

Outcome Measurement After Lumbar Disc Surgery

Lomber Disk Cerrahisi Sonrasında Sondurum Ölçümü

ABSTRACT

OBJECTIVE: Quality of life is becoming more important within the concept of health care. Although clinical outcome still plays a big role in outcome measurement, patients' perceptions and understanding of their own health is being considered as significant. There are many measurement tools used for many diseases and surgical interventions today, including lumbar disc surgery.

MATERIALS: We review the most common generic and disease-specific Health Related Quality of Life (HRQOL) scales, which can be used to measure the outcomes of patients who have undergone lumbar disc surgery.

CONCLUSION: The aim of lumbar disc surgery should be not only to maintain the clinical outcome but to improve quality of life as well. Outcome measurement scales should be useful for assessing the outcome regarding health related quality of life.

KEY WORDS: Outcome, outcome measurement, lumbar disc surgery, quality of life, scale

ÖZ

AMAÇ: Yaşam kalitesi, sağlık bakımı kavramları içinde giderek daha önemli hale gelmektedir. Klinik iyileşme, sondurum ölçümünde hala büyük bir rol oynasa da, hastanın kendi sağlığına bakış açısı ve sağlık anlayışı önemli olarak değerlendirilmeye başlanmıştır. Bugün çeşitli hastalıklar ve lomber disk cerrahisini de içeren cerrahi girişimler için kullanılan birçok sondurum ölçüm aracı bulunmaktadır.

MATERIAL: Bu makalede, lomber disk cerrahisi uygulanan hastaların sondurum değerlendirmesinde en çok kullanılan genel ve hastalığa özel yaşam kalitesi ölçekleri incelenmiştir.

SONUÇ: Lomber disk cerrahisi uygulanan hastalarda klinik iyileşme ile birlikte yaşam kalitesinde artış sağlamak da amaçlanmalıdır. Bu amaca yönelik olarak hastaların iyileşme süreçlerinin değerlendirilmesinde, yaşam kalitesine dayalı sondurum ölçeklerinin kullanılması yararlı olacaktır.

ANAHTAR SÖZCÜKLER: Sondurum, sondurum ölçümü, lomber disk cerrahisi, yaşam kalitesi, ölçek

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INTRODUCTION

Concepts of health and healthcare are changing. Although clinical outcome is still the major indicator of patient's health, the impact of the disease and the therapy regimens on the patient's life quality is becoming more important. If the patient's perception of the disease, and the effects of the disease on his/her life, are known, it becomes easier to choose a treatment. The major aim of a treatment is to enhance the quality of life by reducing the unwanted effects of the disease (5).

Although two patients can have the same sickness, the quality of their lives can be different. Patients' expectations or concept of health can differ according to socioeconomic status, knowledge of health and disease, and their experiences. Quality of life can be considered as a "dynamic construct": as things change over time, its meaning will change for people (5). However these difficulties are not obstacles to studies on quality of life.

The Use of Measurements

Higginson and Carr summarize the uses of quality of life measurements in routine clinical practice as prioritizing problems, facilitating communication, screening for potential problems, identifying preferences, monitoring changes or response to treatment and training the new staff (16). They define the underlying reason for using these measures in clinical practice as ensuring treatment planning and evaluations focus much more on the patient rather than the disease. Besides quality of life measurements, using measures of disability, social outcome and psychological well-being are other ways of evaluating patient-centered outcomes.

Many surveys or questionnaires are being developed to measure outcome or quality of life. Both generic and disease-related patient-completed questionnaires can be used to evaluate the outcome. Muldoon et al think that all quality of life questionnaires seem to be assessing objective functioning and subjective well-being, or both (27). Carr et al accept that many widely used measures are not patient-centered on the area in which the items are generated from (6). They define quality of life as "an individual's perception of their position in life in the context of the culture and value systems where they live and in relation to their goals, expectations, standards, and concerns". Gerszten defines "outcomes research" as research on the management of patients that ask what treatment is

effective, in more realistic settings than those used in randomized, controlled trials, emphasizing the patient's assessment of pain, function, quality of life and satisfaction with the results of the intervention (13).

Outcome Measurement after Lumbar Disc Surgery

Outcome and quality of life measurements are being investigated for chronic or life-threatening diseases. One of these diseases is the lumbar disc prolapse as it can cause disability, pain and functional regression for the patient.

