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HEALTH-RELATED QUALITY OF LIFE AND EXPECTATIONS OF SPINAL STENOSIS PATIENTS TOWARDS THE SURGICAL TREATMENT[1]

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ABSTRACT: The objective of this cross-sectional analytical study was to compare health-related quality of life, presence of anxiety and depression symptoms, and functional limitation according to the location of the spinal stenosis; and to describe patients' expectations toward the surgical treatment. Thirty-two patients with lumbar stenosis and 22 with cervical stenosis participated in the study. Comparison of health-related quality of life showed statistically significant differences in pain and functional capacity dimensions. There were no statistically significant differences regarding anxiety and depression symptoms. The mean functional limitation was 53.2% (SD=11.9%) for the group with lumbar stenosis and 40.2% (SD=17.5%) for the group with cervical stenosis. Most participants expected great improvement of the symptoms after the surgical treatment. In the preoperative period, expectations of improvement are high and should be discussed with the health staff, since in clinical practice, this improvement is not always achieved with the surgical treatment.

DESCRIPTORS: Quality of life. Spine. Anxiety. Depression.

QUALIDADE DE VIDA RELACIONADA À SAÚDE E EXPECTATIVAS COM O TRATAMENTO CIRÚRGICO DE PACIENTES COM ESTENOSE ESPINHAL

RESUMO: Estudo analítico, de corte transversal com objetivos de comparar a qualidade de vida relacionada à saúde, presença de sintomas de ansiedade e depressão e limitação funcional, segundo o local da estenose espinhal; e descrever as expectativas dos pacientes frente ao tratamento cirúrgico. Participaram 32 pacientes com estenose lombar e 22 com estenose cervical. Na comparação da qualidade de vida relacionada à saúde, constatamos diferenças estatisticamente significantes nos domínios Dor e Capacidade funcional. Não houve diferenças estatisticamente significantes quanto aos sintomas de ansiedade e depressão. A média da limitação funcional foi 53,2% (DP=11,9%) para o grupo com estenose lombar e 40,2% (DP=17,5%) para estenose cervical. A maioria dos participantes tinha expectativa de muita melhora dos sintomas após o tratamento cirúrgico. No pré-operatório, as expectativas de melhora são elevadas e devem ser discutidas com a equipe de saúde, uma vez que, na clínica, essa melhora nem sempre é obtida com o tratamento cirúrgico.

DESCRITORES: Qualidade de vida. Coluna vertebral. Ansiedade. Depressão.

CALIDAD DE VIDA RELACIONADA A LA SALUD Y EXPECTATIVAS DEL TRATAMIENTO QUIRÚRGICO DE PACIENTES CON ESTENOSIS ESPINAL

RESUMEN: Estudio analítico, trasversal para comparar la calidad de vida relacionada a la salud, presencia de síntomas de ansiedad y depresión y limitación funcional según el local de la estenosis espinal; y describir las expectativas de los pacientes ante el tratamiento quirúrgico. Participaron 32 pacientes con estenosis lumbar y 22 con estenosis cervical. En la comparación de la calidad de vida relacionada a la salud, constatamos diferencias estadísticamente significantes en los dominios Dolor y Capacidad funcional. No fueron encontradas diferencias estadísticamente significantes en los síntomas de ansiedad y depresión. El promedio de la limitación funcional fue 53,2% (DE=11,9%) para el grupo con estenosis lumbar y 40,2% (DE=17,5%) para estenosis cervical. La mayoría esperaba gran mejora de los síntomas después del tratamiento quirúrgico. En el preoperatorio, las expectativas de mejora son altas y deben ser discutidas con el equipo de salud, ya que esa mejora ni siempre es alcanzada en la clínica con el tratamiento quirúrgico.

DESCRIPTORES: Calidad de vida. Columna vertebral. Ansiedad. Depresión.

