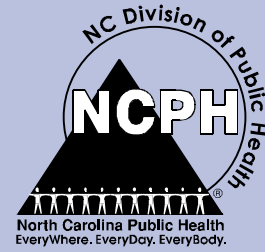


North Carolina Arthritis Report 2002



Division of Public Health
March 2002

North Carolina Arthritis Report – 2002

**A report from
Thurston Arthritis Research Center
University of North Carolina at Chapel Hill
and
The Behavioral Risk Factor Surveillance System
State Center for Health Statistics**



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Purpose of this Document

This report describes the prevalence of arthritis in North Carolina and the factors that are associated with increased risk of arthritis. It also examines the impact arthritis has on the quality of life of North Carolinians. Opportunities for disease management and prevention are discussed. This report has been prepared in collaboration with the Thurston Arthritis Research Center at the University of North Carolina at Chapel Hill as part of the activities of the North Carolina Arthritis Program. The program is funded through the Centers for Disease Control and Prevention (CDC, Fed. # 93-945) as part of the National Arthritis Action Plan (NAAP). NAAP is a collaborative effort among the CDC, the Arthritis Foundation, and the Association of State and Territorial Health Officials.

What is Arthritis?

Arthritis is one of the most common chronic diseases and is the leading cause of disability in the United States (1). Most of us know at least one person who is affected by arthritis. Arthritis has a tremendous impact on the health and well-being of many North Carolinians. This report describes the burden of arthritis in North Carolina. By burden, we mean the physical, social, psychological, and economic consequences of the disease. These include physical and mental disability, medical costs, and lower quality of life for people who have the disease.

The term “arthritis” refers to more than 100 different conditions affecting the joints, surrounding tissues, and other connective tissues. Most of these conditions are characterized by pain, stiffness, and sometimes swelling around joints. Arthritis conditions are also referred to as “rheumatic” conditions or diseases. They include osteoarthritis, juvenile rheumatoid arthritis, rheumatoid arthritis, fibromyalgia, gout, lupus, scleroderma, bursitis, Lyme disease, and many others. Descriptions of the three most common forms of arthritis are excerpted below from the National Arthritis Action Plan:

- **Osteoarthritis**, or “degenerative joint disease,” most often affects the hip, knee, foot, and hand – but can affect other joints as well. Degeneration of joint cartilage and changes in underlying bone and supporting tissues lead to pain, stiffness, movement problems, and activity limitations.
- **Rheumatoid arthritis** is characterized by chronic inflammation of the joint lining. Symptoms include pain, stiffness, and swelling of multiple joints. The inflammation may extend to other joint tissues and cause bone and cartilage erosion, joint deformities, movement problems, and activity limitations. Rheumatoid arthritis can also affect connective tissue and blood vessels throughout the body, triggering inflammation in a variety of organs, including the lungs and heart and increasing a person’s risk of dying of respiratory and infectious diseases.
- **Fibromyalgia** is a pain syndrome involving muscle and muscle attachment areas. Common symptoms include widespread pain throughout the muscles of the body, sleep disorders, fatigue, headaches, and irritable bowel syndrome.

Data Source

Most of what we know about arthritis in North Carolina is from the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a statewide telephone survey of adults that was jointly developed by the Centers for Disease Control and Prevention (CDC) and state health departments. This report primarily uses data from a set of arthritis questions asked in the 2000 BRFSS. In 2000, the North Carolina BRFSS collected 3,016 interviews. The final BRFSS data are weighted and adjusted to account for unequal selection probabilities and to correspond to estimated age, sex, and race distribution of the adult population of NC in 2000. All of the percentages included in this report were calculated using weighted data.

Definitions:

Physician diagnosis of arthritis: A “Yes” response to the question, “Have you ever been told by a doctor that you have arthritis?”

Chronic joint symptoms: A “Yes” response to both of the following questions: “During the past 12 months, have you had pain, aching, stiffness or swelling in or around a joint?” and “Were these symptoms present on most days for at least one month?”

Arthritis: A “Yes” response to either or both the physician diagnosis of arthritis or chronic joint symptoms questions, unless otherwise specified.

Knowing type of arthritis: Response to the item, “What type of arthritis did the doctor say you have?” This question was only asked of those who reported a physician diagnosis of arthritis.

Physical activity: Level of physical activity was derived using the definitions created by the CDC (see last paragraph in this section for more information). These definitions are:

- *Physically inactive:* No reported activity.
- *Irregular activity:* Any physical activity or pair of activities done for less than 20 minutes or less than three times per week.
- *Regular activity:* Any physical activity or pair of activities done for a total of 20 or more minutes three or more times per week, at less than 50 percent of functional cardio-respiratory conditioning capacity.
- *Regular and vigorous activity:* Any physical activity or pair of physical activities that requires rhythmic contraction of large muscle groups at 50 percent of functional cardio-respiratory conditioning capacity for 20 or more minutes three or more times per week.

Continuous Insurance Coverage: Respondents were defined as having continuous insurance coverage if they answered “Yes” to the question, “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?” and answered “No” to the question, “During the past 12 months, was there any time that you did not have any health insurance or coverage?” Those who responded “Yes” to the first question and “Yes” to the last were defined as NOT having continuous coverage, as were those who answered “No” to the first question.

