COLORADO DEPARTMENT OF
PUBLIC HEALTH & ENVIRONMENT
Cancer Prevention & Control

CANCER SURVIVORS IN COLORADO, 2009

The care for cancer survivors doesn't end with cancer treatment. Once diagnosed, cancer survivors' health care needs change for the rest of their lives. Many survivors develop risk factors for other chronic diseases. They encounter the same challenges to stop smoking, eat healthier and stay physically active as the rest of the population. And some experience the physical and mental effects of coping with cancer.

This report describes the population of cancer survivors in Colorado. Its findings demonstrate the importance of comprehensive, ongoing, coordinated health care and preventive measures for the physical and mental health of those diagnosed with cancer. Public health practitioners, cancer organizations and health care providers can use this information to plan programs and interventions to improve cancer survivors' health care as well as their health and quality of life.

KEY FINDINGS

- More than 190,000 cancer survivors were living in Colorado in 2009.
- Five-year survival rates vary by type of cancer and by race and ethnicity.
- Four cancers – breast cancer (25%), prostate cancer (18%), melanoma (9%), and colorectal cancer (8%) – accounted for 60% of cancer survivors in Colorado in 2009.
- 37% of cancer survivors aged 40 years or older received their first diagnosis within the last five years.
- Among persons aged 18 years or older, the population of cancer survivors was older than the population of persons without a cancer diagnosis.
- Among persons aged 40 years or older, a higher proportion of cancer survivors were female, White non-Hispanic, insured with health insurance and retired compared with persons without a cancer diagnosis.
- Cancer survivors had similar risk factors as the general population for a broad spectrum of chronic diseases.
- Among persons aged 40–64 years, cancer survivors had a higher prevalence of arthritis, angina or coronary heart disease, and stroke.
- Among persons aged 65 years or older, cancer survivors had a higher prevalence of diabetes and of being physically inactive.
- A large proportion of cancer survivors (11–34%) reported quality of life issues, such as activity limitations, fair or poor health status, poor physical or mental health on 14 or more of the past 30 days, and health problems requiring special equipment.

CANCER SURVIVORS OF ALL AGES — COLORADO, 2009

A cancer survivor is anyone who has received a diagnosis of cancer. Survivorship begins at the time of diagnosis and lasts through the end of life. Cancer survivors include those who are several years past treatment and those still undergoing treatment for cancer.

Increased survival from cancer is directly related to earlier diagnosis and improved treatments of many cancers. In the United States, the five-year relative survival rate for all cancers diagnosed during 1999–2005 and followed through 2006 was 68%, up from 50% during 1975–1977.[1] In Colorado, the five-year

survival rate for all cancers increased slightly in recent years, from 60% during 1988–1990 to 64% during 2000–2003.

More than 190,000 cancer survivors were living in Colorado in 2009, representing 4% of Colorado's population. This number does not include in-situ cervical cancer or non-melanoma skin cancer survivors. In 2007, about 12 million cancer survivors were living in the United States, representing approximately 3% of the U.S. population.[2]

The largest proportion of these cancer survivors (25%) had breast cancer as their most recently diagnosed cancer, followed by prostate cancer (18%), melanoma (9%), colorectal cancer (8%) and cervical cancer (5%).

Figure 1. Cancer Survivors* by Cancer Type — Colorado, 2009
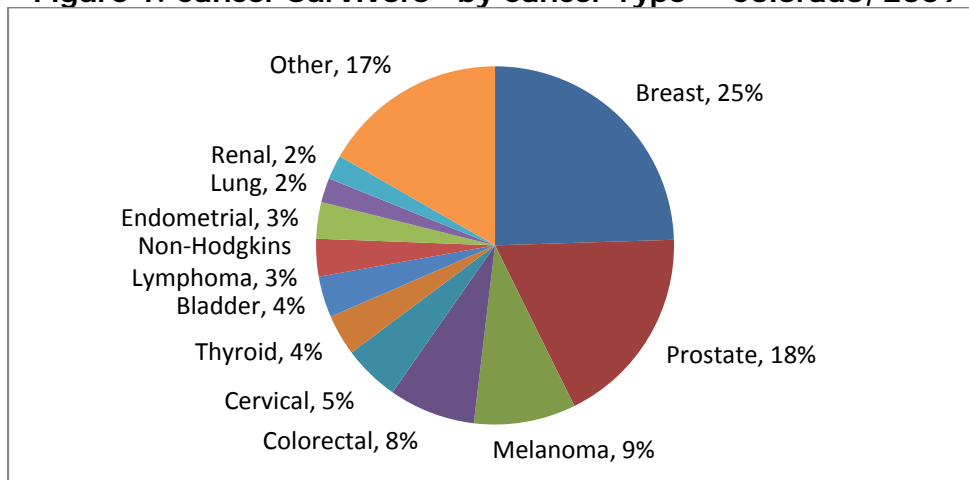
Data source: Colorado Central Cancer Registry
* Survivors of in-situ cervical cancer or non-melanoma skin cancer were not included.

Incidence rates and survival rates for specific cancer types affect these proportions. For example, lung cancer was the third most commonly diagnosed cancer in Colorado in 2009, but only 2% of cancer survivors had lung cancer as their most recently diagnosed cancer. The five-year survival rate for lung cancer was only 14% for those who received a diagnosis during 2000–2003, compared with 89% for female breast cancer, 94% for prostate cancer, 84% for melanoma, 57% for colorectal cancer, 71% for cervical cancer, 95% for thyroid cancer, 75% for bladder cancer, 65% for non-Hodgkin lymphoma, 83% for endometrial cancer and 62% for renal cancer.

