
<td>3 series with 8 repetitions each.</td>
</tr>
<tr>
<td>Phase 5 – Cardiac and</td>
<td>Stationary running</td>
<td>1st to 5th session: 1 series of 60 seconds → 6th to 10th session: 2 series</td>
</tr>
<tr>
<td>respiratory conditioning</td>
<td>Side jumps along a length of 5 meters</td>
<td>of 60 seconds each</td>
</tr>
<tr>
<td></td>
<td>Lateral jumping jacks</td>
<td>1st to 5th session: 1 series, with 10 repetitions → 6th to 10th session: 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>series of 8 repetitions</td>
</tr>
<tr>
<td>Phase 6 – Balance and</td>
<td>Stationary bicycle with two floaters between the legs</td>
<td>1st to 5th session: 60 seconds → 6th to 10th session: 2 series of 8</td>
</tr>
<tr>
<td>proprioception</td>
<td></td>
<td>repetitions</td>
</tr>
<tr>
<td></td>
<td>Lift the lower limb with a floater, under the foot, first with the knee</td>
<td>1st to 5th session: 2 series of 10 repetitions → 6th to 10th session: 3</td>
</tr>
<tr>
<td></td>
<td>bent (1st to 7th session) and then progressing to exercise with the knee</td>
<td>series of 8 repetitions</td>
</tr>
<tr>
<td></td>
<td>outstretched (8th to 10th session)</td>
<td></td>
</tr>
<tr>
<td>Phase 7 – Relaxation</td>
<td>Massotherapy on the cervical region, joint mobilizations on the ankle and</td>
<td>1st to 5th session: 15 minutes → 6th to 10th session: 10 minutes</td>
</tr>
<tr>
<td></td>
<td>spine, and movements of the Watsu Method3.</td>
<td></td>
</tr>
</tbody>
</table>

→ = progression of the exercise.

**Table 2.** Pain experienced before and after the hydrokinesiotherapy, Passo Fundo, Rio Grande do Sul, Brazil, 2018

<table>
<thead>
<tr>
<th>Variables</th>
<th>Before intervention</th>
<th>After intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point score according to VAS</td>
<td>5.0±2.86 (0-8) points</td>
<td>2.3±1.94 (0-4) points</td>
</tr>
<tr>
<td>Intensity of pain</td>
<td>Moderate</td>
<td>Light</td>
</tr>
<tr>
<td>Location of pain</td>
<td>Metatarsi and phalanges of the right foot</td>
<td>Posterior region of the right and left ankles</td>
</tr>
</tbody>
</table>

Mean ± standard deviation (minimum – maximum); VAS = visual analog scale.

**Table 3.** Muscular trophism of the patient, before and after hydrokinesiotherapy. Passo Fundo, Rio Grande do Sul, Brazil, 2018

<table>
<thead>
<tr>
<th>10cm above the center of the patella</th>
<th>15cm above center of the patella</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before intervention</td>
<td>After intervention</td>
</tr>
<tr>
<td>Right Arm*</td>
<td>24cm</td>
</tr>
<tr>
<td>Left Arm</td>
<td>24cm</td>
</tr>
<tr>
<td>Right Thigh**</td>
<td>43cm</td>
</tr>
<tr>
<td>Left Thigh</td>
<td>44cm</td>
</tr>
</tbody>
</table>

cm = centimetres; * = dominant side; ** = dominant and affected side.
hydrokinesiotherapy. Table 4 shows the values for muscle strength on the patient's knees, before and after the hydrokinesiotherapy. We see that the patient showed an increase in muscle strength in all parameters analyzed, after hydrokinesiotherapy. With regards to the peak of torque, the flexor muscles of the right knee had the best performance, followed by the extensor muscles of the left knee, flexors of the left knee, and extensors of the right knee. Concerning total work, the extensor muscles of the left knee had the best performance, followed by the flexor muscles of the left knee, the flexors of the right knee, and the extensors of the right knee.

