










COMPARING PREOPERATIVE QUALITY OF LIFE QUESTIONNAIRE IN LUMBAR STENOSIS

COMPARANDO QUESTIONÁRIOS DE QUALIDADE DE VIDA PRÉ-OPERATÓRIOS NA ESTENOSE LOMBAR

COMPARANDO CUESTIONARIOS DE CALIDAD DE VIDA PREOPERATORIA EN ESTENOSIS LUMBAR

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ABSTRACT

Objective: To correlate the four quality of life questionnaires: Oswestry Disability Index (ODI), SF-36, Swiss Spinal Stenosis Questionnaire (SSS), and EQ-5D in patients who have not received surgical treatment of lumbar stenosis. **Methods:** Prospective cross-sectional study. Forty patients diagnosed with lumbar stenosis at a university hospital answered four quality-of-life questionnaires in a preoperative consultation. The scores of each questionnaire were tabulated and then compared. In statistical analysis, the Spearman correlation was performed. **Results:** 17 female and 23 male patients with a mean age of 56.5 years. ODI had an average dysfunction of 44.9%; the PCS score averaged 29.9, and the MCS score of 41.3. The general symptoms of SSS presented a mean of 3.2, and the EQ-5D presented an average of 0.491. The EQ-5D presented the best correlation with the other questionnaires. The score that presented a worse correlation with the other questionnaires was the neuroischemic symptomatology of SSS. **Conclusion:** quality-of-life questionnaires can be correlated; thus, the evaluation of preoperative patients can be simplified. **Level of Evidence III; Diagnostic Studies.**

Keywords: Spinal Stenosis; Surveys and Questionnaires; Quality of Life; Low Back Pain.

RESUMO

Objetivo: Correlacionar os quatro questionários de qualidade de vida: Oswestry Disability Index (ODI), SF-36, Swiss Spinal Stenosis Questionnaire (SSS) e EQ-5D em pacientes que não foram submetidos a tratamento cirúrgico de estenose lombar. **Métodos:** Estudo transversal prospectivo. Quarenta pacientes com diagnóstico de estenose lombar acompanhados em hospital universitário responderam a quatro questionários de qualidade de vida em consulta pré-operatória. As pontuações de cada questionário foram tabuladas e depois comparadas. Na análise estatística, foi realizada a correlação de Spearman. **Resultados:** 17 pacientes do sexo feminino e 23 do sexo masculino com idade média de 56,5 anos. ODI teve uma disfunção média de 44,9%, a pontuação do PCS foi em média de 29,9 e a pontuação do MCS de 41,3. Os sintomas gerais de SSS apresentaram média de 3,2 e o EQ-5D apresentou média de 0,491. O EQ-5D apresentou a melhor correlação com os demais questionários. A pontuação que apresentou pior correlação com os demais questionários foi a sintomatologia neuroisquêmica do SSS. **Conclusão:** os questionários de qualidade de vida podem ser correlacionados e, assim, simplificar a avaliação dos pacientes no pré-operatório. **Nível de Evidência III; Estudo diagnóstico.**

Descritores: Estenose Espinal; Inquéritos e Questionários; Qualidade de Vida; Dor Lombar.

RESUMEN

Objetivo: Correlacionar los cuatro cuestionarios de calidad de vida: Oswestry Disability Index (ODI), SF-36, Swiss Spinal Stenosis Questionnaire (SSS) y EQ-5D en pacientes que no han sido sometidos a tratamiento quirúrgico de estenosis lumbar. **Métodos:** Estudio transversal prospectivo. Cuarenta pacientes con diagnóstico de estenosis lumbar acompañados en un hospital universitario respondieron cuatro cuestionarios de calidad de vida en una consulta preoperatoria. Las puntuaciones de cada cuestionario fueron tabuladas y luego comparadas. En el análisis estadístico se realizó la correlación de Spearman. **Resultados:** 17 pacientes del sexo femenino y 23 del sexo masculino con una edad media de 56,5 años. ODI tuvo una disfunción promedio de 44,9%, el puntaje PCS promedió 29,9 y el puntaje MCS de 41,3. Los síntomas generales de SSS presentaron una media de 3,2 y el EQ-5D presentó una media de 0,491. El EQ-5D presentó la mejor correlación con los demás cuestionarios. La puntuación que presentó una peor correlación con los demás cuestionarios fue la sintomatología neuroisquémica del SSS. **Conclusión:** los cuestionarios de calidad de vida se pueden correlacionar y, por lo tanto, se puede simplificar la evaluación de los pacientes preoperatorios. **Nivel de Evidencia III; Estudios de diagnósticos.**

Descriptor: Estenosis Espinal; Encuestas y Cuestionarios; Calidad de Vida, Dolor de la Región Lumbar.