INTRODUCTION

Spinal stenosis is the narrowing of the spinal canal diameter, which might affect any extension of the spine, and it might be associated with nerve and vascular compression.[1] This condition stands out among degenerative diseases of the spine. However, it is still difficult to measure its incidence, since it is associated with other types of diseases, such as herniated disc, spondylolisthesis, and myelopathy.[2-4]

Depending on the spine region in which the stenosis develops, individuals will have different symptoms and disabilities.[4-5] When it develops in the cervical region, the symptoms described are pain in this region and arms, loss of sensation, paraparesis in the lower limbs, sphincter and torso sensitivity alterations, besides occurrence of reflexes of Babinski, Hoffman and Warternberg.[6-8] Stenosis in the lumbar region causes leg pain, discomfort in the lumbar region, dysesthesia, numbness, tingling in the lower limbs and neurogenic claudication.[1,6-7]

Clinical practice shows that depending on the spinal stenosis location, patients report different limitations for carrying out activities of daily living, which affects their quality of life in different ways. Nonetheless, until now, no study investigated the impact of spinal stenosis according to its location (lumbar and cervical), presence of previous treatments and personal characteristics of patients (gender, age, marital status and education level). Studies on the matter become necessary, since the perception of the impact of this health condition on patients' life might differ according to these variables. Regarding the limitations imposed by the disorder, surgical treatment is considered the solution for all symptoms resulting from stenosis, creating a high expectation in patients.[5-7,9] The disorder's progression is associated with higher inability, and surgical treatment is indicated with the aim of minimizing symptoms. Nonetheless, surgical treatment does not ensure the improvement of all symptoms caused by stenosis, which might cause a worsening in the physical and emotional clinical condition of patients.[5-7,10-13]

In addition to the functional analysis of the surgical results, in the last few years, researchers have been searching for a subjective analysis regarding the health condition of these people. Therefore, perspectives of patients on the evaluation of signs and symptoms of the disorder, health-related quality of life (HRQOL),[11,14-16] pain, functional aspects,[6,17-19] expectations[20-23] and satisfaction with the treatment[24-25] have been sought. Such evaluations are necessary to support healthcare professionals in making decisions concerning the treatment, preventing the development of unrealistic expectations in patients.[15,20,24]

In the orthopaedic practice setting, more specifically on the subject of this study, spinal stenosis, measures from these instruments in the evaluation of patients' HRQOL have not been often used. Scientific publications are incipient, which may contribute for the poor use of these instruments in the daily clinical practice. Nonetheless, researchers and health staff must start to think about the HRQOL evaluation of these individuals, because this is an important step for the evaluation of positive or negative results about the treatment procedure.[20] Nurses and other healthcare professionals who work on the recovery of patients with spinal stenosis must know the real possibilities of these individuals after the surgical treatment, and work in face of different expectations.

The aim of the present study was to answer questions that remain inconclusive for professionals of this area, namely: Are there differences in demographic profile (age, gender, education level, marital status and professional situation) and previous treatment (pharmacological and physical therapy) of patients according to the spinal stenosis location?; Are there differences in patients' HRQOL

and functional limitation as per the spinal stenosis location?; Are there differences in anxiety and depression symptoms, and in patients' expectations as regards the spinal stenosis location?

The following objectives were set to respond to these questions: to compare HRQOL and presence of anxiety and depression symptoms according to the local of stenosis presented (lumbar or cervical), and to describe functional limitation and patients' expectations toward the surgical treatment.

METHOD

A cross-sectional analytical study was conducted in the orthopedics' hospitalization units of a university hospital in a city in the state of São Paulo. A consecutive and non-probabilistic sample was made up of hospitalized patients, for their first lumbar or cervical stenosis surgical treatment, from October 2012 to January 2014, and who met the following inclusion criteria: being 18 years or older, of both genders and regardless of race. The exclusion criteria were: lack of cognitive and verbal expression conditions to respond to the research questions at the time of the interview; presenting both medical diagnosis of lumbar and cervical stenosis in the medical record. Cognitive conditions were evaluated according to medical records, the researcher's observation, and medical and/or caregivers' information.

During the study, 60 patients were hospitalized for spinal stenosis surgical treatment. Of these, six were excluded - three presented diagnosis of both cervical and lumbar spinal stenosis, and three did not have cognitive conditions to understand the instruments' items.