The beneficial effects upon pain in the child with JIA also confirm the findings of other studies that use hydrokinesiotherapy as a plan for treatment of pain, observing a reduction among the individuals treated, stressing the use of strengthening exercises in their protocols, as adopted in this study. Confirming the results presented in this study, the literature says that hydrokinesiotherapy does not influence muscle strength in people with lower limbs disorders, due to the inconsistent methodologies in most studies, especially those related to the prescription of resistance exercises in a water environment.

The methodological design used in this study that analyzed the effects of hydrokinesiotherapy on muscle strength in a child with JIA by isokinetic dynamometer was observed in only one similar study. It was a study where 30 children with JIA were randomly distributed between a control group (n=15), subjected to conventional physiotherapy on the ground, and an intervention group (n=15), which was subjected to a specific hydrokinesiotherapy programme for lower limbs (5 minutes warming up, then 20 minutes of resisted exercise, and 5 minutes of cooling off), associated with the interferential current in the muscles of the anterior, posterior, medial and lateral sections of the hips (frequency of 100Hz, pulse duration of 125 Ksec at the sensorial threshold of the individual). After the intervention, the intervention group showed superior results when compared to the control group, regarding the increase in the peak torque of lower limbs and the reduction of the levels of pain. In the present study, we confirmed that the plan for the hydrokinesiotherapy increased the peak of torque and also the total effort made by the extensor and flexor muscles of the knees, as well as easing the patient's intensity of pain, without the need for any additional resources.

The present report does have its limitations. Even though we have observed an improvement in muscle force and a reduction in pain intensity, we believe that the number and frequency of the sessions, which were lower than in most of the evidence presented in the literature, could have contributed to the fact that there was no evidence of an improvement in most measurements of muscle trophism of the patient's thighs. However, these circumstances did not hinder the generation of the data presented, seeking to contribute so that new studies are carried out, based on a more significant number of individuals, thereby allowing the solution of any questions that may have remained.

| Table 4. Muscle strength of the patient's knees, before and after the hydrokinesiotherapy. Passo Fundo, Rio Grande do Sul, Brazil, 2018 |
|-----------------|-----------------|-----------------|-----------------|
| **Peak of torque** | **Muscle Group** | **Before intervention** | **After intervention** | **Progress** |
| **Knee** | **Right** | **Left** | **Right** | **Left** | **Progress** |
| **Extensor muscles** | 62.6 N m | 58.9 N m | 70.3 N m | 70.4 N m | 12.3% | 19.4% | 12.7% |
| **Flexor muscles** | 23.8 N m | 22.9 N m | 32.8 N m | 25.8 N m | 37.9% | 19.4% | 12.7% |

| **Total Work** | **Muscle Group** | **Before intervention** | **After intervention** | **Progress** |
| **Knee** | **Right** | **Left** | **Right** | **Left** | **Progress** |
| **Extensor muscles** | 242.3 J | 153.9 J | 287.4 J | 272.0 J | 18.6% | 76.7% | 45.0% |
| **Flexor muscles** | 94.1 J | 70.0 J | 132.4 J | 101.5 J | 40.6% | 45.0% |

N m = Newton-metre; J = Joule; % = relative value; * = dominant and affected side.
CONCLUSION

The plan for intervention through hydrokinesiotherapy showed to be an effective strategy for pain relief and the increase of trophism and muscle strength in a patient with JIA.

REFERENCES

ABSTRACT

BACKGROUND AND OBJECTIVES: During the undergraduate course students have the opportunity to learn and understand health promotion and prevention, quality of life and other concepts, but they rarely learn about health education, let alone pain. Knowing that there are gaps in the training of health professionals regarding pain, and in the use of pedagogical methodologies that encourage the active construction of knowledge, the objective of this study was to provide an experience about the process of understanding pain neuroscience education from an instrument and the role-playing technique in the academic environment of Physiotherapy students.

CASE REPORTS: During a Basic Complexity class, Physiotherapy students from the Ceilândia campus of the University of Brasília were invited to provide care to a fictitious population and develop explanations and lessons about pain and its processes in the human body using the WHOQOL-Bref questionnaire to evaluate the quality of life of the individual and target the care accordingly.

CONCLUSION: The experience provided by the simulation of clinical cases was important for the analysis and discussion of challenging issues such as psychological, social and behavioral factors in the health education process in multi and interdisciplinary interventions.