Five-year survival rates for all cancers combined vary by race/ethnicity. For those who received a diagnosis during 2000–2003, the rate was 65% for White non-Hispanics, 56% for White Hispanics, and 55% for Blacks (Hispanic or non-Hispanic).

A complete report on cancer in Colorado, including incidence, mortality, and survival is available at: http://www.cdphe.state.co.us/pp/cccr/1997-2007/index.html.

The remainder of this report includes data and estimates derived from the 2009 Colorado Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an ongoing telephone survey of Coloradans aged 18 years or older. A total of 11,956 adults completed surveys in 2009. Data analyses included 1,134 adult cancer survivors (excluding non-melanoma skin cancer survivors) and 9,097 adults without a cancer diagnosis. Of those respondents who were aged 40 years or older, data analyses included 1,089 cancer survivors and 7,109 adults without a cancer diagnosis. BRFSS prevalence estimates are weighted to be representative of the Colorado adult population. Unlike Colorado Central Cancer Registry data, which does

not include in-situ cervical cancer, BRFSS does not collect data on stage at cancer diagnosis and most likely includes in-situ cervical cancer survivors. Statistical significance was defined as $p<0.05$ from chi-square testing.

TIME SINCE FIRST CANCER DIAGNOSIS AMONG CANCER SURVIVORS AGED 40 YEARS OR OLDER — COLORADO BRFSS, 2009

Among cancer survivors aged 40 years or older, 10% received their first diagnosis within one year or less; 37% received their first diagnosis within five years or less and 41% received their first diagnosis 10 or more years ago.

Among cancer survivors aged 40 years or older, a higher proportion of female cancer survivors received their first diagnosis 10 or more years ago than male survivors (49% vs. 31%, respectively).
- One factor contributing to this finding is that female cervical cancer survivors had a higher prevalence of receiving their first diagnosis at a younger age (younger than 40 years) compared with all cancer survivors combined.

Figure 2. Years Since First Diagnosis among Cancer Survivors*
Aged 40 years or Older — Colorado, 2009
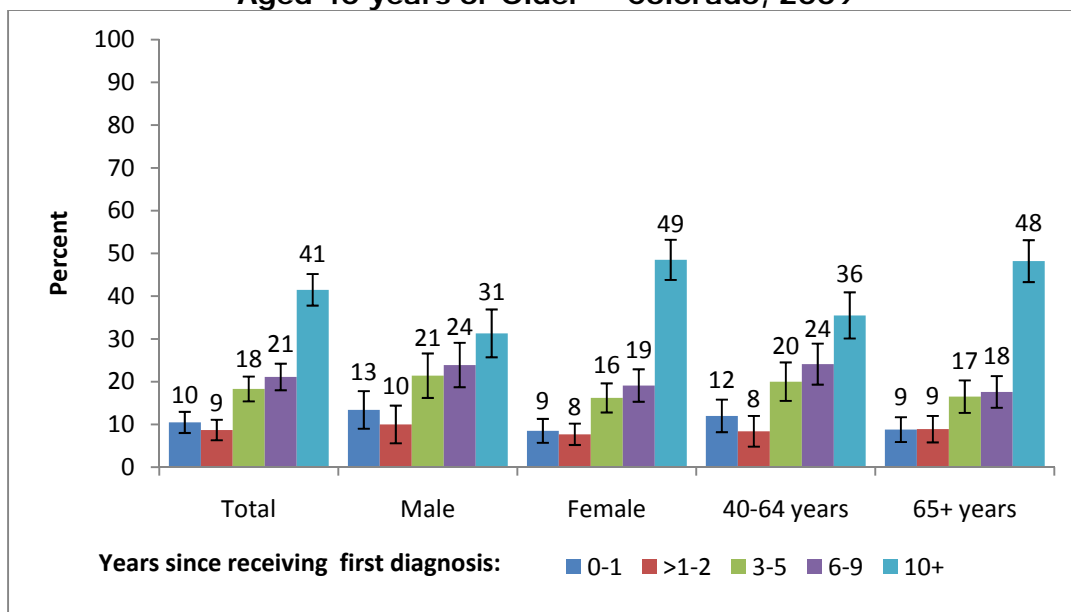
Data source: Colorado Behavioral Risk Factor Surveillance System
* Survivors of non-melanoma skin cancer were not included.

DEMOGRAPHICS OF CANCER SURVIVORS COMPARED WITH PERSONS WITHOUT A CANCER DIAGNOSIS — COLORADO BRFSS, 2009

Among persons aged 18 years or older, the population of cancer survivors was older than the population of persons without a cancer diagnosis in 2009.
- The age distribution for cancer survivors was: 9% aged younger than 40 years, 47% aged 40–64 years, and 44% aged 65 years or older.
- The age distribution for persons without a cancer diagnosis was: 44% aged younger than 40 years, 45% aged 40–64 years, and 11% aged 65 years or older.

Age is associated with demographic factors such as employment, income and health insurance. Because of this association and because cancer survivors were older than persons without a cancer diagnosis (and few cancer survivors were aged younger than 40 years), only persons aged 40 years or older were compared on other demographic factors.