For further information about the 2000 BRFSS, please visit the North Carolina BRFSS website (www.schs.state.nc.us/SCHS/about/programs/brfss) and the CDC BRFSS website (www.cdc.gov/nccdphp/brfss).

Other Data Sources:

Data on rheumatologists in North Carolina come from the North Carolina Health Professions Data System at the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill.

Prevalence of Arthritis

- In 2000, almost a quarter of North Carolinians (24.8%) surveyed reported physician-diagnosed arthritis.
- More dramatically, over one-third of the adult population surveyed reported physician-diagnosed arthritis or chronic joint symptoms (Figure 1). This percentage represents more than 2 million adults.
- Among those with arthritis and/or chronic joint symptoms (Figure 2):
 - Close to half (44%) reported a physician diagnosis of arthritis accompanied by chronic joint symptoms.
 - More than a quarter (28%) reported only a physician diagnosis of arthritis.
 - More than a quarter (28%) reported only chronic joint symptoms.
- A large percentage (43%) of adults who reported a physician diagnosis of arthritis did not know what type of arthritis they had (Figure 3). Of those who said they knew what type of arthritis they had, osteoarthritis was the type most often mentioned (60%).

Figure 1: Percentage of North Carolinians with Arthritis

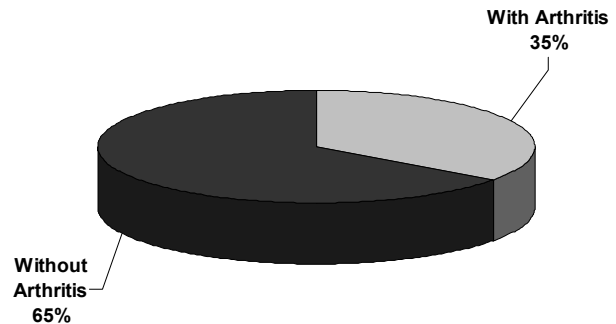


Figure 2: Among Those with Arthritis

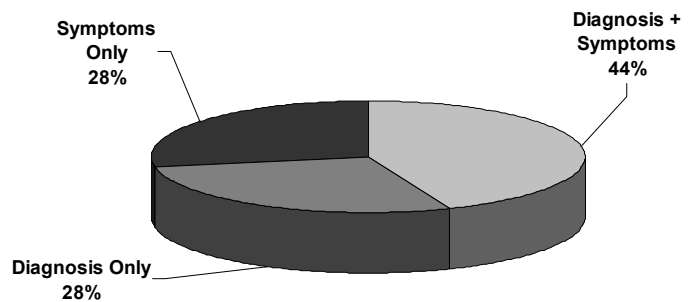
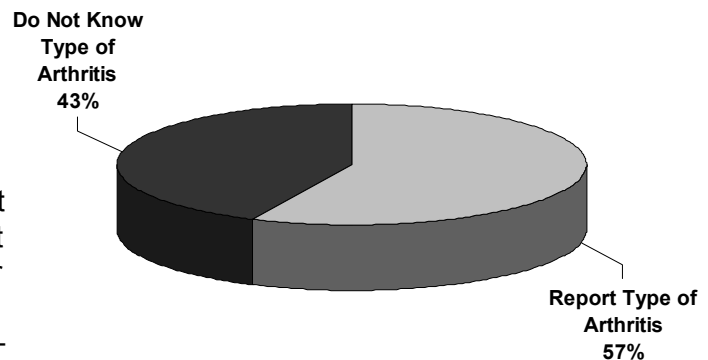


Figure 3: Knowing What They Have...

