

# Rehabilitation Counseling Bulletin

<http://rcb.sagepub.com/>

---

## Employment and Satisfaction Outcomes From a Job Retention Intervention Delivered to Persons with Chronic Diseases

Saralynn H. Allaire, Jingbo Niu and Michael P. LaValley  
*Rehabil Couns Bull* 2005 48: 100  
DOI: 10.1177/00343552050480020401

The online version of this article can be found at:  
<http://rcb.sagepub.com/content/48/2/100>

---

Published by:  
Hammill Institute on Disabilities



and  


<http://www.sagepublications.com>

Additional services and information for *Rehabilitation Counseling Bulletin* can be found at:

**Email Alerts:** <http://rcb.sagepub.com/cgi/alerts>

**Subscriptions:** <http://rcb.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [Version of Record](#) - Jan 1, 2005

[What is This?](#)

# Employment and Satisfaction Outcomes From a Job Retention Intervention Delivered to Persons with Chronic Diseases

**Saralynn H. Allaire**  
**Jingbo Niu**  
**Michael P. LaValley**  
*Boston University School  
of Medicine and School  
of Public Health*

Job retention services are recommended for people with chronic diseases based on their high risk for work disability. This randomized trial tested the effectiveness of a job retention intervention in a sample of employed persons with rheumatic diseases at risk for work disability. One hundred and twenty-two experimental participants received the job retention intervention, and 120 controls received written materials. Employment status was assessed at 6-month intervals up to 48 months after enrollment. Main outcomes were time to job loss and satisfaction with the experimental and control interventions. The log-rank test was used to detect a difference between the groups in time to job loss. Between-group differences in satisfaction scores were analyzed using Wilcoxon tests. Job loss was delayed in experimental participants compared with controls,  $p = 0.03$ . Satisfaction scores for the job retention intervention were substantially higher than those for the written materials,  $p < 0.0001$ . Job retention intervention has the potential to reduce the high rates of chronic disease-associated job loss.

Chronic diseases are major causes of work disability. Of the top seven conditions causing work limitation, four are chronic diseases (heart disease, arthritis, respiratory diseases, and diabetes; Stoddard, Jans, Ripple, & Kraus, 1998). And because the U.S. workforce is aging (Toossi, 2002) and the incidence of many chronic diseases increases with age, the proportion of work disability caused by such diseases will increase in the foreseeable future. The costs of chronic disease-related work disability to society are substantial (e.g., \$49.6 billion for arthritis in 1992; Yelin & Callahan, 1995), and individuals pay a price, as well, both in loss of income and lower quality of life (Roessler & Rumrill, 1998).

Disproportionately few people with chronic diseases receive public vocational rehabilitation (VR) services (U.S. General Accounting Office, 1993). For example, heart disease is the second leading cause of work limita-

tion, but people with heart disease make up only 1.6% of rehabilitated clients in the public VR program (Stoddard et al., 1998). And although people with arthritis represent 8.3% of cases of work limitation (Stoddard et al.), they made up 2% of the individuals served by public VR in the years 1977 through 1988, the last years with available data (Allaire, Partridge, Andrews, & Liang, 1993).

Furthermore, when VR is provided to persons with chronic diseases, it is typically given after a job loss has already occurred, and the results have been disappointing. In a study using the randomized trial design, unemployed persons with musculoskeletal conditions and a desire to return to work were no more likely to regain employment after referral to public VR than those persons who were not referred (Maisiak, Fine, White, & Straaton, 1998; White, Maisiak, Fine, & Straaton, 1997). A U.S. General Accounting Office (1993) study of the outcomes of the

public VR program among all recipients indicated that employment gains were short lived (i.e., approximately 2 years).

A number of experts have recommended providing VR to persons with chronic diseases while they are still employed (Burkhauser, 1998; Roessler, Reed, & Brown, 1998; Ross, 1998; Rumrill, 1997; Rumrill, Nutter, Hennessey, & Ware, 1998; Weaver, 1998). The object of this job retention VR is the primary prevention of work disability, that is, to prevent work disability from occurring rather than attempting to correct it after the fact. These and other experts have also recommended and developed job retention strategies for the chronic disease population based on experience, theory, and research.

Roessler and Rumrill (1995b; 1998) theorized that among persons with chronic diseases, greater numbers of work-site barriers reduce job mastery and job satisfaction and that reduced mastery and satisfaction lead to premature work cessation. Their subsequent research (1995b) demonstrated that job satisfaction is a function of job-mastery problems and the number of work-site barriers experienced, indicating that assessment of work-related barriers, development of solutions (often job accommodations) for barriers, and skill training in requesting accommodation are essential strategies (Roessler & Rumrill, 1994; Rumrill, 1997; Rumrill, Roessler, & Denny, 1997; Sumner, 1995). In a related vein, it is frequently advised that employed persons with disabilities be informed of the job accommodation provision of the Americans with Disabilities Act (Roessler & Rumrill, 1994; Rumrill, Steffen, & Sumner, 1996; Koch, 2000).

Enhancement of belief in ability to work appears to be another essential component. Roessler and Rumrill (1994) and Beveridge, Craddock, Liesener, Stapleton, and Hershenson (2002) noted the importance of belief in ability to work in persons with multiple sclerosis and other midcareer-onset disabilities and recommended intervention to increase self-efficacy. Evidence of the importance of this belief was found in a study that evaluated the outcomes of an innovative VR program for persons with chronic diseases called the Job Raising Program (LaRocca & Hall, 1990). Attendees most often cited gains in self-confidence about their ability to work as a helpful aspect of the program (Allaire, Anderson, & Meenan, 1997).

