

Occupational Reintegration of Long-Term Cancer Survivors

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To determine the long-term psychosocial consequences of cancer related to work, a postal survey was conducted among 849 long-term survivors of cancer in the southwest Netherlands. Forty-four percent of the responders who worked at the time of the diagnosis of cancer returned to their job, 24% of them part-time. Fourteen percent experienced impediments at work after return. Absenteeism in this group does not differ from that in the year prior to the moment of diagnosis. There is a small decrease in promotional and financial prospects.

Cancer is a chronic disease state, which represents a variety of diseases, affecting the somatic and psychological performance of a person. To patients, the diagnosis of cancer implies a sudden confrontation with mortality. Often radical treatment is called for, possibly resulting in functional limitations or cosmetic defects. As a consequence, many psychosocial problems, like the disturbance of social relationships, and problems related with work or insurance may occur.¹⁻⁴ Actuarial and population-based figures give us survival estimates for various cancers, but those figures do not reflect the experience of the individual patient, whose experience is unique and not adequately described by aggregate data.⁵ The patient, who has undergone a cancer experience is permanently affected by it. Physically and emotionally, the experience leaves an impression. In past decades, the major emphasis in care of the cancer patient was directed toward increasing the quantity of life by refinement of diagnosis and treatment.⁶ Because of the rapid advances made in cancer treatment, an increasing number of patients are being cured. The incidence of cancer is expected to increase in the next decade, because of the increased longevity in our population and the higher rates of cancer in the older population. The future growth in number of long-term survivors will reflect these developments.^{3,7,8}

An analysis of the quality of survival is more complex, but of major significance in evaluating the success of cancer treatment.²

Most cancer patients are in their middle years, the period of greatest productivity and greatest family, social, and community responsibility. Work, leisure-time activities, and social relationships are some of the di-

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mensions that constitute a person's quality of life.^{9,10} Work plays a crucial role in many lives. Earnings from employment are the primary source of income to meet primary needs and to enhance life. A person's adequacy is often measured by such criteria as health and the ability to work.^{1,9,11} Until now, in The Netherlands, little research has been done to determine the psychosocial problems that the long-term cancer survivor may encounter when he returns to society. Studies abroad demonstrated difficulties with returning to work and social life among many long-term survivors.^{1,4,12,13}

In 1987, a postal survey was conducted among 849 long-term survivors of cancer at the regional cancer center for the southwest Netherlands (population of more than 2 million), as part of the 10th anniversary of the Comprehensive Cancer Centre Rotterdam. The survey was conducted into the characteristics of this population and into their psychosocial problems that may be related to their cancer or its treatment. Global results were published elsewhere.¹⁴

The purpose of this survey was to gain understanding of the problems met by the "cured" cancer patient during his or her reintegration in society. Here, we are interested especially in the following issues:

1. What happened to the responders who were employed at the time of diagnosis?
2. To what extent does cancer affect the capacity to work, absenteeism, promotional prospects, and income?
3. To what degree do insurance problems occur?

Methods

The ex-cancer patients had to meet the following four conditions:

- 1) The cancer was diagnosed in 1978, 1979, or 1980.
- 2) The treatment and posttreatment checkups all took place in the regional cancer center.
- 3) The patient is still alive and no relapse has been demonstrated for at least five years.

- 4) At the moment of diagnosis, the patients age was under 60 years.

The first and third condition together form the concept "cured of cancer." The fourth condition is added to avoid distortion of the results of this survey by the effects of aging (retirement). The medical data of the histologic diagnosis and localization of the primary tumor were obtained from the archives of the regional cancer center. The data of the social status and performance state of the ex-cancer patients were collected by a postal survey.

The survey consists of 149 questions (190 items), partly extracted from existing questionnaires of the Dutch Central Bureau of Statistics.

The questions concern the following issues:

- background information: family status, education
- medical data: checkups, complaints, special aids
- everyday activities: degree of independence
- social characteristics before and after the treatment: employment, income
- perceived consequences of the disease or treatment
- relationships with family and friends
- leisure activities

Since the responders only had to answer those questions that were relevant for their position, the actual number of questions to be answered was considerably less (average, 67 questions). In the presentation of results, we will first describe the changes of socioeconomic positions for all responders. After that, we will restrict ourselves to the responders who worked at the time of diagnosis.

