

Employment Status, Job Characteristics, and Work-Related Health Experience of People With a Lower Limb Amputation in The Netherlands

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Objectives: To describe the occupational situation of people with lower limb amputations in The Netherlands and to compare the health experience of working and nonworking amputee patients with a nonimpaired reference population.

Design: Cross-sectional study in which patients completed a questionnaire about their job participation, type of job, workplace adjustments to their limb loss, their position in the company, and a general health questionnaire.

Setting: Orthopedic workshops in The Netherlands with a population of lower limb amputees.

Patients: Subjects were recruited from orthopedic workshops in the Netherlands. They ranged in age from 18 to 60 years (mean, 44.5yr) and had a lower limb amputated at least 2 years (mean, 19.6yr) before this study.

Main Outcome Measures: A self-report questionnaire, with 1 part concerning patient characteristics and amputation-related factors, and the other concerning job characteristics, vocational handicaps, work adjustments, and working conditions; and a general health questionnaire (RAND-36) to measure health status.

Results: Responses were received from 652 of the 687 patients (response rate, 95%) who were sent the questionnaire. Sixty-four percent of the respondents were working at the time of the study (comparable with the employment rate of the general Dutch population), 31% had work experience but were not presently working, and 5% had no work experience. After their amputations, people shifted to less physically demanding work. The mean delay between the amputation and the return to work was 2.3 years. Many people wished their work was better adjusted to the limitations presented by their disability and they mentioned having problems concerning possibilities for promotion. Seventy-eight percent of those who stopped working within 2 years after the amputation said that amputation-related factors played a role in their decision. Thirty-four percent said that they might have worked longer if certain

adjustments had been made. The health experience of people who were no longer working was significantly worse than that of the working people with amputations.

Conclusions: Although amputee patients had a relatively good rate of job participation, they reported problems concerning the long delay between amputation and return to work, problems in finding suitable jobs, fewer possibilities for promotion, and problems in obtaining needed workplace modifications. People who had to stop working because of the amputation showed a worse health experience than working people.

Key Words: Amputation; Employment; Netherlands; Rehabilitation.

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ALTHOUGH THE MAJORITY of patients with a lower limb amputation in Western Europe are aged 60 years or older, many younger patients have a lower limb amputation.^{1,2} Not only is training of physical mobility and independence in activities of daily living important after an amputation in younger patients, but return to work or school also has an important role. Employment is important to the well-being of people and in enlarging their social environment. Chronically disabled persons have emphasized the importance of work for self-respect, giving meaning to life, and providing a stable income.³⁻⁵ In addition, the chronically disabled view their work more positively than nonimpaired persons, though they report more physical problems caused by their work environment.^{3,6} Verkleij⁷ found a positive relation between long-term unemployment and health problems. In his study patients who returned to work felt that it was a positive influence on their overall health.

Recognition of the importance of vocational rehabilitation is increasing and many job rehabilitation programs are being developed. Schmidt et al⁸ showed that there is a greater chance of return to work when patients with musculoskeletal diseases followed a job rehabilitation program. Before starting such a program for a population with a specific disease or disability, it is important to know the current employment status of the patients and the problems they experience in work or in finding work. The program should be adjusted to these specific problems. Some information has been published about the employment status of patients with neuromuscular diseases,^{3,6} multiple sclerosis,^{9,10} traumatic brain injury,^{11,12} spinal cord injury,^{13,14} and rheumatoid arthritis.^{15,16} These patients showed significantly lower job participation when compared with people without health problems. Until now, the employment status of patients with a lower limb amputation has been unclear, with only a few articles having addressed their return to work or school. The most detailed study is of Millstein et al,¹⁷ in which the employment status of employees with an amputation of an arm or leg because of accidents at work is described. Ninety-

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three percent of patients with an arm amputation and 87% of patients with a leg amputation returned to work. However, 75% of the population changed occupational groups after amputation. The amputee patients returned to jobs that were less physically demanding, but that required greater intellectual skills. Patients also reported reduced potential for salary increases and fewer opportunities for job promotion. Gerhards et al¹⁸ reported a significantly larger proportion of amputee patients who, compared with controls, had a lower occupational status after amputation. Despite this, they found no difference in vocational satisfaction between amputee patients and non-impaired control subjects. In other studies, only the number of patients who returned to work are mentioned; other details are not given.¹⁹⁻²⁴ The percentage of amputee persons who return to work vary from 30% to 90% in these studies, which only included patients with amputations resulting from trauma.