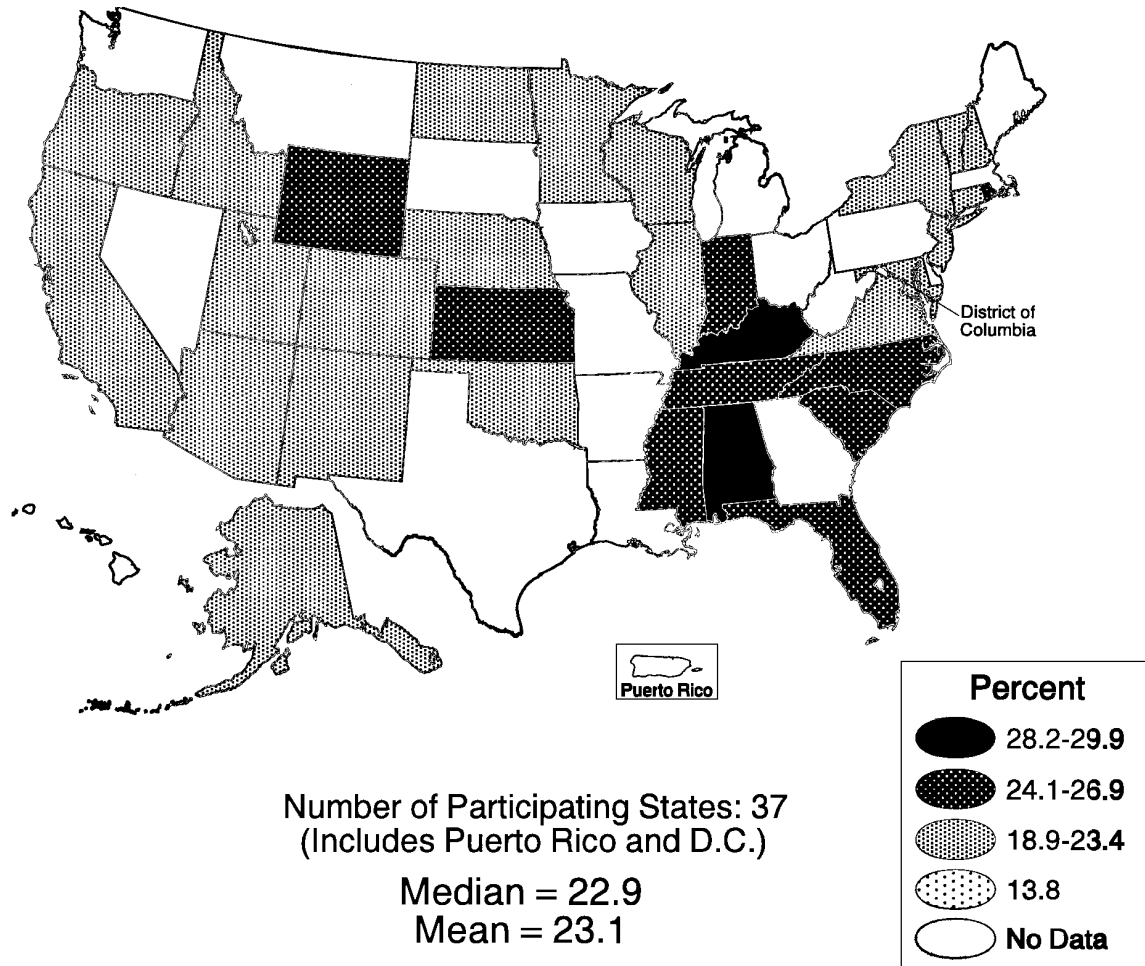


Comments: Arthritis is one of the most common chronic conditions in the U.S. The North Carolina numbers are consistent with what we know about the prevalence of arthritis and the various types of arthritis in other states and in the nation. However, these numbers also indicate that many people with arthritis know little about their disease. It is difficult to manage your condition without more information. This points to the need for more arthritis education.

Comparing North Carolina to the Nation

- Figure 4 shows the prevalence of self-reported physician diagnosis of arthritis in 37 states. As noted earlier, 24.8 percent of North Carolinians report physician-diagnosed arthritis.

Figure 4: Prevalence of Self-reported, Physician-diagnosed Arthritis



Source: BRFSS 2000 Survey

Comments: North Carolina's arthritis prevalence is one of the highest in the nation. This puts a tremendous burden on state resources, making arthritis prevention and control a priority.

Sociodemographics of Arthritis

- Age:** In other studies, age is the factor most strongly associated with arthritis risk (2). Because of this strong association, prevalence rates that are presented for gender, race, body mass index, education and physical activity are age-adjusted. In the N.C. data, the prevalence of arthritis and chronic joint symptoms increases in each age group (Figure 5).
- Gender:** In the 2000 BRFSS, more women than men report arthritis or chronic joint symptoms (Figure 6). From past surveys, we know that more women than men have arthritis in all age groups (3).
- Race:** In the N.C. 2000 BRFSS data there were no differences in age-adjusted prevalence rates between African Americans and whites, the two groups for whom valid estimates could be made.
- Education:** In N.C. and in data from other states, lower levels of education are associated with greater risk of arthritis (Figure 7). Although this relationship reflects associations between education and being overweight to a degree, this association does not completely account for the relationship between education and arthritis. The mechanisms for this relationship still are not well understood.

Comments: Looking at arthritis by socio-demographic factors gives us a better understanding of who gets arthritis. Knowing this, we can target interventions more effectively. Some of these factors cannot be changed, such as age, gender, and genetic predisposition. Others can change, such as education. Although we know some of these factors are related to arthritis risk, in some cases we don't yet understand the mechanisms for their effects.

