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Longitudinal person-centered measurement: A psychometric evaluation of the Preparedness for Colorectal Cancer Surgery Questionnaire (PCSQ)☆

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ABSTRACT

Objective: The Preparedness for Colorectal Cancer Surgery Questionnaire (PCSQ) was previously developed in Swedish to assess patients' knowledge seeking and sense making capabilities. Aiming to measure preparedness at different phases during the pre-surgery and recovery period, the objectives were to (a) evaluate psychometric properties of the longitudinal PCSQ, (b) establish measurement invariance over time, and (c) describe change in preparedness.
Methods: Elective colorectal cancer surgery patients completed a questionnaire at five time points from pre-surgery until 6 months post-surgery (n = 250). The longitudinal PCSQ consists of 23 items measuring four domains: Searching for and making use of information, Understanding and involvement in care, Making sense of recovery, Support and access to care. Psychometric analyses, including confirmatory factor analysis, were applied to evaluate internal consistency reliability and ascertain invariance over time of the measurement structure and parameters.
Results: The psychometric analyses revealed good fit of the measurement models, high internal consistency reliability (≥.94), and support for configural, metric and scalar measurement invariance of the four PCSQ domains. Patients reported lower levels of preparedness after surgery than pre-surgery.
Conclusion: The adapted version of the PCSQ can be used for longitudinal analyses.
Practice implications: The measurement of preparedness is important for evaluating person-centred outcomes before and during recovery from colorectal cancer surgery.

1. Introduction

1.1. Colorectal cancer surgery and recovery

Today's shortened periods of hospitalization following cancer surgery and the evidence for enhanced recovery after surgery [1] place an increased expectation on patient self-care management both during the hospital stay and following discharge, as in the case for colorectal cancer [2,3]. In spite of this, patients' recovery has mainly been evaluated based on bio-medical considerations [4]. However, how patients can be personally prepared for surgery

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and recovery is not only bio-medically oriented, but also involves cognitive, emotional and behavioural dimensions. This necessitates appropriate and timely patient information and communication throughout the period from diagnosis, through hospitalization in relation to surgery and subsequent recovery after discharge [4,5]. There is thus a need to develop measures for evaluating the extent to which patients are prepared for surgery and subsequent recovery as the basis for informing their care and evaluating outcomes throughout the recovery period. In the case of colorectal cancer, patients' preparedness for surgery and recovery after surgery takes place at a time when the patient will have to make sense of their cancer diagnosis as well as the demands of the surgery, both bio-physiologically and personally. Within this context, the measurement of preparedness is especially important for the development and evaluation of timely supportive interventions that address patients' concerns at different points in time.

1.2. Preparedness for surgery and recovery

Patients' preparedness as a forward directed achievement [6,7] to take action in advance of possible future problems and challenges, could be regarded as a significant aspect of their capability and agency in relation to patient education and learning [7]. Preparedness involves knowledge-seeking, concerns and sense-making of illness and care in relation to the particular context of health and illness [8]. From this point of view, preparedness is considered an on-going process of realizing, adjusting and anticipating what to be prepared for [9] and awareness of possible transitions [10,11]. Dimensions of preparedness are distinguished as cognitive ("to know"), emotional ("to feel") and activity ("to be able to") [12,13].

Instruments for the measurement of preparedness are sparse and mostly focus on perspectives of family caregivers [e.g.,14,15,16] or professionals [17,18]. In addition, there are measures of patients' preparedness targeting specific contexts, including breast cancer treatment [10], mammography in women with intellectual disabilities [19], oncology clinical trials [20] and reconstructive pelvic surgery [21]. The concept of preparedness also appears as subscales in instruments of, for example, the provision of end of life care [22]. Aspects of preparedness have also been conceptualized as pertaining to domains of self-care information, equipment/services, and confidence [23] and cognitive, emotional and behavioural domains [24]. These existing measures of preparedness, however, are not directly applicable to the context of colorectal cancer surgery.

1.3. The Preparedness for Colorectal Cancer Surgery Questionnaire

To address this gap, a patient-reported outcome measure of preparedness for use prior to surgery and throughout the recovery process, The Preparedness for Colorectal Cancer Surgery Questionnaire (PCSQ), was developed sequentially according to established recommendations [25]. Specifically, the generation and construction of items and domains was based on extensive literature searches and qualitative data, observations from patient-provider clinical consultations related to colorectal surgery, and focus group discussions and narrative interviews with former patients who had undergone colorectal cancer surgery. Based on the analyses, the following four domains of preparedness for surgery and recovery following surgery were constructed: (a) Searching for and making use of information, (b) Understanding and involvement in the care process, (c) Making sense of the recovery process, and (d) Support and access to medical care. Then, a tentative scale was constructed, which was empirically verified with clinical experts, patients and researchers. A baseline version of the PCSQ, applicable to the pre-surgical phase, was subsequently validated based on a psychometric evaluation. Confirmatory factor analysis provided support for a measurement model consisting of four correlated latent factors and 24 items. In addition, the overall PCSQ measure as well as the PCSQ domains had good internal consistency reliability [26]. However, since the PCSQ was applicable only to the pre-surgical phase, it could not be used to examine to what extent preparedness for recovery may change over time from prior to surgery throughout the recovery period.

The challenge in measuring preparedness over time in relation to surgery and recovery is that the measurement needs to be reflective of different phases during recovery. Accordingly, an essential feature in the instrument development process was to ensure contextual relevance of the items to significant stages in the surgery–recovery process. Five time points (phases) were identified for special clinical relevance (see Fig. 1). The content of all but one of the 24 items was identified as being applicable to all phases. The not-applicable item pertained specifically to the results of pre-surgery tests (e.g., colonoscopy) and therefore needed to be excluded for the purpose of longitudinal measurement. However,

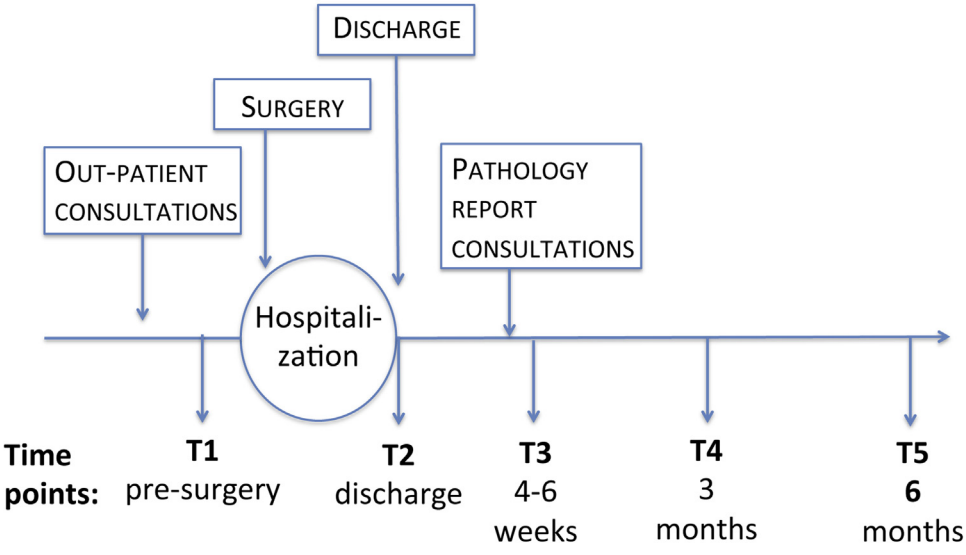

Fig. 1. Five measurement time points as related to significant stages in the surgery–recovery process for patients undergoing colorectal cancer surgery.

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