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Factors associated with Danish cancer patients' return to work. A report from the population-based study 'The Cancer Patient's World'

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ABSTRACT

Purpose: If patients facing difficulties in the process of returning to work after treatment of cancer could be identified, these patients could be assisted in the transition. This might help some patients to stay in work. We therefore assessed demographic and clinical factors associated with returning to work after a cancer diagnosis. *Materials and methods*: In this cross-sectional survey, 1490 cancer patients who had been in contact with a hospital department during the past 12 months in three Danish counties responded to a mailed questionnaire. Factors associated with employment and return to work (i.e., working more than 0 h in the past month) respectively, were assessed in multivariate ordinal logistic regression models. *Results*: Of the 598 patients below age 65 who were employed at the time of diagnosis, 75% were still employed when answering the questionnaire at a median of 2.8 years after diagnosis and 63% were working. In multivariate analyses, younger and more recently diagnosed patients were more often employed. Patients diagnosed with lung or head and neck cancer were least likely to be employed and having returned to work. Advanced cancer at diagnosis was associated with loss of employment. Advanced cancer and being in active treatment were associated with not having returned to work. *Conclusion*: A quarter of the patients had lost their employment probably resulting in economic consequences on the individual as well as at the societal level. The highest risk was observed for older patients and those diagnosed with lung or head and neck cancer.

1. Introduction

The dramatic changes in the number of cancer survivors have added survivorship and rehabilitation of cancer patients to the agenda. In the USA it is estimated that more than 11 million people were living with a diagnosis of cancer in 2006 [1]. The same pattern is observed in Denmark where approximately 200,000 persons were living with a cancer diagnosis (excluding non-melanoma skin cancer) by the end of 2007 [2] in a total population of 5.4 million people.

It is important to assist these cancer survivors in managing the disease and treatment related effects and to reduce the possible economic and work related impact. This is important at the societal level in order not to loose people from the work force. At the personal level it is equally important, as not being able to return to work or to stay at work following an illness may result in financial loss, social isolation, reduced self-esteem and impaired quality of life [3,4]. Returning to work can improve the quality of life of many cancer patients because they interpret this as a means to regain control and normalcy [5,6]. On the other hand, facing a life-threatening disease may cause some cancer survivors to value work less and voluntarily stop working [7,8]. The process of returning to work is complex [6,9,10] and the WHO's International Classification of Functioning (ICF) model states that work ability is multi-causal and not only dependent of the disease [11]. The transition from sick leave to return to work may depend on disease and treatment related, work related and person related factors [10,12–14].

If vulnerable cancer patients facing difficulties in the process of returning to work could be identified, these patients could be assisted in the transition. We therefore aimed at identifying demographic and clinical factors associated with future employment status and being able to work among Danish cancer patients who were employed at the time of diagnosis and still affiliated with the hospitals to some extent. As breast cancer patient constitute the largest sub-group, the overall results are supplemented with separate analyses and results for breast cancer patients.

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2. Materials and methods

2.1. Study population

In three Danish counties (Ringkoebing, Funen and Copenhagen) all hospital departments treating cancer patients were invited to provide lists of patients that had; (i) been in in- or out-patient contact with that department within the past 12 months, (ii) had a diagnosis of cancer, (iii) were alive and (iv) lived in the county of interest. Patients born on the 23rd–31st of any month were selected for the study, corresponding to 28% of all patients. However, at the two largest regional oncology departments (Odense University Hospital and Rigshopitalet) only patients born on the 23rd–27th were selected, corresponding to 16% of patients from those departments. The differences in sampling proportions were chosen because most cancer patients were in contact with one of these two oncology departments. If we selected the same proportion of patients from all departments rather few patients would be included from each of the smaller departments precluding reliable comparisons between departments unless the total sample was very large. We therefore 'over-sampled' patients from the smaller departments. In the analyses, data was weighted to take the sampling into account (see section on analyses).