Figure 5: Arthritis by Age

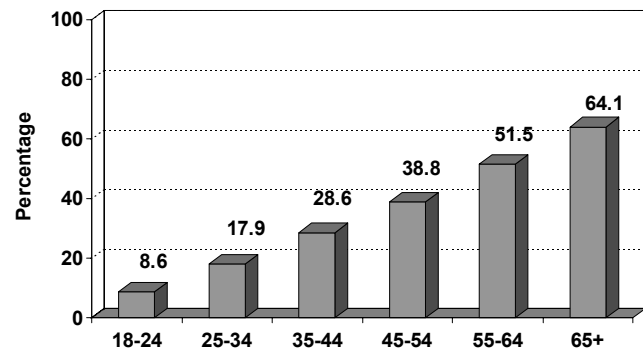


Figure 6: Arthritis by Gender

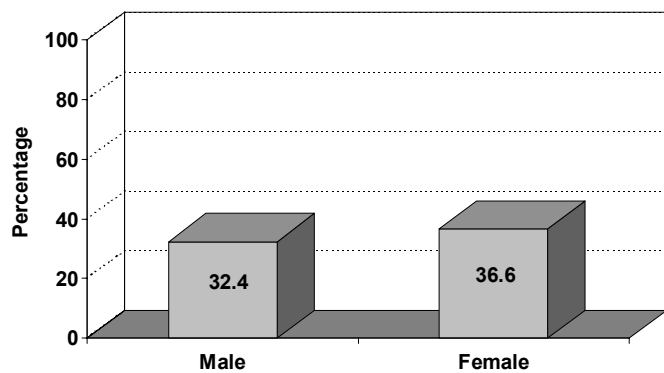
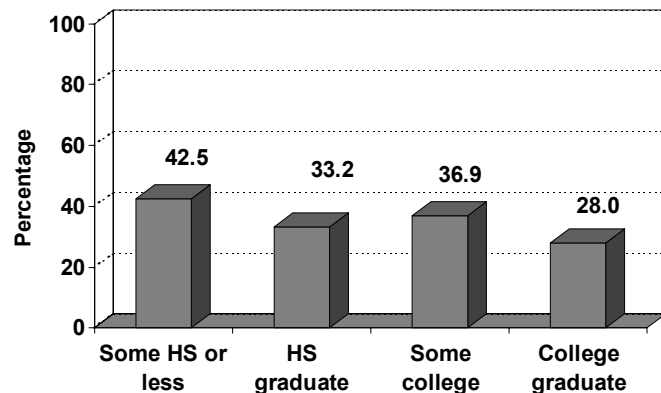


Figure 7: Arthritis by Education



Modifiable Risk Factors

- **Weight:** Excess weight is a risk factor for arthritis, particularly osteoarthritis of the knee (2). The current data for NC indicate a higher age-adjusted prevalence rate for individuals who are overweight (Figure 8). Body mass index (BMI) is calculated as weight in kilograms divided by height in meters squared.
- **Physical Activity:** Physical activity can maintain joint health and reduce the risk of many other conditions not related to arthritis. In Figure 9, the age-adjusted prevalence rates for arthritis decrease with increasing physical activity.

Figure 8: Arthritis by Body Mass Index (BMI)

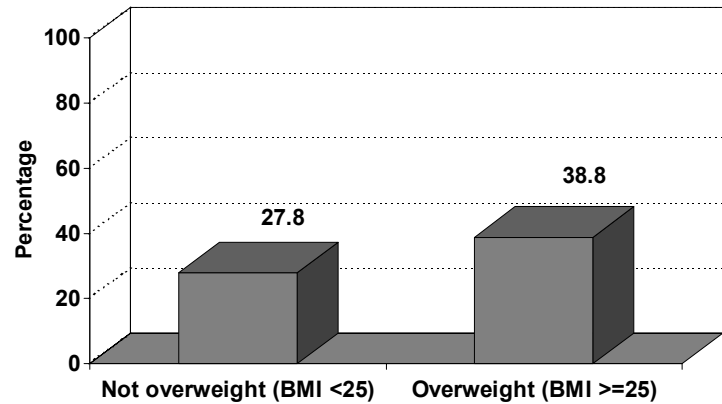
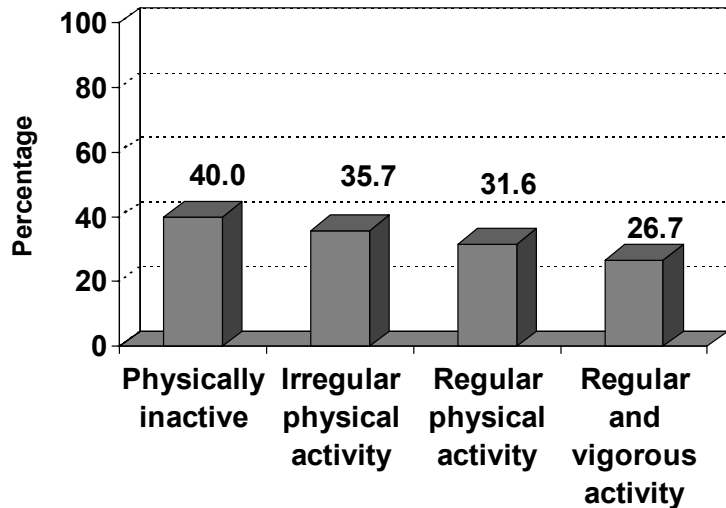


Figure 9: Arthritis by Physical Activity



Comments: Modifiable risk factors such as physical activity and weight control are important targets for intervention. They are integral to arthritis prevention and management. Maintaining appropriate weight can not only lower risk of developing arthritis, but also reduce the pain and disability associated with arthritis.

Quality of Life for People with Arthritis

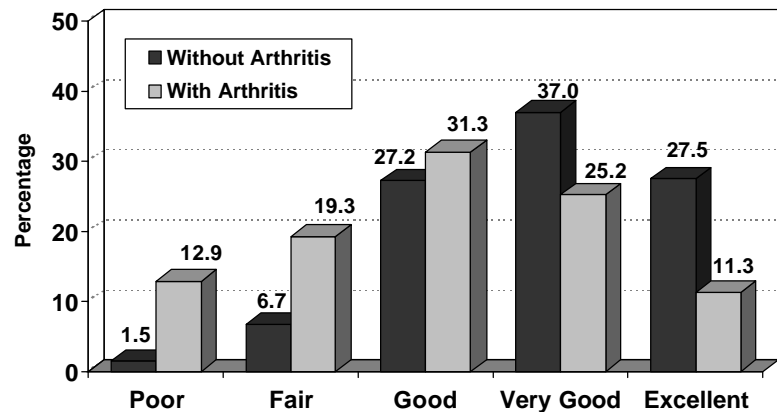
In measuring the burden of arthritis, it is important to consider how these conditions affect people in their everyday lives. Do they feel different because they have arthritis? Is their health affected in important ways? The physical and mental effects of arthritis and other conditions is sometimes measured in terms of “health-related quality of life” (4,5).

