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Long-term quality of life after colorectal cancer

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Colorectal cancer is the third most common malignant disease and one of the leading causes of cancer related death worldwide. Due to improvements in early detection and treatment, the prognosis of colorectal cancer improves steadily. In the light of this growing number of long-term (five and more years after diagnosis) colorectal cancer survivors, investigation of health related quality of life (QoL) of colorectal cancer survivors becomes increasingly important to assess late or chronic effects of disease and treatment and to evaluate whether there is a need for interventions for long-term colorectal cancer survivors to improve their situation.

The aim of this project was to investigate long-term quality of life of colorectal cancer survivors, including an assessment of positive and well as negative consequences of disease or treatment.

First, a systematic literature review using various databases like MEDLINE, CINAHL, EMBASE, and PsycINFO was performed to summarize the current state of research with respect to long-term QoL in colorectal cancer survivors. The search identified 14 articles about ten studies, which met the inclusion criteria. In the included articles, long-term colorectal cancer survivors had global QoL levels comparable with the general population, but reported restriction in bowel functioning, distress related to cancer, and had higher depression scores. Results on determinants of QoL were consistent for age, income, and number of comorbidities. Survivors of lower age, with more income, and less comorbidities reported higher QoL scores. None of the studies assessed the association between QoL and physical activity and chemotherapy. In addition, no study included an assessment of positive consequences as a result of the disease or treatment. Overall, results of the included studies were restricted by methodological short comings like small sample size, low response rates, and cross sectional QoL assessment.

Second, the longitudinal development of QoL was investigated in the context of the VERDI study. The VERDI study is a population-based prospective study that included an assessment of QoL of colorectal cancer survivors one, three, five, and ten years after diagnosis. Data from this study was combined with QoL data from the general population. Results from this analysis showed that the development of QoL after colorectal cancer depended on the age at

diagnosis. While younger survivors (< 60 years at diagnosis) reported continuously restrictions in QoL over ten years after diagnosis, older survivors (≥ 70 years at diagnosis) had a comparable to higher QoL than the general population in the first three years and comparable to lower QoL after five and ten years. Thus, restrictions from cancer diagnosis and its treatment can persist over ten years or even develop in the long-run.

Third, the five-year follow-up of the DACHS study was conducted to assess the situation of colorectal cancer survivors five years after diagnosis. The DACHS study is a population-based case control study conducted in the Rhine-Neckar-Odenwald and Heilbronn region that started in 2003. Cases were colorectal cancer patients and control individuals were persons without a history of colorectal cancer. In 2009, the five-year follow-up of the DACHS study was conducted for all colorectal cancer patients with a cancer diagnosis in 2003 and 2004 to assess their situation approximately five years after diagnosis.

In the context of the five-year follow-up, the association between chemotherapy and QoL and survival was analyzed in subgroups of stage II and III patients. A chemotherapy-associated survival benefit was only found for stage III patients. The association between chemotherapy and QoL depended on the age of the patient. Younger survivors (≤ 70 years) reported lower QoL in various dimension if they had chemotherapy. This pattern was not found for older survivors (> 70 years).

In a second analysis in the context of the five-year follow-up, the prevalence and determinants of benefit finding (BF) and post-traumatic growth (PTG) and the association between these constructs and QoL was analyzed. Almost all colorectal cancer survivors reported to experience at least some benefit and around half of the survivors reported moderate to high levels of BF and PTG. Survivors with a higher education or lower depression scores at follow-up reported more BF and PTG. PTG was additionally positively associated with the severity of the disease. While BF and PTG were moderate to highly correlated, both constructs had only very weak positive correlations with QoL.

Summarizing the results, colorectal cancer survivors show detriments in various QoL dimensions even years after diagnosis. The development of restrictions in QoL depended strongly on the age at diagnosis. Despite these negative long-term consequences, many survivors also report to have benefited from their diagnosis. BF and PTG were almost uncorrelated with QoL. Thus, an investigation of the situation after cancer must include an assessment of positive as well as negative consequences of the disease to reflect a complete view of the adjustments after cancer. Chemotherapy was negatively associated with long-term QoL for younger survivors. Further research should be conducted to investigate this association and its dependence on age in more detail. In addition, more intervention studies are needed to improve the QoL of long-term survivors.