One purpose of this study is to describe the occupational situation at the time of the amputation and the current employment status of people with leg amputations in the Netherlands. Current employment status is described with respect to job participation, type of job, adjustments at the working place, and the person's position in the company. This study also compares the health experience of persons with amputations to a nonimpaired reference population, and the health experiences of working and nonworking patients with amputations.

Within the framework of vocational rehabilitation, information about the following 4 groups of patients is important: people employed at the time of amputation who are with or without a job at present, and people unemployed at the time of amputation who are with or without a job at present. In the last group, only the persons with an employment history were studied in detail.

METHODS

Subjects

Patients met the following inclusion criteria: an acquired major amputation of the lower limb; at least 2 years since amputation; age 18 to 60 years; and living in the Netherlands. The time required since amputation was at least 2 years to ensure a stable situation in which the employment status could best be judged. Patients with severe cognitive problems or difficulties with the Dutch language who could not complete a questionnaire were excluded. The study was approved by the Medical Ethics Committee of the University Hospital Groningen.

We asked 49 orthopedic workshops (almost all existing workshops) in the Netherlands to participate in recruiting patients for the study. Twenty-five workshops had few or no amputee patients on file who met the inclusion criteria. For multiple reasons, 13 of the other 24 workshops could not participate. It is likely that some also did not have patients on file who met the inclusion criteria. Eleven workshops with qualified amputee patients sent those patients letters asking their permission to give their names and addresses to the Department of Rehabilitation of the University Hospital Groningen. Patients were asked to return a signed consent form. Of the total number of patients asked to participate, 50% to 60% returned the signed consent. Researchers phoned the patients to verify the inclusion and exclusion criteria and their employment status. They were sent the questionnaire, if they met the criteria. Of 687 questionnaires mailed, 652 patients returned them (response rate, 95%).

The study population consisted of 465 (71%) men and 187 (29%) women whose mean age was 44.5 years (range, 18–60yr). There were 328 patients with left-sided amputations, 298

Table 1: Patient Characteristics

	Mean (yr)	Median (yr)	Range (yr)
Age at amputation	25.1	22	0–57
Time since amputation	19.6	19	2–59

	n	%
Reason for amputation		
Trauma	396	58.4
Cancer	101	14.9
Vascular	47	6.9
Diabetes	30	4.4
Other	100	14.7
Not given	4	0.6
Level of amputation		
Transfemoral	316	46.6
Transfemoral	230	33.9
Knee	80	11.8
Hip	21	3.1
Ankle	16	2.4
Pelvis	12	1.8
Not given	3	0.4

NOTE. Data include 652 patients with 678 amputations.

with right-sided amputations, and 26 with bilateral amputations (total, 678 amputations). Table 1 lists the patient characteristics.

Questionnaire

The questionnaire had 2 parts. In the first, the questions concerned patient characteristics and aspects related to the amputation (eg, side, level, reason, pain, use of prosthesis, comorbidity). The second consisted of a questionnaire developed by the Netherlands Organization for Applied Scientific Research (TNO) Vocational Handicap Research Programme.^{25,26} Three versions of the questionnaire are available: for people presently working (type 1); for those with previous work experience but who were not working anymore (type 2); and for those with no work experience (type 3). The differences among the 3 questionnaires are the number of (possible) questions on labor experience. Job characteristics are explored, vocational handicaps are assessed by comparing job demands and patient/worker (dis)abilities, as well as adjustments at work. People were also asked for their opinion on working conditions and the social atmosphere at work. TNO validated the questionnaire in several other research projects^{25,26} and reported good reliability. To measure health status (psychological, physical, social, overall well-being), a general health questionnaire was used (RAND-36, Dutch version). The RAND-36 is a short version of the RAND Health Insurance Study Questionnaire, and it is similar to the Medical Outcome Study Short Form Health Survey.^{27,28} It measures health perception on 9 multi-item dimensions: physical functioning, social functioning, physical role restriction, emotional role restriction, mental health, vitality, pain, general health, and health change. A lower score on the RAND-36 means a worse health experience. The data of a reference population without health problems are available.²⁸ In this study, answers to the questionnaire concerning epidemiologic data about employment status as well as the RAND-36 were used.