Although lumbar disc surgery is known to be able to relieve pain we have to make sure it improves the quality of life. The success rate after lumbar disc surgery is between 80 and 95% (19). Early results tend to be successful whereas long-term results have been less successful with a rate of 40 - 79% (23). Many authors report different outcome results at different follow-up time intervals. In some studies (36), the overall outcome shows no significant difference and no prognostic factor can be said to be statistically significant at different follow-up intervals. At least a two-year-follow-up is suggested for detecting the long-term complications of surgery (31). Taylor and Howie state that chronicity of preoperative symptoms has a negative effect on the outcome (31). Reduced physical activity and intense pain also predict a poor outcome. The researchers relate the poor results in these patients to psychosocial or neurogenic factors.

Surgery involving one or two discs, and full or partial laminectomy do not show significantly different outcome scores. Graver et al consider preoperative psychological distress and impaired fibrinolytic activity as significant predictors for poor long-term outcome (15). In general, long-term outcomes are poorer than the early outcomes for the pain component.

There is also a significant difference in disability of patients between patients who have undergone repeated surgery compared to patients who had only one operation (19). "Distressed" patients have 48% higher preoperative disability scores than "normal" patients and there is a significant relationship between changes in disability and psychological distress (17).

Three main principles have been generally accepted for evaluating the outcome of lumbar disc surgery (32): The duration of follow-up should be a

minimum of two years and should include at least 80% of the patients operated on. The assessment should be performed by an independent observer, both preoperatively and at follow-up.

Although many methods have been used, there is no standard accepted method to measure the outcome of lumbar disc surgery. Both objective and subjective signs and symptoms can be used for evaluation. Although pain reduction or elimination is considered to be essential for the surgical success, perception and definition of pain can differ from one person to another and should not be used as the main criterion. The patient's opinion of the outcome can also be measured but psychosocioeconomical factors may play a role here. These factors can also play a role in returning to work. The examiner's opinion of outcome is also very important. All these variables can produce different results for one patient.

Epker and Block divide the psychosocial factors that have been shown to impact response to surgery into three categories (8): (1) personality/emotional, (2)cognitive/behavioural, and (3) environmental/historical. The Minnesota Multiphasic Personality Inventory (MMPI) can be used especially to assess personality for studies on chronic back pain and spinal surgery outcomes. The hysteria and hypochondriasis sections are the most commonly elevated scales among personality traits in these patients. Studies with MMPI, the Zung Depression Scale and Beck Depression Inventory confirm that preoperative depression can also cause poor results (8).

MATERIALS

Many scales can be used to measure outcome. These can be divided into two main groups: generic and disease-specific. Generic scales measure the general health status, the patients' perceptions of their health and health-related quality of life. Disease-specific measures investigate the patients' perception of their status for a specific disease.

Generic Health-Related Quality of Life Measures

There are many generic measurement tools for quality of life assessment such as the Short Form-36 (SF-36) Health Survey, WHOQOL-BREF, EUROQOL EQ-5D, Nottingham Health Profile (NHP) or shorter instruments.

SF-36 Health Survey

The SF-36 Health Survey has been developed by Ware et al and contains 36 items (25, 26, 33). It has

two summary measures; Physical Component Summary (PCS) and Mental Component Summary (MCS) including eight scales; physical function (PF), role - physical (RF), bodily pain (BP), general health (GH), vitality (V), social functioning (SF), role - emotional (RE) and mental health (MH). The patient's choice is checked for each item. Scores collected from items are coded, summed and transformed on a scale from 0 to 100. The highest scores mean the best health. It is valid and reliable for many countries including Turkey.

Albert et al consider SF-36 to be a reliable, valid, and statistically proven measure of functional status, well being, and general health perception for a number of medical diseases (1).

SF-36 can be obtained from the Medical Outcome Trust and used by permission.

World Health Organisation Quality of Life Questionnaire Abbreviated Version (WHOQOL-BREF)

WHOQOL-BREF has been developed by the World Health Organization (WHO) (34, 35). It is an abbreviated version of the original WHOQOL instrument. The WHOQOL-BREF has 26 items and four broad domains; Physical, Psychological, Social Relations and Environmental. Patients check their answer in each item. Scores are summed and transformed at each domain. The four domain scores are scaled in a positive direction, with a score range of 0-100, with higher scores denoting the higher quality of life.

The WHOQOL-BREF is available in approximately 19 different languages. It was validated for Turkish by Eser et al (9).

EUROQOL Group EQ-5D

Euroqol EQ-5D has been developed by the Euroqol group (4, 10). The EQ-5D has five dimensions, with three degree levels within each dimension and a visual general-health thermometer scale. The dimensions regarded are mobility, self-care, usual activities, pain-discomfort and anxiety-depression. General population-based normative data is used for conversion of each patient's responses.

A Turkish version of the EQ-5D is available from the Euroqol Group but it has not been validated yet.

