

Reliability of The Post-Operative Recovery Index for Measuring Quality of Recovery after Surgery

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ABSTRACT

Background: Postoperative recovery is a crucial component of the patient experience, regardless of the kind of treatment. There has been a lot of research done in this field, including studies using post-operative recovery as an end measure.

Objectives: This study aimed to evaluate the consistency of the Quality of Recovery (QoR-40) index among post-operative patients in the hospitals of Erbil city. **Subjects and methods:** A descriptive study was designed among 166 participants of patients, physicians, nurses, and medical assistants in four surgical wards of Hawler, Rizgary, Maternity, and Raparin (Pediatric) Teaching Hospitals in Erbil City in the Kurdistan Region of Iraq. The data were collected through self-report and direct interview face-to-face techniques from January to July 2022. A questionnaire was designed, and It is divided into two main sections: the sociodemographic information about the participants is presented in the first section, and the second section contains a ready-made scale question about the QoR-40 index, which consists of 40 items concerning five different items and is used to assess the quality of recovery following surgery dimensions.

RESULTS: The study results showed that all the participants believed that the items of all dimensions were applicable and can be used in measuring the level of recovery for post-operative patients and the correlation coefficient was 0.746 which considered that this index has a Good Agreement among the participants.

Conclusion: This study concluded that the QoR-40 index is reliable among the different peoples of patients, nurses, physicians, and medical assistants, and it's considered that this index has a positive agreement among people with very highly applicable for post-operative patients in measuring the quality of the recovery after surgery.

Keywords: Reliability; Correlation Coefficient; Post-operative Recovery Index; Quality of Recovery; Surgery.

INTRODUCTION

Surgery aims to alter the structure of the human body. This method, which involves cutting or destroying tissue, will entail the use of any instrument that produces local displacement or transfer of living human tissue, such as lasers, ultrasound, ionizing radiation, scalpels, probes, and needles. Additionally, it can be utilized to diagnose or treat illnesses or disease processes. Tissue can be altered by any mechanical, thermal, optical, electromagnetic, or chemical method. Additionally, it can be evaluated, and processed by closed reduction of severe dislocations and fractures, burned, steamed, frozen, sutured, burned, and changed. Any invasive surgical procedure referred to as a "major surgery" entails a more substantial excision. In general, major surgery is considered when a mechanical septum (pleural cavity, peritoneum)⁽¹⁾. The process of recovering after surgery is characterized by an increase in functional status and a sense of well-being. Theoretically, the idea that has been developed states that healing from surgery is a process that requires energy to complete in order to return to normal and whole. It is determined using comparison criteria, which is achieved by regaining control over physical, psychological, social, and normal functions. This results in a return to a preoperative level of independence or dependence on day-to-day activities as well as an ideal level of psychological well-being⁽²⁾.

Following surgery, patients receive postoperative care. The surgery and the patient's medical history influence the type of postoperative care required. Pain management and wound care are commonly included. Postoperative care begins after surgery. It continues during your stay in the hospital and may do so even after you depart. The procedure may have drawbacks and side effects that call for after-treatment⁽³⁾. Preventing issues like infections, promoting wound healing, and restoring the patient's health are the objectives of postoperative care. Recovery from surgery is a difficult process that affects many different outcomes. Prior research on post-operative recovery has mostly examined physiologic endpoints such as the frequency of adverse events including severe morbidity and mortality⁽³⁾.

The most widely used rating scale among those developed to evaluate the quality of recovery following surgery is the Quality of Recovery (QoR-40), a 40-item questionnaire on the quality of recovery from the postoperative period that has been proven to be a measure of health status after surgery. a 40-item questionnaire with subscores for each of the five pain, support for the patient, comfort, emotions, and bodily independence categories⁽⁵⁾. The clinical value and overall psychological qualities of QoR-40 (validity, reliability, ease of administration, and interpretation) have been studied in many contexts. For the above reasons, the researcher wanted to determine

whether this measure is consistently applicable to postoperative patients in Erbil hospitals.

MATERIALS AND METHODS

The Hewler, Rizgari, Maternity, and Raparin (Pediatric) Teaching Hospitals in Erbil, Iraq's Kurdistan Region, conducted a descriptive cross-sectional study design from January to July 2022. Twenty paramedics, twenty doctors, twelve nurses, and 109 patients comprised the 166 participants in this study.

Participants from two categories were recruited for this study: postoperative patients and medical professionals. Among other healthcare professions, the inclusion and exclusion criteria included nurses, physicians, and paramedics. The requirements for healthcare professionals of both sexes who were experienced in dealing with postoperative patients had more than five years of experience in surgery, had a diploma or higher, and had good communication skills were not extended to administrative staff. Following surgery, individuals [3].