The efficacy of providing job retention VR services to employed persons with chronic diseases in preventing work disability is unknown. Although its outcome in this population has been assessed in three studies, none used the randomized trial design. As cited in an article by Johnson, Klasner, Amtmann, Kuehn, and Yorkston (2004, p. 44), LaRocca, Kalb, and Gregg (1996) developed a feasible job retention intervention but found that individuals with multiple sclerosis delayed participation until an employment crisis occurred. Rumrill, as cited in the article by Johnson et al., reported the outcomes of a program

called Project Alliance, which was conducted by the National Multiple Sclerosis Society between 1992 and 1995. Most participants did not complete the program, but among those who did, about 80% retained employment. In the third study, 92% of employed participants retained employment 6 months after participating in the Job Raising Program cited previously (Allaire et al., 1997).

The purpose of our study was to determine if providing job retention VR services to employed persons with chronic diseases at risk for work disability would prevent or reduce subsequent work disability. To accomplish this, we conducted a randomized trial in which individuals in the experimental group received a job retention intervention and persons in the control group received a minimal intervention to control for the benefit of interaction. The sample consisted of individuals with arthritis or another chronic rheumatic disease who were employed but at risk for job loss. Based on the outcomes of the Job Raising Program (Allaire et al., 1997), our hypothesis was that individuals in the experimental group would experience less job loss than those in the control group. The employment outcome results of our trial were previously published in the medical literature (Allaire, Li, & LaValley, 2003a), and a synopsis of these results is presented here.

As a further assessment of the utility of the job retention intervention used in our study, we assessed the satisfaction of participants with it. Their satisfaction was then compared to that of the control group to determine if satisfaction with the job retention intervention was greater than that for minimal attention. Because components of the job retention intervention had been recommended and developed for people with chronic diseases, we hypothesized that satisfaction with it would be high and higher than that for the control intervention.

In conducting the trial, we became aware of several issues that need to be addressed to provide job retention services effectively to employed persons with chronic diseases. We discuss these issues in addition to providing the employment and satisfaction results of the study.

## METHOD

### *Participants*

Two hundred forty-two employed persons with rheumatoid arthritis, knee osteoarthritis, systemic lupus erythematosus, ankylosing spondylitis, or psoriatic arthritis who were at risk for job loss and who resided in eastern Massachusetts were recruited for the study. Risk for job loss was a positive response to the question "Do you have any concern about your health affecting your ability to work now or over the next few years?" Exclusion criteria were plans to retire or move from the area within the following 2 years. All participants agreed to receive either interven-

tion. One hundred and twenty-two participants were randomized to the experimental group, and 120 to the control group.

The mean age of participants was 49.49 years ( $SD = 9.19$ , range = 24–66); 197 (81%) were women, and 224 (93%) were White. The mean functional limitation score of participants was 0.54 ( $SD = 0.43$ ; see *Health Assessment Questionnaire* under “Instruments”), which is in the mild limitation range for persons with rheumatoid arthritis (Wolfe et al., 1988); range was 0–1.70. One hundred fifty-seven (65%) had more than a high school education, while 80 (33%) had professional or managerial occupations. The experimental and control groups did not differ on these characteristics, as shown in Table 1.

### Instruments

Two instruments were used in the study. The *Health Assessment Questionnaire* (HAQ) disability index (Fries & Spitz, 1982) was used to measure participants' functional limitation. This self-report instrument measures disability over the past week by asking 20 questions in eight areas of function; it has established reliability and validity for arthritis samples (Ramey, Fries, & Singh, 1996). Disability was assessed to describe the sample and compare the experimental and control groups on this important risk factor for work disability (Allaire, Anderson, & Meenan, 1996; Yelin, Henke, & Epstein, 1987).

The *Work Experience Survey* (WES) was used in carrying out the job retention intervention (Roessler, Reed, & Rumrill, 1995). The WES is a structured interview designed to involve employed persons with disabilities in identifying their own reasonable accommodation needs (Roessler & Gottcent, 1994). It is administered in a face-to-face (or telephone) interview by a rehabilitation professional and consists of (a) background information on the respondent, (b) checklists of potential accessibility and essential job function barriers, (c) job mastery and job

satisfaction surveys, and (d) an accommodation plan. We modified the WES by adding questions about the workplace activities of working overtime or extra hours and using a computer and the out-of-work activities of commuting and getting in and out of the home because these things either have been shown or could be expected to be difficult for persons with rheumatic diseases (Allaire, Li, & LaValley, 2003b).

### Procedures

**Recruitment and Randomization.** Recruitment was conducted through the practices of rheumatologists, who sent letters and a screening form to 2,545 patients ages 18 through 65 years with the designated diagnoses. The screening form inquired about employment status and interest in participating in the study. Persons who returned the form and were employed were telephoned to further assess eligibility status. Consent forms approved by Boston University School of Medicine's Institutional Review Board were mailed to eligible persons who were interested in taking part in the study. Individuals returning signed consent forms were telephoned for the baseline data collection. Nine hundred and twelve persons returned the screening form; of those, 558 did not meet eligibility criteria, 58 declined to participate, and 54 could not be reached by telephone or did not sign the study consent form. The remaining 242 individuals completed the baseline data collection, were enrolled in the study, and were randomized to the experimental or control group. Randomization was stratified based on age, type of rheumatic disease, and location of residence within the economically diverse area from which they were recruited (Piantadosi, 1997).