Nottingham Health Profile (NHP)

The NHP has been developed by Hunt et al (18) and it is one of the widely used generic HRQOL measures. The NHP has 6 dimensions and 38 items.

Dimension scores range from 0 to 100. Higher scores refer to a bigger health problem. The NHP has been adapted into Turkish (22).

Disease-Specific Measure for Lumbar Disc Surgery

The hallmark of a disease-specific measure is the attribution of symptoms and functional limitations to a specific disease or condition. Unlike items in a generic measure, items in a disease-specific measure assess only those aspects of health that tend to be affected by the disease (20).

Commonly used back-specific measures are the Roland–Morris Disability Questionnaire (RDQ) and the Oswestry Disability Index (ODI) (3).

Roland-Morris Disability Questionnaire

The Roland-Morris Disability Questionnaire has been developed from the Sickness Impact Profile (SIP) by Roland and Morris (28, 29, 30). The RDQ consists of 24 items related specifically to physical functions that are likely to be affected by low back pain. Patients check the items that are true for them. The RDQ score is the total number of checked items and ranges from 0 to 24. High scores refer to more disability. The RDQ is short, simple and easily understood by patients. The RDQ may be answered by patient without any assistant of a professional and therefore has also been administered on paper and by phone.

Küçükdeveci et al validated the Turkish version of the RDQ in patients with low back pain (21). This version of RDQ is provided in Appendix 1.

Oswestry Disability Index

The Oswestry Disability Index was published at 1980 by Fairbank et al (11, 12). The ODI consists of 10 sections. Each section consists of six statements according to the level of pain and daily physical activities of patients limited by pain. Patients check only one statement in each section. The first statement in each section is scored as 0 and the last statement as 5. The others are scored according to rank. If more than one statement is marked in any section, the score is taken from the highest scored statements. The total score is calculated by adding the scores of each section. If one section is not answered, the total score is calculated from answered sections. The final score is the percentile of the possible maximum score. A higher score shows more disability. The ODI can be easily answered in a short time.

The Turkish version of the ODI has been validated by Yakut et al for patients with low back pain (37). This version of the ODI has been provided in Appendix 2.

Some of the generic and specific measures are summarized in Table I.

Table I. Descriptive Information for Selected Generic and Back Specific Tools.

Name	Administration	Time to complete	Number of Items	Number of Categories/ Domains	Scoring	Turkish Version
SF-36 Health Survey	Self, Interviewer	10 – 15 minutes	36	8	8 domain scores and overall physical and mental health component summary scores, range from 0 to 100%	Validated
WHOQOL-BREF	Self, Interviewer	10 – 15 minutes	26	4	4 domain scores range from 0 to 100	Validated
EUROQOL EQ-5D	Self	5 minutes	5	5 dimensions and a visual general-health thermometer scale	General population-based normative data used for conversion.	Adapted, not validated
NHP	Self	10 – 15 minutes	38	6	Mean score is calculated across all items within each domain. Overall score is the mean across all items.	Adapted
RDQ	Self	5 minutes	24, yes/ no response	8	Overall score 0-24	Validated
ODI	Self	5 minutes	10, 6 response options for each	10	Overall score 0-100	Validated

DISCUSSION

Many generic and disease-specific tools may be used for outcome measurement after lumbar disc surgery. SF-36, WHOQOL-BREF, NHP and EQ-5D are widely used generic measures for different health problems. The SF-36 has several advantages and is recommended for outcome measurement of spinal disorders and lumbar disc disease (7, 20, 24).

For assessing the spinal surgery outcomes as a whole process, we should also measure the work-related outcome to assess productivity loss, to evaluate the effectiveness of health services and injury prevention programs and to evaluate the effectiveness of work organizations and to improve employer-employee relations (2).

As patient satisfaction can be an important outcome of care and has many aspects, there is no single measure that can measure them all (3).

The most important patient-based outcomes in back pain are said to be symptoms, physical function, and the impact of pain on major life activities, such as work and social life. Some of these concepts can be measured not only by generic measures but also by disease-related measures (20). It is generally recommended that investigators use both generic and specific measures (7, 20).

The RDQ is mostly a measure of function, while the ODI incorporates a measure of pain as well as physical function, but the differences are not very great in practice.

We have been using SF-36, RDQ and ODI for assessing the outcomes of patients with spinal disorders since 2000. A preliminary report was presented at the 14th Turkish Neurosurgical Congress in 2000. We perform all three preoperatively, and after the first, 12th and 24th month postoperatively. The late-term reports are being prepared for publishing.

