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Building the Case: Health Promotion for Vocational Rehabilitation Consumers

A new line of research for the Research and Training Center on Disability in Rural Communities (RTC: Rural) focuses on the role of secondary conditions and health promoting lifestyle behaviors in obtaining and maintaining employment for adults with physical disabilities. This line of research started with Ipsen (2006) conducting an analysis of Behavioral Risk Factor Surveillance System data. She found that individuals who reported lower rates of secondary conditions and/or who practiced better lifestyle behaviors had a higher probability of being employed after controlling for demographic characteristics including age, gender, race, education, and disability severity.

Past research has shown that secondary conditions can be reduced through participation in health promotion programs (Ravesloot, Seekins, & White, 2005; Lorig, et al., 1999). It follows that participation in such programs may be a strategy to increase employment outcomes for people with disabilities.

Unfortunately, access to health promotion programs is a significant problem for people with disabilities. For example, since many people with disabilities are not employed (61.9%), they cannot access employer sponsored wellness programs (StatsRRTC, 2005). Many individuals receive Medicaid and/or Medicare health insurance benefits, which typically do not cover preventative health measures. Paying out-of-pocket costs for health promotion is difficult for those with high medical expenses and low incomes. Additionally, there are few health

promotion programs in the rural US. These factors limit the opportunities available to people with disabilities to best manage their health.

One avenue for improving access to health promotion programming is for state Vocational Rehabilitation Agencies (VR) to include it in the menu of available services. VR is charged with assisting people with disabilities to become employed, and health promotion appears to fit within this broad mission. Because VR dollars must be allocated to services that positively impact work outcomes, however, establishing the linkage between secondary conditions and subsequent employment outcomes is the first step in creating a role for health promotion.

To explore this relationship, RTC: Rural conducted a longitudinal study of VR consumers to determine whether baseline secondary conditions could help predict future employment outcomes.

Study Participants

Researchers recruited study participants through regional VR offices in ten states. VR consumers were eligible to participate if:

- Their primary disability was physical (e.g. a mobility impairment).
- They were between the ages of 21 and 65.
- They had been accepted to receive VR services.
- They were within 6 months of entering the VR system.

264 VR consumers agreed to provide employment, demographic and health data at baseline, 6 months, 12 months, and 18 months. Due to incorrect addresses, 18% of the sample did not receive follow-up surveys. An additional 21% did not return one or more surveys, including the 18-month follow-up. This resulted in a sample of 162 participants that provided data at baseline and 18 months.

Measures

We asked about the participants' employment situation at baseline and 18 months. We also asked about several factors that have been shown to predict employment outcomes including age, gender, education, and disability severity.

We measured health factors with the validated Secondary Conditions Surveillance Instrument (SCSI). The SCSI assesses the prevalence and severity of 29 secondary health conditions that might be managed through health promotion efforts – conditions such as pain, fatigue, weight problems, depression, and urinary tract infection (Ravesloot, et al., 2007). Respondents indicated how much each condition limited them on a scale where 0 = rarely or never limits, 1 = mild or infrequent limitation (1-5 hours per week), 2 = moderate limitation (6-10 hours per week), and 3 = significant limitation (more than 11 hours per week).

Results

Respondents said they experienced an average of 11 different secondary conditions. Several secondary conditions were experienced by the majority of participants. For instance, 79% of respondents said they were limited by fatigue. Table 1 provides information about the most prevalent and limiting secondary conditions. Each secondary condition includes information about the **percent** of respondents who said a secondary condition limited their participation; the **average severity rating** of that condition by those endorsing it; and the **problem index** (percent experiencing the condition multiplied by the average severity rating).

Table 1. Top Secondary Conditions (n = 162)

	Percent	Avg. Severity	Problem Index
Fatigue	79	2.03	158
Sleep Problems	75	2.06	156
Joint/Muscle Pain	76	1.99	151
Chronic Pain	63	2.22	140
Conditioning Problems	70	1.85	130
Depression	66	1.87	123
Arthritis	56	2.08	115
Weight Problems	54	1.95	105
Mobility Problems	44	1.85	82
Sexual Dysfunction	41	1.89	78
Contractures	41	1.85	77
Anger Problems	48	1.58	76
Isolation	48	1.56	76

We developed a "sum of secondary conditions score," which aggregates the reported level of limitation (mild, moderate, or severe) for each condition. This score can range from 0 (if the respondent didn't experience limitation for any of the 29 secondary conditions) to 87 (if the respondent said he or she was severely limited by all secondary conditions). The average sum of secondary conditions score at baseline for our sample was 21.6.