Of 81 invited departments, 53 participated with lists of a total of 3304 eligible patients (Fig. 1). Medical records could not be located for 165 patients. The medical records of the remaining 3139 patients were reviewed in the period from February 2005 to January 2006 to determine whether the inclusion criteria were met. The review showed that 508 patients had not been in contact with the hospital department during the past 12 months, 76 patients did not have a verified cancer and eight patients had not been informed about the diagnosis. These were excluded along with patients who did not speak Danish ($N = 25$) or suffered from dementia ($N = 23$) or a serious mental disease ($N = 21$) according to the medical records. The medical records of 116 patients were insufficient to allow assessment of eligibility. In addition, 9 patients had another co-morbid condition that hindered participation (e.g., bad vision or brain damage) and 11 patients were excluded for various other reasons, leaving 2342 patients.

The vital status of all citizens in Denmark is recorded in the central person register (CPR) along with the postal address. After linkage with the CPR, an additional 140 patients were excluded: 99 patients had died, 33 patients had moved to another county, two patients had emigrated, four patients had protected mailing address and two were excluded for unknown reasons. The resulting sample of 2202 patients was mailed a letter of invitation along with a questionnaire (Fig. 1). Patients returning a questionnaire also returned a signed agreement form.

The study complied with the Helsinki II declaration and was approved by the Ethical Committee and the Danish Data Protection Board.

In the questionnaire, patients were asked to state their current affiliation with the work market as well as the affiliation prior to the diagnosis of cancer. If they were currently on sick leave, they were instructed to state their employment anyway. Also, patients were asked to indicate the number of hours they had worked per week during the past month. Those on vacation, sick leave or not part of the work force were instructed to answer '0 h'.

2.2. Analyses

Participants and non-participants were compared using ordinal logistic regression analysis. Two outcome variables were used (i.e., employment and return to work) among the participants that were employed at the time of diagnosis of cancer and who were below the age of 65 years at the time of sampling.

Employment was defined as having a full time or part time job. Participants who stated that they were unemployed, retired, under education, or housewives were defined as not employed. As some of the patients who reported to be employed may have been on sick leave from their job, we labeled those who reported to be currently employed *and* reported to have worked more than 0 h during the past month as having returned to work. For both outcomes (i.e., being currently employed and having returned to work) univariate analyses of the associations between background variables and the outcome were performed using ordinal logistic regression in the total sample as well as for the subsample of breast cancer patients. The background variables were gender, age, marital status, education, diagnosis, TNM stage of disease, treatment phase, number of different treatment modalities (i.e., surgery, radiation therapy chemotherapy and hormone therapy), county and type of hospital department. Subsequently, the background variables that were significantly associated with the outcome were entered in a multiple regression model in which backward stepwise logistic regression analysis was undertaken for model building.

To adjust for the unequal proportions of patients included from different departments data were weighted in all analyses using the PROC SURVEYFREQ (frequencies) and PROC SURVEYLOGISTIC (regressions) procedures in the SAS statistical package v. 9.1. In this way, the results correspond to those that would have been obtained if equal proportions had been sampled from all departments.

A significance level of 0.05 was used for all analyses.

3. Results

Of the 2202 patients invited to participate, 1490 patients (68%) filled in and returned the questionnaire (Fig. 1). Participation was lowest in the youngest and especially the oldest age groups, whereas there was a slight overrepresentation of patients diagnosed with breast cancer and stage three disease among participants (Table 1). A smaller proportion of patients treated at medical wards participated compared to patients treated elsewhere (Table 1).

About half of the sample ($N = 770$) was below the age of 65 (the typical state pension age in Denmark) when they were sampled. Of these, 598 were employed (81% full time and 19% part time) when they were diagnosed with cancer.

3.1. Employment

Of the 598 who were employed at the time of diagnosis, 75% were currently employed (78% of these were employed full time) when answering the questionnaire at a median of 2.8 years (mean 4.0 years, range 0.2–23.4 years) after the diagnosis. In the period from sampling until the questionnaire was answered, nine patients (2%) had retired to old age pension. Another 18% had retired to early retirement pension and 3% were unemployed. Of patients who were in the first year after diagnosis, 93% were still employed. The proportion of patients still employed gradually dropped to 60% observed for patients diagnosed more than ten years before sampling (Table 2). Of the 220 breast cancer patients, 78% were still employed. This proportion dropped from 96% among those diagnosed 6–12 months before sampling to 64% among those that were diagnosed more than ten years before sampling (Table 2).

Among the 598 participants who were employed at the time of diagnosis, age, cancer diagnosis, stage of disease, time since diagnosis and type of department were significantly associated with being currently employed in the univariate analyses (data not