The study was approved by Etichal Research Committee of the hospital where the study was conducted, under protocol no. 13.120/2010. The objectives were presented orally and in writing for the potential participants and after agreement, an Informed Consent Form was signed according to Resolution no. 466/12 of the National Health Council.[26] All 54 patients who met the eligibility criteria were invited and agreed to participate in the study.

The data were collected in patients' interviews and consultation on their medical records in the hospitalization units. One of the researchers evaluated the patients who were hospitalized and would be submitted to surgery on the following day. The interviews were carried out in a private place, to keep the participants' privacy during data collection and clinical data collected from medical records.

An instrument previously developed[12] containing the following variables was used for sociodemographic and clinical characterization: gender, age (years), marital status, education level (years), performance of paid activities (yes or no), spinal stenosis region (lumbar or cervical), clinical treatments carried out before surgery indication, evolution of the time of disease (years), comorbidities, use of medications and surgical treatment recommended.

The Medical Outcomes Study 36 - Item Short-Form Health Survey (SF-36)[27] was used in its validated version for Portuguese language[28] to evaluate HRQOL. The SF-36 contains 36 items grouped in eight dimensions. Each dimension is evaluated in a scale from 0 to 100, with higher values indicating better HRQOL.

The presence of anxiety and depression symptoms was analyzed by the Hospital Anxiety and Depression Scale (HADS)[29] in its validated version for Portuguese language.[30] This scale has 14 items, being seven for evaluation of anxiety symptoms (HADS-Anxiety) and seven for evaluation of depression symptoms (HADS-Depression). The values of responses in each item range from zero to three, and the sum in each subscale may range from 0 to 21 points, with higher values indicating more anxiety (HADS-Anxiety) and depression (HADS-Depression) symptoms.

To evaluate functional limitation, a specific instrument for patients with low back pain was used and another for patients with cervical pain. For patients with low back pain, the Oswestry Disability Index (ODI)[31] was used in its version adapted to Portuguese language.[32] It has ten sections that evaluate the intensity of pain and limitations imposed by it, in the performance of activities of daily living. Each section has six affirmations that range from zero to five points. The total interval is transformed into a scale from zero to 100%, with higher values indicating higher functional limitation.[31] For patients with cervical pain, the Neck Disability Index (NDI)[33] was used in its version adapted to Portuguese language.[34] It has ten sections; the first section evaluates intensity of pain, followed by personal care, lifting objects, reading, headache, paying attention, working, driving cars, sleeping and leisure. Each section has six affirmations scored from zero to five points. In the end, the values are transformed into an interval from 0 to 100%, with higher values indicating higher functional limitation.[33]

The following question was used for evaluation of expectations: What changes do you expect as results from the surgery? (Try to think about

what is really possible and not what you wish to happen). This question was based on a previous study[18] that investigated expectations of patients with low back pain, considering the following items: leg pain; back pain; ability to walk; independency for activities of daily living; sport activities (including walks to keep fit); physical capacity in general (at work and home); frequency and quality of social contacts and mental well-being. For those with cervical pain, two more items were added: arm and neck pain, since the symptoms depend on the region of the column affected by the stenosis. The expectation of changes for each one of these items was evaluated according to options as follows: much better, better, slightly better, no improvement, worse and not applicable.

The patients also responded to a second question for the evaluation of expectation and improvement of their general health status after the surgical treatment: In a scale from 0 to 10, how much do you expect your overall health status to improve after the surgical treatment, considering 0 as no improvement and 10 as the best possible improvement? The Numeric Rating Scale (NRS) of 10 centimeters of length, with the left extremity indicating no improvement and the right extremity indicating the best possible improvement was used for the participants' response.

The data were processed and analyzed by means of the IBM Statistical Package for the Social Sciences 21 software (SPSS). Student's t-test for independent samples was used to compare measures of the SF-36 dimensions, and anxiety and depression symptoms according to the stenosis location. These variables were previously analyzed by the Kolmogorov-Smirnov test. Descriptive analyses were carried out for functional limitation, according to the stenosis location and patients' expectations with the surgical treatment variables. The significance level adopted was 0.05.

