



## Prevalence of Musculoskeletal Pain in Adults with Developmental Disabilities

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### Abstract

**Purpose:** The goal of our study was to assess the prevalence of specific musculoskeletal pain complaints in patients with developmental disabilities and how they compare to the general population.

**Method:** A retrospective chart review was conducted at an outpatient hospital based primary care office serving patients with developmental disabilities in Northern New Jersey

**Results:** Results showed an overall prevalence of 17.02% of musculoskeletal complaints in this population. This is similar to their peers without developmental disabilities. Of the patients seen, those with the diagnosis of cerebral palsy had the highest prevalence of musculoskeletal pain. Low back and knee pain were the most common complaints. Females were noted to be more than two times likely than males to have musculoskeletal pain, but no significant difference was found between age groups.

**Conclusions:** We concluded that individuals with developmental diseases require equal vigilance for musculoskeletal pain because of similar prevalence as the general population and likelihood of communication deficits with intellectual disabilities.

**Keywords:** Intellectual disabilities, Down syndrome, Cerebral palsy, Autism, Back pain, Knee

developmental disabilities using PubMed and OVID Medline databases.

### Introduction:

Musculoskeletal pain plays a substantial role in individual's lives and causes impaired function. In the workforce, thirteen percent of workers have experienced lost productive time from common pain conditions costing an estimated \$61.2 billion [1]. Musculoskeletal disease accounts for the second largest percentage of healthcare costs, much higher than stroke or coronary heart disease [2]. People with all forms of musculoskeletal conditions result in a total medical care expenditure of \$240 billion [3].

In the general population, the occurrence of musculoskeletal pain varies from 22-75% by the site of pain [4,5]. The most common self-reported anatomical locations were low back, shoulder and neck [5]. Incidence of musculoskeletal pain is growing at an alarming rate. A study from the northwest region of England revealed prevalence increase of 2 to 4 folds between the 1950's and 1990's [6]. These disorders and complaints have become a public health issue due to its impact on disability [7,8].

The prevalence of pain and musculoskeletal disorders has been extensively studied in specific populations throughout the world; [9-12] however, we did not find any published articles examining the prevalence of musculoskeletal complaints in individuals with

In this population, pain leads to increased frequency and intensity of problem behavior [13]. Previous studies conducted by Jahnsen et al have been in patients with cerebral palsy and IQ greater or equal to 70 [14]. It is known that pain measurement is ever more difficult in populations with communication difficulties [15].

We investigated whether these musculoskeletal complaints will exist similarly in all individuals with developmental disorders including those with low IQ. The goal of our study was to assess the prevalence of specific musculoskeletal pain complaints in patients with developmental disabilities living in the community and how they compare to the general population.

### Materials and Method

We conducted a retrospective chart review of patients seen in a hospital affiliated outpatient office that provides care for individuals with developmental disabilities.

For inclusion in the study, the patient must be older than 18 years of age, have a developmental disability that is recognized by the New Jersey State Division of Developmental Disabilities, and have been evaluated between January 1, 2009 and January 1, 2010 in the office. There were no specific exclusion criteria in this study.

During the chart review, data was obtained on patient age, underlying development diagnosis, and presence of musculoskeletal complaints and locations of pain. Patients were grouped in specific age categories for simplicity of data analysis and ease in comparison to previously published studies examining the prevalence of musculoskeletal pain in the general population [7-12]. Patients were subcategorized into those 18 to 44, 45 to 64, 65 to 75, and above 75 years of age. Patient diagnoses were also subcategorized into the following diagnoses: Down syndrome, cerebral palsy, autism, unknown, or other. Any documentation of musculoskeletal pain during a patient visit was deemed to be a positive finding. Musculoskeletal pain was recorded to be in the cervical spine/neck, lumbar spine/low back, hip, knee, foot/ankle, shoulder, elbow, hand/wrist or other. If a patient had multiple symptoms, all areas were included for the location subcategory.

Univariate Chi Square analyses were performed to examine the effects of patient age, sex and developmental diagnosis on the prevalence of musculoskeletal pain. Frequencies of specific musculoskeletal complaints were tested for true difference using a Z score. Z score comparisons were set for significance at the P <0.05 level.

This study was approved by the Institutional Review Board of Atlantic Health at Morristown Medical Center.