Analysis

Descriptive statistics were performed by using the SPSS statistical software.^a In most instances, absolute values and

Table 2: Current Employment Status and Employment Status at Amputation

Current Employment Status	Employment Status at Amputation		
	Employed	Unemployed	Total
Presently working	219 (a)	197 (d)	416* (h)
Previous work experience	112 (b)	87 (e)	199 [†] (i)
No work experience		33 (f)	33 (j)
Total	331 (c)	317 (g)	648 [‡] (k)

* Data for 3 patients were incomplete.
[†] The data of 1 patient were incomplete.
[‡] The data of 4 patients were incomplete.

percentages are presented. The proportion of amputee patients presently working at different ages was compared with the total Dutch population by using the chi-square test. Differences in the RAND-36 scores were calculated by using the Student's *t* test. The significance level chosen was $\alpha = .05$.

RESULTS

Employment status. Of the 652 respondents, 419 (64%) were working at the time of the study ("patients presently working"). Two hundred (31%) had work experience, but were not working at the time of the study ("patients with previous work experience"). The remaining 33 persons (5%) had never worked ("patients with no work experience"). Table 2 shows an overview of the current employment status in comparison with the employment status at the time of amputation.

We compared the job participation of patients with a lower limb amputation with the employment status of the Dutch population as a whole. Statistics Netherlands collects, interprets, and presents information about Dutch society. Figure 1 shows the job participation of amputee patients and the Dutch

Table 3: Job Participation of Patients With Different Diagnoses in the Netherlands

Diagnosis	Mean Age (yr)	Presently Working	Previous Work Experience	No Work Experience
Lower limb amputation (1998-1999)	44.5	64%	31%	5%
Neuromuscular disorders (1995-1996)*	44	41%	51%	8%
Multiple sclerosis (1996-1997)*	44.3	25%	69%	6%
Asthmatic bronchitis (1997-1998)*	33.1	70%	19%	11%

* Data from several studies of TNO.^{6,9}

population at different ages for men and women in 1998.²⁹ When we compared the distribution of working people in the amputee group with the distribution of working people in the Dutch population by using the chi-square test, we found no significant differences (men, $p \approx .1$; women, $p > .5$). Nevertheless, figure 1 shows a lower job participation of amputee patients at the age of 40 years and older; this was significant in men ($.01 < p < .02$), but not significant in women ($.10 < p < .50$). Table 3 compares the job participation of people with other chronic diseases in the Netherlands. Most of the studies were performed by TNO.^{6,9} The subjects with an amputation seem to do very well when compared with subjects with neuromuscular disorders and multiple sclerosis.

In the following subsections, the 4 most important groups for vocational rehabilitation described earlier are studied in detail. They concern people employed at the time of amputation with (table 2 cell a) or without (table 2 cell b) a job at present, and