RESULTS

The final sample of this study was made up of 54 participants, of which 32 (59.3%) had lumbar stenosis and 22 (40.7%) had cervical stenosis. Regarding the sociodemographic variables, statistically significant differences were not found, showing homogeneity among the groups (Table 1).

Table 1 - Sociodemographic characteristics of the 54 participants, according to the spinal stenosis location. Ribeirão Preto, São Paulo, Brazil, 2014

Sociodemographic characteristics	Lumbar stenosis (n=32)	Cervical stenosis (n=22)	P value
Age (years)/Mean (SD) *	56.3 (11.8)	54.6 (12.2)	0.617†
Education level (years)/Mean (SD)*	4.8 (3.2)	6.6 (3.5)	0.06†
Gender % (n)			
Male	50.0 (16)	68.2 (15)	0.182
Female	50.0 (16)	31.8 (7)	
Marital status % (n)			
Married/Consensual union	59.4 (19)	59.1 (13)	0.913
Divorced	18.8 (6)	22.7 (5)	
Single	12.5 (4)	13.6 (3)	
Widowed	9.4 (3)	4.5 (1)	
Performance of paid activities % (n)			
No	75.0 (24)	72.7 (16)	0.851
Yes	25.0 (8)	27.3 (6)	

*Standard deviation; †p-value originated from Student's t-test. Other p values originated from the chi-square test.

Regarding the clinical variables, most participants in both groups had already undertaken some type of clinical treatment before surgical indication. As for pharmacological treatments, 56.3% of the patients with lumbar stenosis and 36.7% with cervical stenosis had already been submitted to some treatment, being this difference statistically significant (p=0.04). A statistically significant difference (p=0.05) was also observed among the percentages of patients with lumbar (53.1%) and cervical (31.8%) stenosis, who had undertaken physical therapy (Table 2). Most participants presented some type of comorbidity and used some kind of medication (Table 2).

Table 2 - Clinical characteristics of the 54 participants, according to the spinal stenosis location. Ribeirão Preto, São Paulo, Brazil, 2014

Clinical characteristics	Lumbar stenosis (n=32)	Cervical stenosis (n=22)
	n (%)	n (%)
Clinical treatment before surgery		
Yes	81.3 (26)	54.5 (12)
No	6.3 (2)	4.5 (1)
Not informed in the medical record	12.5 (4)	40.9 (9)
Type of clinical treatment undertaken before surgery*		
Pharmacological	56.3 (18)	36.4 (7)
Physical therapy	53.1 (17)	31.8 (7)
Epidural block	15.6 (5)	-
Disorder's evolution time (in months)	44.2 (36.4)	36.1 (50.5)
Types of comorbidities†		
Hypertension	25.0 (8)	31.8 (7)
Diabetes	18.8 (6)	27.3 (6)
Dyslipidemia	21.9 (7)	13.6 (3)
Obesity	6.3 (2)	-
Use of medications (% Yes)	71.9 (23)	59.1 (13)
Recommended surgical treatment		
Decompression with arthrodesis fixation - lumbar region	100.0 (32)	-
Decompression with posterior arthrodesis fixation - cervical region	-	81.8 (18)
Decompression with anterior arthrodesis fixation - cervical region	-	18.2 (4)

* The same patient might have undertaken more than one type of treatment; † The same patient might have more than one comorbidity.

With respect to the comparison of HRQOL reported by patients with lumbar or cervical stenosis, statistically significant differences were found between the means of the pain (lumbar=62.5; cervical=49.5; p=0.02) and functional capacity (lumbar=20.1; cervical=32.0; p=0.01) dimensions. Pain had a higher impairment for patients with cervical stenosis, but they presented better functional capacity than those with lumbar stenosis. In both groups, the best evaluation was for the general health status dimension (lumbar=67.0 versus cervical=70.3) and the worse for the physical aspects dimension (lumbar=14.8 versus cervical=12.5), and there were no statistically significant differences among the groups (Table 3). Statistically significant differences were not found in the comparison of anxiety (p=0.77) and depression (p=0.51) measures among the groups (Table 3).