Keywords: Pain neuroscience education, Quality of life, Simulation of clinical cases, WHOQOL-Bref.
development of chronic illnesses. In this regard, the teaching of pain issues has become necessary as part of the qualification of health professionals, and for the careful handling of the symptom.

In this context, one of the courses in the health area that goes through this process of change, to qualify the professionals who work with the Brazilian Unified Health System (SUS), is the Physiotherapy course. Starting from this premise and considering that the SUS is a major employer of workers in the health sector, the education of students should be encouraged to aim at a humanist style of action, which is critical, reflexive and generalist. This means that, with the constant union of theory and practice within the University environment, one can produce conscientious professionals, who are engaged in seeking to modify the environment in which they live, also having an attitude that may change the ills in the health sector.

The multidimensional construct of quality of life (QoL) known as the World Health Organization Quality of Life (WHOQOL-Bref) was proposed as an indicator of the general health of the population. The application of this instrument is used to encourage actions for the promotion of health. It is speculated that the use of the questionnaire, together with the EPN tool, could add knowledge when interpreting the different dimensions of human health, such as psychological health, the degree of independence, the social relationships, the environment, and spiritual standards. They can also be used in academic circles after the elaboration of problem situations, and also to promote changes in the teaching and learning process, with regards to pain.

From this perspective, the study promoted a report on experiences regarding the process of understanding and education within the study of pain, through an instrument and the role-playing technique within the academic experience of Physiotherapy students.

**CASE REPORTS**

An academic study based on real-life experiences was carried out at the Ceilândia Campus of the University of Brasília to achieve the proposed goal. For this purpose, the academic students of the 6th semester of the Physiotherapy course were initially separated into two groups, namely physiotherapist student (PhS) and patient-student (PtS).

Later on, after this division, they were asked to simulate the care to three clinical cases, so that they could provide grounds for teachings and explanations about pain and neurophysiological processes in the human body.

**Case 1.** Patient aged 70 years old, had pain when moving the joints of the shoulders and knees, making it much more difficult to carry out daily activities such as cleaning the house, taking care of the dog, and putting clothes out to dry on the clothesline. This patient said that he could not understand why the pain was present, and why his health did not improve with the drugs taken daily. This patient also heard about a physical activity group that had sessions twice a week, and showed significant interest, believing that physical activities could help to improve the loss of strength of the lower limbs.

**Case 2.** This patient is a 45-year-old homemaker and reported that she had spinal pain for 15 years. Two years ago, after having an X-ray of the spine, the doctor said that the patient had spinal problems and she would need to do physical exercises. She believed and reported that she could have a disc herniation. The patient did not show the X-ray, as she didn’t know where it was. She also reported that she does not like to do physical exercises and does not understand why things improve with exercises. She also said that she is unable to pay to work out at a fitness center and that her dream was to be a ballerina. She showed great difficulty when getting down and when carrying her supermarket shopping. She is 155cm tall and weighs 105kg.

**Case 3.** This patient is 65 years old, retired, and cares for her 95-year-old mother. Together with her mother, she carries out all household chores and especially special care: bathing her mother, cooking and the routine walks. She complains of muscular fatigue in general and joint pain. She does not sleep well, and only gets some 4 hours of sleep a night. She does not have any time to herself, to enjoy the company of her friends. However, she heard of the group and went over to understand more about pain, and also to know what can be done at home to make her more energetic.

The WHOQOL-Bref questionnaire was used to evaluate the quality of life (QoL) of the clinical cases, through a battery of 26 questions. Questions 1 and 2, about general QoL and perception of health comparatively, with a score from 1 to 5. The other 24 questions referred to the four dimensions: Physical, Psychological, Social Relations, and the Environment, also with a score from 1 to 5 points, it being necessary to reencode the point values of questions 3, 4 and 26. The mean of the values obtained shall be calculated from the total point score, divided by the number of questions present in the same domain (Annex 1).

For the lived-experience report, the participants produced a video, approximately 10 minutes long, and then simulated a physiotherapeutic appointment for a fictitious patient, with the following objectives:

- Instruct the patient to understand his or her pain (possible causes, and which neural and brain mechanisms were activated);
- Improve the QoL through understanding pain.