**Experimental Group Intervention.** The job retention intervention was based on Roessler and Rumrill's (1995b) theory about the relationship between workplace

**TABLE 1. Comparison of Experimental and Control Group Characteristics**

Characteristic	Experimental <sup>a</sup>		Control <sup>b</sup>		Experimental <sup>a</sup>		Control <sup>b</sup>		<i>p</i>
	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SD</i> )	<i>n</i>	%	<i>n</i>	%	
Age (yrs)	50.03	(9.35)	48.93	(9.78)					.37
Female					99	81	98	82	.92
White					113	93	111	93	.97
Educational attainment beyond H.S.					84	69	73	61	.19
Functional limitation score	0.51	(0.42)	0.57	(0.44)					.24
Professional/managerial job					43	35	37	31	.47

Note. Functional limitation was assessed by the *Health Assessment Questionnaire* (Fries & Spitz, 1982); 0.51–0.57 = mild limitation. <sup>a</sup>*n* = 122. <sup>b</sup>*n* = 120.

barriers and job satisfaction, strategy recommendations for the chronic disease population, research indicating the importance of belief in ability to work (Allaire et al., 1997), and consultation with experienced rehabilitation counselors who noted the importance of self-advocacy. The intervention had three components: (a) identification of work barriers and solutions, (b) vocational counseling and guidance, and (c) education and self-advocacy.

Barriers in the workplace, in commuting, and in the individual's home were identified using the WES tool (Roessler et al., 1995). The counselors interviewed participants face to face using the tool. After barriers were identified, participant and counselor prioritized the barriers. The counselor then suggested potential solutions and discussed their feasibility with participants. The best solutions were identified as a plan of action. If the participant desired, an on-the-job evaluation of barriers was available; likewise, counselors could contact an employer on a participant's behalf.

In the vocational counseling and guidance component, the counselors first conveyed positive messages about a participant's ability to work. Counselor and participant also evaluated the individual's long-term job-person match in light of the impact of his or her rheumatic disease (Roessler, 2002). If problems were foreseen, possible job alternatives, requirements, and relevant resources were identified so the individual could begin the process of changing job or career (Beveridge et al., 2002).

In the education and self-advocacy component, the counselors provided participants with information about their disability-related employment legal rights and responsibilities, such as the employee's responsibility to request accommodation when needed and guidance regarding disclosure issues. They also conducted a skill training exercise with participants to increase their ability to request a job accommodation in an appropriate manner (Rumrill et al., 1997). Finally, counselors gave participants copies of pamphlets and flyers about how to manage health-related employment problems and available resources and discussed the information with them. Materials included information about the Americans with Disabilities Act, job accommodations, and Massachusetts' public VR program.

This intervention was delivered by one of two rehabilitation counselors employed by the study. The study's principal investigator (the first author) instructed the counselors about the intervention and its requirements and typical effects of rheumatic diseases on employment prior to their first meetings with participants. She also reviewed participants' cases with each counselor to ensure that the intervention was delivered as intended, to solve difficult problems and facilitate scheduling.

After each participant was randomly assigned to the experimental or control group, the assigned counselor called to make an appointment for the first of two meet-

ings. Each meeting lasted approximately 1.5 hours; this amount of time was based on prior testing of the time needed to carry out the required activities and in consultation with experienced rehabilitation counselors. Additional time was available if desired. For most participants the intervention was completed within 5 months; however, a longer period was needed in a few cases, the longest being 9 months. One individual did not receive the job retention intervention due to scheduling problems.

**Control Group Intervention.** Participants assigned to the control group received copies of the same pamphlets and flyers about how to manage health-related employment problems and available resources that experimental participants received. These materials were mailed to control participants' home addresses within 1 month after randomization, and these mailed materials were the only intervention the control group received. Two control group participants reported not receiving the materials, though they were mailed twice to confirmed addresses.

**Data Collection.** Data were collected at baseline and every 6 months up to 48 months after enrollment. Enrollment of participants into the experimental and control groups was staggered over 24 months, so longer follow-up data are available for those enrolled earlier in the trial. A professional data collector hired for the study collected the data by telephone. Sociodemographic, disease, and job characteristic information was collected at baseline. Information about work status was assessed at each 6-month follow-up period. Participants were asked if they were employed, unemployed, permanently disabled, or retired, and also if they were on a disability leave from work. Satisfaction was measured at 6 months after intervention, the recommended time for assessing satisfaction with VR counseling (Reagles, Wright, & Thomas, 1972).

**Outcomes.** The main outcome was time to the first of either of two types of job loss events; permanent job loss, consisting of permanent disability or premature retirement; and temporary job loss, consisting of a period of unemployment. The classification of job losses was based on participants' reports of their work status at each 6-month follow-up. Report of unemployment in two consecutive intervals was considered as one temporary job loss. Those on a disability leave from work were classified as employed if they were still officially employed. Participants who were not employed and who considered themselves to be permanently disabled were classified as permanently disabled. Because retirement could be unrelated to health, it was considered as a job loss only if it occurred within 2 years of enrollment (see discussion of exclusion criteria under "Participants") or, if after that time, prior to age 65 years. In addition to time to first job

loss, we examined differences between the experimental and control groups in the total number of permanent and temporary job losses each group experienced.

Three questions were developed to assess the satisfaction of participants in the experimental group compared to the control group. The first assessed overall satisfaction with the respective intervention, and the second assessed its helpfulness; each used a 10-point analog scale to ascertain response. The third question asked whether participants would pay out of pocket for the intervention. For the experimental group, we also wished to assess satisfaction with the helpfulness of the counselors and the amount of time spent with the counselors. Questions about these aspects of satisfaction were taken from the *Scale of Client Satisfaction*, a tool developed to evaluate public VR services (Reagles et al., 1972; Koch & Merz, 1995). For the control group, we were interested in determining whether participants took action after reading the written materials and whether any action taken was successful; two questions were developed to ask about these issues.