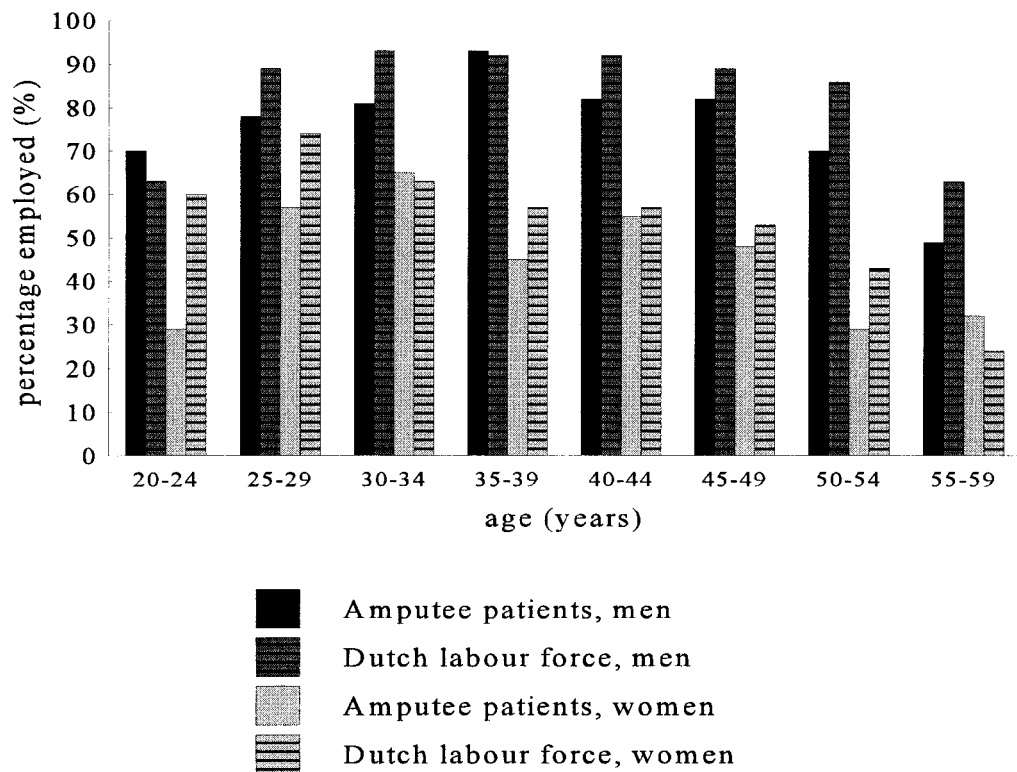


Fig 1. The percentage of job participation of amputee patients and the Dutch population at different ages for men and women.

people unemployed at the time of amputation with (table 2 cell d) or without a job at present, but with some employment history in the past (table 2 cell e). The 33 patients without any work experience were not studied in detail. Forty-six percent of this group were attending school or training at the time of the study.

Population employed at amputation and still working. Of the 331 persons working at the time of the amputation, 219 (66%) were working at the time of the study. Thirty-six percent of these patients had a part-time job and 64% had a full-time job. The mean time from amputation to return to work for those patients was 2.3 years (median, 1yr; range, 0–21yr). The type of work before and after the amputation is given in table 4. In this table the numbers in bold type show the number of patients with the same type of job before and after the amputation. It also shows in all categories the number of patients who went to another type of job after the amputation; it is apparent that after the amputation a shift is made to more administrative and scientific/technical work. Many patients with physically demanding work (agrarian, industrial, transport) changed to a job with fewer physical tasks. When asked if they had ever changed employment because of the amputation, 33% of the patients answered yes. In addition, 44% said that the amputation was a consideration in choosing their present job. A comparison of these data with the Dutch population as a whole is difficult because Statistics Netherlands used a slightly different classification.²⁹ At the time of amputation, it appears that relatively more persons in the study group had an agrarian, trade, industrial, or transport job than did the general Dutch population. After the amputation, the types of jobs held by amputee persons were comparable with those of the general population.

Several studies have stressed the importance of adjustments in the workplace to enable persons with amputations to continue working. In our study, 95 (43%) patients who worked before and after the amputation mentioned modifications of their jobs as a factor in their continuing to work. Adjustments can be divided into 4 categories: changes in working time, getting aids, changes in workload, and other tasks or extra training. All patients could name adjustments that had been made. Most adjustments mentioned pertained to getting aids (31%) and changing the workload (31%). Despite many of these modifications, 59 (27%) people working before and after the amputation still wanted certain adjustments at the workplace. Modifications in workload were mentioned most.