Among persons aged 40 years or older:
- A higher proportion of cancer survivors compared with persons without a cancer diagnosis were female (60% vs. 51%), were White non-Hispanic (86% vs. 77%), had health insurance (95% vs. 88%), were retired (43% vs. 20%), or were living in a household with an annual income of $35,000 or less (35% vs. 26%).
- A lower proportion of cancer survivors compared with persons without a cancer diagnosis were Hispanic (7% vs. 15%).
- The proportion of both cancer survivors and persons without a cancer diagnosis who were Black non-Hispanic was 3%.

Figure 3. Cancer Survivors Compared with Persons without a Cancer Diagnosis by Race/ethnicity — Coloradans aged 40 years or older, 2009
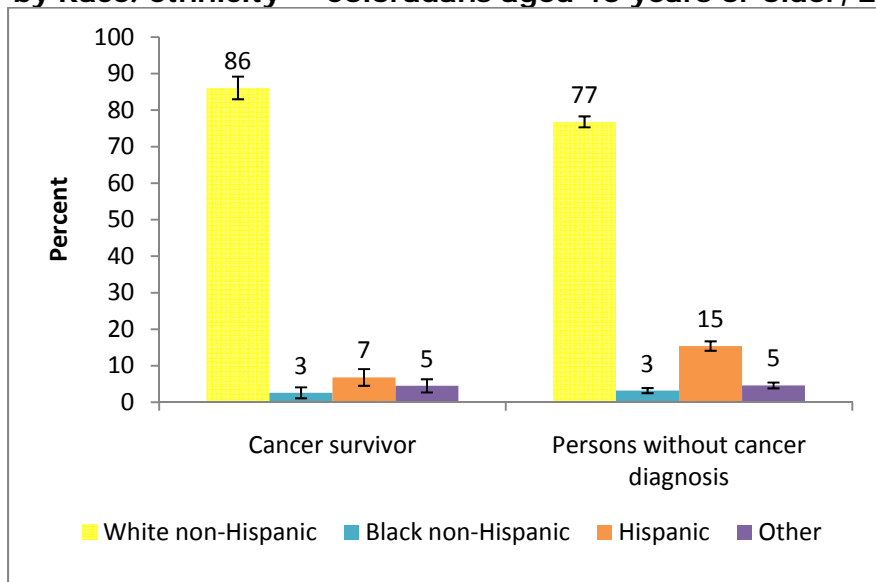
Survival rates for all cancers combined, breast, prostate, colorectal, bladder, endometrial, lung, and renal cancers, and non-Hodgkin's lymphoma were lower for Blacks (Hispanic or non-Hispanic) compared with White non-Hispanics in Colorado during 2000–2003.
Data source: Colorado Central Cancer Registry

Data source: Colorado Behavioral Risk Factor Surveillance System

Figure 4. Cancer Survivors Compared with Persons without a Cancer Diagnosis by Health Insurance Status — Coloradans aged 40 years or older, 2009
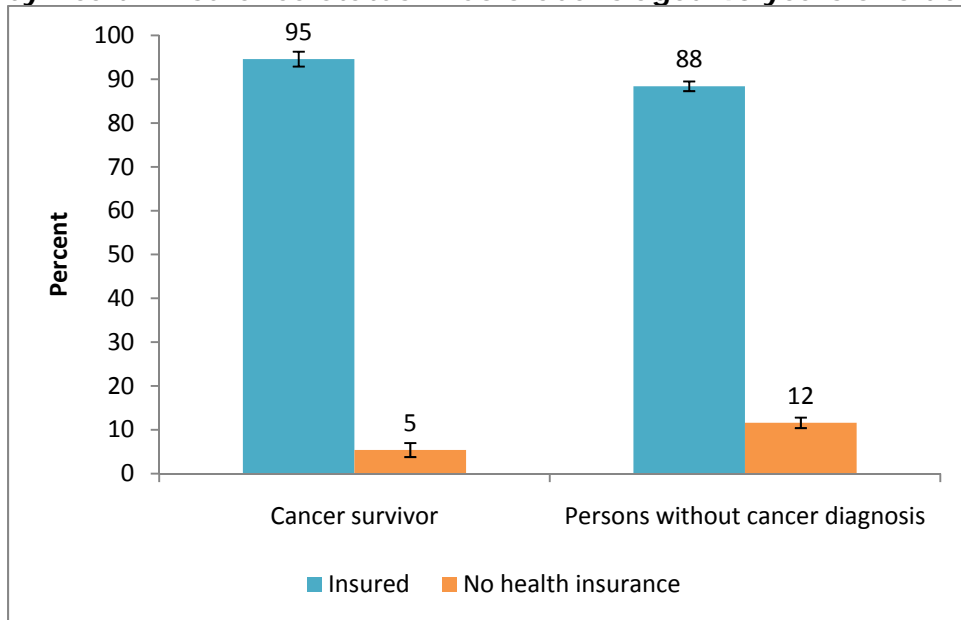
Most (95%) cancer survivors in 2009 had health insurance; 44% of cancer survivors were aged 65 years or older and were eligible for Medicare. Only 11% of persons without a cancer diagnosis were aged 65 years or older.

Data source: Colorado Behavioral Risk Factor Surveillance System

RISK FACTORS AND CONDITIONS

After diagnosis, cancer survivors' health care needs change for the rest of their lives. However, it is still very important to maintain a healthy lifestyle, which includes being physically active, maintaining a healthy diet and weight, and not smoking. Health care providers should counsel their patients on healthy living and create survivorship care plans that include preventive measures for physical and mental health.

