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## Prevalence and Effects of Arthritis in Colorado: Results from the Behavioral Risk Factor Surveillance System, 2001

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### Introduction

Arthritis and related conditions are the leading cause of disability in the United States,<sup>1</sup> affecting nearly 43 million Americans with annual costs of more than \$65 billion.<sup>2</sup> As the population ages, it is estimated that 60 million people will be affected by the year 2020. Arthritis causes pain, stiffness, and sometimes swelling in or around joints. There are more than 100 different types of arthritis and the cause of most types is unknown. Arthritis limits daily activities, affects people's ability to work, and negatively impacts their overall quality of life. Almost one third (31percent) of Colorado adults suffer from some form of arthritis. This report summarizes the prevalence and effects of arthritis in Colorado.

### Methodology

The Colorado Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing statewide telephone survey designed to monitor the prevalence of health behaviors and preventive health practices associated with the leading causes of premature death, disability and disease. The survey was initiated in 1990 as a joint project of the Colorado Department of Public Health and Environment, and the Centers for Disease Control and Prevention. Using random digit

### Statistics Primer

#### What is statistical significance

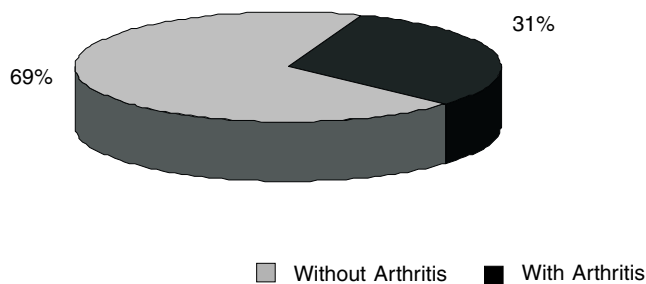
Statistically significant results are considered "real" differences, not due to chance or random variation. There are different levels of significance, but most researchers believe that a level of 95% reflects a statistical difference. A 95% level corresponds to a p-value equal to .05 which means that there is a probability that 5% of the time the result is due to random variation alone. Similarly, a p-value equal to .01 reflects a value of 99%, meaning that 1% of the time, the difference is due to chance alone. The smaller the p-value, the more significant the result is. For example, if you are reading a research study and the author states that two groups are different and the p-value is less than .05, then you can interpret that to mean that there is greater than a 95% chance that the two groups are statistically different or there is less than a 5% chance that the difference is due to random variation or mere coincidence.

dialing techniques, approximately 170 Colorado residents ages 18 years and older were interviewed by telephone each month in 2001. For the purpose of this report, people with arthritis are defined as those who report having chronic joint symptoms and/or a diagnosis of arthritis made by a physician or medical care provider.

## Prevalence of Arthritis

In 2001, nearly one third (31 percent) of adult Coloradans surveyed reported that they had arthritis (Figure 1). Of those with

Figure 1: Prevalence of arthritis in Colorado, 2001



arthritis, 35 percent have physician-diagnosed arthritis with chronic joint pain, 29 percent have physician-diagnosed arthritis, but no chronic joint pain, and 36 percent have joint pain symptoms only (Figure 2). Table 1 shows the prevalence of arthritis by different demographic categories. While the younger

Figure 2: Diagnostic status of people with arthritis in Colorado, 2001

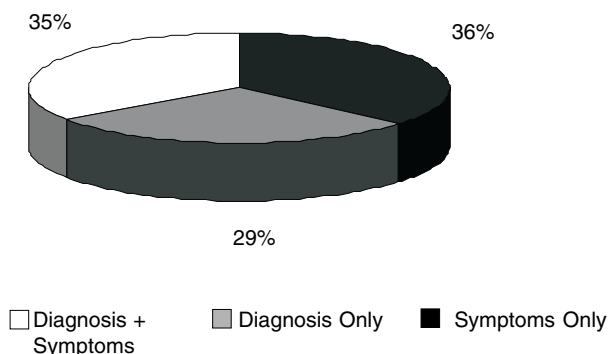


Table 1. Prevalence of arthritis, by selected characteristics for Colorado adults, BRFSS 2001

