



**Arthritis and  
Co-morbid  
Conditions Among  
Adults in Utah**

**2008**

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# Abstract

Most public health reporting and intervention efforts focus on single conditions and rarely address the issue of co-morbid (coexisting) conditions that can have significant health implications. Arthritis has the highest prevalence of any chronic condition among adults, and, therefore, may be the most likely to coexist with at least one other chronic condition.

The intent of this report is to present Utah-specific data about arthritis, its relationship with seven other chronic conditions, and their cumulative impact on health indicators like health status, physical and mental health, and activity limitation.

## Introduction

Arthritis is highly prevalent among U.S. adults. It is the leading cause of disability and is associated with substantial activity limitation, work disability, and reduced quality of life. Findings from the National Health Interview Survey (2003, 2005) indicate that an estimated 21.6% of the adult U.S. population (46.4 million persons) reported they had arthritis, and 8.8% (18.9 million) had arthritis-attributable activity limitations. Nearly 41% (19 million) of the 46 million adults with arthritis reported limiting their usual activities due to their arthritis. In addition to activity limitations, 31% (8.2 million) of working-age adults ages 18-64 with arthritis reported they were limited in work activities due to arthritis.

As the population ages, the prevalence of arthritis is expected to increase. By the year 2030, an estimated 67 million (25% of the projected adult population 18 years and older) will have arthritis, and 25 million adults (9.3%) will experience arthritis-attributable activity limitations.

Co-morbidity among people with arthritis is common. The 2005 national BRFSS survey indicated that more than half (57.8%) of adults with heart disease and nearly half of those with high blood pressure (47.6%) also have arthritis. Among those with diabetes, 52.4% also have arthritis. Studying these relationships will be helpful in providing more comprehensive treatment options.

# Methods

The 2005 and 2007 Utah Behavioral Risk Factor Surveillance System (BRFSS) data were combined for this report. The two years of pooled data generated a sample of 2,969 Utah adults who reported arthritis. The BRFSS is an ongoing random telephone survey of non-institutionalized adults age 18 and older that has been conducted continuously in Utah since 1984.

Variables used in the study were self-reported and were defined as follows:

**Body Mass Index (BMI)** - Weight in kilograms divided by height in meters squared ( $BMI = \text{kg}/\text{m}^2$ ). A person was considered to be ideal weight if his or her BMI was less than 25, overweight if his or her BMI was between 25 and 30, and obese if his or her BMI was 30 or greater.

**Co-morbidity** - The presence of one or more diseases in addition to a primary disease.

**Arthritis** - For this report, respondents who reported they had ever been told by a doctor or other health professional that they have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia, were considered to have arthritis. In other words, respondents who answered “yes” to the BRFSS question “Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?” were considered to have arthritis.

**Other chronic conditions:** BRFSS respondents who answered “yes” to any of the following questions were considered to have the applicable condition:

**Angina or coronary artery disease** - “Have you ever been told by a doctor, nurse, or other health professional that you have angina or coronary artery disease?”

- **Asthma** - “Have you ever been told by a doctor, nurse, or other health professional that you have asthma?”
- **Diabetes** - “Have you ever been told by a doctor that you have diabetes?”
- **Heart attack** - “Has a doctor or other health professional ever told you that you had a heart attack, or a myocardial infraction?”
- **High cholesterol** - “Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?”
- **Hypertension** - “Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?”
- **Stroke** - “Have you ever been told by a doctor, nurse, or other health professional that you have had a stroke?”

Perceived healthy days - To assess the perceived number of healthy days among persons with arthritis and multiple conditions, four standard BRFSS questions were used. The first question about health status asks individuals to rank their health using a scale from poor through excellent. The next two questions ask individuals to report the number of days during the past 30 days when physical and mental health were not good. Finally, the activity-limitation question assesses whether a person's activity had been limited in any way because of physical, mental, or emotional problems. Each measure was assessed for persons with only arthritis, arthritis plus one condition, two conditions, and three or more conditions.

