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# Measures of clinical accuracy and indicators of the nursing diagnosis of delayed surgical recovery



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Received 21 June 2013; received in revised form 23 January 2014; accepted 2 February 2014

## KEYWORDS

Perioperative nursing;  
Nursing diagnosis;  
Postoperative care

**Summary** Delayed surgical recovery is a phenomenon of global concern that affects the results and costs of postoperative care. The aim of this study was to verify the accuracy of the defining characteristics of the diagnosis of delayed surgical recovery in patients after the fifth day in postoperative care. A cross-sectional observational study was conducted with 72 surgical patients to measure sensitivity, specificity, positive and negative predictive values, positive likelihood ratios and negative odds ratios. Diagnoses and the area under the ROC curve were analysed to investigate the diagnostic accuracy of each defining characteristic. Most patients were male (65.3%) with an average length of education of 17.4 years ( $SD = 1.88$ ) and a mean age of 57.39 years ( $SD = 16.04$ ), and 55 (76.4%) had the diagnosis of delayed surgical recovery. The variable time after surgery showed a statistical relationship with the diagnosis of delayed surgical recovery ( $p = .012$ ). Seven characteristics showed high positive predictive values: postpones resumption of work/employment activities, fatigue, perception of needing more time to recover, requiring help to complete self-care, report of discomfort, evidence of interrupted healing of the surgical area, and difficulty in moving about. The only factor in the study that was associated with the diagnosis was postoperative surgical site infection ( $p = .028$ ).

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## Introduction

It is estimated that because of longevity, 63 million people each year are subject to surgical treatments for traumatic

injuries and another 31 million to treat malignancies ([World Health Organization, 2009](#)). This indicates fast growth in the rates of surgical procedures, which requires greater attention to patient safety, for example, reducing the occurrence of complications, morbidity and mortality and readmissions and hospital costs.

Surgical complications account for a large proportion of deaths and injuries that may be preventable medical worldwide. Despite the constant improvement in knowledge regarding surgical safety, at least half of the events in

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hospitalised patients occur in patients undergoing surgery ([World Health Organization, 2009](#)).

Perioperative adverse events affect between 3% and 16% of surgical patients admitted worldwide, with a mortality rate of 0.5%. In addition, nearly seven million surgical patients suffer significant complications each year, of whom one million die during or immediately after surgery ([World Health Organization, 2009](#)). Roughly half of these deaths could be prevented by improved communication among the perioperative care team with consequent reduction of harm to the patient.

Therefore, surgical safety has emerged as a significant public health concern worldwide. Thus, between 2007 and 2008, a movement was started called "Global Challenge for Patient Safety: Safe Surgery Saves Lives", which had as its main goals: (1) prevention of surgical site infections, (2) safe anaesthesia, (3) safe surgical teams and (4) indicators of surgical care ([World Health Organization, 2009](#)).

Thus, delayed surgical recovery is a phenomenon of global concern that affects the outcomes of care burdens and the costs of treatment. Within nursing, the NANDA International nursing diagnosis describes delayed surgical recovery (DSR) as: "Extension of the number of days at post-operative care necessary to initiate and perform activities that maintain life, health and well-being" ([Herdman, 2012](#)).

The clinical indicators of this diagnosis are postponing returning to work activities/employment, difficulty in moving about, evidence of interrupted healing of surgical area, fatigue, the perception that more time is needed for recover, loss of appetite with or without nausea, requiring help to complete self-care, and reporting pain or discomfort. Moreover, factors related to this diagnosis include the following: pain, postoperative expectations, postoperative surgical site infection, obesity, extensive surgical procedures and prolonged surgical procedures ([Herdman, 2012](#)).

However, for the correct identification of patients with delayed surgical recovery it is necessary to establish good clinical indicators that allow nurses to establish the nursing diagnosis that accurately represents the state of health of the patient ([Lopes, Silva, & Araujo, 2012](#)). Thus, studies that seek to measure the importance of each clinical indicator of a nursing diagnosis can assist nurses in making decisions that lead to better clinical outcomes for the patient.

