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Translation and Cross-cultural Adaptation of the SOSG-OQ 2.0 Questionnaire into Brazilian Portuguese*

Tradução e adaptação transcultural do questionário SOSG-OQ 2.0 para o português brasileiro

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Abstract

Objective: To perform the cross-cultural adaptation and translation into Brazilian Portuguese of the Spine Oncology Study Group – Outcomes Questionnaire 2.0 (SOSG-OQ 2.0) to enable its application to Brazilian patients and to allow Brazilian researchers to use a questionnaire that is on trend in the scientific literature.

Materials and Methods: The present is a basic, non-randomized, non-comparative study. The translation followed the proposal by Reichenheime and Moraes, mainly for the semantic equivalence and measurement equivalence sessions, as well as the recommendations by Coster and Mancini mainly in the translation stage. The stages were as follows: first – translation into Brazilian Portuguese; second – back-translation; third – semantic comparison; fourth – validation of the final construct.

Results: The translations of the SOSG-OQ 2.0 made by three translators presented a high degree of similarity for most questions. The translators kept all question titles and subtitles, as well as their internal and external orders. Two sworn translators, with native proficiency in English, performed the back-translation of the amalgamated text. Both back-translations were quite similar, and any differences were solved through consensus between the main author and the sworn translators, and the translated text was considered the final version.

Keywords
- spine/surgery
- surveys and questionnaires
- neoplasm metastasis
- quality of life
- translations

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Conclusion: The present study shows a translated version of the SOSG-OQ 2.0 with semantic validity with the original version published in English. As such, researchers can apply the questionnaire to the Brazilian population, adding another tool for spine surgeons to improve the monitoring of this complex group of patients.

Resumo

Objetivo: Realizar a adaptação transcultural e a tradução para o português brasileiro da versão 2.0 do Questionário de Desfechos do Spine Oncology Study Group (Spine Oncology Study Group – Outcomes Questionnaire 2.0, SOSG-OQ 2.0, em inglês) para viabilizar sua aplicação em pacientes brasileiros e permitir a utilização deste questionário que está em voga na literatura científica por pesquisadores brasileiros.

Materiais e Métodos: Trata-se de uma pesquisa básica, não randomizada, não comparativa. As etapas de tradução foram realizadas conforme propostas por Reichenheime e Moraes, principalmente as sessões de equivalência semântica e equivalência de mensuração, e também foram seguidas as recomendações de Coster e Mancini, principalmente na etapa de tradução. As etapas foram as seguintes: primeira – tradução do questionário para o português brasileiro; segunda – retroversão; terceira – comparação semântica; e quarta – validação final do constructo.

Resultados: As traduções do SOSG-OQ 2.0 feitas por três tradutores apresentaram grande similaridade na maioria das questões. Todos os títulos e subtítulos de perguntas foram mantidos pelos tradutores, assim como as ordens interna e externa das perguntas. A retroversão da tradução conciliada foi realizada por dois tradutores juramentados, com fluência nativa na língua inglesa. Ambas as retroversões foram bastante similares, as divergências foram sanadas por consenso entre o autor principal e os tradutores juramentados, e a versão traduzida foi considerada a versão final.

Conclusão: Neste estudo, apresenta-se uma versão traduzida do SOSG-OQ 2.0 que tem validade semântica com a versão original publicada em inglês, o que permite a sua aplicação na população brasileira, e acrescenta mais uma ferramenta para que os cirurgiões de coluna possam acompanhar de forma melhor este complexo grupo de pacientes.

Palavras-chave
- coluna vertebral/cirurgia
- pesquisas e questionários
- metástase neoplásica
- qualidade de vida
- traduções

Introduction

In Brazil, since 2000, cancer has been the second leading cause of death after heart disease.[1] The prevalence of metastatic spinal tumors is higher than that of primary tumors at this location.[2,3] Metastatic spinal disease increases the morbidity related to the primary condition, directly impacting the patient's quality of life.[2,4,5]

It is not uncommon for patients with metastatic disease to present with dysfunctions in several body systems, and they may undergo different treatments, including chemotherapy and/or radiotherapy.[6] Sometimes, these subjects require spinal surgery to preserve or restore neurological function, sustain spinal segmental stability, and control pain.[6–8]