Table 3 - Comparison of means of the eight SF-36 dimensions and HADS-Depression and HADS-Anxiety subscales. Ribeirão Preto, São Paulo, Brazil, 2014

Variables	Lumbar stenosis (n=32)	Cervical stenosis (n=22)	
	Mean (SD)*	Mean (SD)	*p*†
SF-36 Dimensions			
General health status	67.9 (22.8)	70.3 (17.6)	0.68
Pain	62.5 (16.8)	49.5 (23.5)	0.02
Mental health	59.0 (24.9)	56.5 (25.0)	0.72
Vitality	56.8 (26.0)	54.0 (26.5)	0.70
Emotional aspects	44.7 (42.8)	33.3(41.1)	0.33
Social aspects	42.9 (20.0)	48.8 (27.2)	0.36
Functional capacity	20.1 (12.4)	32.0 (23.4)	0.01
Physical aspects	14.8 (23.6)	12.5 (24.0)	0.72
HADS-Anxiety	8.38 (3.8)	8.73 (5.1)	0.77
HADS-Depression	5.28 (4.5)	6.1 (4.8)	0.51

*Standard deviation; †p-value originated from the Student's t-test.

In the evaluation of functional limitation, patients with lumbar stenosis presented mean of 53.2% (SD=11.9), whereas patients with cervical stenosis presented mean of 40.2% (SD=17.5). Figures 1 and 2 present the distribution of the degree of disability of patients with lumbar and cervical stenosis, respectively, evaluated by means of the ODI and the NDI instruments.

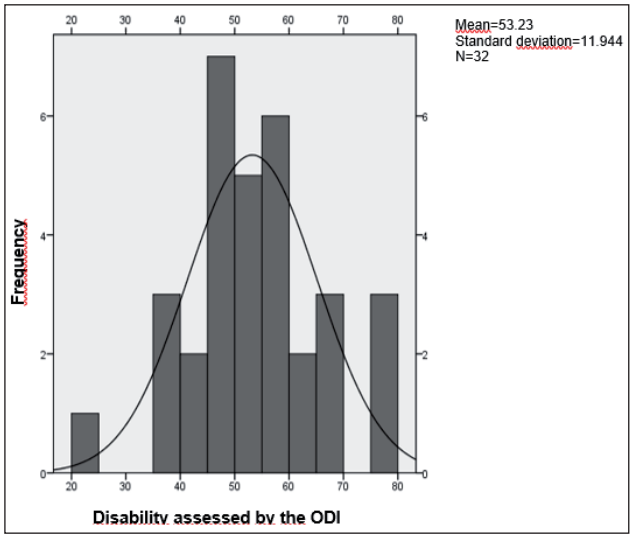

Figure 1 – Results of the measurement of the specific instrument Oswestry Disability Index (ODI) for functional limitation among participants with lumbar stenosis

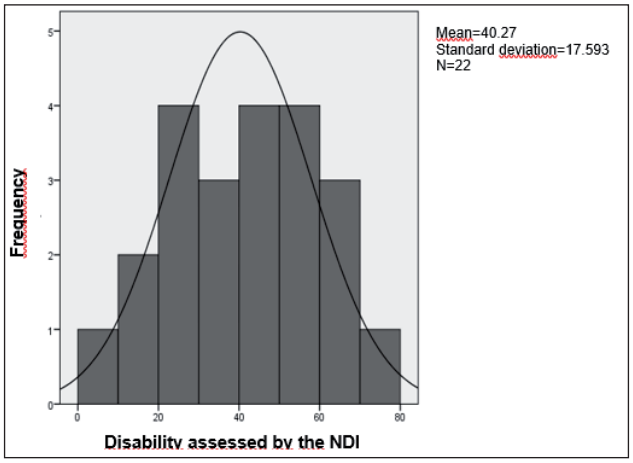

Figure 2 – Results of the measurement of the specific instrument Neck Disability Index (NDI) for functional limitation among participants with cervical stenosis

In the evaluation of the 54 patients' expectations with the surgical treatment, in eight of the ten items, most participants expected to be "much better". Only in the item "Leg pain," most participants expected to be "better" (42.6%). In the item "Back pain," the frequencies of participants who expected to be "much better" and "better" were equivalent (33.3%). The item "Back pain" had a higher percentage of responses for the option "not applicable" (25.9%) (Table 4).