Thus, the PtS group was given the clinical case of the teacher of the subject, and the guidance was to take the clinical case, presenting the current and past history of the disease, symptoms, facial expressions, deficits of movement, falls from own height, feelings, emotions, beliefs, and catastrophization.

Similarly, the PhS group was advised, by the teacher, to evaluate and apply the questionnaire and then proceed with the calculations and discuss interventions for each case. At the same time, the PhS group was asked to plan and execute EPN, with a neurophysiological explanation of the clinical case and guidance on the ongoing education process for activities at home.

During the academic experience, the PhS group should then make use of the data obtained through the WHOQOL-Bref questionnaire, and interpret the values for each domain as described above: WHOQOL-Bref - case 1: the physical domain had the smallest mean (1.83) when compared with the psychological, social relations and environment domains.
WHOQOL-Bref - case 2: the physical domain had the lowest mean (1.71) when compared with cases 1 and 3, and in the environmental domain the mean obtained was 2.0.

WHOQOL-Bref - case 3: the domain of the social relation showed a much lower mean (1.0) when compared to the physical, psychological, and environment domains.

After the interpretation of the domains, guidance was aimed at better catering to the needs of the PtS group. Also, this being an experience within an environment of Basic Complexity, the PhS group should encourage the individual’s participation and also present the funds offered and which best fit the individual needs as presented by the PtS group.

DISCUSSION

Simulations with clinical cases were based on the handling of EPN, in a move to check the altered perceptions of knowledge of the neurophysiology of pain, and how beliefs could trigger the increase in chronic pain.\textsuperscript{3,9,10}

The QoL is a multidimensional construct proposed as an indicator of the general health of the population, and the interpretation thereof is used to encourage actions in the promotion of health\textsuperscript{11} as presented by the PtS group.

From this standpoint, the WHOQOL-Bref instrument guided the educational approach, giving priority to the physical and personal relations domains, and their issues, to be worked upon by the PhS group. The instrument also values individual perception and can assess QoL in different groups and situations, regardless of the educational level.\textsuperscript{17}

On considering the means within the physical domain, for the cases involved (1, 2 and 3), we obtained a variation from 1.71 to 2.85, with Case 2 presenting the lowest of the results, with 1.71. This domain includes issues such as pain and discomfort, energy and fatigue, mobility, activities of daily life, dependence on drugs or treatment, ability to work.

The evaluation of the physical domain showed a need to monitor the indices of quality of life (QoL) in patients with chronic diseases, and plan strategies for intervention, as these provide important information about the user, allowing the identification of priorities and also offering grounds for health programmes to implement effective action and thus provide a better quality of life to users, within primary health care.

This applies to the interpretation of the issues raised in Case 1, which showed a lower level of QoL in the physical domain when compared with the other domains: psychological, personal relations, and the environment. In the opinion of many specialists, this aspect is key when considering the quality of life of the elderly, which is influenced as age increases.\textsuperscript{11,12}

We found no cut-off points in the literature that would establish scores above or below. In this study, we analyzed copies of the individual scores obtained by each respondent within each domain, in the 3 cases studied, and then an association was established with a Likert scale with 5 items (1= very poor, 2= poor, 3= average; 4= good and 5= very good) for the 24 questions that make up the instrument.\textsuperscript{13}

With regards to the evaluation of case 2, we saw that it has the lowest mean within the physical domain and lower levels of means for the psychological and environmental domains; the general assessment of the perception of quality of life was neither good nor bad. This data is linked to the study of three Basic Health Units (UBSs), in the Brazilian state of Rio Grande do Sul, that analyzed the means of the physical domain and concluded that they were lower in female patients who did not live with a partner and had some chronic disease.\textsuperscript{14,15}

As observed in Case 2, there was a low score for the environmental domain for the questions related to financial resources and the physical environment. This analysis corroborates studies where patients of lower social classes showed a worse quality of life, highlighting the fact that, in Brazil, the unequal distribution of wealth, together with illiteracy, low educational level, poor housing conditions, and precarious environment, all had a negative impact on the quality of life and the health of the subjects.\textsuperscript{11,16}