### Data Analysis

Demographic and disease characteristics of the experimental and control groups were compared by unpaired *t* or chi-square tests. Proportions of participants in the two groups who completed the study were calculated, and the numbers of job losses in the groups were counted.

**Job Loss Outcomes.** Participants were recruited into the study over time and followed for the occurrence of job loss. Those who completed the whole study period without any job loss had their follow-up time censored at the time of last data collection. To include the incomplete information provided by the censored observations with varying lengths of follow-up time into the analysis, time-to-event analysis was performed. Two time-to-event analyses were done for time-until-job-loss occurrence. In the first analysis, the outcome was time to the first of either permanent or temporary job loss, while the second analysis evaluated time to permanent job loss alone. For each of these outcomes, Kaplan-Meier curves were used to show the proportions of participants within the experimental and control groups who remained employed without job loss over time. In this situation, declines in the curve indicate job loss. To determine if the observed differences between the Kaplan-Meier curves for the two groups were larger than would be expected by chance, the log-rank test was used to determine statistical significance.

Participants could have more than one job loss event during the study, and the time-to-event analyses track a subject only until the first job loss. Therefore, to supplement these analyses, we used a Poisson regression to ana-

lyze the total counts of permanent and temporary job losses. The number of job losses was the dependent variable, and experimental versus control group membership was the independent variable of interest. Age, functional limitation, and professional/managerial job versus other jobs were also entered as independent variables to control for potential confounding by these risk factors for job loss.

**Satisfaction Outcomes.** Medians and interquartile ranges were calculated for the helpfulness and satisfaction items because the data were not normally distributed. The scores of the experimental and control groups were then compared using Wilcoxon tests. Chi square was used to compare proportions of participants willing to pay for the respective intervention.

## RESULTS

### Participants Who Completed the Study

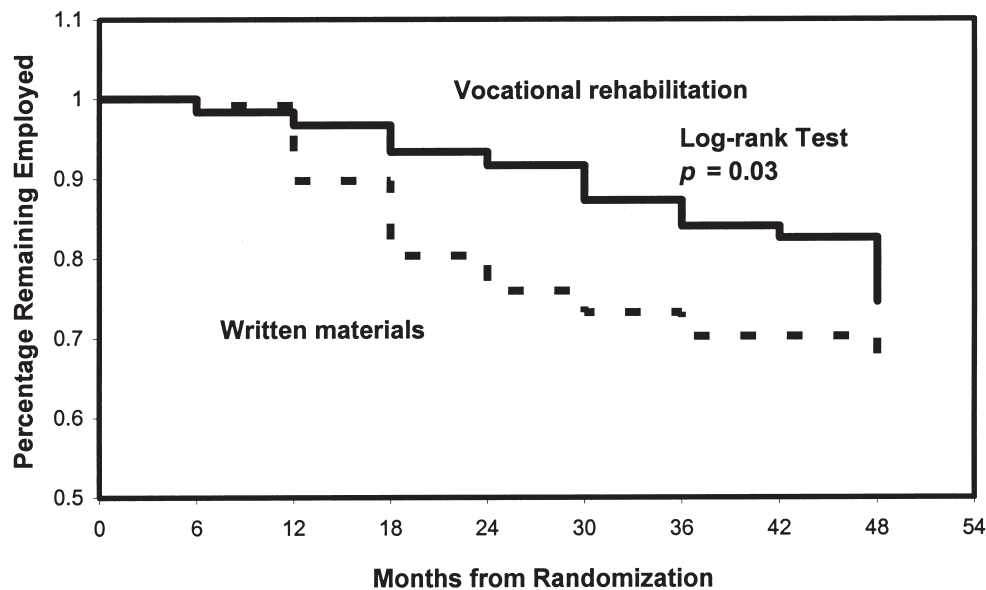
Twenty-one participants in the experimental group dropped out of the study over 48 months, and 1 died, for an attrition rate of 18%. The rate of 20% for the control group was similar; 22 participants dropped out and 2 died. Additional funding was obtained to extend follow-up an additional year, and the majority of the attrition in both groups occurred at that time.

### Job Loss Description

There were 73 permanent or temporary job loss events in the full sample over 48 months of follow-up; of these, 25 occurred in the experimental group and 48 in the control group. Of permanent job losses alone, 12 occurred in the experimental group versus 22 in the control group, and of temporary job losses alone, 13 occurred in the experimental group versus 26 in the control group.

### Time to Job Loss

The survival curve for the first of either permanent or temporary job loss is shown in Figure 1. At 12 months postintervention, a greater percentage of participants who received the job retention intervention remained employed with no job loss, compared to participants in the control group. The difference between the groups increased at 18 months, was sustained over 42 months, and was significant by the log-rank statistical test,  $p = .03$ . Details of the survival analysis are shown in Table 2. After 24 months, the numbers of job losses are more or less equal in the two groups; however, the cumulative job loss at 48 months is greatest in the control group. The pattern of difference between the groups was similar for the outcome



**FIGURE 1.** Time to first temporary or permanent job loss. Note. The experimental group received job retention vocational rehabilitation, and the control group received written materials only.