The data (Intraclass correlation coefficient) were examined using the statistical application (Statistical Package for Science Service-SPSS V.26), which provides both inferential statistical analysis (frequency and percentage) and descriptive statistical analysis (frequency and percentage). According to the correlation coefficient between classes, there is a fair amount of agreement (0.20–0.40), moderate agreement (0.40–0.60), good agreement (0.60–0.80), and very good agreement (0.80–1.00) (6). Inter-rater reliability (IRR) was utilized to evaluate the implementation of the Quality of the Postoperative Recovery Index (QoR-40). Inter-rater reliability assesses consistency for the same tasks across different people. If multiple people give ratings of any kind or take a test, similar persons should yield the same results. With it, people can be calibrated. The two main uses of inter-evaluator reliability tests are how similar subjects are to rank things and how similar subjects are to fundamental objects. In this investigation, the second tactic was used. In truth, everyone has a unique perspective (7).

Ethics approval and consent to participate

On December 16, 2021, approval was obtained from the Faculty of Nursing Scientific Committee at Hawler Medical University No. 5. Oral consent was voluntarily given by each individual.

The researcher promised to respect participant privacy and to only use their information for this study after fully revealing its goals to each one. The researcher also explained to each participant that this was volunteer labor and that they were free to leave at any time, even if the data collection process hadn't yet been finished.

RESULTS

This study included 166 participants distributed as follows: 109 patients, 25 physicians, 12 nurses, with 20 medical assistants. **Table I**, shows the socio-demographic characteristics of the participants, regarding the age group more than half of the study sample, was in the age group between 18-32 years old (50.6%). Concerning sex, the highest percentage (63.9%) of the study sample was female. Regarding the level of education, the highest percentage (27.7%) graduated from an institute or college. 76.5% of the study sample were married. Regarding the residential area, most of the study samples were from urban areas (80.7%). Regarding the years of experience of the health care professionals (physicians, nurses, and medical assistants) more than half of them have between 6-10 years of experience (50.6%).

Table 1. Socio-demographic Characteristics of the Study Sample

Socio-demographic characteristics (n=166)		Frequency	%
Age group/ years	18-32	84	50.6
	33-47	67	40.4
	48-62	8	4.8
	≥ 63	7	4.2
Sex	Male	60	36.1
	Female	106	63.9
Education level	Unable to read and write	29	17.5
	Can read and write	18	10.8
	Primary school graduated	26	15.7
	Intermediate school graduated	15	9
	Preparatory school graduated	5	3
	Institute or college graduated	46	27.7
	Post-graduated-Higher education	27	16.3
Marital status	Never married	35	21.1
	Currently married	127	76.5
	Widowed	4	2.4
Health care professional	Nurse	12	7.2
	Physician	25	15.1
	Medical Assistant	20	12
	Patient	109	65.7
Residency area	Urban	134	80.7
	Rural	32	19.3
Years of experience in surgical words (n= 55)	≤ 5	13	23.6
	6-10	28	50.9
	11-15	9	16.4
	> 15	5	9.1

The findings of Table 2 show the beliefs of the participants and the applicability of items of the Quality of Post-operative Recovery (QoR-40) after surgery that consists of five dimensions (pain, physical comfort, physical independence, psychological support, and emotional state). Most of the study sample accepted that items regarding all dimensions are applicable (83.7%, 93.4%, 92.8%, 99.4%, and 97.6% respectively), while

only 16.3%, 6.6%, 7.2%, 0.6%, and 2.4% of the participants were mentioned that the items of all dimensions were never applied. Concerning the overall applicability of the Quality of Post-operative Recovery (QoR-40) after surgery, 100% of the participants believed that the items of all dimensions were applicable and can be used in measuring the level of recovery for post-operative patients.

Table 2. Applicability of post-operative recovery index dimensions for measuring the quality of recovery after surgery (Qor-40)

Post-operative recovery index dimensions for measuring the quality of recovery after surgery (QoR-40)	Never		Rarely		Sometimes		Often		Always	
	F	%	F	%	F	%	F	%	F	%
Dimension 1: Pain	27	16.3	83	50	52	31.3	3	1.8	1	0.6
Dimension 2: Physical Comfort	11	6.6	81	48.8	27	16.3	8	4.8	39	23.5
Dimension 3: Physical Independence	12	7.2	35	21.1	37	22.3	73	44	9	5.4
Dimension 4: Psychological Support	1	0.6	10	6	45	27.1	89	53.6	21	12.7
Dimension 5: Emotional State	4	2.4	75	45.2	76	45.8	11	6.6	0	0
The overall quality of recovery after surgery	0	0	54	32.5	107	64.5	5	3	0	0

Regarding the reliability of the items of the Quality of Recovery index between the different peoples of patients, nurses, physicians, and medical assistants, in table 3, the correlation coefficient was 0.746 (74.6%) which considered that this index has a Good Agreement among the mentioned peoples.