Questions about the person's position in the company concerned the relationship with colleagues and supervisors and possibilities for promotion. Twenty-seven percent said they were partially dependent on colleagues. Most colleagues (90%) and supervisors (88%) gave sufficient consideration to the person with an amputation. Nevertheless, 31% of respondents gave a positive response to the question about the fewer pos-

sibilities for promotion. Apparently, patients considered their chances for promotion to be lower than those of their nonimpaired colleagues.

Population employed at amputation, but no longer working. One hundred twelve of the 331 patients (34%) with jobs at the time of amputation had stopped working. This group is especially important in the scope of rehabilitation. The mean time between the amputation and the end of work was 7.7 years (median, 1yr; range, 0–40yr). Of the 112 persons, 55% stopped working within the first 2 years after the amputation.

Sixty-six percent of the patients said that the challenges posed by their amputation was a factor in the decision to stop. In the group that ended its work within 2 years after amputation, the percentage was 78%. Other reasons for stopping were: marriage, pregnancy, children, and removal; another disease or handicap; and retirement. Thirty-four percent of the 112 patients thought that they would have worked longer had the right workplace adjustments been made. An adjustment in the workload was the change most preferred (34%). Although 58% of the 112 patients wanted to work again, of these persons, 44% thought they would not succeed in finding a job.

Population unemployed at amputation, but presently working. Of the 317 people with no job at the time of amputation, 197 (62%) had paid employment at the time of the study. Twenty-five percent of these patients had part-time jobs and 75% had full-time jobs. These people needed to find work despite their amputation. Problems in finding work because of the amputation were experienced by 28% of the 1997, and 24% had been unemployed against their wishes for a time—a situation in which the amputation may have been a factor. The amputations were a consideration in the choice of their present jobs by 79 (40%) patients.

One hundred fifty-two of the 197 amputees were still in school at the time of amputation (77%). Our hypothesis is that patients who undergo an amputation while they are still in school or study tend to make a choice for less physically demanding work. Table 5 presents the types of jobs these patients held. When we compared these data with data of patients working before, as well as after the amputation (table 4), we saw the same pattern in employment status after the amputation, with many patients doing administrative or scientific and technical jobs.

In the group not working before amputation, 24% indicated that modifications had been made in the workplace, and 17% wanted (more) modifications. The type of changes mostly concerned working time and adjustments in furniture, tools, or machines.

In this population, 18% of the people were dependent on colleagues. Satisfaction about the consideration of colleagues and supervisors was high (93% said that colleagues and supervisors gave sufficient consideration). Seventeen percent

Table 4: Type of Job at Amputation and the Current Type of Job (n = 216)*

Current Type	Type of Job at Amputation							Total
	Agrarian	Industrial	Transport	Administrative	Commercial	Servicing	Scientific/Technical	
Agrarian	7	0	0	0	0	0	0	7
Industrial	3	48	11	0	1	3	1	67
Transport	1	5	17	0	1	0	1	25
Administrative	2	10	3	16	4	7	2	44
Commercial	2	10	3	1	8	0	1	25
Servicing	0	6	0	1	2	9	0	18
Scientific/technical	0	7	4	3	1	2	13	30
Total	15	86	38	21	17	21	18	216

* Numbers in bold type designate the number of patients with the same type of job at the time of amputation and at present.

Table 5: Type of Job After Amputation of Patients Attending School at Amputation (n = 150)

Job Type	Patients With the Type of Work After Amputation
Agrarian	2 (1.3%)
Trade or industrial	26 (17.3%)
Transport	9 (6.0%)
Administrative	29 (19.3%)
Commercial	13 (8.7%)
Servicing	21 (14.0%)
Other scientific or technical	50 (33.3%)

thought their possibilities for promotion to be lower than those of colleagues.