Table 4 – Frequency of responses for the expectation of the 54 participants toward the surgical treatment. Ribeirão Preto, São Paulo, Brazil, 2014

Expectations	Much better %	Better %	Slightly better %	No improvement %	Worse %	Not applicable %
Leg pain	40.7	42.6	5.6	-	-	11.1
Back pain	33.3	33.3	7.4	-	-	25.9
Neck pain*	24.1	11.1	-	-	-	5.6
Arm pain*	18.5	11.1	3.7	-	-	7.4
Ability to walk	48.1	37.0	.	1.9	-	1.9
Independency in activities of daily living	57.4	31.5	7.4	-	1.9	1.9
Sport activities	44.4	42.6	5.6	1.9	-	5.6
Physical capacity in general	48.1	38.9	11.1	-	1.9	-
Frequency and quality of social contacts	50.0	42.6	3.7	1.9	-	1.9
Mental well-being	57.4	37.0	-	5.6	-	-

*Items responded by the 22 participants with cervical stenosis.

Concerning the evaluation of expectation with the general health status improvement, two participants had difficulty in evaluating the expectation by means of the instrument used, being one from the lumbar stenosis group and the other from the cervical stenosis group. Among the 52 participants who responded to the question, a mean of 8.24 centimeters (SD=1.8) was obtained, indicating the same optimist expectation toward the surgical treatment.

DISCUSSION

This study showed that patients with cervical stenosis presented worse evaluation in the pain dimension, when compared with those with lumbar stenosis. This SF-36 dimension is composed of two questions: one evaluates the intensity of pain in the body in general, whereas the other evaluates how much pain interfered with the individual's normal work (outside and inside home).

Such finding can be explained by the fact that cervical, arm and hand pain prevent individuals to perform small daily tasks, such as buttoning shirts and picking small objects on the furniture, increasing dependency on other people. Results on the comparison of HRQOL among patients with lumbar and cervical stenosis were not found, except those from a study conducted in the city of Caxias do Sul, whose authors found worse means in the physical aspects (lumbar M=11.0 *versus* cervical M=15.62), functional capacity (lumbar M=31.93 *versus* cervical M=41.77) and pain (lumbar M=26.71 *versus* cervical M=26.21) dimensions. These results do not corroborate those found in the present study.[6]

Nevertheless, in the functional capacity dimension, participants with lumbar stenosis presented worse evaluation when compared to those with cervical stenosis. This dimension evaluates the individuals' limitation regarding basic activities such as, taking a bath, walking, walking up stairs, kneeling and carrying objects; it also evaluates limitation considering moderate (sweeping the house, playing ball) and vigorous (running, participating in hard sports) activities.[27] Patients with lumbar stenosis present pain, tingling, and leg and back weakness as main symptoms.[13] These symptoms probably contribute to the worsening of functional capacity. Patients with cervical stenosis present pain, tingling and frequent weakness in the neck and arms symptoms, which would justify the lesser limitation for the performance of the items evaluated in this SF-36 dimension.[7,35]

Comparing the results of the present study with those found in the overall population of Brazil,[35] a difference of more than 50 points was found between patients with spinal stenosis and the overall population, in the SF-36 physical aspects and functional capacity dimensions. Such results may demonstrate how much HRQOL is impaired in patients with spinal stenosis.

Nonetheless, in the SF-36 mental health and emotional aspects dimensions, the means were lower than 60 points, which indicates low HRQOL, considering that in the study conducted with a sample of the Brazilian population, these means were above 70 points in women between 45 and 64 years old, without chronic disease and anxiety and depression symptoms.[36]

In addition to the HRQOL evaluation, the presence of anxiety and depression symptoms was compared according to the spinal stenosis location (lumbar or cervical), since psychological factors, such as depression and anxiety might be present in individuals with spinal stenosis, for being a chronic-degenerative disorder that affects older people and provides debilitating and painful conditions to these individuals. Furthermore, pain relation, worse HRQOL, increase of disability, depression and anxiety coexist.[37]

Comparing score means of HADS-Anxiety and HADS-Depression according to the spinal stenosis location (lumbar or cervical) showed no statistically significant differences between the groups.