Table 3. Reliability of the post-operative recovery index dimensions for measuring the quality of recovery after surgery (QoR-40)

Intraclass Correlation	Value	95% Confidence Interval	
		Lower Bound	Upper Bound
Average Measures	0.746	0.0687	0.798

DISCUSSION

The researchers purposely selected participants aged 18 and above. Based on the research findings, the higher percentage came from ages 18-32. This percentage is higher than the research results of Chazapis et al. in 2016 ⁽⁸⁾, who said that this age group represented the majority of participants. Moreover, the findings in this study showed there was significance in the sex sample of the study wherein females comprised more than half compared to males because the majority of samples were taken in the maternity hospital. Meanwhile, the current study is comparable to other existing studies on sex as in the study done by *Kleif et al.* in 2018 ⁽⁹⁾.

The results of this study corroborated those of a study by Bowyer et al. (2016) carried out in the Clinical Medical Research division of the Department of Anesthesia and Pain Management at the Royal Melbourne Hospital, which discovered that healing quality is an abstract concept whose scope, timing, and definition are not clear. All study participants agreed that items from all aspects were relevant and could be used to gauge how well postoperative patients were recovering ⁽¹⁰⁾. At the institutional level, recovery quality is frequently influenced by care quality as measured by performance measures. Since recovery quality has predictive, financial, and most importantly, real-time effects, it is best quantified as a multidimensional variable at various therapeutically meaningful periods. This makes clinical and scientific applications possible ⁽¹⁰⁾. Research on reliability and standard error of measurement was poorly graded in two studies due to small test-retest sample sizes, although they may have been well categorized in Cliff et al 2018 's analysis. ⁽⁹⁾. Research by Myles et al. at Alfred Hospital in Australia's Department of Anesthesia and Pain Management found that the QoR -40 provides a more comprehensive and useful assessment of the quality of a patient's recovery after surgery, supporting the study's findings regarding the validity of the healing quality index items among patients, nurses, doctors, and paramedics. The QoR-40 would be a useful outcome metric in perioperative clinical trials and for figuring out how adjustments in the way healthcare are provided might alter the standard of care ^(3, 11). While domain-level internal consistency on the validation and cross-validation samples yielded coefficients ranging from =0.813 to =0.932, test-retest reliability produced stability coefficients from $r=0.660$ to $r=0.881$ ⁽¹²⁾

CONCLUSION

The Quality of Recovery index (QoR-40) is reliable among the different peoples of patients, nurses, physicians, and medical assistants, and it's considered that this index has a good agreement between peoples with very highly applicable for post-operative patients in measuring the quality of the recovery after surgery.

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Competing interests

The authors claim to have no conflicts of interest.

REFERENCES

1. **Obuseh M, Duffy G (2022):** Surgical Human-Robot Interaction: A Bibliometric Review. In International Conference on Human-Computer Interaction (pp. 293-312). Springer, Cham.
2. **Allvin R, Berg K, Idvall E, Nilsson U (2007):** Postoperative recovery: a concept analysis. *Journal of advanced nursing*, 57(5), 552-558.
3. **Sajit K, Hattab W, Kadhim A (2021):** Psychometric Scale for Assess the Barriers of Adult Nursing Students to follow up on Mental Health Counselling in Iraq, 44(6): 2961-2967.
4. **Myles P, Weitkamp B, Jones K et al. (2000):** Validity and reliability of a postoperative quality of recovery score: The QoR-40. *British journal of anaesthesia*, 84(1): 11-15.
5. **Kluyvers K, Riphagen I, Vierhout M et al. (2008):** Systematic review on recovery specific quality-of-life instruments. *Surgery*, 143(2):206-215.
6. **Keszei A, Novak M, Streiner D (2010):** Introduction to health measurement scales. *Journal of psychosomatic research*, 68(4):319-323.
7. **Fitzner K (2007):** Reliability and validity a quick review. *The Diabetes Educator*, 33(5): 775-780.
8. **Chazapis M, Walker E, Rooms M et al. (2016):** Measuring quality of recovery-15 after day case surgery. *BJA: British Journal of Anaesthesia*, 116(2): 241-248.
9. **Kleif J, Waage J, Christensen K et al. (2018):** Systematic review of the QoR-15 score, a patient-reported outcome measure measuring quality of recovery after surgery and anaesthesia. *British journal of anaesthesia*, 120(1): 28-36.
10. **Bowyer A, Royse C (2016):** Postoperative recovery and outcomes—what are we measuring and for whom? *Anaesthesia*, 71: 72-77.
11. **Butler S, Black R, Techner L et al. (2013):** Development and validation of the post-operative recovery index for measuring quality of recovery after surgery. *Journal of Anesthesia & Clinical Research*, 3(12):1.
12. **Hassan R, Hamza M, Hassan S (2022):** Nurses' Adherence to Surgical Safety Guidelines for Patients Undergoing Abdominal Surgery. *The Egyptian Journal of Hospital Medicine*, 89(2): 6201-6208.