In the literature, we found a direct reference to the diagnosis of DSR ([Napoleon, Caldato, & Petrilli Filho, 2009](#)) identified in a male elderly patient who had been hospitalised for surgical prostatectomy. As evidence, the article cited interruption to the healing of the surgical area with copious urine drainage by Penrose drain. On the other hand, a majority of studies describe the clinical factors that contribute to delayed recovery from surgery as well as treatments for the global aspects of this diagnosis. Examples include studies on the effective treatment of post-operative pain ([Brown, 2004; Idvall, 2004; Idvall, Hamrin, Rooke, & Sjöström, 1999; Karlsten, Ström, & Gunningberg, 2005; McDonald, Thomas, Livingston, & Severson, 2005](#)), the process of wound healing and wound infection ([Boaz, Bordingnon, & Nesralla, 2006; Devaney & Rowell, 2004; Kasatpibal, Thongpiyapoom, Narong, Suwalak, & Jamulitrat, 2005; Pieper et al., 2006; Vuolo, 2006; Whitby, McLaws, Dodge, & Collopy, 2007; Whitby et al., 2002](#)), nursing diagnoses in the perioperative period ([Galdeano, Rossi,](#)

[Nobre, & Ignacio, 2003; Pivotto, Filho, Santos, Almeida, & Silveira, 2010; Silva, Fernandes, & Volpato, 2008; Volpato & Cruz, 2007](#)), feelings of patients during the postoperative period ([Camargo & Souza, 2003; Pereira, Rosenhein, Bullosa, Lunardi, & Filho, 2006](#)), and postoperative complications ([Golembiewski & O'Brien, 2002; Pompeo, Nicolussi, Galvão, & Sawada, 2007](#)). Other studies emphasise factors that may contribute to a delay in the recovery of the patient, such as diabetes mellitus, age, obesity, poor nutrition, use of corticosteroids and oedema ([Feijó, Cruz, & Lima, 2008; Lenart, Neu, Betioli, Seima, & Michel, 2010; Roche, Wenn, Sahota, & Moran, 2005; Villas Boas & Ruiz, 2004; Werner & Kuntsche, 2000](#)).

DSR being a common clinical phenomenon, there is also a fragmented view of this diagnosis observed in nursing research. Even in studies on nursing diagnoses, DSR is little explored. For example, a previous study on the nursing diagnoses identified in hospitalised patients in a clinical orthopaedic surgery found an average of 11.5 diagnoses per patient, the most prevalent being risk of infection (83.3%) ([Silva et al., 2008](#)). The same study cited that when the patient had musculoskeletal trauma with bone exposure, the length of stay was likely to be extended but did not, however, make any reference to the diagnosis of delayed surgical recovery.

In another article on the prevalence of nursing diagnoses in a surgical unit, comprising a sample of 60 subjects, the mean number of diagnoses found in patients was 5.6. The most frequently occurred in over 30% of subjects: risk of infection (58.3%), pain (50.0%), constipation (41.6%), and activity intolerance (35.0%) ([Volpato & Cruz, 2007](#)). Except for constipation, most of those diagnoses were associated with prolonged stays in postoperative care, indicating DSR.

The diagnosis of risk of infection was the most evident in a study that investigated the nursing diagnoses in perioperative cardiac surgery in 100% of the sample ([Galdeano et al., 2003](#)). The authors reported that in addition to invasive procedures and inadequate primary defence caused by surgical trauma, several other factors influenced the incidence of infection in the wound, including the patients' preoperative clinical conditions, the technical conditions under which surgery was performed and the patients' preoperative hospital stay.

Another study on the diagnostic profiles of patients in postoperative cardiac care identified a total of 15 different diagnoses: impaired gas exchange, ineffective airway clearance, impaired verbal communication, impaired mobility in bed, impaired skin integrity, hypothermia, hyperthermia, decreased cardiac output, ineffective renal tissue perfusion, acute pain, insomnia, anxiety, infection risk, risk of imbalanced fluid volume, and risk of unstable blood glucose ([Pivotto et al., 2010](#)).

Despite the absence of a reference to the diagnosis of DSR, one can observe that risk of infection, impaired skin integrity, acute pain, anxiety, and intolerance for activity are related to the duration of the postoperative period. The observance of these separate clinical signs may impair clinical reasoning and obscure the identification of delayed surgical recovery in the patient. It is possible that interest in the development of technical skills at the expense of more basic clinical skills, as described by [Stevens and Crouch \(1998\)](#), is still a factor that contributes to diagnostic

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