Although statistically significant differences between the groups were not found, evaluations of psychological factors have been currently and frequently mentioned, because of a possible negative influence of anxiety and depression symptoms on a good prognosis after surgery. Moreover, some studies evaluated depression symptoms, in the sense of existing a possible association with poor quality of life.[11-13,38] In a systematic review, the authors concluded that depression may predict unfavorable results regarding functional capacity and the severity of symptoms caused by degenerative disorders of the spine, such as spinal stenosis.[37]

Regarding functional limitation, participants with lumbar stenosis had about 10% more functional limitation than those with cervical stenosis. Similar means as those obtained in the studied group were found in international studies, ranging from 40% to 50% for the functional limitation degree in patients who had degenerative diseases in the lumbar and cervical region of the spine, respectively.[17,21]

In the expectation evaluation, most participants expected to be much better and better regarding the disorder symptoms after the surgical procedure. This result was similar to that found in the study that developed the question used in the expectation evaluation of the present study.[20] The results of the group differ from a study with Swiss patients for physical capacity and mental well-being items. Most patients responded "No improvement", whereas the participants of the present study expected to be "much better".[20] Other two studies sought to evaluate patients' expectations regard-

ing the improvement of the symptoms. One used a closed-ended question of multiple choice and most patients were optimist regarding the improvement of symptoms after their spine surgery.[33] However, in the other study, conducted in the United States, a Visual Analogue Scale (VAS) was used, and means of 6.7 for arm pain and 5.3 for neck pain were found.[39]

The results of the present study show how much patients expected their general health status and the main symptoms of the disorder to change after the surgical procedure. These findings contribute to the decision making of the healthcare staff regarding the perioperative and recovery period. It is worth mentioning the need for developing educational programs to guide patients on their health problem and the purpose of the surgery, so they have a realistic expectation on what might happen after the procedure.

Regarding the patients' profile and unrealistic expectations concerning the result of the surgery, the nursing team, who are most of the time providing care to these patients, can improve their approach, ensuring an easy understanding language and providing nursing care toward guiding patients with a focus on hospital discharge and recovery at home.

CONCLUSION

Comparing patients' groups according to the spinal stenosis location showed no statistically significant differences for anxiety, depression and most HRQOL dimensions' variables, except for pain and functional capacity. Although patients reported a moderate degree of functional limitation, both those with lumbar and cervical stenosis expected a great improvement of symptoms caused by the stenosis after spine surgery. These results are important for planning the recovery of these individuals, since pain and functional capacity impact on quality of life in different ways. Individuals with cervical stenosis mention an impact of pain, whereas those with lumbar stenosis attribute to functional capacity, the greatest compromise in the quality of their lives. Another important result is to consider a more realistic orientation of the possible results of the surgical treatment concerning its limitations, since most of the interviewed patients expected great improvement after the surgery.

Finally, generalization of the findings should be carefully made, since the limitations of the present study include its small sample, which is justified by the fact that participants were recruited from a single hospital, and although this institution performs more than 100 surgical procedures a year, there is a great diversity of spine disorders. Consequently, the specificity of the spinal stenosis disorder made it difficult for getting a larger sample to respond to the study questions. Another aspect to be considered is the difficulty found by some participants in understanding the items and scales of responses of the instruments used, especially those that contain several options of responses, such as items of the SF-36 mental health and vitality dimensions. These difficulties can be justified by poor education and presence of pain and discomfort at the time of data collection among participants. They also presented difficulties in evaluating the expectation with the surgical procedure by means of the NRS, and had to be guided three times to understand how they would fill in the scale. The use of an instrument developed for patients with lumbar stenosis for the evaluation of patients with cervical stenosis was another limitation of the study. Nevertheless, it is worth mentioning that until the beginning of the study data collection, another available instrument for expectation evaluation in Brazil had not been found.

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