Population unemployed at amputation, not working at time of study, but with work experience. This group of 87 people consisted of 2 subgroups. The first consisted of 46 people who began and ended their work before the amputation. This subgroup was not analyzed because their employment status seemed uninfluenced by amputation. The second subgroup consisted of 32 people who started and ended their work after the amputation (data were missing on the remaining 9 people). This population found a job despite their amputation, but stopped working before the study. Only 9 of the 32 persons said that the amputation was a factor in stopping their working career. This group was too small to study in detail.

Income source of people with amputation. The source of income was mentioned by 409 of the 416 people working at the time of the study (table 2, cell h). Seventy percent (286) of these patients had an income from work only, 94 (23%) had an income from work in combination with social insurance, and social insurance was the only source of income for 29 (7%). The social insurance was a disability insurance payment in nearly all cases.

Of the 199 patients with work experience but who were not working at the time of the study (table 2, cell i), 116 (58%) received disability insurance, 12 (6%) received unemployment insurance, and 36 (18%) received a combination of both. The remaining 34 people had no income from social insurance. Some in this group were already retired and others had a partner with a sufficient income.

Health Experience of the Amputee Population Related to Employment Status

The health experiences of the amputee population were measured with the RAND-36. Table 6 shows the scores of the

patients compared with the reference group of persons ages 18 to 60 years. The amputee patients scored significantly lower on the subscales of physical and social functioning, physical role restriction, vitality, pain, general health, and health change. However, the patients who were presently working scored lower than the reference population only on the subscores of physical functioning, pain, and health change. They scored significantly better on some subscales (emotional role restriction, mental health), though the differences were small. However, patients with work experience but who were not presently working scored significantly lower than the reference population on all subscales of the RAND-36. We compared the scores of the patients presently working with the patients who had stopped working and found that the latter group had significantly lower scores on all subscales of the RAND-36, except for health change.

DISCUSSION

In interpreting our results, it is important to remember that the data were obtained through a self-report questionnaire that reflected the situation as experienced by the amputee patients themselves, often long after the amputation. Not all of the orthopedic workshops recruited patients, but the majority of the main workshops selected patients from their databases. Although a large number of patients participated in the study, a selection bias cannot be completely ruled out. The participants could be people with relatively positive experiences in (re)integration, as well as people with negative experiences who wanted to draw more attention to their problems. However, it is the largest sample ever studied and it provides a significant basis for further research into this topic. We excluded 14 people who had severe cognitive problems or who did not speak Dutch well enough to answer the questions. Although it was possible that patients with cognitive problems or Dutch language problems did not return the strip with a signed consent, it nevertheless is a small group compared with the group of participants.

In this study, we describe the occupational situation at the time of the amputation and the current employment status of people with leg amputations in the Netherlands, as well as the health experience of working and nonworking amputee patients. In further research, more information will be obtained about the relation between demographically related, amputation-related, and job-related determinants of the job participation of people with leg amputations.

Employment status. In general, our study revealed good job participation by amputee patients. No significant difference

Table 6: Experienced Health of Amputee Patients With Different Employment Status as Measured By Using the RAND-36 Questionnaire

Mean	Physical Functioning	Social Functioning	Physical Role Restriction	Emotional Role Restriction	Mental Health	Vitality	Pain	General Health	Health Change
Patients presently working	60.0* (26.0)	86.0 (19.8)	82.7 (31.4)	90.9* (24.5)	79.2 [†] (15.0)	68.4 (18.2)	77.9 [†] (21.7)	75.6 (18.7)	50.5 [†] (16.5)
Patients with previous work experience	38.0* (25.9)	67.3* (28.9)	48.8* (40.2)	70.5 [†] (41.6)	70.8* (20.4)	57.8 [†] (22.5)	60.9* (29.5)	59.3* (27.2)	48.6 [†] (22.0)
Patients with no work experience	54.0* (25.6)	78.1 (28.9)	73.2 (38.5)	82.1 (34.5)	75.2 (17.8)	65.5 (18.7)	74.1 (27.6)	78.5 (19.1)	56.1 (23.4)
All amputee patients	53.4* (27.7)	80.0* (24.8)	73.8* (37.1)	85.4 (31.3)	76.6 (17.2)	65.1 [†] (20.2)	72.6* (25.8)	71.1 [†] (22.7)	50.2* (18.8)
Reference population	86.2 (20.4)	86.6 (20.9)	81.4 (33.8)	84.4 (32.1)	76.8 (18.9)	68.1 (19.4)	82.7 (24.4)	74.2 (21.6)	53.7 (19.2)

NOTE. Mean scores with standard deviations.