Tools for analysis:

Odds Ratio - An odds ratio is a way of comparing whether the likelihood of a certain event or condition varies for one group compared to a reference group. An odds ratio of 1.0 implies that the event is equally likely in both groups. An odds ratio greater than 1.0 implies the event is more likely in the comparison group than in the reference group. An odds ratio of less than 1.0 implies that the event is less likely in the reference group. It is also important to note that if the confidence interval does not include 1.0, the ratio for that condition is considered to be statistically significant.

All analyses were conducted using the SUDAAN statistical software package Version 9.0.1.

Cross-tabulations and logistic regression were used. Logistic regression is a statistical technique that identifies the odds of having a condition compared to not having it.

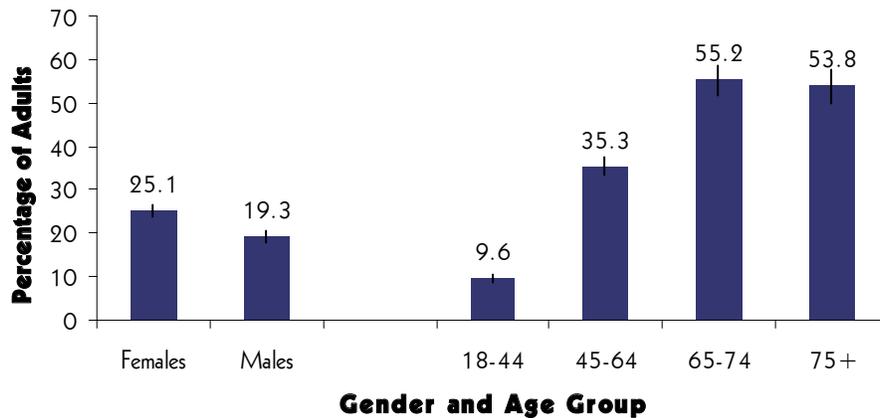
# Results

## The Impact of Arthritis in Utah

About 400,000 adults in Utah (22.2%) have been diagnosed with arthritis. The impact of arthritis as a public health problem in Utah is reflected across a variety of demographic measures. Prevalence of arthritis is higher in females and generally increases with age. One in four Utah women (25.1%) reported having arthritis, compared to one in five Utah men (19.3%) (See Figure 1). Overall, self-reported prevalence of arthritis ranged from 9.6 percent among Utah adults 18-44 to a high of 55.2 percent among Utah adults 65-74. Just over half (53.8%) of adults 75 and older had arthritis. Prevalence of arthritis was higher among those who were obese (34.4%) or moderately overweight (22.2%) compared with those who were at an ideal weight (16.4%). (See Figure 2).

Figure 1

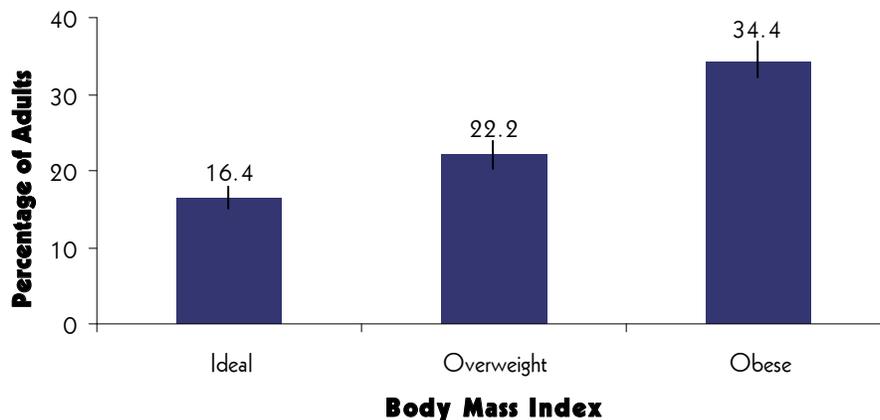
Percentage of Utah Adults Reporting Doctor-diagnosed Arthritis by Gender and Age Groups, Utah BRFSS 2005 and 2007



Note: Because the confidence intervals do not overlap for males and females, and for the age groups 18 to 74, the differences were not likely to have occurred by chance.

