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# Pain as a Secondary Condition Experienced by Rural Medicaid Beneficiaries with Disabilities

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## **Pain as a Secondary Condition Experienced by Rural Medicaid Beneficiaries with Disabilities**

**S**econdary conditions are disability-related problems that further limit a person's ability to engage in daily activities. People who live independently in the community and who have mobility impairments consistently report being limited by 14 secondary conditions annually.

### **Background:**

As many as 80% of people with primary disabilities report pain as a secondary condition (Ehde, Jensen, Engel, Joyce, Turner, Hoffman, & Cardenas, 2003). Although pain may be a sign of acute physical trauma, it often lingers long after an injury. In many instances there is no discernable etiology (such as an injury) for pain – over time what may have begun as a minor ache slowly develops into a chronic, limiting secondary condition.

In our previous work on identifying and removing barriers to health promotion and physical activity, rural people with mobility impairments identified pain as a greater barrier than their needs for transportation, accessibility and personal assistance.

This brief research report is the first in a two-part series which describes how Medicaid recipients with disabilities in two rural counties experience pain as a secondary condition.

### **Methods:**

Working with Montana and Maine Medicaid departments, we identified all Medicaid beneficiaries in one rural county of each state (N=6852). We mailed each beneficiary a letter that described study eligibility criteria (i.e. 18 to 65 years old permanent with a mobility impairment) and a postage paid return postcard with census-type disability questions. Using the returned post-cards, we identified 469 individuals who were eligible and agreed to complete surveys in return for \$10 stipends. We received usable returns from 286 individuals for a 60.9% response rate.

In addition to basic demographic information, the survey included items from the *Behavior Risk Factor Surveillance System*, Radloff's *Centers for Epidemiological Study of Depression Scale* (CES-D, 1977), the *Pain Disability Index* (Tait, Chibnall, & Krause, 1990) and a health-related *Quality of Life Scale* (Hadorn & Ubersax, 1995). The CES-D is a 20-item measure of depression symptoms. The *Pain Disability Index* has respondents rate the degree to which pain limits them in each of seven life areas.

We submitted study variables, including demographic information, to two different exploratory regression analyses. The first, a logistic analysis, was used to predict whether or not respondents reported pain as a secondary condition. We used a forward conditional method for model building in this analysis. Then we submitted the same predictor variables to a linear regression analysis to

predict disability due to pain as measured by the *Pain Disability Index*. We used a stepwise method for model building in this analysis.

## Results:

Of the 286 survey respondents, 208 (75.1%) reported ongoing pain (burning, tingling, aching). Because this cross-disability sample included numerous diagnoses, Table 1 shows the proportion of individuals reporting pain by each condition. While the proportion of pain varies across conditions, clearly most primary disability categories experienced pain as a secondary condition. We computed chi-square for each contingency (i.e. impairment by pain status), and Table 1 notes statistically significant associations (\*). Also, because arthritis is both a very prevalent primary impairment **and** a secondary condition, we include the number in each disability group that did not also report arthritis. Table 1 highlights that pain is a problem across most disability groups even when the effect of having arthritis is eliminated.

**Table 1: Pain by Primary Impairment Group**

| Condition               | Overall N | % with pain | N without arthritis | % with pain, but without arthritis |
|-------------------------|-----------|-------------|---------------------|------------------------------------|
| Amputation              | 6         | 66.6        | 4                   | 75                                 |
| Arthritis               | 159       | 86.8*       | –                   | –                                  |
| Blind/vision impairment | 29        | 62.1*       | 21                  | 61.9                               |
| Cardiovascular disease  | 53        | 67.9        | 25                  | 52                                 |
| Cerebral Palsy          | 3         | 0           | 3                   | 0                                  |
| Deafness                | 21        | 76.2        | 2                   | 0                                  |
| Multiple Sclerosis      | 6         | 66.6        | 5                   | 60.0                               |
| Muscular Dystrophy      | 5         | 60.0        | 5                   | 60.0                               |
| Post-polio              | 4         | 75.0        | 2                   | 50.0                               |
| Spinal Cord Injury      | 39        | 92.3*       | 12                  | 100.00                             |
| Hearing Impairment      | 21        | 85.7        | 6                   | 100                                |
| Other                   | 54        | 57.4*       | 54                  | 57.4                               |

Note: Conditions with fewer than 5 cases represented do not meet assumptions for Chi-square significance testing.