**TABLE 2.** Job Loss Over Time in the Experimental and Control Groups

Follow-up period (mos.)	% of participants remaining employed		No. of participants with first permanent or temporary job loss		No. of participants remaining in study and without job loss	
	Exp <sup>a</sup>	Ctl <sup>b</sup>	Exp <sup>a</sup>	Ctl <sup>b</sup>	Exp <sup>a</sup>	Ctl <sup>b</sup>
6	0.98	0.99	2	1	120	118
12	0.97	0.90	2	11	117	105
18	0.93	0.80	4	11	111	94
24	0.92	0.76	2	5	107	86
30	0.87	0.73	5	3	100	81
36	0.84	0.70	3	3	78	71
42	0.83	0.70	1	0	57	52
48	0.75	0.66	3	2		

Note. Exp = experimental group, Ctl = control group.  
<sup>a</sup>n = 122. <sup>b</sup>n = 120.

of permanent job loss alone, but because there were fewer of these events, the difference was not significant,  $p = .06$ .

### Number of Job Losses

In the Poisson regression analysis, persons in the experimental group had a 49% (confidence interval 17–69%,  $p = .007$ ) reduction in the total number of permanent and temporary job losses compared to individuals in the con-

trol group. In the same analysis, none of the other independent variables—age, degree of functional limitation, or type of job—was significant ( $p = .87, .13, \text{ and } .30$ , respectively).

### Satisfaction

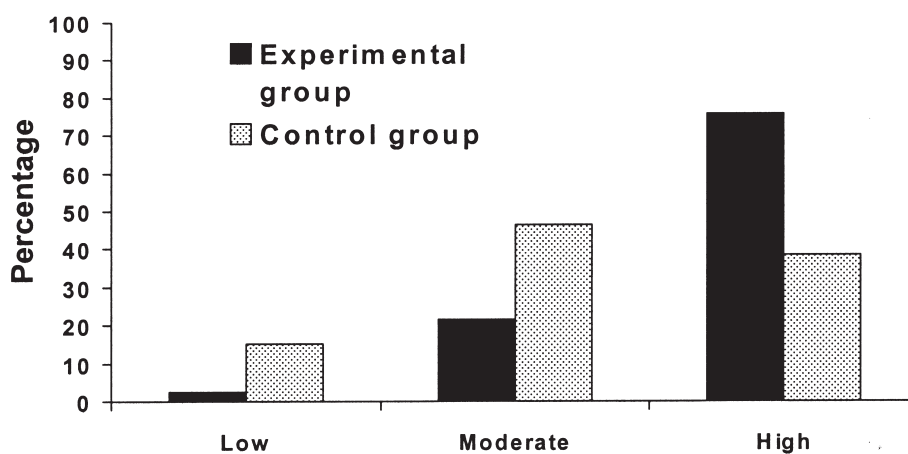
Satisfaction data were available for 116 experimental group participants and 114 in the control group. One par-

participant died prior to the 6-month data collection, 3 did not receive their assigned intervention, and data were mistakenly not collected from 2 participants (1 in each group). In addition, because the interventions were not well described when the data collector asked about them, 3 experimental group participants responded to questions about the written materials, which they had received in addition to the counseling, and 3 control group participants responded to questions about VR counseling. In the latter case, each of these had sought services from Massachusetts' VR program.

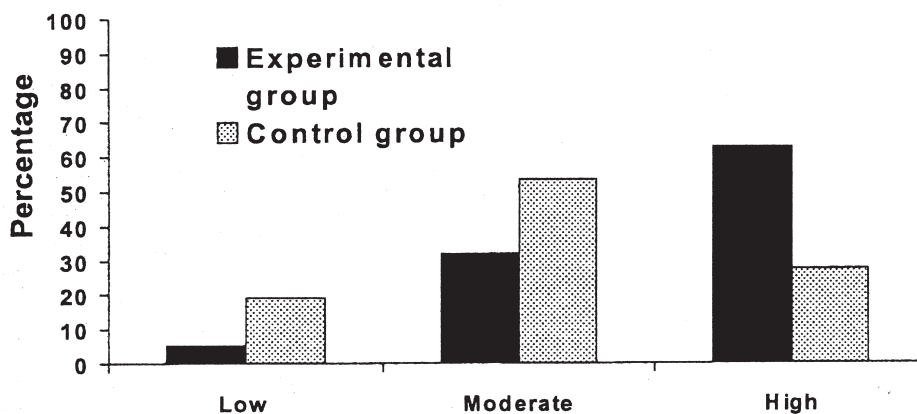
The response patterns of the experimental and control groups to the questions about overall satisfaction with and perceived helpfulness of the respective interventions are shown in Figures 2 and 3. The majority of experimental group responses are concentrated at the high end of

the 1 to 10 scales, indicating high satisfaction and helpfulness, whereas control group responses are more spread out, indicating greater variability in satisfaction and helpfulness. The median scores of the experimental group were 10.0 (interquartile range 1.0) for satisfaction and 9.0 (interquartile range 2.0) for helpfulness, and 81% were willing to pay for the intervention. Control group ratings of satisfaction and helpfulness were moderately high (8.0 [5.0] and 7.0 [4.0]) but significantly lower by the Wilcoxon test ( $p < .0001$  for both) than those of the experimental group, and only 52% were willing to pay for the written materials.

Ninety-eight percent of experimental participants believed their counselor gave them the thought and consideration they needed, and 97% thought the counselor understood their problems and feelings. Eighty-six per-



**FIGURE 2.** Percentages of experimental and control group participants with low, moderate, or high satisfaction with the intervention they received. Note. On the 1-10 scale, low = 1-4, moderate = 5-8, high = 9-10.



**FIGURE 3.** Percentages of experimental and control group participants rating the helpfulness of their intervention as low, moderate, or high. Note. On the 1-10 scale, low = 1-4, moderate = 5-8, high = 9-10.



cent thought the amount of time spent with the counselor was about right, while 10% thought it was not enough. Sixty-two control group participants (55%) did not do anything as a result of receiving the materials, while 38 (34%) took action they perceived as successful.