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INTRODUCTION

Lumbar stenosis is one of the main diagnosed pathologies of the spine and the main cause of spinal surgery in the elderly population; responsible for the generation of significant pain and consequent functional damage to patients.¹ It is increasingly frequent due to the greater life expectancy of the world population.² It has been defined as a condition in which there is a decrease in the space available for neural and vascular elements, secondary to degenerative changes in bone structures and soft tissues, with the consequent invasion of the spinal canal.^{3,4} Neurogenic claudication is a classic alteration related to pain and gait difficulty. Root symptoms may be present alone or in an association.⁵⁻⁷

Imaging exams are of great importance in propaedeutics to complement the patients' clinic, helping to define the location and degree of involvement. Magnetic resonance imaging (MRI) plays a central role in diagnosing spinal stenosis. Despite this, the correlation between MR imaging characteristics and clinical symptoms remains controversial, as many asymptomatic individuals have spinal stenosis verified by magnetic resonance imaging.^{8,9}

The rational use of health goods and services is always desired, especially during the economic recession, aiming to improve the patient-health institution binomial. In this way, clinical and quality-of-life data should be applied so that, together with the physical examination and imaging tests, treatment is conducted most correctly and least expensively.¹⁰

For this, we have lumbar stenosis, questionnaires that stratify the pain complaint, the degree of functional disability, and mental health involvement. Among the most used are the Oswestry Disability Index (ODI), SF-36, Swiss Spinal Stenosis Questionnaire (SSS), and EQ-5D.^{11,12}

The search for simpler and shorter questionnaires is feasible in previous studies without losing their psychometric characteristics.^{13,14}

This study aims to correlate the four quality-of-life questionnaires described above in patients diagnosed with symptomatic lumbar stenosis undergoing conservative treatment and thus define whether it is possible to replace longer questionnaires with one that is simpler and easier to apply.

METHODS

A prospective cross-sectional study was carried out between April 2015 and November 2016 at the spine outpatient clinic of a quaternary university hospital. This study was approved by the Institutional Reviewed Board (IRB) CAAE 68085317.9.0000.5404, and all patients signed an informed consent form.

Patients with clinical and radiological diagnoses of lumbar stenosis, older than 18 years, without gender restriction, who agreed to participate in the study and signed the informed consent form, were included in the study. The following were excluded from the study: patients with a history of spinal surgery, tumor lesions in the spine, deformity greater than 45 degrees in the coronal plane of the spine, those who did not agree to participate in the study, and those with contraindication to magnetic resonance imaging. The patients were submitted to the application of the four quality of life questionnaires by the same orthopedist who was part of the spine group, trained, and with detailed knowledge of the instruments. The applied questionnaires were Oswestry Disability Index, SF-36, Swiss Spinal Stenosis Questionnaire, and EQ-5D.¹⁵⁻¹⁹

The Oswestry Index (ODI) is a questionnaire that the patient can perform by interview or self-completed. It analyzes the levels of perceived disability in 10 items and assigns a subjective level score to each assessed function. It is easy to understand and encompasses a broad domain of pain, function, and health status limitation.¹⁵

The SF-36 consists of 36 items, encompassed in eight scales or components: functional capacity, physical aspects, pain, general health status, vitality, social aspects, emotional aspects, and mental health. These scales can still be grouped into two summarized measures, physical and mental health measures.¹⁶

The Swiss Spinal Stenosis Questionnaire (SSS) is specific to this

pathology. Its characteristic is quantifying symptoms' severity, physical function characteristics, and patient satisfaction after treatment. It is designed to complement existing generic assessment measures.¹⁷

The EQ-5D is a health-related quality-of-life assessment instrument whose descriptive system consists of five dimensions – mobility, personal care, usual activities, pain/discomfort, and anxiety/depression – with three levels of severity for each one. It aims to generate a non-specific and standardized instrument to describe and assess health-related quality of life measures.^{18,19}

The data collected and used in the study were: the percentage of dysfunction found in the ODI, the physical (PCS) and mental (MCS) scores found in the SF-36, the symptom severity scales (painful and neuroischemic), and physical function found in the SSS, in addition to the score based on the EQ-5D questionnaire scores. Patient satisfaction was not used, as none had undergone surgical treatment.