RISK FACTORS AND CONDITIONS AMONG CANCER SURVIVORS AGED 18 YEARS AND OLDER — COLORADO, 2009

Cancer survivors reported a number of risk factors for chronic diseases and health conditions:
- More than half of all cancer survivors reported not consuming fruits or vegetables five or more times per day (72%), being overweight or obese (54%), or not getting enough sleep on every day during the past 30 days (53%).
- A large proportion of all cancer survivors reported high cholesterol (46%), arthritis (44%), high blood pressure (39%), no flu shot or spray during the past year (37%), or physical inactivity (23%).

**Figure 5. Risk Factors and Conditions among Cancer Survivors
Aged 18 years and Older — Colorado, 2009**
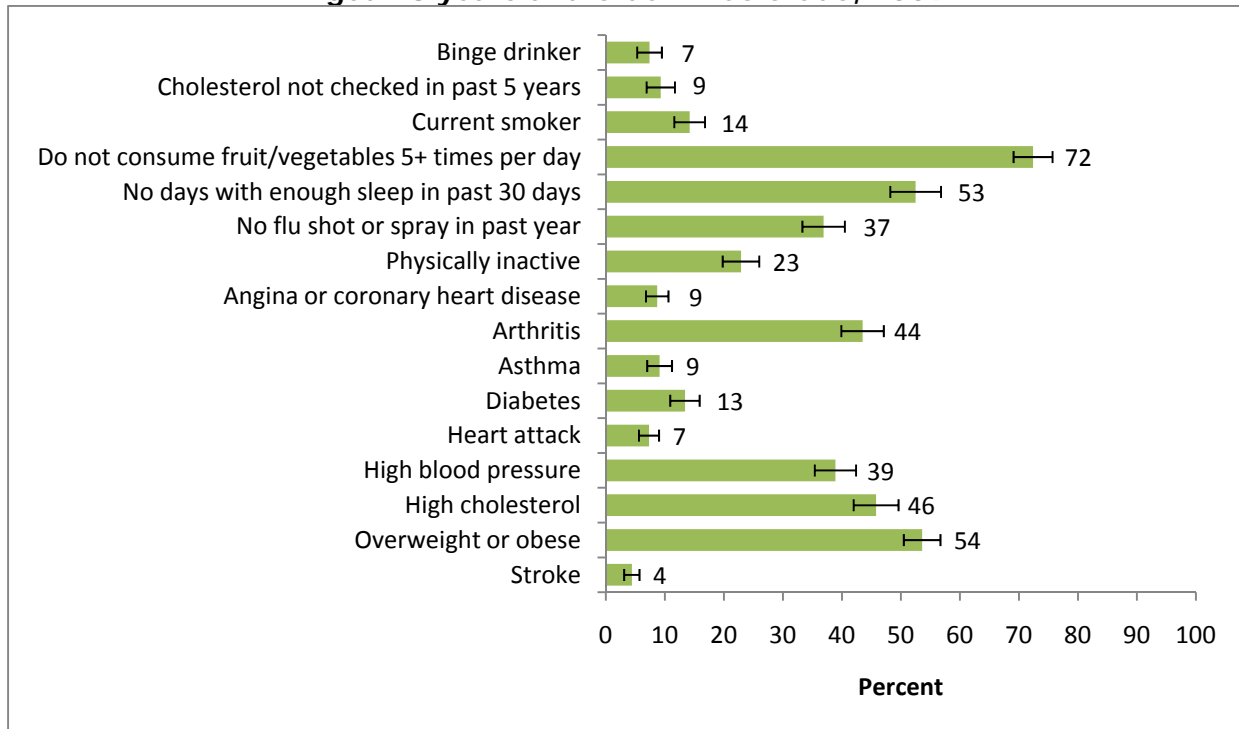
Data source: Colorado Behavioral Risk Factor Surveillance System
Definitions: binge drinker –reported having >=5 drinks (men) or >=4 drinks (women) on >=1 occasion during the previous 30 days; physically inactive – reported no physical activities or exercises other than regular job during the past month

Few differences in these risk factors were found between survivors whose most recent type of diagnosis was female breast cancer, prostate cancer, melanoma, colorectal cancer, cervical cancer or other female cancers (endometrial and ovarian). Exceptions included:

- Prostate cancer survivors, who tend to be older than other cancer survivors, had a higher prevalence of having received a high blood pressure diagnosis compared with all cancer survivors (53% vs. 39%).
- Cervical cancer survivors, who tend to be younger than other cancer survivors, had a higher prevalence compared with all cancer survivors of current smoking (39% vs. 14%) and of not having received a flu shot or spray during the past 12 months (57% vs. 37%).

Cancer types other than those listed here could not be compared due to small sample sizes.

RISK FACTORS AND CONDITIONS FOR CANCER SURVIVORS COMPARED WITH PERSONS WITHOUT A CANCER DIAGNOSIS — COLORADO, 2009

Cancer survivors were older than persons without a cancer diagnosis. To control for some of the age-related difference between cancer survivors and persons without a cancer diagnosis, which would be associated with chronic disease risk factors and conditions, the results comparing these two groups are stratified by age (40–64 years and 65 years or older). Survey respondents aged younger than 40 years were excluded due to the small sample size among cancer survivors.