Results

In the archives of the clinic, a total of 849 cases was found to meet the study criteria and received questionnaires. Of this group, 722 (85%) returned questionnaires of which 649 (76%) were completed satisfactorily to be suitable for processing. The study group consisted of 467 women (72%)

and 182 men (28%). Age ranges were from 16 to 69 years (mean age: women, 55.5 years; men, 51.5 years). The primary sites of the cancers, for which the responders had been treated in the past, were: breast (33%), female reproductive system (24%), head and neck (10%), lymphatic system (9%), skin (8%), male reproductive system (7%), other (6%), and unknown (3%).

A large part of the questionnaire concerned the socioeconomic position, both at the time of the diagnosis of cancer (1978–1980) and at the moment of this survey (1987). Socioeconomic positions were classified as follows (combinations are possible):

- housekeeping
- retired
- employed
- unemployed
- other, eg, student.

Table 1 shows the comparison of the socioeconomic positions at the time of the diagnosis and in 1987. In 1987, the activities of 62% of the responders were identical to those at the time of diagnosis. The responders, who were employed at the time of the diagnosis and are housekeepers now, account for the largest group that have changed (10%). It concerns 28% of those who were working at that time (99% women).

Furthermore, of the people who were employed at the time of the diagnosis, 18% are retired and 3% are now unemployed.

The changes in Table 2 show that the number of employed responders declined by 12.5%. The changes in Table 2 seem to be related to the age of the person, with little change for ex-cancer patients 45 years of age or younger. In this group, a slight increase in employed persons is found. Also striking is the number of pensioners (16%), a category that was empty at the time of diagnosis because of the age limitations in this survey. Obviously, this increase took place particularly in the group of 66 years or older, but there also was a substantial increase of pensioners (11%) in the group 46–65 years of age.

Table 3 shows the change in socioeconomic positions by cancer site. The decrease in the number of the

TABLE 1

Socioeconomic Position at the Time of the Diagnosis of Cancer and at the Moment of Study*

Position in 1978-1980	Position in 1987 (%)					Total
	Housekeeping	Retired	Employed	Unemployed	Other	
Housekeeping	396 (45)	71 (8)	45 (5)	3 (0)	3 (0)	518 (58)
Employed	86 (10)	57 (6)	137 (16)	9 (1)	20 (2)	309 (35)
Unemployed	3 (0)	1 (0)	3 (0)	1 (0)	1 (0)	9 (1)
Other	11 (1)	11 (1)	14 (2)	0 (0)	14 (2)	50 (6)
Total	496 (56)	140 (16)	199 (22)	13 (1)	38 (4)	886† (100)

* As far as data of both times are available, including combinations, in numbers and percentages.

† This number exceeds the number of responders, as a result of the possibility to mark multiple categories (also in Tables 2 and 3).

TABLE 2

Changes in Socioeconomic Positions by Age at Time of Survey (%)

Activities	Total	Age		
		45 and Younger	46-65	66 and Older
Total number	N = 886	N = 183	N = 532	N = 151
Employed	-12.5	+5.5	-15.9	-21.2
Housekeepers	-2.5	+1.7	+2.4	-25.2
Pensioners	+15.8	+0.6	+10.9	+52.3
Unemployed	+0.5	-1.1	+1.2	-0.7
Other	-1.3	-6.6	+1.5	-5.3

TABLE 3

Changes in Socioeconomic Positions by Cancer Site (%)

Activities	Head and Neck	Skin	Breast	Female Reproductive System	Male Reproductive System	Lymphatic System	Other
Total	N = 67	N = 69	N = 313	N = 233	N = 49	N = 85	N = 42
Employed	-35.9	-10.2	-7.9	-13.3	-20.4	+2.4	-28.6
Housekeepers	+3.0	-1.5	-3.9	-6.0	-2.0	+1.2	+7.2
Pensioners	+34.3	+13.0	+12.5	+18.5	+16.2	+5.9	+21.4
Unemployed	+1.5	-1.5	0	+2.6	0	-3.5	+2.5
Other	-3.0	0	-0.7	-1.7	+6.2	-5.9	-2.3

employed treated for head and neck tumors is highest (-36%). In this group, a large increase in the number of pensioners was also found (34%). Only 41% of those that were treated for head and neck tumors returned to work.