Figure 2

Prevalence of Arthritis by Weight Category, Utah BRFSS 2005 and 2007



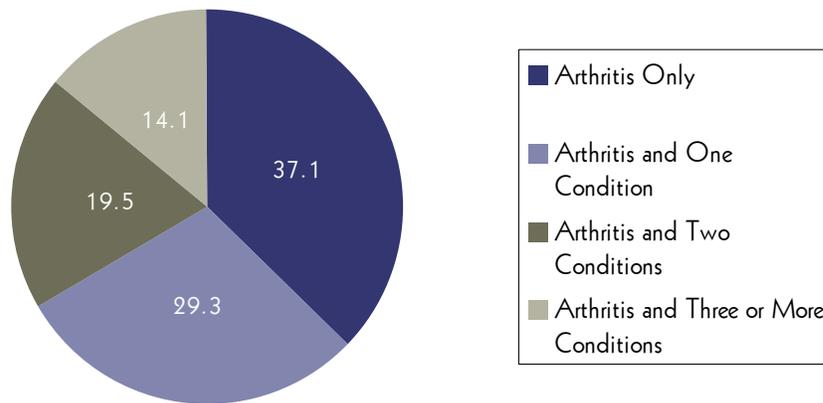
Note: Because the confidence intervals do not overlap for males and females, and for the age groups 18 to 74, the differences were not likely to have occurred by chance.

## The Impact of Arthritis Among Adults with Multiple Chronic Conditions in Utah

As seen in Figure 3, co-morbidity is common among people with arthritis. About two-thirds (62.9%) of persons with arthritis reported they had at least one additional chronic condition. Nearly one in three individuals who reported arthritis (29.3%) reported one other condition. Nearly one in five (19.5%) reported arthritis and two conditions, and nearly one in eight (14.1%) reported arthritis and three or more conditions.

**Figure 3**

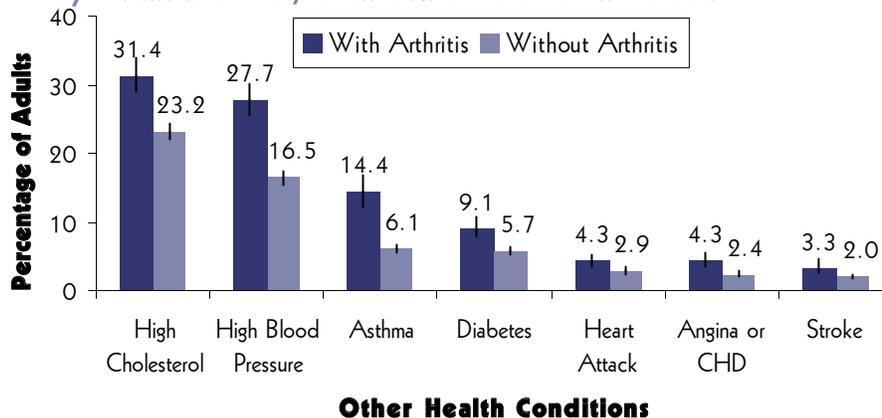
**Percentage of Adults with Doctor-diagnosed Arthritis and Other Chronic Conditions, Utah BRFSS 2005 and 2007**



Arthritis is frequently associated with other health conditions like high blood pressure and other chronic diseases. In this study, the co-existing prevalence of seven conditions was examined for adults with and without arthritis. For each of the seven conditions, the prevalence of other conditions was higher among adults with arthritis than those without it. In particular, the prevalence of high cholesterol, high blood pressure, and asthma was high among adults with arthritis. (See Figure 4).