Respondents reported similar secondary conditions across reporting periods. The sum of secondary conditions scores at baseline and 18 months were highly correlated ($r = .753$, $p = .000$), indicating that in the absence of an intervention, an individual's limitation from secondary conditions is stable over time.

We hypothesized that secondary conditions would help to predict employment outcomes. To test this hypothesis, we developed a binary logistic regression model. In layman's terms, the binary logistic regression model asks: What is the probability of an individual becoming employed if we know his or her age, gender, education level, disability severity, and level of secondary conditions?

To answer this question, the dependent variable was employment (employed vs. not employed) at 18 months. The independent variables included:

- *Age* – age at baseline
- *Female* – a dummy variable that accounts for the influence of female gender relative to male gender.
- *Less than high school* – a dummy variable that accounts for the influence of less than a high school education relative to a high school education.
- *Some college* – a dummy variable that accounts for the influence of some college education relative to a high school education.
- *College graduate* – a dummy variable that accounts for the influence of a bachelors or post-graduate education relative to a high school education.
- *Disability severity* – a variable that aggregates yes answers about use of special equipment, required assistance to meet personal care needs, and required assistance to meet activities of daily living.
- *Secondary conditions* – the sum of secondary conditions score at baseline.

Our research was exploratory and our sample size was small, so we used a .10 significance level to test this model rather than the typical .05 alpha level. Table 2 presents the model results. Overall, the model was significant ($p = .029$); and when used to predict employment at 18 months, correctly predicted the employment outcome for 68.5% of the study participants.

Table 2. Binary Logistic Regression Prediction of Employment Outcome (n = 162)

	Logit	Sig.
Age	-.018	.261
Female	-.251	.461
Less than high school	1.936	.094
Some college	.279	.492
College graduate	.211	.681
Disability severity	-.338	.051
Secondary conditions	-.023	.087

The model values or logits are difficult to interpret, but the logit signs can be used to examine the relationship between the model variables and employment. Positive logits indicate that having a variable characteristic (such as college education relative to high school education) results in a higher probability of employment. Negative logits indicate that having a variable characteristic (such as female relative to male gender) or having more of a variable characteristic (such as age, disability severity and sum of secondary conditions) results in lower probability of employment.

The model includes three significant predictor variables, including *secondary conditions* ($p = .087$), *disability severity* (.051), and *less than high school* ($p = .094$). Overall, the model confirmed our expectations about the relationship between secondary conditions and employment ($p = .087$). People who reported higher rates of secondary conditions were less likely to be employed, after controlling for age, gender, education, and disability severity. The model also supports past research findings reporting that people with severe disability have lower employment rates.

The significant positive relationship between employment and the dummy variable for less than a high school education (relative to a high school education) is less clear. Perhaps individuals without a GED are easier to place and more satisfied with entry level, minimum wage jobs. This deserves further exploration.

Discussion

Given the low numbers of participants that completed this longitudinal study, it is not surprising that the logistic regression findings are somewhat inconclusive. For example, many model variables that have been associated with employment outcomes in the literature (such as age and college education) were not significant, even at the .10 alpha level.

The relationship between baseline secondary health conditions and subsequent employment outcomes, however, was significant and begins to build the case for including health promotion into VR's array of services. Many of the top secondary conditions reported by VR consumers are responsive to health promotion programs. For instance, learning and practicing behaviors like regular exercise is likely to lessen the impacts of fatigue, sleep and conditioning problems, depression, weight issues, and isolation. People who participated in the *Living Well with a Disability* health promotion program reported a 25% decline in total sum of secondary conditions scores pre- to post-intervention (Ravesloot, Seekins & White, 2005). Such a decline in secondary conditions is likely to improve the employment outcomes of individuals with disabilities.

Next Steps

With support from the Centers for Disease Control and Prevention, RTC: Rural is developing and testing a health promotion program, *Working Well with a Disability*, for VR consumers in five states.

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For Additional Information

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