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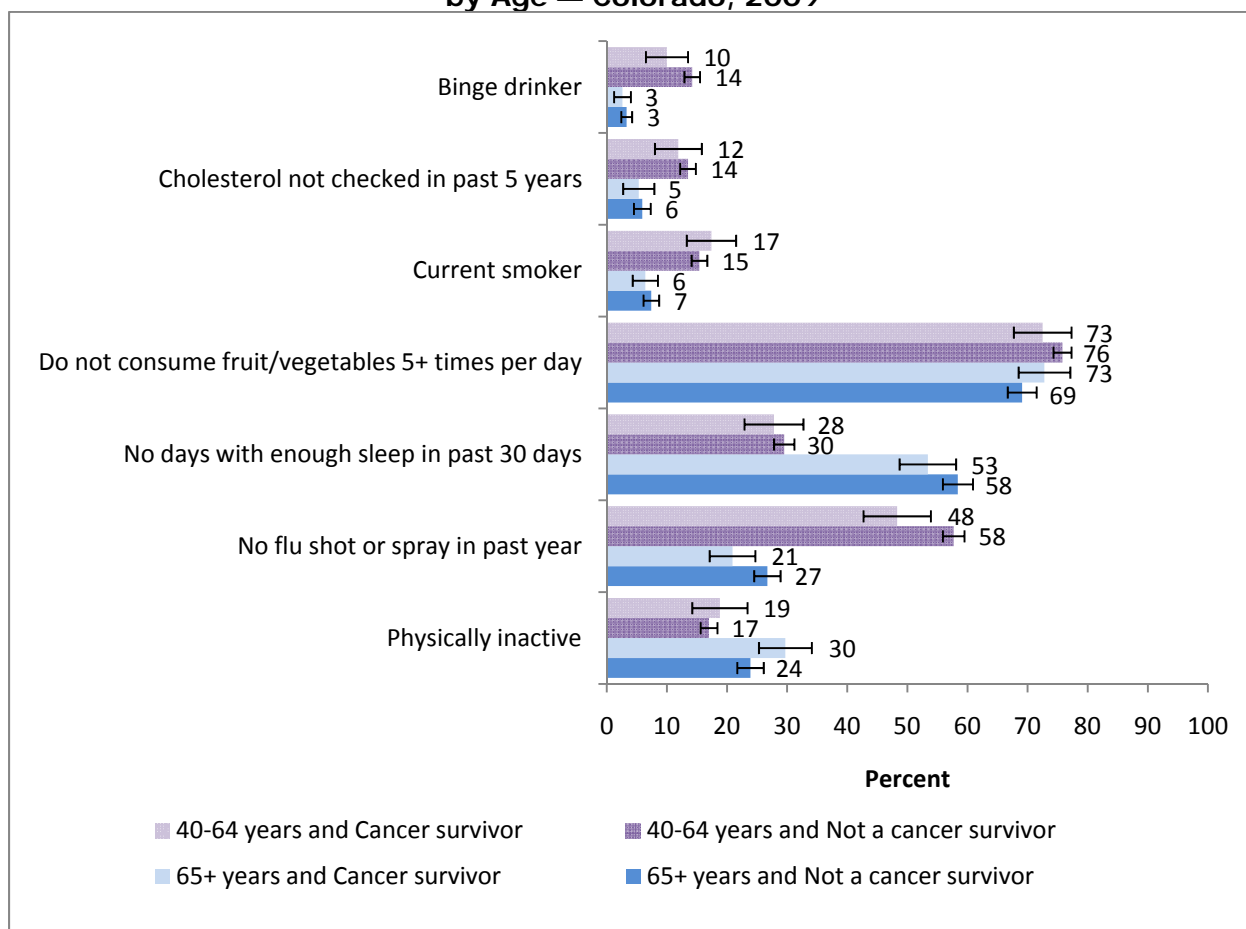Cancer Prevention & Control

RISK FACTORS

Cancer survivors aged 40–64 years had a lower prevalence of reporting no flu shot or spray in the past year compared with persons without a cancer diagnosis aged 40–64 years (48% vs. 58%).

Cancer survivors aged 65 years or older had a lower prevalence of reporting no flu shot or spray during the past year compared with persons without a cancer diagnosis aged 65 years or older (21% vs. 27%).

Cancer survivors aged 65 years or older had a higher prevalence of being physically inactive compared with persons without a cancer diagnosis aged 65 years or older (30% vs. 24%).

There were no differences in the prevalence of binge drinking, having had cholesterol checked during the past five years, current smoking, fruit and vegetable consumption, or days with enough sleep during the past 30 days between cancer survivors and persons without a cancer diagnosis within the age group 40–64 years or 65 years or older.

Figure 6. Risk factors among Cancer Survivors and Persons without Cancer Diagnosis by Age — Colorado, 2009

Data source: Colorado Behavioral Risk Factor Surveillance System
Definitions: binge drinker –reported having >=5 drinks (men) or >=4 drinks (women) on >=1 occasion during the previous 30 days; physically inactive – reported no physical activities or exercises other than regular job during the past month

HEALTH CONDITIONS

Cancer survivors aged 40–64 years had a higher prevalence of several health conditions compared with persons without a cancer diagnosis aged 40–64 years:
- Angina or coronary heart disease (6% vs. 2%)
- Arthritis (35% vs. 28%)
- Stroke (2% vs. 1%)

Cancer survivors aged 40–64 years had a lower prevalence of overweight or obesity compared with persons without a cancer diagnosis aged 40–64 years (53% vs. 63%).

Cancer survivors aged 65 years or older had a higher prevalence of reporting doctor-diagnosed diabetes compared with persons without a cancer diagnosis aged 65 years or older (19% vs. 14%).

There were no differences in the prevalence of high cholesterol, high blood pressure, heart attack or asthma between cancer survivors and persons without a cancer diagnosis within the age group 40–64 years or 65 years or older.