Barriers for use of outcome measurement tools

Some problems exist in the development and wider use of outcome measures and life quality. We should consider technological, economical and cultural aspects of outcome measurement. We face technological difficulties in gathering valid data and there is no clear consensus regarding how best to measure or which tools are the most reliable. There are some problems of developing protocols for appropriate care. Cultural, economical, and institutional barriers are also important. Patients often seek care and treatment in different institutions

over a period of time (13), so should we consider the first one's treatment as "inadequate"?

Gill and Feinstein suggest that global ratings can be used to improve quality-of-life measurements in future studies (14). They state "quality of life can be suitably measured only by determining the preferences of patients and supplementing (or replacing) the authoritative opinions contained in statistically 'approved' instruments" (14).

CONCLUSION

Different aspects of outcome, such as the patient's perspective, clinical results, the physician's perspective and independent tools should all be included in outcome measurement.

In addition, we recommend choosing a valid and reliable questionnaire suitable for the function measured, getting permission from the developers of that measurement tool, and assessing the tool's results combined with clinical outcomes.

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- Appendix 1. Turkish Version of the Roland-Morris Disability Questionnaire (21)**
1. Bel ağrım yüzünden zamanımın büyük çoğunluğunu evde geçiriyorum.
 2. Belimi rahatlatmak için sık sık ayakta duruş, oturuş veya yatış şeklimi değiştirmek zorunda kalıyorum.
 3. Bel ağrım yüzünden eskisinden daha yavaş yürüyorum.
 4. Bel ağrım yüzünden evde yaptığım birçok işi artık yapmıyorum.
 5. Bel ağrım yüzünden merdivenleri çıkarken trabzanlara tutunuyorum.
 6. Bel ağrım yüzünden dinlenmek için sık sık uzanıyorum.
 7. Bel ağrım yüzünden sandalyeden kalkarken bir yere tutunmak ihtiyacı duyuyorum.
 8. Bel ağrım yüzünden bazı işlerimi başkalarına yaptırıyorum.
 9. Bel ağrım yüzünden eskisinden daha yavaş giyiniyorum.
 10. Bel ağrım yüzünden sadece kısa süre ayakta kalabiliyorum.
 11. Bel ağrım yüzünden eğilmekten ve çömelmekten kaçınıyorum.
 12. Bel ağrım yüzünden sandalyeden kalkarken zorluk çekiyorum.
 13. Belim hemen hemen her zaman ağrıyor.
 14. Bel ağrım yüzünden yatakta dönmekte güçlük çekiyorum.
 15. Bel ağrım yüzünden iştahım azaldı.
 16. Bel ağrım yüzünden çoraplarımı giymekte zorluk çekiyorum.
 17. Bel ağrım yüzünden sadece kısa mesafeleri yürüyebiliyorum.
 18. Bel ağrım yüzünden rahat uyuyamıyorum.
 19. Bel ağrım yüzünden bir başkasının yardımıyla giyiniyorum.
 20. Bel ağrım yüzünden günün büyük bir kısmını oturarak geçiriyorum.
 21. Bel ağrım yüzünden evdeki ağır işleri yapmaktan kaçınıyorum.
 22. Bel ağrım yüzünden eskisine göre huzursuz ve sinirliyim.
 23. Bel ağrım yüzünden merdivenleri her zamankinden daha yavaş çıkıyorum.
 24. Bel ağrım yüzünden zamanın çoğunu yatakta geçiriyorum.

Appendix 2. Turkish Version of the Oswestry Disability Index (37)

1. Bölüm – Ağrı Şiddeti

- Şu anda hiç ağrım yok.
- Şu anda ağrı çok hafif
- Şu anda ağrı orta şiddette
- Şu anda ağrı bir hayli şiddetli
- Şu anda ağrı çok şiddetli
- Her zaman şiddetli ağrım var.

2. Bölüm – Kişisel Bakım (yıkama, giyinme vs)

- Fazladan bir ağrım olmadan kendime bakabiliyorum.
- Kendime normal olarak bakabiliyorum fakat çok ağrılı oluyor.
- Kendime bakmak ağrılı oluyor, yavaş ve dikkatli davranıyorum.
- Biraz yardıma ihtiyacım var fakat kişisel bakımımı çoğunlukla yapabiliyorum.
- Kişisel bakımla ilgili işlerin çoğunda her gün yardıma ihtiyacım var.
- Giyinemiyorum, güçlükle yıkıyorum ve yatakta kalıyorum.