## DISCUSSION

The results of this study showed that a job retention intervention effectively prevents job loss when it is provided to persons with rheumatic diseases at risk for job loss while they are still employed. Job loss was both delayed and reduced in incidence among study participants who received the job retention intervention. After 24 months' follow-up, the numbers of subsequent job losses in the groups were similar, but sample sizes at later follow-up times were small, and the groups were no longer similar by then. The difference between the groups at 48 months of follow-up remained significant, and because the intervention was relatively brief and long lasting, it is likely to be highly cost effective. Such intervention therefore has the capacity to substantially reduce the high costs to society associated with the impact of rheumatic diseases on employment and to preserve the economic self-sufficiency of individuals and their families.

Although the job retention intervention was tested among persons with rheumatic diseases, it is likely to be equally effective for persons with other chronic diseases, since it was not specific to rheumatic diseases. The WES tool and job accommodation skill training exercise were both developed for use with persons with any type of disability (Roessler et al., 1995; Rumrill et al., 1997). Likewise, promotion of self-advocacy has been recommended for persons with many types of disability, and need for self-efficacy in relation to employment has been noted for persons with midcareer-onset disabilities in general (Beveridge et al., 2002; Roessler & Rumrill, 1994).

In almost all cases, the intervention consisted of 3 hours of interaction with a counselor; only a few participants requested extra time or telephone contact. The intervention thus was brief. There are several reasons this brief intervention had the capacity to be effective. First, many persons with chronic diseases have already achieved career maturity and have considerable employment skills and history (LaRocca & Hall, 1990; Roessler, 2002). What they are not familiar with is managing job problems resulting from disability. Second, a good deal is already known about the specific types of job retention strategies needed by persons with chronic diseases. Third, a number of materials and methods needed to provide relevant job retention VR services already exist, e.g., the WES, printed information (Roessler & Rumrill, 1995a), and the accommodation request skill training exercise (Rumrill et al., 1997), so the intervention can be provided efficiently.

The results of the assessment of satisfaction with the experimental intervention are a further indication that the length of the intervention was appropriate and suggest as well that its contents were highly valued by recipients. The fact that the overall satisfaction and helpfulness ratings of experimental group participants were significantly higher than those of control group participants is an indication that their high ratings were valid.

### *Limitations*

The location of the study in one area of the United States and several characteristics of the sample place some limitations on the generalizability of the results. Although the study location was economically diverse, the effect of economic conditions was not tested, since randomization was stratified by locale within the area. All study participants were at some risk for job loss, but none had severe functional limitation. Also, few participants were members of racial minority groups. More extensive intervention may be required where economic conditions are poor, or for persons with severe disability or members of racial minorities. Persons at no risk may not require intervention.

### *Implications*

**Job Retention Service Delivery Issues.** During the planning of the study, consideration was given initially to providing the job retention intervention through Massachusetts' VR program. Several problems precluded study participants from becoming VR recipients, but the issue of eligibility was notable. The object of providing job retention services to the chronic disease population is early intervention, but individuals may not be considered as having substantial disability at that time. However, as many persons with chronic diseases need several rehabilitation services besides vocational rehabilitation—for example, physical therapy, occupational therapy, nutrition counseling, podiatric care—they might meet substantial disability criteria based on the need for multiple services (Rumrill, 1997).

We had initially hoped that Massachusetts' VR counselors could provide the intervention at VR offices. Once the study began, however, it quickly became evident that this mechanism would not be successful. Offices tended to be open only during common work hours (i.e., weekdays between 9 A.M. and 5 P.M.), and many participants could not or would not take time off work to receive the intervention. This difficulty was made worse by the fact that participants often needed to travel some distance to get to a VR office, making early, mid- or late-day appointments impossible. Therefore, we hired counselors to provide the intervention, and they arranged times and places to meet participants. Meeting times were lunch hours, after work, and even on weekend days. Meeting places were food

courts in malls, public libraries, participants' homes, and, only occasionally, VR offices. Hiring counselors on a freelance basis is a potential model for a program to deliver job retention services with great flexibility in time and place.

The last issue has to do with informing the target population of the availability of job retention and VR services generally. For the chronic disease population, there is little or no connection between the health care and VR systems (Haig, Rasmussen, & Barroso, 2001), and, as opposed to persons with mental or cognitive disorders, most persons with chronic diseases receive care through the health care system only. Unfortunately, health care providers usually aren't aware of VR services, and research has indicated that physicians refer few patients with arthritis for these services (Straaton, Harvey, & Maisiak, 1992). Special outreach efforts are likely to be required to reach the chronic disease population. Informing potentially eligible persons through the offices of specialist physicians may be an effective method of reaching this population, provided the VR program funds the effort. Advertising through voluntary agency newsletters or in community newspapers is another possibility.

**Resources for Job Retention Services.** Roessler (2001) and Rumrill and Koch (2001) have all stated that more resources should be devoted to job retention services. The public VR program is underfunded, and within it, the effort currently devoted to job retention intervention is relatively small—for example, 18% of individuals served by the program in 2002 (Institute for Community Inclusion, 2002).

Employers potentially could provide job retention services to their employees with chronic conditions, and some employers with disability management programs currently provide certain job retention services (e.g., job modification). Unfortunately, such services are commonly not given unless a disability leave of absence occurs (Dunn, 2001), and they may be limited to employees with occupational illnesses or injuries. Furthermore, it's not clear that employers would be interested in intervention that helps employees identify and request accommodation and/or seek another job. For this reason, the public VR program may be the best resource for the type of intervention tested in this study.