CDC developed a set of measures for the BRFSS that are used to quantify health-related quality of life. These measures include:

- Self-perceived health, which is how a person rates his or her overall health, from poor to excellent
- Healthy days, which are the number of days in the past 30 when physical or mental health was good
- Activity limitation days, which are the number of days in the past 30 when physical or mental health interfered with normal daily activities
- Additional measures include assessments of pain, depressive symptoms, anxiety, fatigue, and difficulties with sleep.

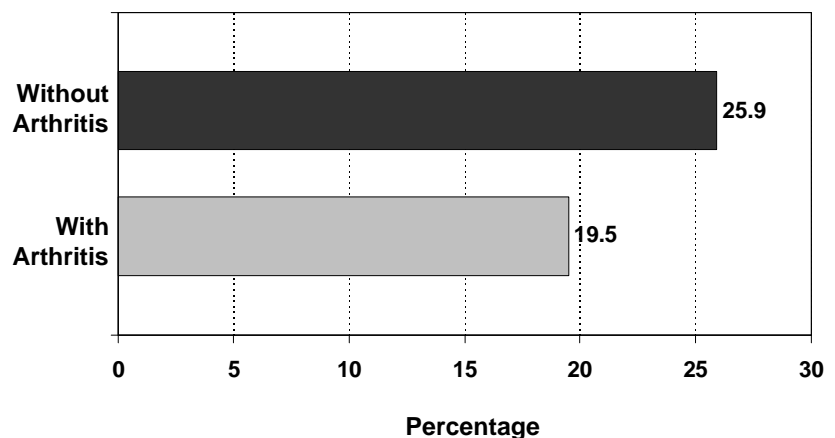
- **Self-perceived Health:** Individuals with arthritis or chronic joint symptoms rate their health overall as poorer than do those without arthritis or chronic joint symptoms (Figure 10).

Figure 10: Self-perceived Health



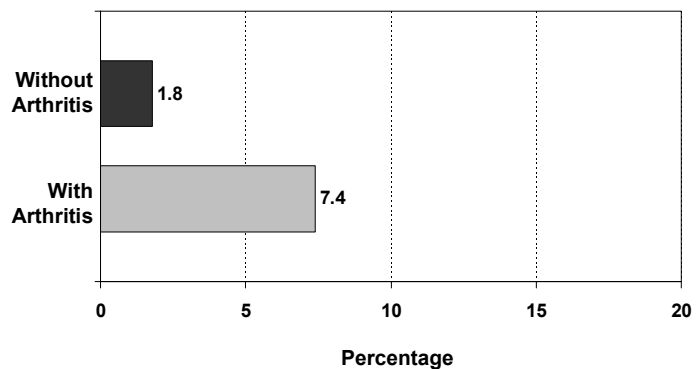
- **Healthy Days:** As shown in Figure 11, people with arthritis report fewer days of good health in the past month than do those without arthritis (19.5 vs. 25.9).

Figure 11: Healthy Days in the Past Month



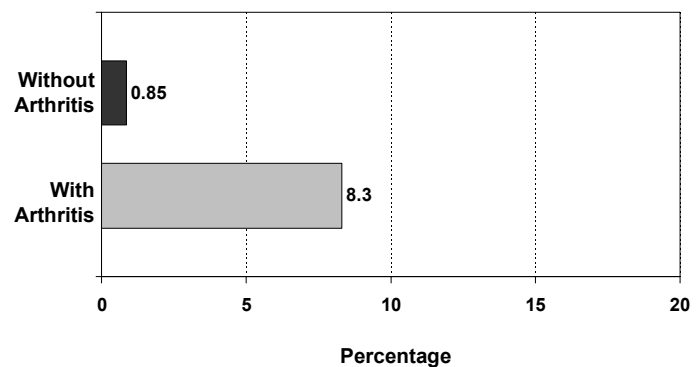
- **Activity Limitation Days:** Those with arthritis report more days in the past month (7.4) when poor physical or mental health limited their activities than do those without arthritis (1.8) (Figure 12).

Figure 12: Activity Limitation Days



- **Pain** plays a huge role in arthritis and chronic joint symptoms, as shown in Figure 13. Those with arthritis report that pain interfered with their usual daily activities more than one-quarter of the time (8.3 days out of the past 30). This compares to less than one day (0.85), on average, for those without arthritis.

Figure 13: Days When Pain Limited Activities



- In addition, individuals with arthritis report more days of:
 - feeling sad, blue or depressed
 - feeling worried, tense, or anxious
 - feeling that they did not get enough rest or sleep than do those without arthritis.
- Finally, individuals with arthritis report fewer days of feeling healthy and full of energy than do those without arthritis.