The lowest score observed for the domain of the personal relations, in case 3, confirmed other results that described the perception that there was a lower quality of life among women, people of more advanced age, people of lower social strata, who did not live with a partner, and having some chronic disease. From there, one can conclude that the absence of a partner can trigger feelings of solitude and isolation, in turn causing a lower level of well-being.\textsuperscript{13,14}

In this way, through experience stimulated by clinical cases, this instrument allows one to discuss the possible subjective perception of his or her physical and psychological health, as well as social relations and the environment in which the person lives.\textsuperscript{7,11}

Educational strategies based on simulations have been commonly used for teaching Communication and Relationship Skills, especially in the health area.\textsuperscript{17} These strategies seek to get the students included in the teaching process through assisted and guided practice. Simulation allows the students to experience the representation of a real event, to practice, learn, appraise, test, or understand human systems or actions.\textsuperscript{10,17}

It is within this understanding that it was possible to analyze and discuss skills among the students, in issues involving the interpretations of the physical and psychological health dimensions, level of independence, social relationships, the environment, and spiritual level.\textsuperscript{11,18}

The videos that reproduce the EPN were analyzed through oral presentations, followed by a debriefing which is considered the most important part of the simulation, and which allows the critical analysis of the planning process and the relationship established between the PhS and PtS.\textsuperscript{18}

The requests for debriefing consisted of acting out the scene, highlighting how they were feeling during the physiotherapeutic evaluation and as Physiotherapy professionals, and also listing the strengths of their actions and points that could be improved. The purpose of the academic experiences described was to meet what is set forth in the National Curriculum Guidelines for the Physiotherapy course, using methodologies and criteria to monitor and evaluate the teaching-learning process.\textsuperscript{19}

CONCLUSION

The results of the reports on the experiences in the classroom suggest that possibly the simulation of clinical cases allowed the students to experience the representation of a real event and that the WHOQOL-Bref instrument gave value to the individual perception, making it possible to evaluate QoL in different groups and situations.
### Annex 1. The WHOQOL-Brief Test

<table>
<thead>
<tr>
<th>Questions and 2</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perception of quality of life</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2. Satisfaction with state of health</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Domain I - Physical

<table>
<thead>
<tr>
<th>Question</th>
<th>Case 1</th>
<th>Mean</th>
<th>Case 2</th>
<th>Mean</th>
<th>Case 3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Pain and discomfort</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4. Energy and fatigue</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5. Sleep and rest</td>
<td>2</td>
<td>1.83</td>
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<td>6. Mobility</td>
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<td>1</td>
<td>1.71</td>
<td></td>
<td>3</td>
<td>2.85</td>
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<td>7. Activities of daily life routine</td>
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<td>8. Dependence on drugs or treatments</td>
<td>1</td>
<td></td>
<td>2</td>
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<td>9. Ability to work</td>
<td>1</td>
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### Domain II - Psychological

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<th>Case 3</th>
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<tr>
<td>10. Positive feelings</td>
<td>2</td>
<td></td>
<td>3</td>
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</tr>
<tr>
<td>11. Thinking, learning, memory, and concentration</td>
<td>3</td>
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<td>12. Self-esteem</td>
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<td>2.66</td>
<td>2</td>
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<td>13. Body image and appearance</td>
<td>3</td>
<td></td>
<td>1</td>
<td>2.33</td>
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<td>14. Negative feelings</td>
<td>1</td>
<td></td>
<td>2</td>
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<td>15. Spirituality, religion and personal beliefs</td>
<td>4</td>
<td></td>
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### Domain III - Social relationships

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<tr>
<th>Domain III</th>
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<tr>
<td>16. Personal Relationships</td>
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<td>17. Social Support</td>
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<td>3.0</td>
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<td>1</td>
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<td>18. Sexual Activity</td>
<td>2</td>
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### Domain IV - Environment