Return to work seems to be more difficult for people with a history of cancer of head and neck, than for those treated for other tumors. This could be the result of the physical limitations because of the cancer treatment, or of the age at which this

disease generally appears. In this survey, responders treated for head and neck tumors were older than the other responders (averaging 59.7 and 54 years of age, respectively). So it is not surprising that many persons treated for cancer of head and neck were about to retire or already had done so. No significant differences in physical complaints could be shown between responders treated for head and neck tumors and the other responders.

In the group of responders treated for lymphatic tumors, no decrease in the number of employed occurred. This could be the result of the relatively low mean age in this group (44.5 years of age at time of survey), compared with the responders treated for other tumors. Twenty-two percent of the responders were employed at the time of the survey (54% of the men, 14% of the women). In comparison with the mean Dutch population, men aged 50 to 64 years worked less than the average Dutch man at this age (45% and 68%, respectively).¹⁵ These men had been treated for tumors of head and neck (36%) and the reproductive system (20%).

At the time of diagnosis, 309 responders were employed. Only 147 of them worked at the moment of this survey (44%). The people who ceased to work are now housekeepers (50%), pensioners (33%), unemployed (5%), or other (12%).

Because the purpose of this report is to get a clearer view of the problems met by the long-term survivors during reintegration in society, and especially during return to work, the responders who were employed at the time of diagnosis were selected and their data were processed separately. Below, the results of these analyses will be presented.

Responders Who Maintained Employment

One hundred thirty-seven of the 309 responders, who were working at the time of diagnosis, maintained employment (44%). This group consisted of 105 men (76%) and 32 women (23%). The mean age is 46.9 years. Cancers of lymphatic system (26%), male reproductive system (20%),

breast (16%), and head and neck (14%) were encountered most frequently.

Medical Data

For 67% of the responders, the duration of treatment was less than 6 months. An exception were those that were treated for cancer of the lymphatic system (60%, duration of treatment more than a year). Ninety-six percent of the responders are still under specialistic supervision. Fifty-eight percent feel comfortable with these regular checkups (women treated for breast cancer, as high as 81%). Seven percent received some kind of rehabilitation therapy. Fifty percent still experience physical symptoms attributed to the disease or its treatment, in particular, impairment of energy or symptoms of arms, hands, or neck. Still, 88% consider themselves healthy while 11% consider themselves disabled. Especially, responders treated for tumors of the head and neck more often think of themselves as disabled (24%). Sixteen percent use special aids as a result of the disease or the treatment. Over 75% of these aids concern breast prostheses. Eighty-four percent of the women who were treated for breast cancer and are working now have a breast prosthesis.

Employment

At the time of diagnosis, 14% worked part-time (all women, and 50% of all the working women). Now (1987), 24% work part-time (58% of the working women and 7% of the men). Ninety percent receive full payment (at the time of diagnosis, 99% received full payment). Only seven responders receive a reduced salary, of whom two claim this to be a result of a reduced performance state, two because of reduced working hours, and one because of physical disability.

During the last 5 years, 14% of the responders have changed jobs or positions, especially the responders aged 21 to 35 years (22%, compared with the group aged 45 to 65 years (only 8%)). At the time of diagnosis, 63% of the employed responders had a positive attitude about possible promotional prospects or better income.

Now, 53% have a positive attitude. Especially responders who are 21 to 45 years of age and those who have been treated for head and neck tumors have a more negative opinion about promotional prospects or better income (only 44% have a positive attitude). It is striking that, compared with the mean Dutch population, our responders have more positive attitudes about promotional prospects, regardless of age.¹⁵

The absence from work now, expressed in days per year (1986), does not differ significantly from the absence in the years prior to the diagnosis (1978–1980). Eleven percent of the working responders feel hampered at work because their colleagues or supervisor know that they have had cancer, and 16% because of a physical disability. This feeling is more pronounced with the responders treated for tumors of the head and neck, or lymphatic tumors, of whom 20% to 25% feel hampered. Five percent have adapted work or special working conditions. At the time of diagnosis, the mean income per year for full-time workers was Dfl 47,000 (US \$29,000), now it is Dfl 56,000 (US \$35,000), an increase of 20%. In The Netherlands, the mean income of the working population increased about 30% in the same period of time. Therefore, for our responders who work full-time, the mean income has increased less than that of the average Dutch population.¹⁶ Seventeen percent feel that they are in a worse financial position than they would have been if they would not have had cancer. Men are more definite about this than women (19% and 10%, respectively), as well as responders treated for lymphatic tumors (27%).