**Further Research.** The job retention intervention tested in this study was based on the available literature about the kind of intervention needed by the population. Further testing would be useful to determine whether all essential components were present and/or if some components are not needed. Also, all the materials and methods required to deliver the intervention in a standard way and to inform the population need to be developed and made available.

## Conclusions

Job retention intervention was proven to reduce job loss in the sample of employed persons with chronic rheumatic diseases and therefore has the potential to reduce the high rates of work disability associated with chronic diseases. Because the intervention needed to accomplish this was brief and long lasting, as well as efficacious, the provision of this type of intervention to persons with chronic diseases should be highly cost effective. Participant satisfaction with the intervention was high. More resources should be allocated to the provision of job retention services to employed persons with serious chronic diseases at risk for job loss.

## ABOUT THE AUTHORS

**Saralynn H. Allaire**, ScD, CRC, is a research associate professor of medicine at Boston University. Her research interests include disability associated with chronic disease, vocational rehabilitation interventions, and the American with Disabilities Act. **Jingbo Niu**, MS, is a computer programmer and doctoral student in epidemiology at Boston University. **Michael P. LaValley**, PhD, is an associate professor of biostatistics at Boston University. His research interests include clinical trial methodology and meta-analysis. Address: Saralynn H. Allaire, Boston University School of Medicine, A203, 715 Albany St., Boston, MA 02118; e-mail: [sallaire@bu.edu](mailto:sallaire@bu.edu)

## AUTHORS' NOTES

1. This work was supported by Multipurpose Arthritis Center Grant AR20613 from the National Institute of Arthritis and Musculoskeletal and Skin Diseases.
2. The authors express their sincere appreciation to Rosalyn Davidoff, MS, CRC, LRC; John Zinkowski, MS; Faye Cochrane; and Elaine Abrams for their work on this project.

## REFERENCES

- Allaire, S. H., Anderson, J. J. & Meenan, R. F. (1996). Reducing work disability associated with rheumatoid arthritis: Identification of additional risk factors and persons likely to benefit from intervention. *Arthritis Care & Research*, 9, 349–357.
- Allaire, S., Anderson, J., & Meenan, R. (1997). Outcomes from the job-raising program, a self-improvement model of vocational rehabilitation among persons with arthritis. *Journal of Applied Rehabilitation Counseling*, 28(2), 26–31.
- Allaire, S. H., Li, W., & LaValley, M. (2003a). Reduction of job loss in persons with rheumatic diseases receiving vocational rehabilitation. *Arthritis & Rheumatism*, 48, 3212–3218.
- Allaire, S. H., Li, W., & LaValley, M. (2003b). Work barriers experienced and job accommodations used by persons with arthritis and other rheumatic diseases. *Rehabilitation Counseling Bulletin*, 46, 147–156.