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<tr>
<td>19. Physical security and protection</td>
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<td>20. Home environment</td>
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<td>4</td>
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<tr>
<td>21. Financial resources</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
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<tr>
<td>22. Health care and social care: availability and quality</td>
<td>3</td>
<td></td>
<td>2.5</td>
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<td>2</td>
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<tr>
<td>23. Opportunities to acquire new information and skills</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
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<tr>
<td>24. Participation and opportunities for, recreation and leisure</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td>4</td>
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<tr>
<td>25. Physical environment: pollution/noise/traffic/weather</td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
<td>2</td>
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<tr>
<td>26. Transportation</td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
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</table>
INSTRUCTIONS TO AUTHORS

The Brazilian Journal of Pain (BrJP), printed version: ISSN 2595-0118, electronic version: ISSN 2595-3192, is the multidisciplinary medical journal of the Brazilian Society for the Study of Pain (SBED). This is a journal focusing on the study of pain in clinical and research contents, gathering scientists, physicians, dentists, veterinaries, epidemiologists, psychologists, physiotherapists and other health professionals aiming at publishing their basic or applied research in this area of knowledge. Articles are of full responsibility of the authors and its periodicity is quarterly. All submitted papers are reviewed and the journal follows the Uniform Requirements of Manuscripts submitted to Biomedical Journals (URM) – The International Committee of Medical Journal Editors – ICMJE.

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3. Body of text: Organize the text according to the types of below-described articles. In original articles with humans or animals ethic aspects shall be informed in addition to the number and the year of the Institution’s Ethics Committee process. Acknowledgments to other collaborators may be mentioned at the end, before the references.

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The submission of experimental or clinical research articles, with humans or animals, implies that authors have obtained approval from the relevant Ethics Committee and that they comply with the Declaration of Helsinki. This type of statement shall be included in the chapter “METHODS”.

For all articles including information about patients or clinical pictures, the written and signed consent from each patient or relative shall be obtained to be forwarded to the journal with the submission process. Generic drug names shall be used. When trade names are used in the research, these names shall be included in brackets in the chapter “METHODS”.

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1. Introduction – this section shall briefly describe the scope and previous evidence-based knowledge for the design of the research, based on subject-related references. At the end, the research objective shall be clearly stated. Please include up to six authors. Methods – shall include study design, sample selection processes, ethic aspects, exclusion and inclusion criteria, clear description of interventions and methods used, in addition to data analysis as well as sample power and applied statistical tests. Results – shall be objectively described, further explained with figures and tables when needed. Analyses carried out and their results shall be included. Discussion – this section shall discuss research results at the light of previous knowledge published by scientific duly mentioned sources. This section may be divided in sub-chapters. Please include study limitations and close with the conclusion of the paper. Whenever possible, include clinical implications and information about importance and relevance of the study. Acknowledgments – acknowledgments to collaborators, among others, may be mentioned in this section, before references. References – shall be formatted according to Vancouver standards (http://www.jcmje.org). Figures and Tables – shall be sent separately from the text of the article in a format allowing for edition (figures in Excel and tables in Word).
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1. Case reports with relevance and originality are invited to be submitted to BrJP. A limit of 1800 words shall be respected. Findings shall be clearly presented and discussed at the light of scientific literature, mentioning references. Please include up to three authors. The body of the text shall contain: INTRODUCTION, CASE REPORT, DISCUSSION, Acknowledgments and References. Figures and tables illustrating the text may be included.

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Supplement article:

Book: (when strictly necessary)

Book chapter:

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All illustrations (including figures, tables and pictures), shall be compulsorily mentioned in the text in the preferred place for their inclusion. Please number them in Arabic numbers. All shall have title and captions. Please use pictures and figures in black and white and restrict their number to a maximum of three. The same result shall not be expressed by more than one illustration. Graphic signs, figures of acronyms used in tables or figures shall have their correlation mentioned as footnote. Figures and tables shall be sent separately from the text and in format allowing for edition, according to the following recommendations.

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Submission Letter, Manuscript and Figures shall be forwarded in DOC format (Microsoft Word standard); figures in bars or lines shall be forwarded in Excel (extension XLS). Pictures shall be digitalized with minimum resolution of 300 DPI, in JPEG format. File name shall express illustration type and number (Figure 1, Table 2, for example). Copies or reproductions of other publications shall be allowed only after attachment of express authorization of the Editing Company or of the Author of the original article.

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