**Figure 4**

**Age-adjusted\* Percentage of Utah Adults with Other Health Conditions by Arthritis Status, Utah BRFSS 2005 and 2007**



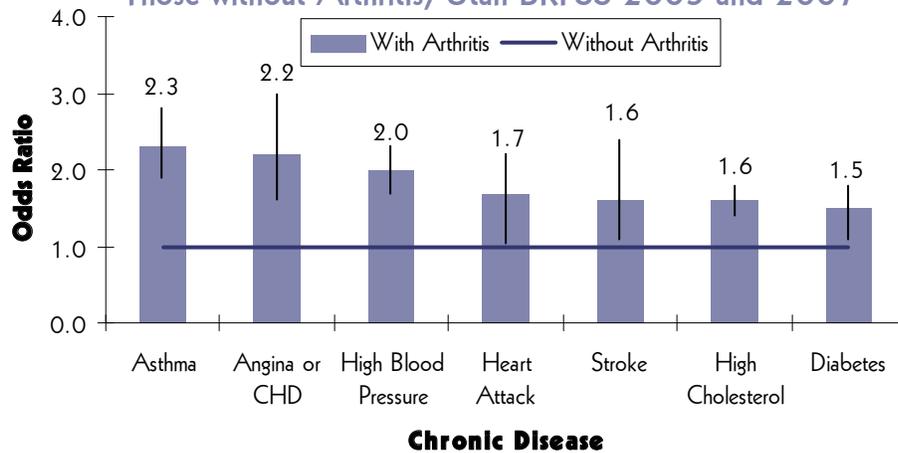
\* Rates are adjusted to the U.S. 2000 standard population for comparison purposes.

Note: Because the confidence intervals do not overlap, the differences were not likely to have occurred by chance.

Factors that generally increase the risk of arthritis are being female, aging, and being overweight or obese. Even after adjusting for age, sex, and BMI, a diagnosis of arthritis significantly increased the odds for reporting other health conditions. Having arthritis doubled the odds of having asthma, angina or coronary heart disease (CHD), and high blood pressure, and increased the risk of having a heart attack, stroke, high cholesterol or diabetes by 50 percent, compared to people without arthritis.

**Figure 5**

**Odds Ratios\* of Chronic Diseases for Adults with Arthritis Compared to Those without Arthritis, Utah BRFSS 2005 and 2007**



\* Data are adjusted for sex, age, and body mass index for comparison purposes.  
 \*\* The reference group is people without arthritis.

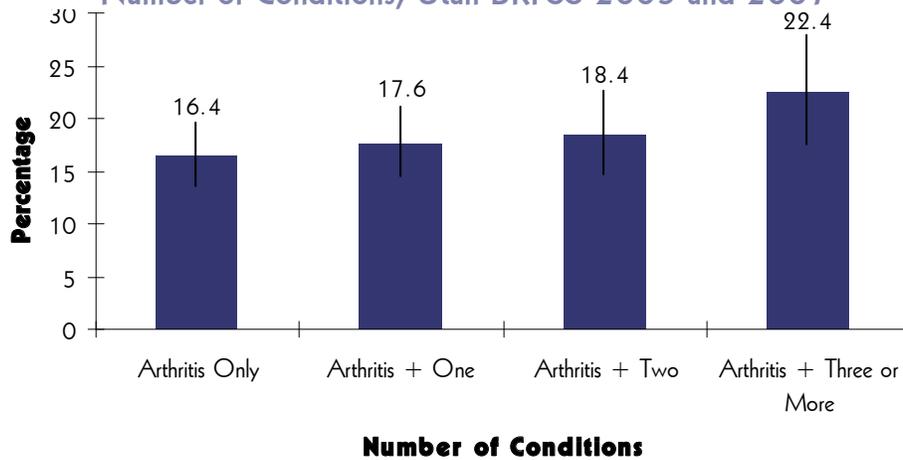
### Healthy Days

The impact of arthritis on health is significant. Whether the measure was health status, unhealthy mental or physical health days, or activity limitation, adults who reported having three or more chronic conditions in addition to arthritis were more likely to report poorer health and activity limitation.

