The Costs Associated With Sleep Difficulties Among Fibromyalgia Patients

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INTRODUCTION

Fibromyalgia (FM) is a chronic disorder characterized by pain of the muscle and connective tissues, and pain in response to touch or pressure; it affects approximately 5 million Americans1; sleep difficulties are some of the most common complaints among patients with FM; yet no study has assessed the costs associated with sleep difficulties in an FM population.

OBJECTIVE

To examine cost differences among patients with fibromyalgia with no, general, and severe sleep difficulties.

METHODS

Data Source

Data were obtained from the US 2009 National Health and Wellness Survey—an internet-based, cross-sectional study. Only patients with FM were included (N=2196) for analyses.

Measures

The primary comparison was made among (Table 1):

• Patients with FM and without sleep difficulties versus,
• Patients with FM and with general sleep difficulties versus,
• Patients with FM and with severe sleep difficulties.

Table 1. Operational Definitions for Severe, General, and No Sleep Difficulties

<table>
<thead>
<tr>
<th>Severe Sleep Difficulties</th>
<th>General Sleep Difficulties</th>
<th>No Sleep Difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting ≥3 of the following:</td>
<td>Reporting 1 (and only 1) of the following:</td>
<td>Reporting none of the following:</td>
</tr>
<tr>
<td>Experiencing difficulty falling asleep</td>
<td>Experiencing difficulty staying asleep</td>
<td>Waking up too early before the alarm clock</td>
</tr>
<tr>
<td>Experiencing difficulty sleeping</td>
<td>Experiencing difficulty sleeping</td>
<td>Experiencing insomnia</td>
</tr>
</tbody>
</table>

RESULTS

The overall FM sample (N=2196) was mostly female (n=1841; 83.8%) and had a mean age of 53.3 years (standard deviation = 12.6) (Table 2). The prim ary comparison was made among (Table 1):

• Patients with FM and without sleep difficulties versus,
• Patients with FM and with general sleep difficulties versus,
• Patients with FM and with severe sleep difficulties.

Analyses

• A series of descriptive analyses were conducted on all patients with FM to fully describe the sample demographically and clinically.
• Differences among the sleep groups were assessed on demographic and health history variables, pain frequency, and severity by using chi-square tests for categorical variables and analyses of variance for continuous variables.

Direct Costs

• For each patient, the number of each type of visit reported (ED, health care provider, hospitalization) was multiplied by 2 to project the annual number of visits, and then multiplied by its average cost according to the Medical Expenditure Panel Survey database.

The sum of ED visit, hospitalization, and physician visit costs were summed to arrive at total direct costs.

Indirect Costs

• Indirect costs were calculated for each respondent by using median weekly income figures obtained through the Bureau of Labor Statistics (BLS).
• For each respondent, an hourly rate was estimated by dividing the median weekly income by 40 hours (the typical workweek).
• Next, the number of hours missed in the last week because of one’s health (absenteeism) and the number of hours missed in the last week because of health impairment while at work (presenteeism) were each multiplied by the hourly rates to arrive at total lost wages.
• These figures were then multiplied by 50 (average number of workweeks in a year) to obtain annual estimates.
• To account for demographic and health history differences between the sleep groups, multivariate analyses were conducted to estimate adjusted cost figures. Generalized linear models specifying a negative binomial distribution with a log-link function were used because of a pronounced skew in the data.

There were 269 patients with no sleep difficulties (mean age = 57.6), 538 patients with general sleep difficulties (mean age = 53.4), and 1353 patients with severe sleep difficulties (mean age = 52.5) (Table 3).

Patients experiencing severe or general sleep difficulties were significantly more likely to be on disability (28.0% and 23.2% vs 14.9%, respectively; P<0.05) and less likely to possess insurance coverage (87.1% and 90.1% vs 93.7%, respectively; P>0.05) compared with patients without sleep difficulties (Table 4).

After controlling for demographic and health characteristics, patients experiencing severe or general sleep difficulties reported higher mean physician visit costs ($1,299.60 and $1,239.90 vs $1,195.70; P<0.05), ED visit costs ($675.00 and $648.50 vs $354.40; P<0.01), and hospitalization costs ($3,972.70 and $4,063.10 vs $2,655.60; P<0.05) per year compared with patients without sleep difficulties (Figure 1).

Similarly, employed patients with severe sleep difficulties (vs no sleep difficulties) reported higher mean absenteeism costs ($3,951.70 vs $3,147.90; P<0.05), though patients with no sleep difficulties reported higher absenteeism costs than those with general sleep difficulties ($3,147.90 vs $2,057.60; P<0.05). Presenteeism costs increased with severity of sleep difficulties (severe: $10,887.80 vs general: $8,927.60 vs none: $7,385.80; P<0.05) (Figure 2).

CONCLUSIONS

Patients with FM, sleep difficulties were independently associated with higher direct and indirect costs. These results suggest that effective treatment of sleep difficulties may improve health-related quality of life among the FM population.

Table 3. Comparison of Patients With Fibromyalgia With No, General, and Severe Sleep Difficulties

Table 2. Demographic and Health History Information of US Patients With FM (N=2196)

Table 4. Mean Workday Productivity (indirect) Costs (2009 US dollars) Among Patients With Fibromyalgia With No, General, and Severe Sleep Difficulties, After Adjusting for Patient Demographic and Health History Characteristics

Figure 1. Mean Health Care (direct) Costs (2009 US dollars) Among Patients With Fibromyalgia With No, General, and Severe Sleep Difficulties, After Adjusting for Patient Demographic and Health History Characteristics

Figure 2. Mean Work Productivity (indirect) Costs (2009 US dollars) Among Patients With Fibromyalgia With No, General, and Severe Sleep Difficulties, After Adjusting for Patient Demographic and Health History Characteristics


The costs associated with sleep difficulties among fibromyalgia patients suggest that effective treatment of sleep difficulties may improve health-related quality of life among the FM population.