* Significant difference between score of the patient group and the reference population ($p < .001$).

[†] Significant difference between score of the patient group and the reference population ($p < .01$).

could be shown in comparison with the Dutch population as a whole, though there was a decline in job participation when amputee patients were 40 years and older. In older patients, aging may negatively influence their physical limitations. The difference in job participation between amputees more than 40 years old and the total Dutch population above this age was significant for men, but not for women. This is explained by the smaller groups of women in each age category; sociodemographic factors may also play a role. In addition, the amputee patients showed higher job participation than people with multiple sclerosis⁹ or neuromuscular disorders.^{3,6} Patients with traumatic brain injury,^{11,12} spinal cord injury,¹³ and rheumatoid arthritis¹⁵ also showed a lower return to work rate than did amputee patients. However, this last comparison was more difficult because the methods of the studies were not comparable. Millstein et al¹⁷ also reported a lower rate of unemployment of persons with amputations when compared with other disabled groups. An important difference between many of these diseases or disabilities and amputation is that an amputation is not a progressive disease. The symptoms are more circumscribed and adjustments can be effected more easily. Many patients can perform many of their activities almost normally when they wear their prostheses. Most patients were quite young at the time of the amputation and may have had many opportunities to adapt to the consequences of the amputation. We found a slightly higher job participation (64%) than Millstein¹⁷ (56%); this is explained by small differences in defining "employed" and "unemployed," or by different demographic factors.

Population employed at amputation and still working. Of the patients with jobs at the time of the amputation, 66% returned to work and were still working. This rate is lower than that found by Millstein¹⁷ and Walker et al,²⁴ but higher than in the study by Livingston et al.²¹ The study population in Millstein's research consisted only of patients with work-related injuries. The responsibility of employers may force them to do their best in organizing the return to work of their employees, giving a high proportion of return. A problem in our study was the long mean time of 19.6 years since the amputation. This could negatively influence the results because, during this long period, many events could have happened that caused the patient to stop working. Although these events could be related to the amputation, it may not be the amputation itself that caused the patient to quit the job.

In our subjects, the time between amputation and return to work was long (mean 2.3yr; median, 1yr). Livingston²¹ reported a mean time to return to work of 14 months, and in Hutchins's study,²⁰ it ranged from 17 to 26 months. All studies indicated a long rehabilitation period, with important economic consequences. When people are not at work for a long period, they may lose contact and involvement with their work. Reasons for this long delay are not clear, but the change in the type of work after the amputation (table 4) may be a cause. Retraining may be necessary for many people—a possible explanation for the delay. Many patients indicated that they had changed employment because of the amputation and that their choice of their present job was influenced by the amputation. In the future, efforts should be made to reduce the time between amputation and return to work because of the importance of employment to patients' well-being, as well as for economic reasons. Patients should start as soon as possible with part-time work on a trial basis and gradually resume a normal working week, as discussed by Schmidt et al⁸ for patients with musculoskeletal impairments. The Dutch government is attempting to stimulate the return to work of people with a disease or disability by making employers partially responsible financially for their reintegration. However, the effect of this policy is still unclear.

The change to less physically demanding jobs after amputation has also been reported in earlier research.^{17-20,23,24} The amputation has a negative influence on the physical capacity of the patient. The effect of the amputation on the type of job during aging may be even greater than in the Dutch general population because many patients had physically demanding jobs at the time of amputation.

Despite many adjustments in the workplace, almost 30% of the people wanted still more modifications. The most desired modification was a change in workload. It seems worthwhile to make a detailed inventory of necessary adjustments at the workplace in the rehabilitation program to prevent secondary problems indirectly related to the amputation.