Because of their disease, employed cancer patients can come into contact with many social welfare institutes. Twenty-three percent of the working responders have contacted such an official institute, mostly concerning finding employment, medical reexaminations, or vocational counseling.

Insurance

Since diagnosis, 35% of these responders have tried to take out insurance or modify an existing insurance

policy. Generally, this occurred in the first 5 years after treatment. Of these, 89%, especially responders 21 to 45 years of age, met with difficulties doing this because of their cancer. Men met with difficulties more often than women (91% and 83%, respectively). These problems consisted of refusal of coverage by the insurance company, higher premiums, or medical reexaminations. It concerned life, medical, and funeral insurance.

Social Contacts and Leisure Activities

There seem to be no changes in the intensity and frequency of social contacts among the employed responders. In the questionnaire, the working responders were asked about their leisure activities at the moment of diagnosis and at present. In this group, the more active forms of leisure activities, like sports, going out, and doing jobs around the house, lost some interest for the responders (a decrease of only 2%). This decrease took place only among men.

Responders Who Stopped Working Since Diagnosis

Housekeeper. This group consists of 85 women and 1 man. The mean age is 52.5 years. Cancers of the breast (42%) and female reproductive system (31%) were encountered most frequently. Sixty-eight percent still have physical symptoms attributed to the disease or its treatment. However, 81% consider themselves healthy, while 17% consider themselves disabled. Four percent make use of special facilities at home and 29% cannot do strenuous household work like making beds or cleaning windows. Of these responders, 33% think they would be employed now if they did not have cancer.

Pensioners. At present, 57 responders, who were employed at the time of diagnosis, are retired (35 men and 22 women; mean age, 63.7 years). Mainly these are responders treated for tumors of the head and neck (33%) and tumors of the female reproductive system (16%).

The mean age of retirement was

60.5 years. Twenty-seven percent retired 60 years of age or younger. Sixty-eight percent retired because of age and 20% because of the physical consequences of the disease. Over 50% of these responders still have symptoms attributed to the disease and over 25% think of themselves as disabled. Five percent are cared for at home.

On being asked, 11% think they still would be employed if they did not have cancer. These are people who retired at a relatively young age.

Unemployed. At present, nine responders, who worked at the time of diagnosis, are unemployed (six men and three women; mean age, 48.9 years). On being asked, five responders blame their unemployment on cancer, either because the employer knew they had cancer (two responders), or because of the physical consequences of the disease (three responders). The duration of unemployment varies from 1 to 8 years. Only four responders are searching for work at present.

Seven responders still have symptoms attributed to the disease or its treatment. In spite of this, five of these think of themselves as healthy. Eight responders have regular contacts with social welfare institutes. On being asked, only two responders think they would be employed if they did not have cancer.

Discussion

Because of the increasing number of long-term survivors of cancer, as a result of improvements in diagnostics and treatment, it is important to assess the long-term consequences of this disease. Psychosocial problems usually occur after a patient has passed the most intensive period of medical care and tries to regain his position in society. This survey was conducted to determine the long-term consequences of cancer, especially its effect on work.

One should be cautious in making generalizations about the results of this survey to the general population of ex-cancer patients. The population of patients from the regional cancer center probably differs from the total group of cancer patients. Also, the age

limits, the interval of time between diagnosis in this survey, and nonresponse could have led to selection. Finally, it should be pointed out that only a limited number of variables could come up in this survey. In consideration of these limitations, the following conclusions can be drawn.