Perceptions about health are very important and can serve as a proxy measure for the perceived burden of chronic health conditions. The impact of having conditions in addition to arthritis and reporting fair or poor health is evident in Figure 6. The percentage reporting fair or poor health increased with each additional condition, and was three times greater among adults who reported three or more conditions when compared to persons who report arthritis only. More than half of adults (50.8%) with arthritis and three additional conditions reported fair or poor health.

**Figure 6**

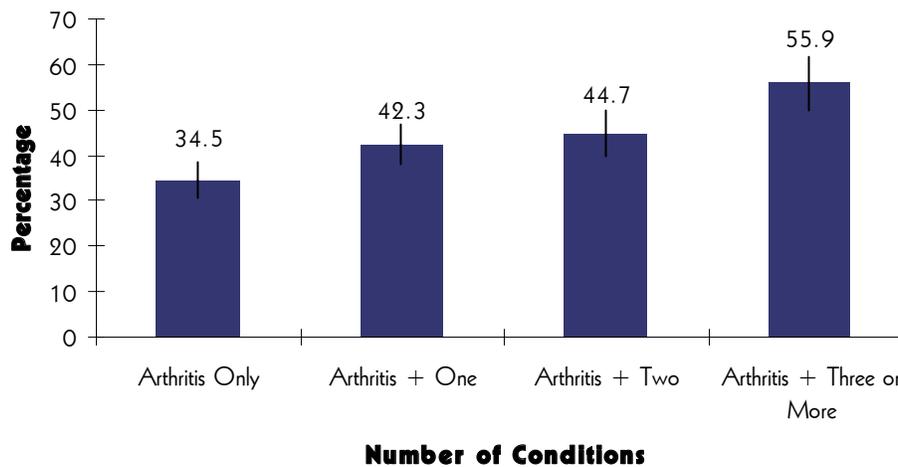
**Percentage of Adults with Arthritis Who Reported Fair or Poor Health by Number of Conditions, Utah BRFSS 2005 and 2007**



A similar relationship is observed when the outcome measure is seven or more days of poor physical health within the past 30 days. Nearly one in five adults (21.8%) with arthritis only reported seven or more days of poor physical health in the past 30 days, compared to nearly half (45.4%) who reported arthritis and three conditions (See Figure 7).

**Figure 7**

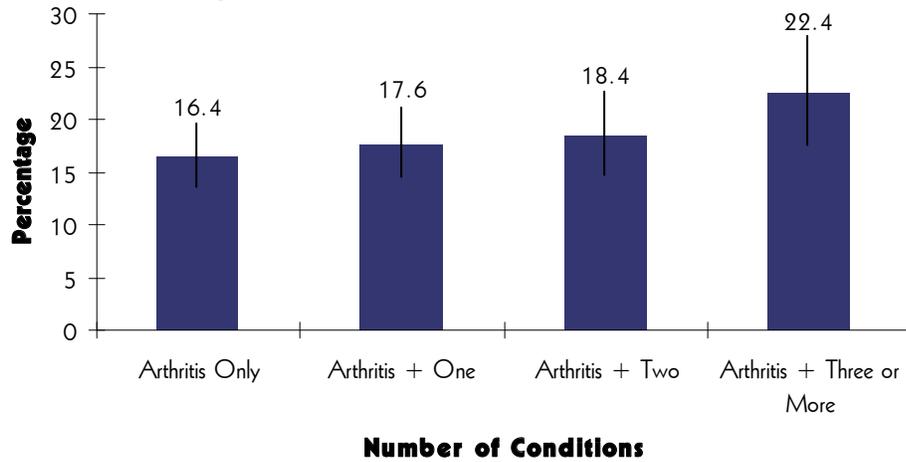
**Percentage of Adults with Arthritis Who Reported Seven or More Days of Poor Physical Health by Number of Conditions, Utah BRFSS 2005 and 2007**



The relationship between arthritis and the number of conditions and mental health is less dramatic; however, the pattern remains the same. One in six adults with arthritis only (16.4%) reported seven or more days of poor mental health within the past 30 days compared to one in five (22.4%) adults with arthritis and three or more conditions. (See Figure 8).