## Results

A total of 540 patients met inclusion criteria as shown in table 1. 52.25% were males and 47.75% females. The majority of patients in the review were between the ages of 18 to 64 years of age. There was a slightly higher representation of the age group 18-44 (47.73%) compared to the age group 45-64 (44.51%). The most common cause of developmental disability was listed as “unknown” (51.77%) while 14.71% of patients were noted to have Down syndrome and 14.53% had the diagnosis of cerebral palsy.

Total Patients	540
Gender	
Male	52.25%
Female	47.75%
Age Group:	
18-44	47.73%
45-64	44.51%
65-75	4.92%
>75	2.84%
Developmental Diagnosis	
Down Syndrome	14.71%
Cerebral Palsy	14.53%
Autism	9.12%
Other	9.87%
Unknown	51.77%
Pain Location	

Low Back	5.35%
Knee	4.02%
Foot/Ankle	3.25%
Hips	2.10%
Neck	1.34%
Shoulder	0.96%
Wrist/Hand	0.76%
Elbow	0.19%
Other	0.19%

**Table 1:** Patient distribution

During the study period, musculoskeletal complaints were noted in 17.02% of the patients. There was no statistically significant difference found in the incidence of musculoskeletal pain based on developmental diagnosis. Patients with Cerebral Palsy had the highest prevalence of musculoskeletal pain and this prevalence is consistent with those previously published in the literature [14].

The data shows a trend of increasing pain with age but it is not statistically significant.

Females (23.67%) were found to have a significantly higher prevalence of musculoskeletal complaints compared to males (10.99%). When analyzed for specific complaints, females were more likely to have low back pain (p=0.025) and knee pain (p=0.003) than their male counterparts. When the sexes were compared, no specific region of the body was statistically more affected than others.

	Percent	P-value
Overall	17.02%	
Diagnoses		0.64
Cerebral Palsy	23.70%	
Other	23.50%	
Unknown	17.80%	
Down Syndrome	9.30%	
Autism	8.16%	
Age Group		0.67
18-44	15.92%	
45-64	17.18%	
65-75	16%	
>75	28.57%	
Gender		0.0001
Female	23.67%	
Male	10.99%	
Low back pain		0.025

Female	7.76%	
Male	3.30%	
Knee Pain		0.003
Female	6.53%	
Male	1.47%	

**Table 2:** Prevalence of Musculoskeletal Complaints

## Discussion

This is the first study that we are aware of that specifically looks at the prevalence of musculoskeletal pain in an adult population of individuals with developmental disabilities living in the community. With a national and international trend towards deinstitutionalization of this population, health care professionals in the community will be treating a larger number of individuals in this population.

The reported prevalence of musculoskeletal pain in our study population (17.02%) is comparable to that found in the general population (15-25%) [7,8]. Despite this apparent similarity, it still remains prudent that health care professionals remain vigilant and inquire about musculoskeletal diseases with this population due to possible communication deficits some individuals with developmental disabilities may have. Tools such as using a non-communicating adult pain checklist (NCAPC) may be helpful when evaluating patients with communication deficits [15].

Our study results demonstrated a statistically significant greater prevalence of musculoskeletal pain in females compared to males. Of all specific complaints, low back pain and knee pain were noted to have significantly larger prevalence among female patients. The authors hypothesize that the increase in low back pain among female subjects may be related to menorrhagia. Females are prone to endocrine abnormalities and resulting abnormalities in menses.

In our study, patients with cerebral palsy were noted to have the highest prevalence of musculoskeletal pain compared to all other patients studied. A recent study by Jahnsen et al noted that patients with cerebral palsy had a 82% prevalence of musculoskeletal pain which is far greater than the general population [14]. Our prevalence of 23.7% in cerebral palsy patients is far lower than theirs, but this can be explained by the contrasting nature of our study groups. Jahnsen's study excluded patients with an IQ less than 70 [14] while our population included patients with cognitive impairments. Communication deficits in our patients with cognitive impairments may have led to a symptom underreporting.

This study has definite limitations. These include a possible reporting bias as this was a retrospective chart review. Our study's relative small sample size may have limited our ability to identify additional significant findings. A larger, multi-center study is preferred.

## Conclusion

Individuals with developmental disabilities are known to suffer from health disparities compared to the general population [16].

Complaints of musculoskeletal pain in individuals with developmental disabilities may be overlooked because of their potential communication deficits, behavioral challenges or comorbid medical issues. We believe that it is important to screen for musculoskeletal pain in individuals with developmental disabilities since the prevalence is similar to the general population and may be hindering the patient's quality of life or overall function.

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