Comparing the socioeconomic position at the time of diagnosis to that at the moment of this survey, it appears to be unchanged in 62% of all cases. Of these, 28% were employed at the time of diagnosis and are housekeepers now (10% of all responders). To what extent the fact of being treated for cancer caused this change cannot be assessed. The socioeconomic position of responders under 45 years of age showed only small changes compared to the older responders.

The reduction in employment among responders treated for tumors of the head and neck is striking. After treatment, only 41% of these responders returned to work. This confirms the results of some studies abroad.¹⁷⁻¹⁹ It could be the result of physical disability due to the disease or its treatment (not confirmed in this survey), or of the relatively high age at which this type of cancer appears.

When we compare the study of Fobair et al⁴ among survivors of Hodgkin's disease to our group of ex-patients with tumors of the lymphatic system, both studies show high employment rates when compared to all ex-cancer patients. More detailed comparison of the two studies is difficult, because Fobair et al do not provide data about the employment status at the time the diagnosis was made.

Of the 137 responders who resumed or continued work 96% are still under a specialist's care. Over half of them think these regular checkups to be of great support. However, one wonders to what extent being released from a specialist's care while having access to the advice of the family physician in case of symptoms might have given the same support. Eighty-eight percent consider themselves healthy and 60% use aids or prostheses (mainly breast prostheses). In spite of this, 50% still report physical symptoms

attributed to the disease or its treatment.

At present, 24% work part-time (58% of the women and 7% of the men). At the time of diagnosis, only 14% worked part-time (50% of the women who were employed then). Of the responders who expressed their opinion about possible promotional prospects or better income, 63% had a positive attitude at the time of diagnosis. Now, on average 8 years after diagnosis, 53% have a positive attitude about this.

Twenty years ago, Wheatley et al²⁰ were already optimistic about the employability of persons with a history of treatment for cancer. The number of employed survivors in our study shows that, in The Netherlands, this is common practice. This conclusion is supported by the lack of change in absenteeism before and after the period of disease.

A history of cancer can cause problems with insurance. The majority of the responders who tried to take out insurance or to modify an existing insurance policy met with difficulties, especially younger responders. This confirms the results of some American studies.^{1,12,21}

The size of our study group enabled us to stratify the analyses among several dimensions: age, tumor size, and employment status. Most studies that we have found in the literature are considerably smaller. Differences between our study and others may be due to a different case mix of patient groups according to age and/or tumor sites, as well as a difference in length of period between diagnosis and follow-up study. Finally, we cannot rule out the possibility that in The Netherlands the psychological effect of the label of cancer differs from other countries. To keep in touch with the problems of the long-term cancer survivors, we recommend to monitor their situation repeatedly, with a time interval of several years.

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Putting Nuclear Waste in Its Place

Some 4.7 million cubic meters of nuclear waste have accumulated in the United States since ... 1942, and the radioactive piles of debris—generated by the military as well as 112 operating nuclear power plants—grow by 100,000 cubic meters every year. Currently, most of the waste material is sealed in steel drums and tanks and buried 30 to 40 feet deep in unlined trenches in South Carolina, Washington State, and Nevada. But these waste dumps are steadily filling up while the nuclear industry and a host of federal, state, and local agencies try to choose between several controversial contenders for a more permanent storage site, including Carlsbad Caverns in New Mexico and Yucca Mountain in Nevada.

An impressive array of technologies offers hope for cleaning up the radioactive mess by the target date of 2019. Of these possibilities, the most promising may be vitrification. ... Inserting electrodes into contaminated soil, vitrification subjects low-level waste like cesium and strontium to 615,000 kwhrs of electricity and temperatures of 3000°F. The technique turned one test area into a 900-ton block of leach-proof, glass-like material. Plasma technology, another contender, superheats waste with a flame hotter than 18000°F. It decreases the volume of contaminated-metal-reactor hardware by a factor of 4, reducing it to ingots. Yet another technique, bioremediation, stabilizes radioactive soil and groundwater through naturally occurring microbes that use nutrients to immobilize radionuclides. Still more exotic—and perhaps too expensive—is transmutation, which puts long-lived, hazardous components of spent fuel back into a reactor core and then uses fusion to break the components down into elements with half-lives of perhaps 300 years, far shorter than their normal life spans.

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