Figure 7. Health Conditions among Cancer Survivors and Persons without Cancer Diagnosis by Age — Colorado, 2009
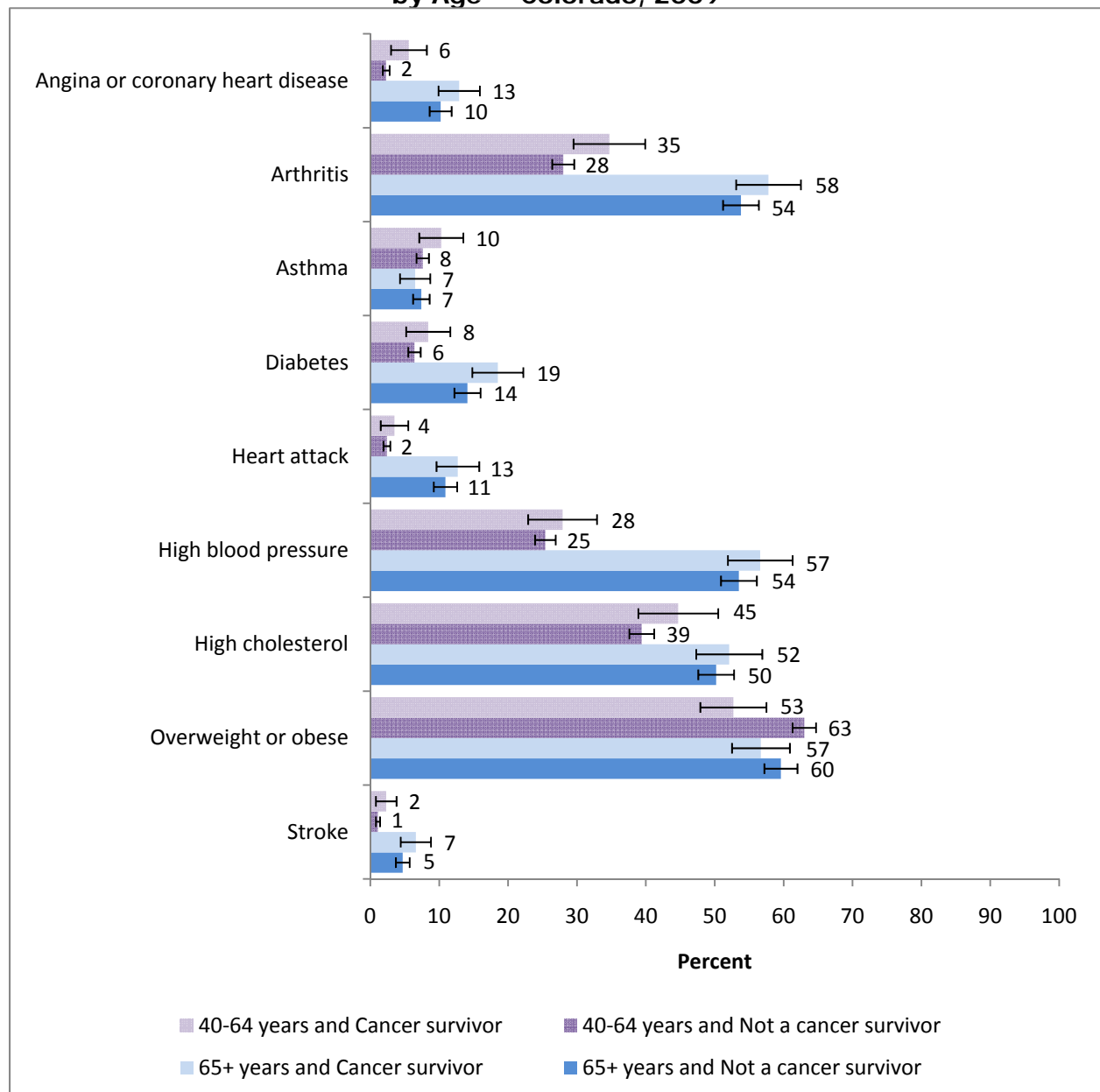
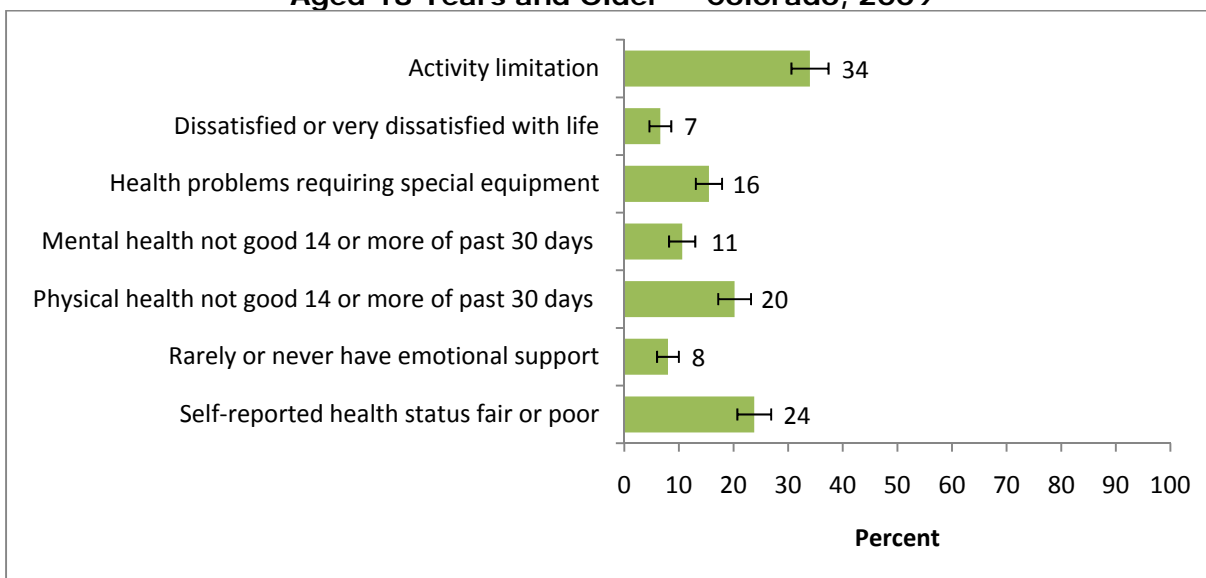Data source: Colorado Behavioral Risk Factor Surveillance System