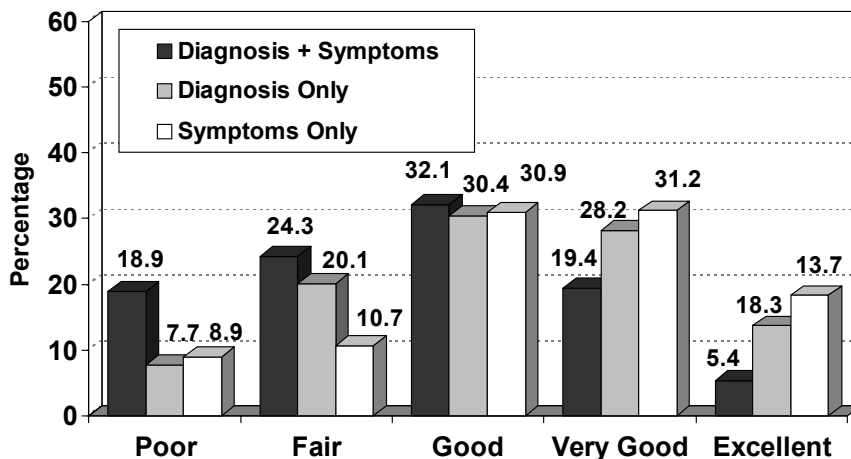
Comments: Across all these measures, individuals with arthritis or chronic joint symptoms report much poorer health-related quality of life than do those without these conditions. These comparisons show that arthritis has an enormous impact on the physical, psychological, and social aspects of everyday lives. Although some types of arthritis are associated with increased mortality, arthritis is far more likely to affect individuals' health and ability to function in their everyday lives than it is to cause their death. To understand the impact that arthritis has on North Carolina and its citizens, it is important to capture these effects and add them to our assessment of the burden of arthritis.

To explore further the impact of arthritis, we compared subgroups of those with arthritis. We looked at health-related quality of life in the three groups shown earlier in Figure 2:

- Arthritis diagnosis plus chronic joint symptoms
- Arthritis diagnosis only
- Chronic joint symptoms only

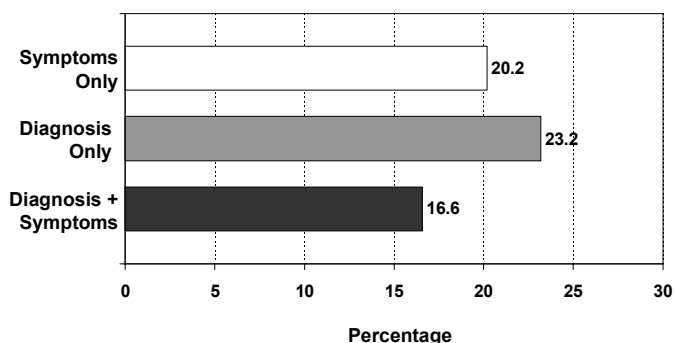
- **Self-perceived Health:** Figure 14 shows self-perceived health ratings for the three arthritis groups. Individuals with a diagnosis who are also experiencing symptoms fare the worst.

Figure 14: Self-perceived Health (Arthritis Groups)



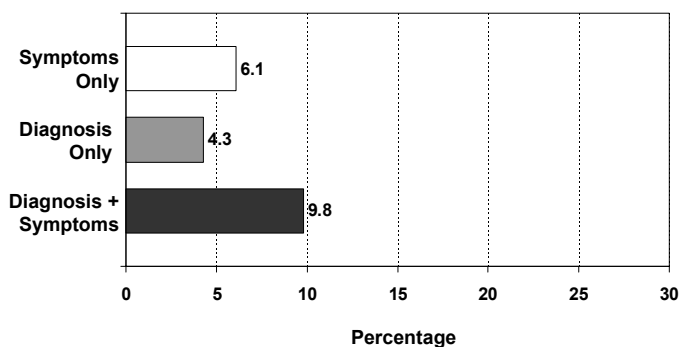
- **Healthy Days:** Those with a diagnosis and symptoms report fewer healthy days in the past month than do those with symptoms only or diagnosis only. Also those with a diagnosis only fare better than do those with symptoms only (Figure 15).

Figure 15: Healthy Days in the Past Month



- **Activity Limitation Days:** Individuals with a diagnosis accompanied by symptoms experience more days of activity limitation in the past month than do those with a diagnosis or joint symptoms alone (Figure 16).

Figure 16: Activity Limitation Days



Comments: The presence of current symptoms appears to be a major contributor to decreased quality of life. The good news is that appropriate disease management can reduce chronic joint symptoms and other symptoms associated with arthritis.

Access to Health Care

- According to the BRFSS, more than 14 percent of those with arthritis or chronic joint symptoms have not had continuous insurance coverage over the past 12 months.
- Among individuals with arthritis, 17 percent said they had needed to see a doctor over the past 12 months but could not because of the cost.
- Table 1, on the next 2 pages, lists the 2000 population and estimates of the number of individuals with physician-diagnosed arthritis and with physician-diagnosed arthritis or chronic joint symptoms in each county in N.C. Applying the state BRFSS prevalence rates by age, gender, and race to the county populations by age, gender, and race produces these estimates. The last column in the table shows the number of rheumatologists (arthritis specialists) in each county in 1999. Many individuals with arthritis live in counties without a rheumatologist, and many counties have a small number of rheumatologists serving a large population. It should also be noted that most of the rheumatologists in the state are clustered around universities and population centers, making access for those in rural areas difficult.