**Figure 8**

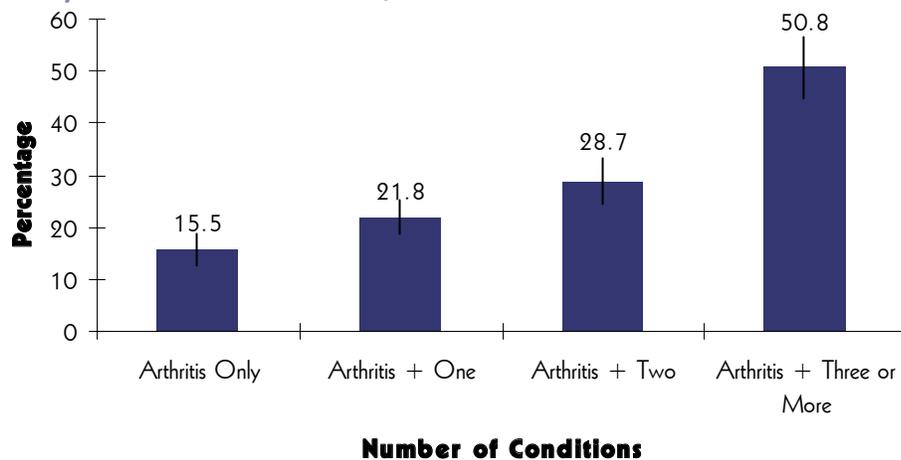
**Percentage of Adults with Arthritis Who Reported Seven or More Days of Poor Mental Health by Number of Conditions, Utah BRFSS 2005 and 2007**



Activity limitation is another important measure of health. One-third (34.5%) of adults with arthritis only reported limiting their usual activities, compared to more than half (55.9%) of those with arthritis and three or more conditions. (See Figure 9)

**Figure 9**

**Percentage of Adults with Arthritis Who Reported Activity Limitation by Number of Conditions, Utah BRFSS 2005 and 2007**



# Discussion

The coexistence of multiple health conditions impacts medical outcomes and is important in determining effective treatment protocols. Therefore, managing the care of persons with arthritis who have multiple health conditions should be oriented toward a person's overall health rather than focusing on an individual disease. This requires:

- increasing dialogue among public health professionals, medical providers, medical specialists, persons with arthritis, private organizations, and others, to better understand the high prevalence of arthritis and other health conditions.
- developing alliances among public and private health care systems to provide a more complete approach to treating arthritis and co-morbid conditions.
- using system resources more effectively to simultaneously address multiple conditions.
- collaborating with programs within state government, especially the Bureau of Health Promotion, that have common goals such as increasing physical activity and/or reaching and maintaining a normal weight to help the common target audience.
- using cross-cutting, evidence-based self-management education programs (like the Chronic Disease Self-Management Program) and physical activity programs (like EnhanceFitness) to dramatically increase the reach of the Bureau of Health Promotion Programs.
- promoting and using arthritis-specific self-management education programs (like the Arthritis Self-Management Program) and physical activity programs (like the Arthritis Foundation Exercise Program and Arthritis Foundation Aquatic Program) to address the arthritis-specific concerns of people with arthritis and other chronic conditions.
- embedding arthritis information in other chronic disease program messages to reduce arthritis-specific barriers among people with other chronic conditions who also have arthritis.

## Conclusion

Arthritis is a debilitating disease that may limit the independence of affected persons and disrupt the lives of their family members and caregivers. The impact can be especially devastating when multiple chronic health problems coexist with arthritis.

Nearly two-thirds of adults who reported they had arthritis also reported they had at least one other condition. The presence of multiple conditions can complicate the management of arthritis. Increasing the awareness of co-morbidity and collaboration with private and public partners will increase resources and awareness that will help people with arthritis better meet their goals and needs and improve their overall quality of life.

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