The number of patients who judged their possibilities for promotion lower than their colleagues (31%) was high. Millstein¹⁷ also mentioned this problem. Amputee persons obviously felt restrained in their development. In this study, the reason for this finding is not clear; it will be studied in further research.

Population employed at amputation, but no longer working. Many patients stopped working within 2 years after the amputation (55%), and 78% of these patients said that the amputation was a factor in their decision. Of the entire population who stopped working after an amputation, 66% said the amputation influenced their ending their work. These results stress the importance of early return to work in the rehabilitation process. Most patients mentioned physical disability as the major reason they could not remain on their jobs. In the group of people who stopped working many years after the amputation, aging may have contributed additionally to their physical limitations. Re-evaluation of functional capacity when amputee persons become older may be necessary to prevent new problems in the workplace.

The importance of adjustments at work was also stressed by this population; 34% thought that they could have worked longer had certain modifications been made. Again, adjustments in their workload were most desired. It is possible, of course, that people were overestimating the importance of the amputation in their judgment about changes in the work organization. People without health problems also want changes in their work.

Population unemployed at amputation, but working. People without work at the time of amputation needed to find a job, and the amputation greatly influenced their choice of work. Few patients went to a physically demanding job; the majority worked in administrative, scientific, or technical jobs. The job pattern resembled that of the working situation for people who were already working before amputation. Twenty-five percent had problems finding a job. The number of modifications of the work place in this group was low compared with the group of patients with a job at the time of the amputation. This is explained by the fact that these patients considered the amputation in making their choice of work more than did patients who already had a job and attempted to return to that job. They may have taken jobs that did not require adjustments. The smaller number of people in this group who indicated fewer possibilities for promotion may also reflect this selection. In rehabilitation programs, it is important to help these people obtain an adequate education or find a job, and to give them information about their possibilities. The same information should be given to their teachers and potential employers.

Population unemployed at amputation, not working at time of study, but with work experience. Although the group of patients who began and ended their work after the amputation was too small to analyze, we believe that the difficulties in finding a job and the reasons for quitting work were the same as for the former groups.

Income source of people with amputation. In the Netherlands, a complex system of social insurance exists. For people

with disabilities, the percentage of work disability is calculated on the basis of their present earning capacity. A person who is completely disabled receives disability insurance in an amount up to 70% of the income they earned on their last job. People who are partly or completely disabled always lose a part of their income (10%–30%). In our study, 30% of all working people received additional income from disability insurance. Most of those who stopped working after the amputation received disability insurance equal to 70% of their last income from working.

Health Experience of Amputee Patients Related to Employment Status

The study's second aim was to compare the health experience of amputee patients with a healthy reference population, as well as with the health experience of working amputee patients with nonworking patients. All amputee patients had worse scores than the reference population on the physical functioning subscale of the RAND-36, which reflects the physical consequences of amputation. Conversely, there were great differences on the other subscales. Patients who were presently working showed a much better health experience in all domains than did unemployed patients with work experience. This confirms the importance of work for the well-being of people found by other researchers.^{3,5-7} Health experience seemed largely unaffected by the impairments; the consequences for social function seemed more important. Although this is a significant and important finding, from this cross-sectional study, we cannot conclude that bad health experience is the consequence or the cause of being unemployed. For clinical practice, the fact that patients who stopped working had the worst health experience is an important factor that should be remembered during rehabilitation. A prospective study is indicated to learn more about the relation between cause and consequence.

CONCLUSIONS

People with lower limb amputations in the Netherlands showed a relatively high job participation in comparison with people with other diseases or handicaps, as well as in comparison with the general population. After the amputation, most patients were working at jobs that were not physically demanding. Problems mentioned by the different groups of amputee patients mainly concerned the long delay between amputation and return to work, difficulty in finding a suitable job, fewer possibilities for promotion, and many problems with getting the right workplace adjustments, especially with people who stopped working within 2 years after the amputation. We confirmed the relevance of work for the feeling of well-being in amputee patients, shown by the differences in health experience on the RAND-36.

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