	Percent	95% confidence interval	
		Lower limit	Upper limit
<b>Total Persons with Arthritis</b>	30.9	28.7	33.2
<b>Have Chronic Joint Symptoms</b>	22.2	20.2	24.2
<b>Have Doctor-Diagnosed Arthritis</b>	19.9	18.0	21.9
<b>Age</b>			
18-44*	18.7	16.4	21.0
45-54	34.6	29.3	39.9
55-64	47.0	39.9	54.1
65+	58.0	51.7	64.3
<b>Gender</b>			
Male	27.8	24.5	31.1
Female	34.0	31.1	36.9
<b>Race/Ethnicity</b>			
White, non-Hispanic	32.9	30.4	35.4
Hispanic	18.1	13.0	23.2
Black	35.9	22.2	49.6
Other	33.4	23.0	43.8
<b>Education</b>			
Less than High School	28.1	20.8	35.4
High School Graduate	35.3	30.6	40.0
Some College	30.8	26.7	34.9
College Graduate	28.9	25.4	32.4
<b>Annual Income</b>			
<\$15,000	40.7	31.9	49.5
\$15,000-24,999	32.1	26.0	38.2
\$25,000-34,999	28.9	22.9	34.9
\$35,000-49,999	28.1	23.0	33.2
\$50,000+	29.3	25.6	33.0

\* statistically significant difference

age groups exhibit a lower prevalence of arthritis, older Coloradans have a much higher prevalence. More females have arthritis (34 percent) than males (28 percent), and this difference nears statistical significance. Hispanics have a lower prevalence (18 percent) than non-Hispanic whites (33 percent).

When looking at people with physician-diagnosed arthritis versus those with chronic joint pain, the main difference between the two groups is age. A significantly higher proportion of younger people (18-24 year-olds) have chronic joint symptoms (13 percent) compared to 3 percent with physician-diagnosed arthritis. Conversely, more older people (65 years and older) have physician-diagnosed arthritis than chronic joint symptoms (53 percent versus 35 percent, respectively).

Table 2 presents the characteristics of Colorado adults with arthritis. Two thirds of those with arthritis are 45 years of age or older, and nearly half (46 percent) are 55 years of age or older.

**Table 2. Characteristics of Colorado adults with arthritis , BRFSS 2001**

	Percent	95% confidence interval	
		Lower limit	Upper limit
<b>Age</b>			
18-24	6.2	4.0	8.4
25-34	8.8	6.5	11.0
35-44	17.3	14.1	20.4
45-54	21.6	18.0	25.2
55-64	18.2	14.7	21.7
65+	28.0	24.0	31.9
<b>Gender</b>			
Female	56.1	51.8	60.5
Male	43.9	39.5	48.2
<b>Race/Ethnicity</b>			
White, non-Hispanic	84.0	80.7	87.3
Hispanic	8.7	6.1	11.2
Black	4.1	2.3	5.9
Other	3.2	1.7	4.7
<b>Education</b>			
Less than High School	9.7	7.0	12.5
High School Graduate	28.4	24.5	32.3
Some College	29.5	25.5	33.5
College Graduate	32.4	28.4	36.4
<b>Annual Income</b>			
<\$15,000	11.0	8.3	13.7
\$15,000-24,999	15.5	12.3	18.7
\$25,000-34,999	15.4	12.0	18.7
\$35,000-49,999	18.4	14.8	21.9
\$50,000+	39.7	35.2	44.2
<b>Health Insurance</b>			
Yes	89.6	86.9	92.2
<b>Activity Limited Because of Joint Symptoms</b>			
Yes	32.2	28.1	36.2
<b>Currently Being Treated for Arthritis</b>			
Yes	20.7	17.2	24.1

The majority are White, non-Hispanic (84 percent) and have had some college or a college degree (62 percent). The majority have health insurance; 90 percent, compared to 83 percent without arthritis. This is a statistically significant difference.

Almost one third (32 percent) of adults with arthritis report having activity limitations due to joint symptoms such as pain, aching, stiffness or swelling. More people with chronic joint pain report activity limitations (40 percent) than those with physician-diagnosed arthritis (31 percent). Surprisingly, only

21 percent of all adults with arthritis are currently being treated for it, and only 32 percent of those with physician-diagnosed arthritis are currently being treated.