Personal characteristics and quality of life scores were described using summary measures (mean, standard deviation, median, minimum, and maximum) or absolute and relative frequencies (Kirkwood and Sterne, 2006).²⁰

Spearman correlations (Kirkwood and Sterne, 2006) were calculated between all quality-of-life scores.²⁰

The analyzes were performed using the IBM-SPSS for Windows version 20.0 software, and the tables were prepared using the Microsoft Excel 2003 software. The tests were performed with a significance level of 5%.

RESULTS

Forty patients completed the study, 17 females (42.5%) and 23 males (57.5%). The mean age was 56.5 years. (Table 1)

The Oswestry (ODI) had an average of 44.9. The SF-36 PCS presented an average of 29.9. The MCS had an average of 41.3. The

Table 1. Patients description.

Variable	Description (N = 40)
Gender, n (%)	
Female	17 (42.5)
Male	23 (57.5)
Age (Years)	
Average ± SD	56.5 ± 12
Median (min; max)	56.5 (23; 79)
Oswestry	
Average ± SD	44.9 ± 16.5
Median (min; max)	43 (20; 72)
PCS	
Average ± SD	29.9 ± 8.8
Median (min; max)	29 (4; 46)
MCS	
Average ± SD	41.3 ± 11.6
Median (min; max)	38.6 (22; 65)
SSS (symptoms)	
Average ± SD	3.2 ± 0.63
Median (min; max)	3.22 (2; 5)
SSS (pain)	
Average ± SD	3.62 ± 0.65
Median (min; max)	3.63 (2; 5)
SSS (neurologic)	
Average ± SD	2.65 ± 0.94
Median (min; max)	2.67 (1; 4.33)
SSS (physical function)	
Average ± SD	2.6 ± 0.56
Median (min; max)	2.8 (1.6; 3.6)
EQ-5D	
Average ± SD	0,491 ± 0,251
Median (min; max)	0,446 (0,049; 0,843)

Swiss Spinal Stenosis questionnaire and its subdivisions showed: SSS (symptoms) mean of 3.2; SSS (painful) mean of 3.62; SSS (neuroischemic) mean of 2.65; SSS (physical function) average of 2.6. The EQ-5D presented an average of 0.491. (Table 1)

When the statistical analysis of possible correlations between the questionnaires was performed (Table 2), the ODI presented an absolute inverse correlation with the PCS of the SF-36 ($r = 0.441$), in addition to the EQ-5D, where it found an absolute relationship of 0.564. When correlated with the scores of the Swiss questionnaire, it presented a direct correlation with general symptoms and physical function, 0.443 and 0.577. All with $p < 0.05$.

The SF-36 showed an inverse correlation with general symptoms, mechanical pain, and physical function when correlating PCS with SSS. However, the same correlation was not found with the EQ-5D. Mental health (MCS), on the other hand, showed a direct correlation with EQ-5D ($r = 0.549$).

The Swiss questionnaire showed an inverse correlation with EQ-5D when general symptoms and mechanical pain were considered, in addition to physical function. It was also possible to observe this correlation with the SF-36 PCS. When the neuroischemic symptoms subgroup was evaluated alone, no direct or inverse correlation was found with any other questionnaire.

As previously shown in Table 2, the EQ-5D was the questionnaire that presented the best correlations with the other questionnaires, presenting a direct or inverse absolute relationship above 0.5. The exception was with the PCS subgroup of the SF-36 and the neuroischemic symptoms of the Swiss questionnaire.

DISCUSSION

Lumbar canal stenosis is a prevalent pathology in our population, especially in the elderly population, and generates great economic expenditure. It is one of the main causes of surgical treatment among spinal disorders in many countries.²¹ The damage caused by this pathology to patients' quality of life is well known, reaching the biopsychosocial sphere.^{4,11,22-25}

Quality-of-life questionnaires are a feasible, effective, and routinely used instrument to monitor the evolution of patients undergoing treatment for spinal pathologies.²³⁻²⁷

For Higginson et al., to be clinically useful, an instrument that assesses the quality of life should be easy to understand and quick to respond to.^{25,28}

The great challenge in creating quality-of-life assessment instruments with a small number of items is the difficulty in transforming them into multidimensional instruments. In addition, simplified instruments tend to have lower levels of reproducibility.²⁹ On the other hand, studies suggest that short questionnaires have higher response rates (when sent to patients) and lower rates of unanswered items when compared to long questionnaires.^{30,31}

This search for instruments that can measure the quality of life with fewer items is not new.³²⁻³⁴

In our study, four questionnaires already established in the literature for evaluating spinal pathologies were used; the EQ-5D, the shortest and easiest to apply among these, correlated well with all the other questionnaires. Among all the questionnaires, it was the one that presented the best correlation with the others. One of the criteria in which no significant correlation was found was the symptomatology triggered by neuroischemic factors evaluated by the SSS, but when compared with the general symptomatology, the correlation was moderate. The other criterion that did not present a significant correlation was the PCS of the SF-36. Studies based on the evaluation and follow-up of patients with degenerative changes in the spine found moderate to low correlations between EQ-5D and SF-36 both in patients with conservative treatment and those undergoing surgical treatment.^{35,36} Conner-Spady et al. reported similar correlation coefficients at baseline for EQ-5D and SF-36.^{37,38}

Soon, it is possible that a surgeon's performance will not be evaluated by its clinical results but also by the economic value spent on the treatment.¹⁰ Thus, the idea is inserted that smaller questionnaires, in addition to not being a burden for the patient, would facilitate the operational logistics involved in health systems.³⁹

The ODI questionnaire seeks to define the degree of incapacity of the patient due to the pathology studied, mainly considering physical changes for day-to-day activities.¹⁵ In this study, when compared with the SF-36 questionnaire, a moderate correlation was found with the PCS but very small with the MCS. Therefore, the physical changes were similar in the two questionnaires. As might be expected, mental function showed a low correlation, as the ODI does not present this projection.

Recently, Ko et al. (2016) found very similar results when they studied a population with low back pain undergoing surgical treatment.⁴⁰

When compared to the SSS, both symptoms and physical function also presented concordant results, leading to the understanding that the incapacity of these patients was directly related to their mechanical pain complaints and physical limitations imposed by lumbar stenosis. A moderate relationship was also found with the EQ-5D.

Our study also showed a moderate correlation between the SSS and the other questionnaires. General symptoms, mainly those related to mechanical pain, showed moderate correlations with all other questionnaires, and physical function did not correlate well with the MCS.

McDonough et al. (2005) believe that all questionnaires measure the quality of life to some degree but do not provide enough information to guide the selection of one instrument over another. When there is no clear superior method, the practical and design aspects of the questionnaires may indicate which tool would be more suitable for measuring the quality of life of people with lumbar stenosis.³⁵

Table 2. Correlation between scores on quality-of-life questionnaires.

Correlation		Oswestry	PCS	MCS	SSS (symptoms)	SSS (pain)	SSS (neurologic)	SSS (physical function)
PCS	r	-0.441						
	p	0.004						
MCS	r	-0.250	-0.025					
	p	0.120	0.876					
SSS (symptoms)	r	0.443	-0.338	-0.382				
	p	0.004	0.033	0.015				
SSS (pain)	r	0.465	-0.396	-0.357	0.783			
	p	0.003	0.012	0.024	< 0.001			
SSS (neurologic)	r	0.247	-0.168	-0.302	0.809	0.313		
	p	0.125	0.301	0.058	< 0.001	0.050		
SSS (physical function)	r	0.577	-0.380	-0.112	0.547	0.543	0.307	
	p	< 0.001	0.016	0.491	< 0.001	< 0.001	0.054	
EQ-5D	r	-0.564	0.157	0.549	-0.526	-0.559	-0.294	-0.538
	p	< 0.001	0.335	< 0.001	< 0.001	< 0.001	0.066	< 0.001

The population of the current study comes from the public health system, and, in general, they belong to a less economically favored population class with, consequently, less access to basic services such as health and education. In this context, the use of a questionnaire that can combine simplicity and objectivity with a good understanding of the assessment instrument through the patient, with the proven effectiveness of its results, is the ideal scenario.

This relationship between patient education is known to play an important role in the treatment and understanding of chronic diseases such as spinal pathologies.^{41,42} The educational factor is described as limiting for the routine use of quality-of-life questionnaires since patients with a lower educational level find it difficult to use them. These patients have not been systematically included in studies to validate the questionnaires, being the target of investment by a few researchers. Unfortunately, this patient subpopulation is still very common in Brazil,^{43,44} and it was the basis of the current study.

Limitations of our study reside in the fact that it is not a

prospective study, in which it would be possible to assess the evolution of these same patients at different treatment periods and because of the relatively small sample size.

CONCLUSION

When compared to a population with preoperative lumbar stenosis, the quality-of-life questionnaires showed a good correlation, making it possible to use a simpler and more direct questionnaire, such as the EQ-5D, to assess these patients with an acceptable outcome. More studies are needed to consolidate simpler and more objective questionnaires as feasible and with good results for lumbar stenosis.

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