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### Enhancing return to work of cancer patients

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## Summary

Advances in cancer screening and cancer treatment have improved the survival rates of cancer in recent years. An increasing number of cancer patients will therefore be able to live many years beyond a cancer diagnosis and face new challenges upon cancer survivorship. For cancer patients of working age, returning to work is a key aspect of survivorship because it is often experienced as an important part of their recovery. Furthermore, work contributes to personal, social, and economic well-being and work is associated with a higher quality of life of cancer patients. Unfortunately, cancer patients have a 37% higher risk of becoming unemployed and may suffer from impaired work functioning, face a decrease in income, or may be confronted with unreasonable treatment at the workplace. Unfortunately, interventions aimed at enhancing the return to work of cancer patients are rare and work is not typically addressed as part of usual psycho-oncological care at the hospital.

The main objective of this thesis is to gain knowledge on how to reduce adverse work outcomes of cancer patients. The following research questions were put forward (**Chapter 1**):

1. What are important aspects in the design of a hospital-based work support intervention for cancer patients to enhance the return to work and quality of life?
2. What are the psychometric properties of the Dutch translation of the Work Limitation Questionnaire (WLQ) among cancer patients?
3. How is the process of a hospital-based work support intervention for cancer patients evaluated?
4. What is the effectiveness of a hospital-based work support intervention compared to usual care for cancer patients on return to work and quality of life?

*Design of a hospital-based work support intervention for cancer patients*

We developed an intervention for cancer patients with the primary aim of enhancing the return to work and quality of life (**Chapter 5**). Important aspects of the design of this type of intervention include the following: 1) an early hospital-based intervention that is integrated into the usual psycho-oncological care (**Chapter 2**), 2) addressing misconceptions about cancer and work (**Chapter 2**), 3) involvement of the occupational

physician and the supervisor (**Chapter 3**), and 4) informing the patient's occupational physician about patient's diagnosis and cancer treatment (**Chapter 5**).

The hospital-based work support intervention started a few weeks after inclusion in the study and was spread over a maximum of 14 months. The hospital-based work support intervention consisted of: 1) delivering patient education and support at the hospital as part of psycho-oncology care, 2) improving the communication between the treating physician and the occupational physician, 3) the advice to make a concrete and gradual return-to-work plan in collaboration with the cancer patient, the occupational physician, and the supervisor. A breast care nurse, oncological nurse, nurse practitioner, or social worker (hereafter called nurse), who delivered psycho-oncological care in normal cancer care delivered the patient education and support at the hospital in 4 meetings of 15 minutes each (both face-to-face meetings and contact by telephone). In addition, at least one letter was sent to the occupational physician to enhance the communication: two from the treating physician and one from the nurse. We asked the occupational physicians to organise a meeting between the patient and the supervisor to make a return-to-work plan. The key aspects of the hospital-based work support intervention were the patient education and support at the hospital and the sending of information to the occupational physician.

#### *Psychometric properties of the Work Limitation Questionnaire (WLQ) among cancer survivors*

To understand the full impact of a cancer diagnosis on adverse work outcomes, it is also important to understand the work functioning of cancer survivors. A commonly used measure of impaired work functioning due to ill health is the Work Limitation Questionnaire (WLQ), which has been translated into Dutch. However, the measurement properties of the Dutch translation of the WLQ among cancer survivors were unknown. Therefore, we employed a cohort study of 53 cancer survivors with three measurement points (**Chapter 4**). We found sufficient reproducibility at the group level but not at the individual level as the minimal important change (4.0) exceeded the smallest detectable change at the group level (3.1) but not at the individual level (18.0). There was no indication of systematic bias or proportional bias. The internal consistency and construct validity for the WLQ and its subscales were sufficient or

slightly less than sufficient. There was a floor effect for one subscale but there were no ceiling effects. Responsiveness was sufficient with an area under the curve of a receiver operating characteristic of 0.68. The WLQ is reproducible, valid, and responsive for the use at group level, but it is not sufficiently reproducible for clinical use among cancer survivors.

*Process evaluation of a hospital-based work support intervention for cancer patients*

How is the process of a hospital-based work support intervention evaluated? To answer this question, we conducted a case study (**Chapter 6**) and a process evaluation (**Chapter 7**). We conducted a case study to describe how the return-to-work process progressed in a cancer patient and how a hospital-based work support intervention supported this process (**Chapter 6**). Furthermore, we performed a process evaluation at the level of the hospital department, nurse, and patient (**Chapter 7**). The following process evaluation outcomes were assessed: recruitment, context, reach, intensity of the intervention delivered, intensity of the intervention received, and fidelity.