QUALITY OF LIFE

Quality of life among cancer survivors can be affected by cancer treatment and physical and mental health issues.

QUALITY OF LIFE AMONG CANCER SURVIVORS AGED 18 YEARS AND OLDER — COLORADO, 2009

A large proportion of cancer survivors reported activity limitations (34%), fair or poor health status (24%), poor physical health on 14 or more of the past 30 days (20%), health problems requiring special equipment (16%), and poor mental health on 14 or more of the past 30 days (11%).

No differences in these quality of life measures were found between survivors whose most recent type of diagnosis was female breast cancer, prostate cancer, melanoma, colorectal cancer, cervical cancer or other female cancers (endometrial and ovarian).

**Figure 8. Quality of Life among Cancer Survivors
Aged 18 Years and Older — Colorado, 2009**

Data source: Colorado Behavioral Risk Factor Surveillance System

QUALITY OF LIFE FOR CANCER SURVIVORS COMPARED WITH PERSONS WITHOUT A CANCER DIAGNOSIS — COLORADO, 2009

Cancer survivors were older than persons without a cancer diagnosis. To control for some of the age-related difference between cancer survivors and persons without a cancer diagnosis, which might be associated with quality of life, the results comparing these two groups are stratified by age (40–64 years and 65 years or older). Survey respondents aged younger than 40 years were excluded due to the small sample size among cancer survivors.

Cancer survivors had a higher prevalence of reporting activity limitation compared with persons without a cancer diagnosis (31% vs. 20% for those aged 40-64 years; 38% vs. 28% for those aged 65 years or older).

Among those aged 40-64 years, cancer survivors had a higher prevalence of reporting life dissatisfaction compared with persons without a cancer diagnosis (9% vs. 5%).

Cancer survivors had a higher prevalence of reporting health problems requiring special equipment compared with persons without a cancer diagnosis (8% vs. 5% for those aged 40-64 years; 25% vs. 16% for those aged 65+ years).

Cancer survivors had a higher prevalence of reporting 8 or more physically unhealthy days in the past 30 days compared with persons without cancer diagnosis (22% vs. 11% for those aged 40-64 years; 24% vs. 16% for those aged 65 years or older).

Cancer survivors had a higher prevalence of reporting fair or poor general health compared with persons without a cancer diagnosis (20% vs. 11% for those aged 40-64 years; 28% vs. 18% for those aged 65 years or older).

Cancer survivors did not differ from persons without a cancer diagnosis in the number of mentally unhealthy days reported during the past 30 days or in the availability of emotional support.

Figure 9. Quality of Life Factors among Cancer Survivors and Persons without Cancer Diagnosis by Age — Colorado, 2009
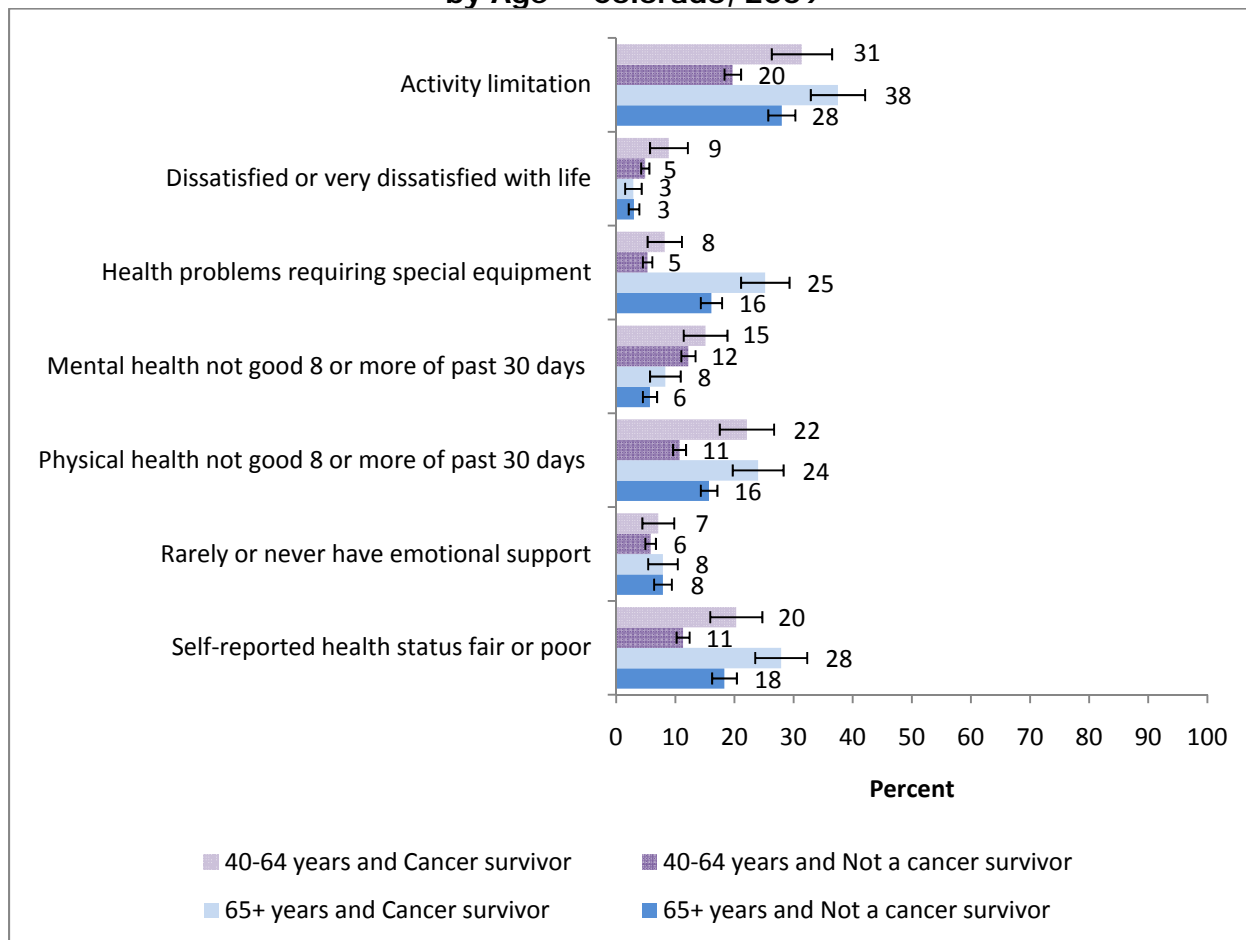
Data source: Colorado Behavioral Risk Factor Surveillance System