### Other Health Conditions

As shown in Table 3, many people with arthritis also suffer from other chronic diseases such as hypertension, high cholesterol, and diabetes. When data are age-adjusted to account for difference in the age distribution of those with arthritis

**Table 3. Prevalence of selected health issues for Colorado adults with and without arthritis, BRFSS 2001**

	Crude prevalence rates				Age-adjusted prevalence rates**			
	With arthritis		Without arthritis		With arthritis		Without arthritis	
	Percent	95% CI	Percent	95% CI	Percent	95% CI	Percent	95% CI
<b>Hypertension</b>	33.0*	28.9 - 37.1	16.2	14.0 - 18.4	24.8	21.6 - 28.0	20.0	17.6 - 22.5
<b>High Blood Cholesterol</b>	41.7*	37.0 - 46.4	23.1	20.3 - 26.0	32.9*	28.5 - 37.3	23.7	20.9 - 26.6
<b>Diabetes</b>	8.7*	6.0 - 11.4	2.9	1.9 - 3.8	6.3	4.3 - 8.2	3.6	2.3 - 4.8
<b>Obese by BMI</b>	20.9*	17.3 - 24.4	12.4	10.5 - 14.3	20.5*	16.7 - 24.3	12.3	10.2 - 14.3

\* statistically significant difference

\*\*age-adjusted to 2000 Census

compared to those without arthritis, significantly more adults with arthritis report having high cholesterol (33 percent) compared to those without arthritis (24 percent). Another statistically significant difference is in the proportion of those who are obese. About 21 percent of people with arthritis are obese as defined by their body mass index (BMI), while only 12 percent of people without arthritis are obese. Obesity often contributes to activity limitation and is one modifiable risk factor associated with an increased risk of arthritis.

## Physical and Mental Health

When respondents were asked about their physical and mental well-being, compared to people without arthritis, those with arthritis report that they experience more unhealthy days, and more days when their physical and mental health is “not good”. As shown in Table 4, people with arthritis, on average, report that they have 6.6 days where their physical health is not good and 5.1 days where their mental health is not good in the last 30 days, compared to 1.8 days and 2.9 days, respectively, for those without arthritis. People with arthritis also report more than twice as many days in the last month where physical or mental health kept them from their usual activities: 5.7 days compared to 2.1 days for those without

arthritis. The average number of total unhealthy days in the last month is also much greater for arthritis sufferers: 9.8 days compared to 4.4 days for those without arthritis. All of these results represent statistically significant differences between the group with arthritis and those without it, exemplifying how much arthritis affects both the physical and mental health of those individuals afflicted with it.

## Physical Activity

Arthritis and its associated pain often limits people from participating in physical activity or exercise, although it has been shown that physical activity helps lessen pain and stiffness, increases range of movement and endurance and improves overall health and well-being.<sup>3</sup> As stated previously, 32 percent of adults with arthritis have limited activity due to joint symptoms. As shown in Table 5, almost 14 percent are physically inactive, compared to 8 percent of adults who do not have arthritis. This difference is statistically significant. Approximately 21 percent of adults with arthritis participate in some form of vigorous physical activity (defined as 20 or minutes per day at least 3 or more times per week), compared to 33 percent without arthritis, which is also a statistically significant difference. Many people with arthritis do partici-

**Table 4. Physical and mental health for Colorado adults with and without arthritis, BRFSS 2001**

	Adults with arthritis			Adults without arthritis		
	Percent	95% confidence interval		Percent	95% confidence interval	
		Lower limit	Upper limit		Lower limit	Upper limit
<b>Mean Number of Days<sup>1</sup> Physical Health was Not Good*</b>	6.6	5.7	7.5	1.8	1.5	2.1
<b>Mean Number of Days<sup>1</sup> Mental Health was Not Good*</b>	5.1	4.2	6.0	2.9	2.5	3.3
<b>Mean Number of Days<sup>1</sup> Physical or Mental Health Kept you from Usual Activities*</b>	5.7	4.7	6.7	2.1	1.6	2.5
<b>Mean Number of Unhealthy Days<sup>1</sup>***</b>	9.8	8.7	10.8	4.4	3.9	4.9

<sup>1</sup> in the past 30 days

\* statistically significant difference

\*\* total number of days where physical health and mental health were not good

**Table 5. Physical activity of Colorado adults with and without arthritis, BRFSS 2001**

	Adults with arthritis			Adults without arthritis		
	Percent	95% confidence interval		Percent	95% confidence interval	
		Lower limit	Upper limit		Lower limit	Upper limit
<b>Vigorous Physical Activity*</b> <sup>+</sup>	20.7	17.2	24.2	32.7	30.0	35.5
<b>Leisure Time Physical Activity in last month**</b>	77.2	73.5	80.8	82.6	80.3	84.8
<b>Moderate Physical Activity**</b>	48.9	44.4	53.3	55.2	52.1	58.2
<b>Physically inactive****<sup>+</sup></b>	13.6	10.5	16.7	7.8	6.1	9.5

\* Vigorous activity – activity that causes large increases in breathing or heart rate, done at least for 20 minutes per day, 3 or more times per week.