The results of the case study revealed that the support delivered by the nurse helped the patient to resume work gradually and the sending of information from the treating physician and the nurse improved communication with the occupational physician. This resulted in the patient being able to achieve lasting return to work (**Chapter 6**). The results of the process evaluation showed that 47% of all eligible patients participated in the study. Nurses' meetings with the patients were conducted according to the protocol in 85% of the cases. In 100% of the cases, at least one letter was sent to the occupational physician, and in 10% of the cases a meeting took place between the patient, the occupational physician, and the supervisor. Our method, which involved asking occupational physicians to organise a meeting between the patient, the supervisor, and themselves to draw up a return to work plan, proved difficult. Patients and nurses found the intervention in general very useful (**Chapter 7**). Nurses made the following suggestions to optimise the intervention: 1) meetings must be planned at the right time and should be allotted sufficient time, 2) meetings should be conducted face-to-face, and 3) to be able to deliver all meetings face-to-face it may mean that the intervention should be hand on to another health care professional who has longer follow-up consultations in usual cancer care.

Based on the case study and the process evaluation, we conclude that the intervention yields high acceptability to implement in usual psycho-oncological care but that it proved difficult to involve the occupational physician. Patients were highly satisfied and nurses found the intervention useful and feasible.

*Effectiveness of an innovative hospital-based work support intervention for cancer patients*

We studied the effectiveness of an innovative hospital-based work support intervention in a multi-centre randomised controlled trial with a follow-up of 12 months (**Chapter 8**). Cancer patients who were treated with curative intent and who had paid work participated. Patients were randomly assigned to the intervention group (N=65) or to the control group (N=68). Outcomes were the rate of and time to return to work, quality of life, work ability, work functioning, and costs (i.e. costs to deliver the intervention and lost productivity costs). The relative risk of the intervention versus usual care of the return to work rate was calculated at follow-up. The time until return to work was analysed with a Kaplan Meijer survival analysis and Cox regression analysis. Secondary outcomes were analysed with multi-level analysis.

The rate of return to full or partial work at the 12 month follow-up was 79% in the intervention group versus 79% in the control group; and 86% and 83% respectively when excluding patients who died within the follow-up period and with a life expectancy of months. The relative risk of returning to work (full or partial) in the intervention group versus the control group was 1.03 (95% confidence interval 0.84 – 1.2). The median time from initial sick leave to partial return to work was 194 days (range 14-435) in the intervention group and 192 days (range 82-465) in the control group ( $p = 0.90$ ). The hazard ratio of partial return to work was 1.03 (95% confidence interval of 0.64 – 1.6) of the intervention group versus the control group. Quality of life improved statistically significant over time ( $p$  ranged from 0.014 to  $\leq 0.001$ ) but did not differ statistically significant between groups ( $p$  ranged from 0.15 to 0.99). Work ability and work functioning improved over time but did not differ statistically between groups. The cost of delivering the intervention was €119. Lost productivity costs did not differ between groups (€41.792 versus €40.147).

Return-to-work rates were generally high. We found non-statistically significant findings between groups, but there is still considerable uncertainty about possible effects of the intervention. Further research is needed to determine which aspects of the intervention are useful and which elements need improvement.

*Conclusion and recommendations for further research and practice*

The importance of work for cancer patients is confirmed by the studies described in this thesis. Most importantly, a recommendation for further research is to study which aspects of the intervention are useful and which elements need improvement as we found similar work outcomes for both groups and there is still considerable uncertainty about possible effects.

An important generic recommendation for practice is that an individual approach is required as the differences among cancer patients are large regarding the experienced adverse work outcomes. A specific recommendation for psycho-oncological care is to be aware of the work concerns of cancer patients and to address the possibility of adverse work outcomes of a cancer patient both early in their treatment phase and at follow-up as the intervention was highly appreciated by patients and perceived useful and feasible by nurses.

Occupational health care professionals and the employer should be attentive of the long-term consequences of cancer treatment on work outcomes to prevent a wear-off effect of attention and support. Cancer patients are recommended to make themselves aware of the rules of the social security system and discuss return to work with a health care professional early in their treatment phase and at follow-up.

In conclusion, the importance of work for cancer patients is confirmed by the studies described in this thesis. Therefore, interventions should be further developed to support cancer patients with their return to work.