



Short-term and long-term elderly cancer survivors: A population-based comparative and controlled study of morbidity, psychosocial situation, and lifestyle[☆]

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A B S T R A C T

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Purpose: The aim of this study was to compare how short-term (1–5 years) and long-term (≥ 5 years) elderly cancer survivors and matched cancer-free controls report their morbidity, psychosocial situation, lifestyle and rurality.

Methods: Among 11 899 persons aged ≥ 70 years who participated in the second Health Survey of North-Trøndelag County (1995–1997), 479 had been diagnosed with invasive primary cancer 1–10 years before the survey according to Cancer Registry of Norway and self-report. Each patient was randomly age- and gender-matched with three controls without cancer ($N = 1437$). Descriptive statistics was performed.

Results: The cancer sample consisted of 265 (55%) short-term and 214 (45%) long-term survivors, where 223 (47%) lived in rural and 256 (53%) lived in urban areas. No significant differences were found when comparing short and long-term survivors. When all cancer survivors were compared with controls, the survivors reported significantly poorer 'self-rated health', and more 'visits to a medical doctor'. Stepwise logistic regression analysis explained 3.3% variance in being cancer survivors, with 'visits to a medical doctor' and 'personal activity of daily living problems' as variables contributing to the model. Rural versus urban areas of living explained 6.3% variance in being a rural inhabitant, with 'self-reported health' as the variable showing significant contribution to the model.

Conclusion: Short and long-term older cancer survivors showed similar psychosocial situation, morbidity, and lifestyle. Compared to cancer-free controls, survivors reported poorer health, more activity of daily living problems, and more frequently medical consultations. Elderly cancer survivors living in rural areas reported poorer health than those living in urban areas.

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Introduction

Internationally, it is well documented that the number of cancer survivors will grow. Since cancer is most common among the elderly, this development will accelerate with the aging of the population (Bellizzi and Rowland 2007; Rao and Demark-Wahnefried, 2006; Yancik and Ries, 2004). In Norway as an example of the Scandinavian welfare states, 40% of malignancies are diagnosed in people ≥ 70 years. The number of cancer patients alive 1–10 years after cancer diagnosis is 190 865 (Cancer Registry

of Norway, 2007), and the life expectancy is 78.2 years for men and 82.7 years for women (Statistics Norway, 2008). Somatic and psychosocial health of elderly cancer survivors (aged ≥ 70 years = ECSs) is relevant for their health-related quality of life and their need and use of health care services (Bellizzi and Rowland, 2007). An aspect of the organisation of such services is the dwelling in urban or rural areas. Beck et al. (2009) showed that ECSs experienced a significant number of unrelieved symptoms without any significant differences related to area of dwelling. However, Rogers et al. (2009a) emphasized that cancer survivors in distant rural populations had problems in attaining follow-up programs. The distance between the ECSs' home and the follow-up clinic or health care centre may have an impact on their ability to attend care or service offered, which in long term could influence their health status. It is therefore of considerable interest to identify and to characterize underserved subgroups in the population of elderly cancer survivors (Ayanian and Jacobsen, 2006).

[☆] Results from The Nord-Trøndelag Health Study.

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Most of population-based controlled studies which examine the morbidity and psychosocial situation of cancer survivors have large age ranges. For example, the American National Health Interview Study compared cancer survivors aged 18 to >75 years with individuals without cancer (Hewitt et al., 2003). Such an age range makes specification of findings relevant for young, middle-aged or elderly survivors as their situation, tasks and challenges vary considerably (Rolland, 2005). In prostate cancer survivors aged 47–88 years, Blank and Bellizzi (2008) reported that increasing age was moderately associated with increasing comorbidity. Alfano et al. (2007) studied cancer survivors aged 29 to over 70 years without age grouping, leaving the same problem of age-related interpretation of the study results.

In a study with a reasonable age range, Deimling et al. (2005) documented that cancer survivors (mean age 72.3 years, range 60–74 years) were vulnerable for functional problems and comorbidity, and that pain was the most common symptom attributed to cancer or cancer treatment. In elderly female cancer survivors, Sweeney et al. (2006) (mean age 72 years, range 66–82 years) reported that functional problems were significantly more common than in controls without cancer. From a nursing perspective, comorbidity and impact on activities of daily living (ADL) define the needs and demands of the ECSs, and their identification of health problems and availability of health care are therefore essential.