3. Bölüm – Ağırlık Kaldırma

- Fazla ağrı çekmeden ağır yükleri kaldırabiliyorum.
- Ağır yükleri kaldırabiliyorum fakat bu bir hayli ağrı yapıyor.
- Ağrı, yerden ağır yükleri kaldırmamı engelliyor fakat uygun pozisyonda örneğin masa üzerine konduklarında kaldırabiliyorum.
- Ağrı, yerden ağır yükleri kaldırmamı engelliyor fakat hafif veya orta derecede ağırlıkları uygun biçimde konmuşlarsa kaldırabiliyorum.
- Ancak çok hafif ağırlıkları kaldırabiliyorum.
- Hiçbir şeyi kaldıramıyorum veya taşıyamıyorum.

4. Bölüm – Yürüme

- Ağrı herhangi bir mesafeyi yürümemi engellemiyor.
- Ağrı bir buçuk kilometreden fazla yürümemi engelliyor.
- Ağrı 750 metreden fazla yürümemi engelliyor.
- Ağrı 100 metreden fazla yürümemi engelliyor.
- Ancak bir baston veya koltuk desteği kullanarak yürüyebiliyorum.
- Çoğu zaman yataktayım ve tuvalete yerde sürüklenerek gitmek zorundayım.

5. Bölüm – Oturma

- Her türlü sandalyede istediğim kadar oturabiliyorum.
- Alıştığım sandalyede istediğim kadar oturabiliyorum.
- Ağrı bir saatten fazla oturmamı engelliyor.
- Ağrı yarım saatten fazla oturmamı engelliyor.
- Ağrı 10 dakikadan fazla oturmamı engelliyor.
- Ağrı sürekli oturmamı engelliyor.

6. Bölüm – Ayakta Durma

- Fazla ağrı çekmeden istediğim kadar ayakta durabiliyorum.
- İstediğim kadar ayakta durabiliyorum, fakat oldukça ağrı veriyor.
- Ağrım nedeniyle bir saatten fazla ayakta duramıyorum.
- Ağrım nedeniyle yarım saatten fazla ayakta duramıyorum.
- Ağrım nedeniyle 10 dakikadan fazla ayakta duramıyorum.
- Ağrı ayakta durmamı tümüyle engelliyor.

7. Bölüm – Uyku

- Ağrı nedeniyle uykum hiç bölünmüyor.
- Ağrı nedeniyle uykum ara sıra bölünüyor
- Ağrı nedeniyle 6 saatten az uyku uyuyorum.
- Ağrı nedeniyle 4 saatten az uyku uyuyorum.
- Ağrı nedeniyle 2 saatten az uyku uyuyorum.
- Ağrı uyumumu tümüyle engelliyor.

8. Bölüm – Cinsel Yaşam (eğer geçerliyse)

- Cinsel yaşamım normal ve fazla ağrıya neden olmuyor.
- Cinsel yaşamım normal fakat biraz ağrıya neden oluyor.
- Cinsel yaşamım hemen hemen normal fakat çok ağrılı.
- Cinsel yaşamım ağrıdan dolayı ciddi ölçüde kısıtlı.
- Cinsel yaşamım ağrıdan dolayı hemen hemen yok.
- Ağrı cinsel yaşamımı tümüyle engelliyor.

9. Bölüm – Sosyal Yaşam

- Sosyal yaşamım normal ve fazladan bir ağrı çekmeme neden olmuyor.
- Sosyal yaşamım normal fakat ağrının şiddetini artırıyor.
- Fazla zorlayıcı olan spor gibi bedensel etkinlikler dışında ağrının sosyal yaşamımda hiçbir önemli etkisi yok.
- Ağrı sosyal yaşamımı kısıtladı ve evden dışarı sık çıkamıyorum.
- Ağrı nedeniyle evden çıkamıyorum.
- Hiçbir sosyal yaşamım yok.

10. Bölüm – Gezi

- Ağrım olmadan gezip tozabiliyor ve yolculuk yapabiliyorum.
- Her yere gezi yapabiliri fakat bu bana bir hayli ağrı veriyor.
- Ağrım fazla fakat iki satın üzerindeki gezileri yapabiliyorum.
- Ağrı bir saatin altındaki seyahatleri yapmamı engelliyor.
- Ağrı 30 dakika altındaki gerekli kısa gezileri yapmamı engelliyor.
- Ağrı tedaviye gidip gelmek dışında gezi yapmamı engelliyor.

11. Bölüm – Önceki Tedavi

- Son üç ay içerisinde bel yada bacak probleminizle ilgili ilaç, fizik tedavi gibi herhangi bir tedavi aldınız mı?
- Hayır
- Evet (eğer cevabınız evetse lütfen tedavi şeklinizi yazınız)

12. Bölüm

Lütfen her soruda sadece bir kutuyu işaretleyip işaretlemediğinizi kontrol ediniz ve aşağıdaki boşluğu imzalayınız.

İmza: