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# The impact of preoperative education on postoperative outcomes in patients with colorectal cancer in Johannesburg, South Africa

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# ABSTRACT

The global burden of cancer has increased over the past few decades. Colorectal cancer is one of the most frequently reported cancer types globally. There are a number of lifestyle-related factors described in the literaure linked to risk of colorectal cancer and survival. Surgery remains the top treatment choice (when appropriate) for patients diagnosed with colorectal cancer. Furthermore, patients who have undergone a variety of different cancer treatment methods may experience fatigue and muscle weakness resulting in reduced physical function. There is literature describing the use of preoperative physiotherapy interventions (rehabilitation and education strategies) for patients undergoing abdominal surgery for various pathologies. However, there is a paucity of literature describing the use of preoperative education by physiotherapists for patients undergoing abdominal surgery for coloretal cancer specifically. This thesis describes the profile of patients with colorectal cancer in urban Johannesburg South Africa and further describes those who underwent surgical resection. Secondly, a physiotherapy preoperative education programme was developed using a variety of research methods. Finally the impact and feasibility of the programme was tested in a randomised pilot study for patients who underwent colorectal cancer resection at a private hospital in Johannesburg South Africa.

Paper 1 (Chapter 3) includes a secondary analysis and retrospective review of a database of patients who were diagnosed with colorectal cancer at institutions forming part of the University of the Witwatersrand Academic Teaching Complex. The aim was to determine the demographic, functional and clinical profile of the patients included in the database. The review further aimed to identify modifiable factors linked with colorectal cancer and to determine the relationship between these risk factors and survival. Data from the public sector was compared with data from the private sector. The results showed that patients in the private sector cohort were older, had earlier stages of cancer, had a higher percentage of alcohol consumption and had higher survival rates than the public sector cohort. Furthermore, waist circumfrence was shown to have a large-strength effect on survival across the whole cohort.

Paper 2 (Chapter 4) aimed to further investigate the patients included in the database who had surgical resection for their colorectal cancer in the private sector cohort. The surgical and functional profiles of the patients were identified. Predictors of post-surgical outcomes were determined using regression analysis statistics. One hundred and twenty five patients were included in the review. Postoperative paralytic ileus and surgical site infections accounted for the most postoperative complications that were reported. Preoperative vigorous-intensity

exercise and functional performance status were the significant predictors of hospital length of stay and incidence of postoperative complications in patients who underwent abdominal surgery for colorectal cancer at one private hospital in Johanesburg, South Africa.

Paper 3 (Chapter 5) describes the start of the development of a physiotherapy preoperative education programme framework for patients undergoing abdominal surgery for colorectal cancer. Firstly, five databases were screened and a narrative review was performed to determine the evidence available regarding the timing, content, mode of delivery and setting of preoperative education delivered by physiotherapists for patients who underwent abdominal surgery for various pathologies. Seventeen studies were included in the review. The content included in the programmes described in the literature inclues breathing exercises, coughing techniques, verbal advice, physical exercises, surgical information, postoperative pain management, nutritional support, relaxation techniques and information about postoperative complications. Secondly, physiotherapists working in surgical intensive care units and high care units in Johannesburg were purposively sampled to participate in a focus group session. The nominal group technique was used with the goal to reach consensus on the proposed content of a preoperative education programme for patients undergoing abdominal surgery for colorectal resection. The author used the results of the narrative review and the focus group session to develop a famework for preoperative physiotherapy education for this patient population.

Paper 4 (Chapter 6) describes the use of a modified Delphi study to obtain expert insight into the content of peoperative education that could be provided to patients undergoing colorectal cancer resection. A panel consisting of international physiotherapy clinicians and academics working in the field of surgery, oncology or a combination of both were invited to participate in a two-round Delphi study. The survey developed was based on information gathered from the retrospective database review, narrative review and the focus group session. Consensus was set at 70%. The initial survey consisted on 36 statements. Statements not achieving consensus after the first round were modified and new statements added to the second round survey depending on patient feedback. Seventeen experts were invited to participate. Eight responded to the first round survey and seven responded to the second round survey. Thirty one statements reached consensus after both rounds which fell under the following categories: wound/pain, rehabilitation, respiratory considerations, cancer considerations, medical and surgical journey, and other consideratons.

Paper 5 (Chapter 7) describes the use of a pilot study to test the impact and feasibility of a preoperative physiotherapy education programme for patients undergoing abdominal surgery

for colorectal cancer. Firstly, a reliability study was perfomed to establish interrater reliability of the research assistants who were to assist with data collection in the pilot study. Three research assistants performed assessments using two outcome measures on five healthy control participants. Interrater reliability was measured using the intraclass correlation coefficient using Cronbach's alpha. The results showed that two of the three research assistants demonstrated excellent interrater reliability using the Six minute walk test and the Short Physical Performance Battery. Secondly, a randomised pilot study was perfomed on patients who underwent open abdominal surgery at a private hospital in Johannesburg. Participants who met the inclusion criteria were randomised into one of three groups: a control group, intervention group one (patients received a written education pamphlet) and intervention group two (patients received a written educaton pamphlet as well as a face-to-face education session). Assessments were performed preoperatively, at discharge from the intensive care unit and at hospital discharge. Outcomes measured were hospital length of stay and postoperative complications that developed. Due to very low recruitment rates over the five-month study period, only one patient was included in the pilot study. The patient was randomised into the control group which meant that the impact of the education programme could not be assessed. However, the feasibility of the programme was assessed addressing the practicality and integration aspects.

A number of limitations of the various studies were identified and described in the relevant chapters in the thesis. In conclusion, the profile of South African patients with colorectal cancer described in this thesis highlighted risk factors associated with survival and poor postoperative outcomes. A preoperative physiotherapy education programme was developed and tested. Issues were identified regarding the feasibility of implementing the programme in patients undergoing colorectal cancer resection at a private academic hospital in Johannesburg, South Africa.

**Keywords:** Colorectal cancer, preoperative education, physiotherapy, physical activity