We hold the view that morbidity studies of cancer survivors should be done within restricted age spans in order to focus on life phase specific problems. For elderly populations, comorbidity, functional impairment, and the ability to perform ADL are significant problems. The aim of this Norwegian population-based study was therefore to examine morbidity, lifestyle and psychosocial situation of ECSs compared to an age-matched sample without cancer. We defined three groups for comparisons: ECSs with primary cancer diagnosis 1–5 years before the survey (short-term ECSs = SECSs), those with diagnosis ≥ 5 years before the survey (long-term ECSs = LECSs), and age- and gender-matched controls to SECSs and LECSs without cancer (controls). The limit of 5 year survival beyond cancer diagnosis generally implies that cancer treatment has been successful, and several authors have used this cut-off point to discriminate between those close to diagnostic time, and those not (Hewitt et al., 2005; Korfage et al., 2005; Van den Belt-Dusebout et al., 2006; Welch et al., 2000).

Additionally, we stratified the cancer survivors living in rural and urban areas respectively. Our research hypotheses were (1) that SECSs, because of shorter adaptation time, experience significantly higher impact on morbidity, psychosocial situation and lifestyle compared with LECSs, (2) ECSs (SECSs + LECSs) would display more morbidity than controls, but similar lifestyles and psychosocial situations due to the expectation of more comorbidity in ECSs than the normal population, (3) no significant differences concerning health conditions would be observed for ECSs in urban and rural areas due to the well-established health care system in Norwegian municipalities.

Methodology

Design

This is a cross-sectional questionnaire study, and the data is register-based.

Sample

The second Health Study of Nord-Trøndelag County (HUNT-2) invited all the inhabitants of the County aged ≥ 20 years to take part in the survey which was carried out locally in the 24 municipalities of the

County between August 1, 1995 and June 30, 1997. The survey consisted of a simple physical examination, non-fasting blood sampling, and a mailed questionnaire (Form 1), delivered at the examination. A second questionnaire (Form 2) was handed out at the examination, to be completed at home and returned by prepaid mail. Details of the HUNT-2 study are given elsewhere (Holmen et al., 2003), (<http://www.hunt.ntnu.no>). Among 15 983 individuals aged ≥ 70 years who could have participated, 11 899 did so (74% response rate).

Report of all cancer cases occurring in Norway to the Cancer Registry of Norway (CRN) has been mandatory by law since 1953, and the CRN is considered a quite complete and reliable registry concerning cancer localization and invasiveness. Based on the personal identity numbers, and an authorized linkage between HUNT-2 and the CRN, we identified 911 participants (8%) with at least one diagnosis of invasive cancer 1 year or more before their HUNT-2 examination. Basal and squamous cell carcinoma of the skin were excluded. From these 911 participants, we excluded 246 who were found in the CRN but who did not self-report cancer, 155 with a second cancer, and 31 participants who had not completed Form 2. This left us with a sample of 479 ECSs, and among them 265 (55%) belonged to the SECSs group and 214 (45%) to the LECSs group, Fig. 1.

The Nord-Trøndelag County consists of four cities (Stjørdal, Steinkjer, Namsos and Levanger), defined as urban areas, and 223 (46%) of ECSs lived in urban areas. The other 20 municipalities were defined as rural areas and include 256 (54%) of ECSs, Fig. 1.

Among the 10 988 participants ≥ 70 years not registered in the CRN, we excluded those who did not complete Form 2, and from the remaining sample we randomly drew three controls matched on age and gender. This final sample of 1437 participants represented the control group (controls).

Questionnaire variables

Demography

Civil status was dichotomized into those married and those single, separated, divorced or widowed. *Level of education* was dichotomized into those reported <10 years of basic education and those with ≥ 10 years. *Social network* was assessed by the response of having enough friends or not, and *social activities* were defined as being active in social clubs ≥ 1 time/month or not.

Lifestyle

Daily smoker concerned those who reported any current daily consumption of cigarettes. *Body Mass Index (BMI)* was calculated as kg/m². The level of *physical activity* was divided into “minimal” and “moderate or more” according to the published algorithms (Thorsen et al., 2003).

Somatic morbidity

Impairment was defined as limitations in daily activities caused by chronic disease, injury or somatic or mental morbidity and was divided into *physical* or *mental* impairment. *Self-rated health* was rated to be “good” (very good/good) or “poor” (poor/very poor). *Somatic diseases* were investigated by the question: “Has a doctor ever said that you had...?” and included myocardial infarction, angina pectoris, stroke (these three diseases taken together as cardiovascular disease), hypertension, asthma, diabetes, thyroid disease (hyperthyroidism, hypothyroidism, goiter or other thyroid diseases), osteoporosis, and arthritis/arthrosis. In addition self-rated somatic complaints or headache that had caused “much bother last year” was assessed. *Muscular pain and stiffness affecting activities of daily living* last month were rated as present or absent and were specified for major body parts. Presence of ≥ 3 musculo-skeletal complaints were calculated, where the grouping of

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