- Allaire, S. H., Partridge, A. J., Andrews, H. F., & Liang, M. H. (1993). Management of work disability. *Arthritis & Rheumatism*, 36, 1663–1670.
- Beveridge, S., Craddock, S. H., Liesener, J., Stapleton, M., & Hershenson, D. (2002). INCOME: A framework for conceptualizing the career development of persons with disabilities. *Rehabilitation Counseling Bulletin*, 45, 195–206.
- Burkhauser, R. V. (1998). Policies to make work pay for people with disabilities. In K. Rupp & D. C. Stapleton (Eds.), *Growth in disability benefits* (pp. 365–371). Kalamazoo, MI: W. E. Upjohn Institute for Employment Research.
- Dunn, P. (2001). Proprietary rehabilitation: Challenges and opportunities in the new millennium. *Work*, 17, 135–142.
- Fries, J. F., & Spitz, P. W. (1982). Dimensions of health outcomes: The Health Assessment Questionnaire. *Journal of Rheumatology*, 9, 789–793.
- Haig, A. J., Rasmussen, L., & Barroso, C. (2001). Increasing resident physician initiation of vocational rehabilitation services. *American Journal of Physical Medicine and Rehabilitation*, 80, 624–625.
- Institute for Community Inclusion. (2002, November). [Analysis of FY2000 state–federal vocational rehabilitation system data]. Boston, MA: Author.
- Johnson, K. L., Klasner, E. R., Amtmann, D., Kuehn, C. M., & Yorkston, K. M. (2004). Medical, psychological, social, and programmatic barriers to employment for people with multiple sclerosis. *Journal of Rehabilitation*, 70(1), 38–49.
- Koch, L. C. (2000). Assessment and planning in the Americans with Disabilities Act era: Strategies for consumer self-advocacy and employer collaboration. *Journal of Vocational Rehabilitation*, 14, 103–108.
- Koch, L. C., & Merz, M. A. (1995). Assessing client satisfaction in vocational rehabilitation program evaluation: A review of instruments. *Journal of Rehabilitation*, 61(4), 24–30.
- LaRocca, N. G., & Hall, H. L. (1990). Multiple Sclerosis Program: A model for neuropsychiatric disorders. *New Directions for Mental Health Services*, 45, 49–64.
- Maisiak, R., Fine, R., White, M., & Straaton K. (1998). Demographic characteristics of ARMD patients who benefit from vocational rehabilitation [Abstract]. *Arthritis & Rheumatism*, 41, S185.
- Piantadosi, S. (1997). *Clinical trials: A methodological perspective*. New York: Wiley.
- Ramey, D. R., Fries, J. F., & Singh, G. (1996). The Health Assessment Questionnaire 1995: Status and review. In B. Spilker (Ed.), *Quality of life and pharmacoeconomics in clinical practice* (pp. 227–237). Philadelphia: Lippincott-Raven.
- Reagles, K. W., Wright, G. N., & Thomas, K. R. (1972). Development of a scale of client satisfaction for clients receiving vocational rehabilitation counseling services. *Rehabilitation Research and Practice Review*, 3, 15–22.
- Roessler, R. T. (2001). Job retention services for employees with spinal cord injuries: A critical need in vocational rehabilitation. *Journal of Applied Rehabilitation Counseling*, 32(1), 3–9.
- Roessler, R. T. (2002). Improving job tenure outcomes for people with disabilities: The 3M model. *Rehabilitation Counseling Bulletin*, 45, 207–212.
- Roessler, R. T., & Gottcent, J. (1994). The Work Experience Survey: A reasonable accommodation/career development strategy. *Journal of Applied Rehabilitation Counseling*, 25(3), 16–21.
- Roessler, R., Reed, C., & Brown, P. (1998). Coping with chronic illness at work: Case studies of five successful employees. *Journal of Vocational Rehabilitation*, 10, 261–269.
- Roessler, R. T., Reed, C. A., & Rumrill, P. D., Jr. (1995). *The Work Experience Survey (WES) manual*. Hot Springs: Arkansas Research and Training Center in Vocational Rehabilitation.
- Roessler, R. T., & Rumrill, P. D. (1994). Strategies for enhancing career maintenance self-efficacy of people with multiple sclerosis. *Journal of Rehabilitation*, 60(4), 54–59.
- Roessler, R. T., & Rumrill, P. D. (1995a). *Enhancing productivity on your job: The win-win approach to reasonable accommodation*. New York: National Multiple Sclerosis Society.
- Roessler, R. T., & Rumrill, P. D. (1995b). The relationship of perceived work site barriers to job mastery and job satisfaction for employed people with multiple sclerosis. *Rehabilitation Counseling Bulletin*, 39, 2–14.
- Roessler, R. T., & Rumrill, P. D. (1998). Reducing workplace barriers to enhance job satisfaction: An important post-employment service for employees with chronic illnesses. *Journal of Vocational Rehabilitation*, 10, 219–229.
- Ross, J. L. (1998). Rethinking the Social Security Disability Program: Causes and options. (1998). In K. Rupp & D. C. Stapleton (Eds.), *Growth in disability benefits* (pp. 343–349). Kalamazoo, MI: W. E. Upjohn Institute for Employment Research.
- Rumrill, P. D. (1997). Enhancing the employment potential of people with diabetes mellitus: Guidelines for research and practice. *Work*, 9, 157–161.
- Rumrill, P., & Koch, L. (2001). Postemployment services in vocational rehabilitation: Picking up where job placement leaves off. In P. D. Rumrill, J. L. Bellini, & L. C. Koch (Eds.), *Emerging issues in rehabilitation counseling* (pp. 148–172). Springfield, IL: Thomas.
- Rumrill, P. D., Nutter, D. L., Hennessey, M., & Ware, M. E. (1998). Job retention and breast cancer: Employee perspectives and implications for rehabilitation planning. *Work*, 10, 251–259.
- Rumrill, P., Roessler, R., & Denny, G. (1997). Increasing confidence in the accommodation request process among persons with multiple sclerosis: A career maintenance self-efficacy intervention. *Journal of Job Placement*, 13(3), 5–9.
- Rumrill, P. D., Steffen, J. M., & Summer, G. (1996). Job retention interventions for persons with multiple sclerosis. *Work*, 6, 185–190.
- Stoddard, S., Jans, L., Ripple, J., & Kraus, L. (1998). *Chartbook on work and disability in the United States, 1998* (An InFoUse Report). Washington, DC: U.S. National Institute on Disability and Rehabilitation Research.
- Straaton, K. V., Harvey, M., & Maisiak, R. (1992). Factors associated with successful vocational rehabilitation in persons with arthritis. *Arthritis & Rheumatism*, 35, 503–510.
- Sumner, G. (1995). *Project Alliance: A job retention program for people with chronic illnesses and their employers*. New York: National Multiple Sclerosis Society.
- Toossi, M. (2002). A century of change: The U.S. labor force, 1950–2150. *Monthly Labor Review*, May, 15–27.
- U.S. General Accounting Office. (1993). *Vocational rehabilitation: Evidence for federal program's effectiveness is mixed*. (Publication PEMD-93-19). Washington, DC: Author.
- Weaver, C. L. (1998). Policy changes to improve market outcomes. In K. Rupp & D. C. Stapleton (Eds.), *Growth in disability benefits* (pp. 351–356). Kalamazoo, MI: W. E. Upjohn Institute for Employment Research.
- White, M., Maisiak, R., Fine, R., & Straaton, K. (1997). Return to work of persons with ARMD 36 months after referral to vocational rehabilitation [Abstract]. *Arthritis & Rheumatism*, 40, S337.
- Wolfe, F., Kleinheksel, S. M., Cathey, M. A., Hawley, D. J., Spitz, P. W., & Fries, J. F. (1988). The clinical value of the Stanford Health Assessment Questionnaire functional disability index in patients with rheumatoid arthritis. *Journal of Rheumatology*, 15, 1480–1488.
- Yelin, E., & Callahan, L. F. (1995). The economic cost and social and psychological impact of musculoskeletal conditions. *Arthritis & Rheumatism*, 38, 1351–1362.
- Yelin, E., Henke, C., & Epstein, W. (1987). The work dynamics of the person with rheumatoid arthritis. *Arthritis & Rheumatism*, 30, 507–512.