Results of the regression analyses identified an overlapping set of predictor variables for both the presence of pain and for the disability outcome of pain. For the logistic regression, 178 individuals reported having pain and 53 indicated they did not. The first variable to enter the equation was “quality of life”. For each one-point increase on the 10-point quality of life scale, there was a 36.6% reduction in the likelihood of reporting pain as a secondary condition. The next variable was “nights with poor sleep”. There was a 6.7% increase in the likelihood of reported pain for each night of poor sleep. The third variable was “number of hours worked per average week”. For each hour of work reported, the likelihood of reported pain was 3.7% lower. Finally, “age” entered the equation with a 2.7% decrease in likelihood of reported pain for each year of age. Overall, this model predicted

29% of the variance in the presence or absence of pain as a secondary condition and correctly classified 81.4% of respondents' pain status.

It is worth noting that “depression”, as measured by the CES-D, did not enter this equation and is not associated with the presence or absence of pain in this sample. Other variables that did not enter the equation included “gender”, daily number of “hours out of bed”, weekly number of “days out of the house”, and monthly number of days “individual feels energetic”.

The linear regression on the *Pain Disability Index* demonstrated partial overlap of the predictors observed in the logistic analysis with one notable exception. Depression (measured by the CES-D) was the first variable to enter the equation and accounted for 16.9% of variance in pain disability ratings. The number of days respondents felt energetic per month accounted for an additional 6.0% of the variance in pain disability. Lastly, typical hours worked per week accounted for an additional 2.8% of the variance. Overall, these three variables accounted for 25.7% of the variance in pain disability ratings.

Variables that did not enter the equation included age, gender, daily number of hours out of bed, weekly number of days out of the house, quality of life, and number of nights of poor sleep.

## **Discussion:**

We used survey data to identify individuals who report pain as a secondary condition, and then constructed two regression models to predict both the incidence of pain and the severity of limitation due to pain. A substantial proportion of the sample reported pain as a secondary condition and their reports were associated with a number of other study variables. Limitations of the study include the self-reported data collection and the modest proportion of the eligible population completing the instrument. There was no way to investigate the data for systematic differences between responders and non-responders. Finally, the independent variable “hours per week spent working” is not normally distributed in this sample. Hence, this parameter estimate may not accurately reflect the true value of this effect if work hours for the population of Medicaid beneficiaries with mobility impairments are normally distributed.

This study is unique because it examines pain in a sample of people with various types of impairment. It also examines predictors of the presence or absence of pain, as well as the predictors of limitation due to pain. The association of work hours and pain is a particularly valuable result. Due to this sample's skewed distribution of work hours, these results must be interpreted with caution, but they suggest pain reduces people's ability to work. In addition, the number of hours people work is predictive of a significant proportion of the variability in limitation from pain. A prospective intervention study that uses “hours worked” as an outcome in this population might demonstrate that improved pain outcomes lead to improved work outcomes.

Perhaps this study's most valuable finding is that depression was associated with limitation from pain, but not with the simple presence or absence of pain. The role of depression in these analyses highlights the difference between simply having pain and having pain that limits activities. Many researchers have reported the positive association between pain and depression. This study highlights that depression is not necessarily associated with the presence of pain, but rather is linked to the level of limitation caused by the pain. This study does not allow us to determine whether pain causes depression or depression causes pain; it is likely that the cause and effect are cybernetic, with recursive effects between the two. Nonetheless, when Medicaid recipients report limitation due to pain, they are also likely to report depression. These findings may provide guidance for assessing and treating pain based on the degree of limitation caused by the pain itself.

Pain exacts a toll even when it isn't associated with limitation. A person's quality of life is affected both by the presence of pain and by the severity of limitation caused by that pain. That is, individuals in this study might have reported pain, but with very little pain-related limitation. The logistical regression suggests that people reporting pain also perceive their health to be worse and quality of life lower than people not reporting pain as a secondary condition. The implication is that it is important to intervene in all pain, even when the pain causes minimal limitation.

## Resources and References:

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