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## SCIENTIFIC ARTICLE

# Quality of recovery after anaesthesia measured with QoR-40: a prospective observational study



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### KEYWORDS

Anaesthesia;  
Quality of recovery;  
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### Abstract

**Background:** QoR-40, a 40-item questionnaire on quality of recovery from anaesthesia, has been shown to measure health status after surgery. Our aim was to evaluate the incidence of poor quality of recovery in our Post Anaesthesia Care Unit and to compare their QoR-40 scores before surgery and 3 months later.

**Methods:** A prospective observational study was conducted in adult patients consecutively admitted from 18 June to 12 July 2012. The follow-up period was 3 months. We exclude patients submitted to cardiac surgery, neurosurgery, obstetric surgery and with a mini-mental state examination test score lower than 25. The primary endpoint was quality of recovery measured with the validated Portuguese for Portugal version of the QoR-40 before surgery (T0), 24 h after surgery (T1) and 3 months after (T2).

**Results:** A total of 114 patients completed the study. Mean QoR-40 score was 169 and patients with poor quality of recovery were identified if their QoR-40 score was lesser than 142. This occurred in 26 patients (24%). Global median scores for patients with poor quality of recovery were lower at T0 (121 vs. 184,  $p < 0.001$ ), at T1 (120 vs. 177,  $p < 0.001$ ) and at T2 (119 vs. 189,  $p < 0.001$ ).

**Conclusion:** Patients with poor quality of recovery had lower quality of life. This fact may allow earlier and more effective interventions, in order to improve quality of life after surgery. Beside its utility after surgery, QoR-40 may be important prior to surgery to identify patients who will develop a poor quality of recovery.

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**PALAVRAS-CHAVE**

Anestesia;  
Qualidade de  
recuperação;  
Qualidade de vida;  
QoR-40

**Qualidade da recuperação pós-anestesia medida com QoR-40: um estudo observacional prospectivo****Resumo**

*Justificativa:* QoR-40, um questionário com 40 itens sobre a qualidade de recuperação da anestesia, mostrou medir o estado de saúde após a cirurgia. O nosso objetivo foi avaliar a incidência de má qualidade da recuperação em nossa Sala de Recuperação Pós-anestesia e comparar os escores do QoR-40 antes e três meses depois da cirurgia.

*Métodos:* Estudo observacional prospectivo, realizado com pacientes adultos admitidos consecutivamente de 18 de junho a 12 de julho de 2012. O período de acompanhamento foi de três meses. Excluímos os pacientes submetidos à cirurgia cardíaca, neurocirurgia, cirurgia obstétrica e aqueles com escore inferior a 25 no minixame do estado mental. O desfecho primário foi a qualidade da recuperação medida com a versão do QoR-40, validada para a versão do português de Portugal, antes da cirurgia (T0), 24 horas após a cirurgia (T1) e três meses após a cirurgia (T2).

*Resultados:* No total, 114 pacientes completaram o estudo. A média dos escores no QoR-40 foi de 169, e os pacientes com má qualidade de recuperação foram identificados se os seus escores no QoR-40 fossem menores que 142. Isso ocorreu em 26 pacientes (24%). As médias dos escores globais dos pacientes com má qualidade de recuperação foram menores em T0 (121 vs. 184,  $p < 0,001$ ), T1 (120 vs. 177,  $p < 0,001$ ) e T2 (119 vs. 189,  $p < 0,001$ ).

*Conclusão:* Os pacientes com má qualidade de recuperação apresentaram uma pior qualidade de vida. Esse fato pode permitir intervenções precoces e mais eficazes para melhorar a qualidade de vida após a cirurgia. Além de sua utilidade após a cirurgia, o QoR-40 pode ser importante antes da cirurgia para identificar os pacientes que desenvolverão uma má qualidade de recuperação.

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**Introduction**

Postoperative recovery is a key outcome in the perspective of anaesthesiologists. It is defined as the patients return to the normal state after a surgery, and has traditionally been referred in terms of pain scores, duration of hospital stay, and return to normal activities.<sup>1</sup> It involves several factors such as regain of physical, physiologic and social functions. Therefore, it is fundamental for the evaluation of health care and patient satisfaction after surgery.<sup>2</sup>

Regarding outcomes, in the past what concerned more the health professionals were the mortality and complication rates. Since these parameters have improved, as a result of surgical techniques enhancement, patient's Quality of Life (QoL) is now more than ever a central aspect.<sup>1,3,4</sup> Satisfaction remains the best way to assess the outcome from the point of view of the patient.<sup>5</sup> Patient satisfaction was illustrated as the most clinically relevant measure of outcome<sup>6</sup> and also became a fundamental step in processes of hospital accreditation.<sup>7</sup> Therefore, it is vital to estimate patients' Quality of Recovery (QoR) from their perspective, which might be related to perception of their own QoL.

QoL is defined by the World Health Organization as the individual perception of one's position in life, in the context of his culture, objectives, expectations and worries.<sup>8</sup> The complexity and subjectivity of this concept makes it difficult to evaluate and even more difficult to measure appropriately.<sup>9</sup> So the question arises: how can we define and assess changes in the QoL after surgery?

A valid and reliable measure of QoR after anaesthesia and surgery, the QoR-40, was developed by Myles et al.<sup>10</sup> It has shown superior content validity and construct validity, when compared to other pre-existing questionnaires, and did not reveal any negative ratings.<sup>1</sup> This questionnaire was specifically designed to measure a patient's health status after surgery and anaesthesia and has been proposed as a measure of outcome in clinical trials.<sup>10</sup> Recently, a meta-analysis of seventeen studies with a sample size of 3459 patients concluded that QoR-40 is well suited to measure quality of postoperative recovery.<sup>11</sup> A significant correlation between QoR-40 scores and the SF-36 questionnaire has been demonstrated.<sup>12-14</sup> A poor score on QoR-40 was associated with a poor score on the SF-36. This supports the belief that a Poor Quality of Recovery (PQR) can predict a poor QoL after surgery.<sup>12</sup> Hence, QoR-40 might be used as a predictive index to identify patients whose health status is about to change.

If it was possible to foresee a PQR, more effective support strategies could be proposed for these patients during their hospital stay.<sup>12</sup> Furthermore, a PQR was associated with a prolonged duration of stay in the hospital, readmission and post-operative complications, indicating not only patient discomfort but also consumption of economic resources.<sup>14</sup>

The aims of our study were to evaluate the incidence of Poor Quality of Recovery (PQR) in the Post Anaesthesia Care Unit (PACU), to compare QoR-40 scores before surgery, 24 h after surgery and 3 months later, and to identify the most affected dimensions of QoR-40.

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