Multiple tools are currently available to study the clinical outcomes of patients with metastatic spinal tumors. However, they are nonspecific and usually analyze a single variable.[9] For instance, the Frankel scale and the American Spinal Injury Association (ASIA) impairment scale quantify (classify) the degree of neurological injury.[10,11] In addition, quality-of-life questionnaires filled out by patients determine how they perceive their quality of life/health status, enabling them to identify the impact of a procedure or condition on the subject quality of life/health status.[12,13] In spinal surgery, the most applied quality-of-life questionnaires are the Oswestry Disability Index[14] and the Neck Disability Index,[15] which specifically quantify the impact of a condition on the self-perceived quality of life regarding the lumbar spine and cervical spine respectively. Moreover, broader questionnaires, such as the EuroQoL Five Dimensions (EQ-5D) or the 36-Item Short Form Survey (SF-36), quantify quality of life more comprehensively, without focusing on a specific condition or location, enabling the comparison of patients with different diseases or treatments using the same score.[16,17] Lastly, quality-of-life impact scores filled out by physicians, surgeons, or both, such as the Eastern Cooperative Oncology Group (ECOG) score, classify how much the tumor impacts the patient's activities. On the ECOG, 0 equals regular quality of life, while 5 indicates death.[18]

Despite being validated and helpful in the follow-up and evaluation of patients with metastatic tumors, none of these questionnaires focus specifically on patients with spinal tumors. As such, the literature diverges on the best combination of questionnaires to follow-up patients with metastatic spinal tumors. For instance, Street et al.[9] recommend ECOG and SF-36, while Choi et al.[19] prefer the EQ-5D.

The lack of questionnaires for the specific evaluation of a given condition led the Spine Oncologic Study Group (SOSG) to develop an outcomes questionnaire (SOSG – Outcomes Questionnaire, SOG-OQ) to assess the quality of life of patients with metastatic spinal tumors.[20] Furthermore, a study[21] showed that the SOSG-OQ was superior to the 3-Level Version of the EQ-5D (EQ-5D-3L) in patients with metastasis, lymphoma, or myeloma. Moreover, the SOSG-OQ was more effective than the Patient-Reported Outcomes Measurement Information System (PROMIS)[22] in analyzing the quality of life of patients with spinal metastasis; however, the PROMIS was more effective in assessing physical function and pain, according to a study by Paulino Pereira et al.[23]

Although specifically designed for patients with spinal metastases, the SOSG-OQ still contained certain internal inconsistencies, and items in selected subdomains did not correlate as effectively.[21,24]

Thus, in 2018, Veersteg et al.[24] performed a psychometric study on the SOSG-OQ, and developed an updated version. To solve discrepancies in the first version of the SOSG-OQ , the authors divided the original question 8 (on bowel and bladder function) into 2 separate questions to facilitate the answer, since often only the bowel or bladder is dysfunctional. Furthermore, they moved questions 7 (on walking assistance) and 20 (on leaving the house) to the physical function domain; question 16 was moved to the pain domain, and question 15 (on energy level) was removed, as it was not associated with any domain and did not provide enough significant information.[24] Then, the SOSG-OQ 2.0 construct was compared with the Numeric Rating Scale (NRS) for pain and the SF-36 in patients with spinal metastasis, and a strong correlation was found between the questionnaires.[24]

As such, the present study aimed to perform the cross-cultural adaptation and translation of the SOSG-OQ 2.0 into Brazilian Portuguese, to enable its application to Brazilian patients.

Materials and Methods

The present is a basic, non-randomized, non-comparative study.

Translation and cross-cultural adaptation process

The translation and cross-cultural adaptation of an instrument involve multiple steps to ensure that the translated construct is valid and equivalent, and that it also makes sense for the target audience.[25] The process begins with multiple translations of the original questionnaire; then, a synthesis of these texts forms the amalgamated translation. After a consensus on the translation, a group of translators (with native proficiency in the original language) performs back-translations (BTs) of the document, which are then synthesized to obtain the final BT. An expert committee compares the BT with the original version to check for any discrepancies between the previous texts. If there are few or no discrepancies, the construct undergoes psychometric and validity assessments in the target population.[25,26]

The translation followed the proposal by Reichenheime and Moraes,[26] mainly for the semantic equivalence and measurement equivalence sessions, and the recommendations by Coster and Mancini,[27] mainly in the translation stage (►**Fig. 1**).

Step 1: individual translation into Brazilian Portuguese of the SOSG-OQ 2.0 by 3 Brazilian researchers. Through a comparison of the three translations a consensual, unified version was developed, called amalgamated translation. During the translation stage, the reviewers were asked to make any required changes to elements of the questions that were not so familiar to the Brazilian population.

Step 2: Two proofreaders, certified language studies specialists with proficiency in English, analyzed the

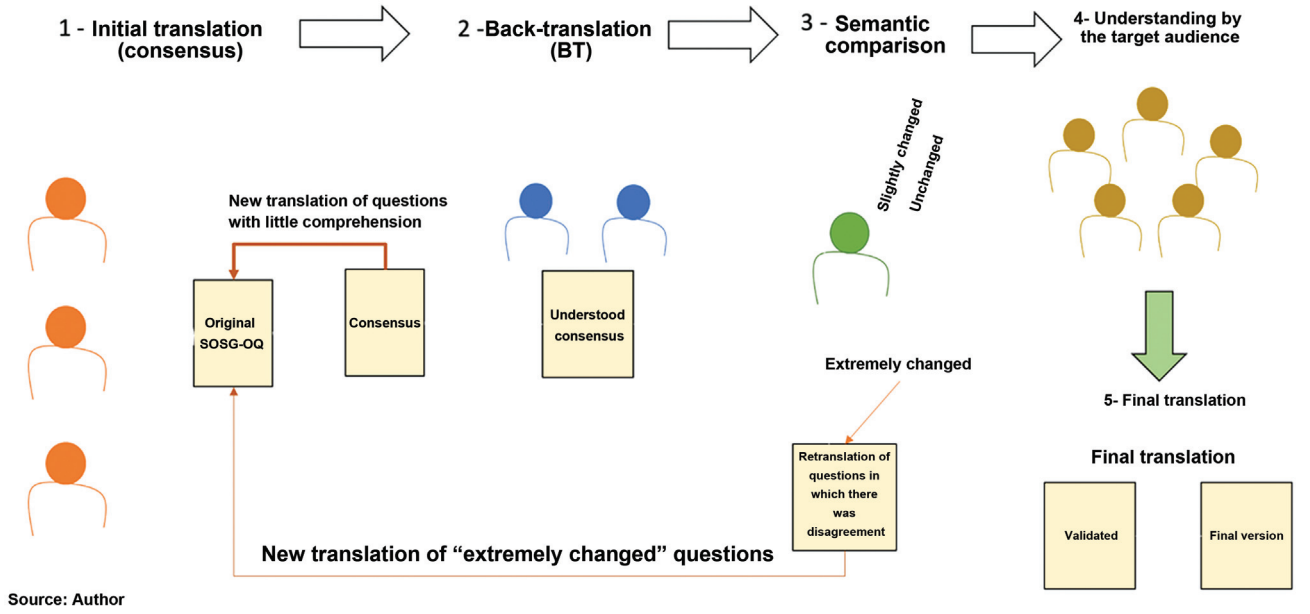

Fig. 1 Flowchart of the translation of the SOSG-OQ until the final version.

Table 1 Discrepancies in the translation of questions

Original	Alternative 1	Alternative 2	Conciliation
Do you require assistance from others to travel outside of the home?	Você precisa de ajuda de outras pessoas para sair de casa?	Você necessita de auxílio dos outros para trabalhos fora do ambiente domiciliar?	Você precisa de ajuda de outras pessoas para sair de casa?
When I feel pain, it is awful, and I feel that it overwhelms me.	Quando eu sinto dor, é horrível e sinto que isso me oprime.	Quando eu sinto dor, é uma dor horrível e insuportável.	Quando eu sinto dor, é uma dor horrível e insuportável.

amalgamated translation. The generated texts were called amalgamated BT.

Steps 3 and 4: Another translator (called final translator), who had not been involved in any of the translations and BTs, compared the amalgamated BT with the original version to provide an opinion on the similarity of the questionnaires, both in denotative and connotative aspects. This translator evaluated the questions as *unchanged*, *slightly changed*, and *extremely changed*.

SOSG-OQ 2.0

The SOSG-OQ 2.0 was developed in 2018 as an adaptation of the original SOSG-OQ to improve the internal validity of its domains and its correlation with other previously-validated constructs.[24] The reliability values of the questionnaire in the test-retest evaluations ranged from 0.58 to 0.92 between domains. In addition, the SOSG-OQ 2.0 presented an excellent correlation with the SF-36. The construct consists of 27 (20 preoperative and 7 postoperative) questions. The preoperative questions constitute five domains: physical function (6 questions); neurological function (4 questions); pain (5 questions); mental function (2 questions); and social function (3 questions). All questions contain 5 items with scores ranging from 1 to 5. To obtain the total score on the SOSG-OQ, one needs to reverse the score on the items, that is, $1 = 5$, $2 = 4$, and so on. The higher the score, the worse the quality of life. The score of the seven postoperative questions is a percentage of the maximum potential points (rule of three).[21]

Results

The translations of the SOSG-OQ 2.0 by the 3 translators presented a high degree of similarity for most questions. The translators kept all question titles and subtitles and their internal and external orders.

As for the translation of the questions per se, there was little discrepancy between the reviewers, with only two questions showing significant divergence between them (►**Table 1**). There were some disagreements in the translation of the alternatives (►**Table 2**). With these divergences resolved, we prepared the amalgamated translation.

Back-translation and Final Version

Two sworn translators, with native proficiency in English, performed the BT of the amalgamated text. Both BTs were quite similar, and any differences were solved by consensus among the main author and the sworn translators (►**Table 3**).

Since none of the questions or alternatives was "extremely changed" compared with the original questionnaire, the amalgamated translation was the final considered version of the questionnaire (►**Table 4**).

Discussion

Metastatic spinal tumors can cause different clinical manifestations and considerably impact the quality of life of the

Table 2 Examples of discrepancies regarding the translations of answer items

Original	Alternative 1	Alternative 2	Conciliation
Somewhat	Pouco	Mais ou menos	Mais ou menos
A little bit	Muito pouco	Um pouco	Um pouco
Sometimes	As vezes	Algumas vezes	Algumas vezes
Often	Frequentemente	Geralmente	Frequentemente

Table 3 Examples of discrepancies and consensus between the two back-translations

Back-translation 1	Back-translation 2	Consensus
A little	little	A little
%word% Constantly	Constantly %word%	%word% Constantly
Moderate outdoor activities	Moderate activity outside of the home	Moderate outdoor activities

Table 4 Reconciled translation and final version

I- Função Física
1. Qual é o seu nível de atividade?
Sem limitação nas atividades – Atividade moderada ao ar livre – Mobilidade mínima em residência – Restrito a deslocamento da cadeira para a cama – Acamado
2. Qual é a sua capacidade de trabalhar e/ou estudar?
Ilimitada – 4-8 horas por dia – 2-4 horas por dia – Menos de 2 horas por dia – Nenhuma
3. A sua coluna limita a sua habilidade de cuidar de si mesmo?
Não me atrapalha – Um pouco – Mais ou menos – Moderadamente - Bastante
4. Você precisa de assistência de outros para sair de casa?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
5- Você precisa de assistência para caminhar?
Nenhuma – Bengala – Um andador ou duas bengalas – Auxílio de outras pessoas – Não posso caminhar
6. Você sai de casa para eventos sociais/socializar?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
IIA- Função neurológica dos membros inferiores
7. Você sente fraqueza nas pernas?Nunca – Leve, ocasionalmente – Leve, constantemente – Moderada, constantemente – Severa, constantemente
IIB- Função neurológica dos braços
8. Você sente fraqueza nos braços?
Nunca – Leve, ocasionalmente – Leve, constantemente – Moderada, constantemente – Severa, constantemente
IIC- Função neurológica intestinal
9. Você sente dificuldade de controlar seu intestino (exceto em casos de diarreias)
Nunca – Leve, ocasionalmente – Leve, constantemente – Moderada, constantemente – Severa, constantemente
IID- Função neurológica da bexiga
10. Você sente dificuldade de controlar sua vontade de urinar?
Nunca – Raramente – Algumas vezes – Frequentemente – Faço uso de sonda
III- Dor
11. Em geral, quanto de dor nas costas você tem?
Nenhuma – Muito fraca – Fraca – Moderada – Severa
12. Quando você está na sua posição mais confortável, você continua a sentir dores?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
13. Em geral, a dor nas costas limita sua mobilidade (sentar-se, andar, levantar-se...)?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
14. Quão confiante você se sente em controlar a sua dor?
Não confio – Confio pouco – Confio moderadamente – Confio muito – Confio completamente
15. Quando eu sinto dor, é uma dor horrível e insuportável.
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
IV- Saúde mental
16. Você se sente deprimido?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
17. Você sente ansiedade em relação ao seu estado de saúde?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
V- Função social
18. Sua doença na coluna influencia na sua habilidade de concentração em conversas, leituras e ver televisão?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente

Table 4 (*Continued*)

19. Você acha que sua doença na coluna atrapalha suas relações interpessoais?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
20. Você se sente confortável em conhecer novas pessoas?
Nunca – Raramente – Algumas vezes – Frequentemente – Muito frequentemente
Questões pós-operatórias
21. Você está satisfeito com os resultados da sua cirurgia de remoção de tumor?
Muito satisfeito – Satisfeito – Nem satisfeito nem insatisfeito – Pouco insatisfeito – Muito insatisfeito
22. Se você pudesse escolher, faria o mesmo tratamento novamente?
Definitivamente sim – Provavelmente sim – Não sei dizer – Provavelmente não – Definitivamente não
23. Como sua cirurgia modificou sua função física e capacidade de realizar atividades do dia a dia?
Melhorou muito – Melhorou – Não mudou – Piorou um pouco – Piorou muito
24. Como sua cirurgia da coluna afetou sua medula e/ou raízes nervosas?
Melhorou muito – Melhorou – Não mudou – Piorou um pouco – Piorou muito
25. Como sua cirurgia afetou a sua dor na coluna?
Melhorou muito – Melhorou – Não mudou – Piorou um pouco – Piorou muito

patients. This impact is not restricted to the affected spinal segment, due to the systemic characteristic of the disease.[4,28,29] In addition, the existing questionnaires to assess the clinical outcomes of patients with metastatic spinal tumors were nonspecific and did not involve all variables.[9,20] Thus, the SOSG-OQ 2.0 was developed in an attempt to quantify the impact of the condition on quality of life.[24] However, to date, no version of the questionnaire in Brazilian Portuguese had been published.

In the present study, we performed the translation into Brazilian Portuguese and cross-cultural adaptation of the SOSG-OQ 2.0. Despite some discrepancies among the initial translations, mainly regarding adverbs of degree (*very*, *enough*, *little* etc.) reaching consensus among translators was simple. Likewise, the cross-cultural adaptation required few changes (such as altering *use of chopsticks* to *use of cutlery*), since it was originally developed by American and European researchers, whose habits tend to be very similar to those of Brazilians. Similarly, in a study by the Brazilian Spine Study Group and Brazilian surgeons the Frailty Index[30] was translated; despite discrepancies regarding some items, few cross-cultural adaptations were required.[31]

The SOSG-OQ consists of 27 questions, including 20 on the symptoms and impact of the disease on the patient's quality of life, plus 7 questions on how the patient feels about the surgical procedure.[20,21] In psychometric and consistency evaluation studies,[21,24] the SOSG-OQ correlated strongly with the quality-of-life scores on the EQ-5D and SF-36. In addition, its subgroups presented strong internal consistency.[21,24]

The potential improvement in the follow-up and evaluation of the impact of spinal neoplasms using the SOSG-OQ has led several authors to translate it into their native languages. Luksanapruksa et al.[32] performed the translation and cross-cultural adaptation into Thai, and they reported that the domains pf the translated version maintained a high internal consistency (Cronbach alpha >0.7) and that the questionnaire presented a strong correlation with the 5-Level EQ-5D (EQ-5D-5L). Likewise, Brodano et al.[33] reported the validity of the Italian version in terms of the internal domains and their correlation with the SF-36 subdomains, as well as a high consistency among questionnaire items.

Yin et al.[34] showed that the simplified Chinese version presented a strong correlation with the EQ-5D-5L and SF-36, an excellent internal consistency among its subgroups, and good intra-observer results. A group of researchers[35] recently demonstrated that the physical function, pain interference, and depression domains of the PROMIS presented a strong correlation with the SOSG-OQ.

Regarding the impact of the SOSG-OQ on decision-making, a 2020 study[36] on the benefits of potentially predicting scores on health-related quality of life (HRQoL) instruments after the surgical treatment of spinal neoplasms pointed out that the 2 questionnaires most beneficial in terms of the prediction of postoperative outcomes were the EQ-5D and the SOSG-OQ.[36] Furthermore, an article published in 2021[37] proposed the development of a summarized version of the SOSG-OQ especially focused on utility units, which would enable its use in the analysis of decisions, such as the one to convert these utility units into quality-adjusted life years (QALYs).

The present study has limitations, mainly the non-validation of the Brazilian Portuguese version due to the difficulties in obtaining sufficient data. However, it will serve as a basis for future validation. We believe that validation studies of our version of the SOSG-OQ are required for the internal consistency of its constructs and to determine its correlation with already established questionnaires, such as the EQ-5D.

Conclusion

In the present study, we performed the cross-cultural adaptation and translation into Brazilian Portuguese of the SOSG-OQ, which presents semantic validity regarding the original English version, which enables its application to the Brazilian population, adding another tool for spine surgeons to monitor this complex group of patients.

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Conflict of Interests
The authors have no conflict of interests to declare.

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