Comments: Individuals with a chronic condition like arthritis are likely to need regular visits to their health care provider in order to manage their condition safely and effectively and to slow the progression of disease. A key element in managing a chronic condition is having continuous health care coverage. However, many of those with arthritis or chronic joint symptoms do not have adequate health insurance. In addition, access to needed health care can be limited by the lack of resources in a particular geographic area. For patients with arthritis conditions that require close monitoring of treatment regimens, such as rheumatoid arthritis or lupus, access to a specialist is often difficult.

Cost Issues

In addition to psychological and social costs, the financial costs of arthritis in the United States are enormous. The total costs of arthritis have risen from \$65 billion in 1992 to almost \$83 billion in 1995 (1,6). The estimated direct costs of medical care in 1995, including hospitalizations, medication, and doctor's visits, totaled nearly \$22 billion. Indirect costs, due primarily to lost wages, were \$61 billion (Figure 17). This estimate would be even larger if the costs attributed to loss of housekeeping activities were included.

**Figure 17: Costs of Arthritis in U.S.
(billions \$)**

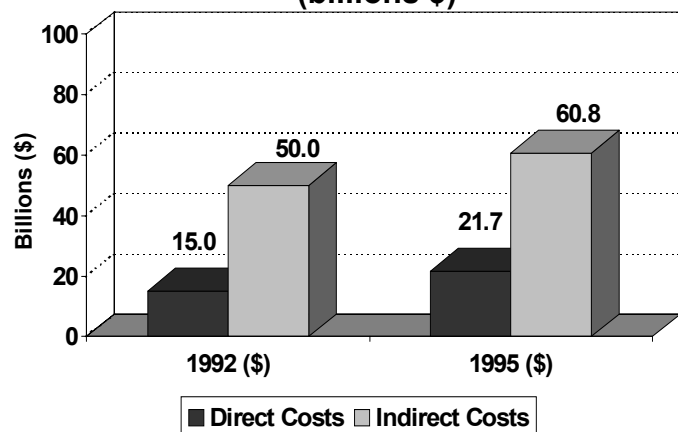


Table 1: County-level Estimates* of Arthritis and Chronic Joint Symptoms and Number of Rheumatologists in North Carolina, 2000

Geographic Area	Adult Population	Number* Reporting Physician-Diagnosed Arthritis	Number* Reporting Physician-Diagnosed Arthritis or Chronic Joint Symptoms	Number of Rheumatologists (in 1999)
North Carolina	6,200,522	1,563,451	2,166,247	92
Alamance	101,806	27,494	37,405	1
Alexander	25,747	6,553	9,225	0
Alleghany	9,010	2,752	3,667	0
Anson	19,288	5,388	7,071	0
Ashe	20,031	5,894	7,957	0
Avery	14,294	3,893	5,357	0
Beaufort	35,269	10,077	13,391	0
Bertie	14,919	4,173	5,414	0
Bladen	24,897	7,072	9,337	0
Brunswick	58,637	16,900	22,731	0
Buncombe	165,798	46,336	63,034	4
Burke	68,805	18,285	25,253	0
Cabarrus	99,031	25,233	35,223	2
Caldwell	60,303	15,842	22,060	0
Camden	5,280	1,428	1,952	0
Carteret	47,840	13,012	17,895	0
Caswell	18,489	5,243	6,935	0
Catawba	109,091	27,902	38,984	2
Chatham	39,287	10,882	14,716	0
Cherokee	19,945	6,062	8,078	0
Chowan	11,435	3,456	4,486	0
Clay	7,356	2,263	3,018	0
Cleveland	73,607	19,975	27,137	0
Columbus	41,412	11,470	15,318	0
Craven	69,956	17,103	23,839	1
Cumberland	220,529	45,932	66,565	2
Currituck	13,896	3,570	5,003	0
Dare	24,015	6,000	8,519	0
Davidson	113,112	29,015	40,570	0
Davie	27,145	7,487	10,253	0
Duplin	36,884	9,997	13,471	0
Durham	175,203	39,291	55,438	13
Edgecombe	41,513	11,066	14,610	1
Forsyth	237,816	60,479	83,277	7
Franklin	36,124	9,202	12,621	0
Gaston	145,644	36,950	51,575	2
Gates	7,834	2,074	2,790	0
Graham	6,427	1,877	2,529	0
Granville	37,708	9,542	13,052	0
Greene	14,573	3,883	5,186	0
Guilford	327,970	81,956	112,965	3
Halifax	43,245	11,812	15,510	0
Harnett	67,809	16,606	23,204	0
Haywood	44,100	13,575	18,044	1
Henderson	72,962	22,829	30,151	1
Hertford	17,362	4,871	6,319	0
Hoke	24,153	5,722	7,863	0

Table 1 (continued)