\*\*Leisure time activity – activity for 20 or minutes per day at least 3 or more times per week.

\*\*\*Moderate activity – activity that causes small increases in breathing or rate, done at least 30 minutes per day for 5 or more days per week, or vigorous activity for 20 or more minutes, on 3 or more days per week.

\*\*\*\*Physically inactive - no moderate or vigorous physical activity, or doing moderate or vigorous activity less than 10 minutes per week.

+ statistically significant difference

pate in leisure time and/or moderate physical activity. Approximately 77 percent have done some form of leisure time physical activity in the last month and 49 percent regularly participate in moderate physical activity (defined as 30 or more minutes per day for 5 or more days per week, or vigorous activity on 3 or more days per week). People without arthritis have very similar rates.

## Summary

Arthritis affects nearly one third of Colorado adults. The majority of sufferers are White, non-Hispanics who have health insurance. Persons with arthritis are more likely to be obese and have a greater prevalence of high cholesterol. Many are physically inactive and report activity limitations due to joint symptoms. Colorado adults with arthritis also report twice as many days when their physical and mental health was not good and twice as many unhealthy days as compared to those without arthritis. Surprisingly, only 21 percent of those with arthritis are currently being treated for it.



## Additional Information

For more information about the Behavioral Risk Factor Surveillance System (BRFSS), visit the Colorado BRFSS Web site at [www.cdphe.state.co.us/hs/cobrfss.asp](http://www.cdphe.state.co.us/hs/cobrfss.asp), and the national BRFSS Web site at [www.cdc.gov/brfss/](http://www.cdc.gov/brfss/), or contact the Health Statistics Section at the Colorado Department of Public Health and Environment, 303-692-2160.

Data from the Colorado Behavioral Risk Factor Surveillance System can also be queried using the Colorado Health Information Dataset (CoHID) at [www.cdphe.state.co.us/cohid/](http://www.cdphe.state.co.us/cohid/)

For more information about the Arthritis Program at the Colorado Department of Public Health and Environment, visit the Web site at [www.cdphe.state.co.us/pp/arthritis/](http://www.cdphe.state.co.us/pp/arthritis/)

This Brief is available on our Web site at [www.cdphe.state.co.us/hs/pubs.html](http://www.cdphe.state.co.us/hs/pubs.html)

## References

- 1 CDC. Prevalence of Disabilities and Associated Health Conditions - United States, 1991-1992. *MMWR* 1994;43:730-1;737-9.
- 2 Yelin E, Callahan LF. The Economic Cost and Social and Psychological Impact of Musculoskeletal Conditions. *Arthritis Rheum* 1995;38:1351-62.
- 3 National Institute of Health, National Institute of Arthritis and Musculoskeletal and Skin Diseases. <http://www.niams.nih.gov/index.htm>

The goal of the **Colorado Arthritis Program** is to develop and enhance Colorado's capacity to decrease the burden of arthritis in Colorado and to improve the quality of life for people living with arthritis through health promotion and disease prevention activities. To address this, the Colorado Arthritis Advisory Committee (CAAC), with a membership of 28 diverse professionals from the public and private arenas, was created to help develop and assist with implementation of a Colorado Arthritis Strategic Plan. Recruitment for new members of the CAAC is on going.

Major activities include working with partners to offer the following self-management interventions involving physical activity:

❖ **PACE (People with Arthritis Can Exercise):** Trained instructors of this community-based recreational exercise program choose from approximately 72 different exercises and utilize a host of endurance-building activities, games, relaxation techniques and health education topics.

❖ **Adult Aquatics Program:** This unique program involves gentle physical activity performed in warm water.

Additionally, education in the form of the Arthritis Self-Help Course (ASHC) Leadership Training is another effective intervention for people with arthritis. This involves training volunteers throughout the state to teach the ASHC. Course content includes information on self-help principles, disease process, exercise/fitness, pain management and relaxation, depression, fear, nutrition, Doctor-patient relationships, medications and non-traditional treatments.

## Resources:

Colorado Department of  
Public Health and Environment  
Arthritis Program  
4300 Cherry Creek Drive South A-5  
Denver, CO 80246  
303-692-2562

Arthritis Foundation, Rocky Mountain Chapter  
2280 South Albion Street  
Denver, CO 80222  
303-756-8622  
1-800-475-6447