Geographic Area	Adult Population	Number* Reporting Physician-Diagnosed Arthritis	Number* Reporting Physician-Diagnosed Arthritis or Chronic Joint Symptoms	Number of Rheumatologists (in 1999)
Hyde	4,764	1,382	1,818	0
Iredell	93,160	24,511	33,830	2
Jackson	27,516	7,361	10,118	0
Johnston	91,970	23,460	32,645	0
Jones	7,878	2,227	2,950	1
Lee	37,153	10,017	13,626	0
Lenoir	45,254	12,504	16,597	1
Lincoln	48,786	12,396	17,425	0
McDowell	33,229	9,120	12,519	0
Macon	24,557	7,931	10,411	1
Madison	15,950	4,511	6,161	0
Martin	19,375	5,475	7,192	0
Mecklenburg	530,202	119,019	170,119	12
Mitchell	12,651	3,774	5,073	0
Montgomery	20,390	5,194	7,173	0
Moore	59,774	18,663	24,422	2
Nash	66,386	16,869	23,086	1
New Hanover	129,304	33,305	46,148	4
Northampton	17,125	5,127	6,546	0
Onslow	110,604	19,920	30,981	1
Orange	95,719	20,589	30,216	11
Pamlico	10,534	3,271	4,258	0
Pasquotank	26,870	7,019	9,460	1
Pender	32,332	9,059	12,156	0
Perquimans	8,975	2,707	3,553	0
Person	27,521	7,433	10,042	0
Pitt	103,983	23,471	33,362	4
Polk	15,340	5,049	6,556	0
Randolph	99,614	25,435	35,695	0
Richmond	35,118	9,403	12,689	0
Robeson	89,105	22,100	29,611	0
Rockingham	71,844	19,640	26,637	0
Rowan	100,529	26,871	36,808	1
Rutherford	48,916	13,428	18,322	0
Sampson	45,506	12,524	16,768	0
Scotland	26,231	6,624	8,987	0
Stanly	44,361	11,767	16,217	0
Stokes	34,376	8,809	12,372	0
Surry	55,522	15,403	21,059	0
Swain	10,078	2,798	3,747	0
Transylvania	23,975	7,306	9,718	0
Tyrrell	3,297	972	1,269	0
Union	90,256	21,660	30,877	1
Vance	31,901	8,172	11,007	0
Wake	478,524	103,855	151,320	8
Warren	15,764	4,861	6,164	0
Washington	10,346	2,919	3,836	0
Watauga	36,275	8,221	12,047	0
Wayne	84,727	20,656	28,641	0
Wilkes	51,629	13,899	19,221	0
Wilson	56,004	14,852	19,985	1
Yadkin	28,204	7,739	10,639	0
Yancey	14,349	4,189	5,666	0

* Numbers are estimated for each county from the BRFSS based on age, gender and race distributions. These estimates do not reflect actual numbers and should be used with great caution.

Prevention and Control

Given the substantial impact it has on individuals and society, arthritis should receive considerable attention from a public health perspective. Arthritis can be addressed effectively at all three levels of the prevention spectrum—primary, secondary, and tertiary. Descriptions of the three types of prevention and examples of what can be done for arthritis in each category are listed below.

Primary prevention is aimed at reducing the incidence of disease and other departures from good health.

Strategies:

- Weight reduction
- Avoiding sports- and occupational-associated injuries
- Avoiding tick exposure, checking self and pets for ticks (Lyme disease)

Secondary prevention aims to detect the disease early and to reduce the impact of the disease and its prevalence.

Strategies:

- Medical history and physical exams
- Improved education of health professionals
- Public education to encourage early diagnosis and treatment
- Genetic testing (potential)

Tertiary prevention is aimed at reducing complications.

Strategies:

- Improved education of health professionals
- Medication
- Physical therapy
- Exercise
- Occupational therapy
- Self-management programs

The N.C. Arthritis Program plans to address the above strategies through an arthritis marketing and communication campaign to reach health and aging professionals and people with arthritis, their caregivers, and families. The program will also implement a statewide series of Arthritis Self-Help Course Leader trainings, making it possible to increase the number of courses conducted in communities throughout the state. Additionally, the N.C. Arthritis Coalition, composed of a multidisciplinary team of health and aging professionals from state, local, and private agencies and people with arthritis and their caregivers, advocates statewide for improved arthritis care and support.

The Arthritis Self-Help Course (ASHC), sponsored by the Arthritis Foundation (AF), is a six-week course that trains people with arthritis to manage their condition and minimize its effects. This course has been evaluated and shown to be effective in reducing pain by 20 percent and doctor's visits by 40 percent, thus reducing overall health care costs. This course is typically

conducted in a community group setting of about 15 people. The course includes information on types of arthritis, its prognosis, treatment, and medications as well as information on nutrition and how to evaluate alternative therapies. It is interactive, teaching participants relaxation, pain management, and individually tailored exercises. The North Carolina Arthritis Program, in partnership with the Arthritis Foundation Carolinas Chapter, will train new leaders for this course throughout the state in the coming years. For more information, contact Ellen Condelli, Arthritis Program Director at (919) 715-4175 or via internet ellen.condelli@ncmail.net.

Resources:

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Fax: (704) 529-0626

Arthritis Foundation (national office)
Web site: www.arthritis.org
Arthritis Information Line: 1-800-283-7800

N.C. Office of Disability and Health
Division of Public Health
1916 Mail Service Center
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Thurston Arthritis Research Center
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Web site: www.rheumatology.org

National Institute of Arthritis and
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