LIMITATIONS

The data on risk factors, health conditions and quality of life from the Behavioral Risk Factor Surveillance System (BRFSS) are subject to at least three limitations:

- The data are cross-sectional, and temporality cannot be determined. For example, it is unknown whether a cancer survivor with arthritis received the arthritis diagnosis before or after his or her cancer diagnosis.

- The health conditions data in this report represent doctor-diagnosed illness. Therefore, in order for a survey respondent to respond yes to a question about having a diagnosis of arthritis, for example, three things must occur:

    o The person has visited a doctor or other health care provider.

    o The person has been given a diagnosis.

    o The person understood and remembered it, and responded "yes" during the survey.

    Frequency of visiting a health care provider could not be compared between cancer survivors and persons without a cancer diagnosis. It is unknown whether cancer survivors visit health care providers more often than the general population and would, therefore, have more opportunities to be screened for or diagnosed with health conditions. Frequency of visiting a health care provider might be one possible, partial explanation for the association of multiple health diagnoses.

- Results comparing cancer survivors with persons without a cancer diagnosis were stratified by age (40–64 years and 65 years or older) to control for some of the age-related difference between the two groups. The occurrence of chronic diseases increases with age; therefore, the stratification by age attempts to examine whether or not risk factors and conditions are still associated with a diagnosis of cancer within the same age group. However, age differences might still exist within the age groups of 40-64 years and 65+ years that would affect prevalence of the risk factors, health conditions and quality of life factors because the age range is large.

WHAT DOES THIS MEAN?

It is important to educate health care providers and others in Colorado about cancer survivorship issues. This information should be used by health care and public health professionals to develop interventions to improve health care, health and quality of life for cancer survivors.

Cancer is a chronic disease and requires careful disease management by survivors and their health care providers. Raising awareness about healthy living and physical and mental health after a cancer diagnosis is a critical step in improving the health and quality of life of cancer survivors. Developing a survivorship care plan and treatment summary will help cancer survivors receive comprehensive and coordinated health care throughout life.

Follow-up care should include post-cancer care as well as discussion about other health problems. Cancer survivors will benefit from the same advice given to anyone who wants to improve his or her health: exercise, eat a healthy diet, maintain a healthy weight, stop smoking and discuss health concerns during regular visits to a health care provider.

In 2005, the Institute of Medicine published "*From Cancer Patient to Cancer Survivor: Lost in Transition.*"[3] The report outlined the challenges faced by cancer survivors in obtaining quality primary care following cancer treatment. One of the recommendations made in the report was that cancer treatment providers

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use a survivorship care plan to assist patients in understanding how and when to seek care after they are no longer receiving cancer treatment. This plan should help survivors understand the role of primary care and prevention in their overall health, as well as alert them to possible health risks that may result from cancer treatments (such as osteoporosis, heart failure, etc). Another recommendation of the report was: "Patients completing primary treatment should be provided with a comprehensive care summary and follow-up plan that is clearly and effectively explained. This 'Survivorship Care Plan' should be written by the principal provider(s) who coordinated oncology treatment. This service should be reimbursed by third-party payors of health care."

The Colorado-specific data and the disparities presented in this brief report can be used to target interventions and plan programs to improve cancer survivors' health care, physical and mental health, and quality of life. They can also be used to reduce the disparities in health among persons who have received a cancer diagnosis.

LINKS TO ADDITIONAL INFORMATION

Colorado Department of Public Health and Environment: http://www.cdphe.state.co.us/pp/ccpc/index.html
Colorado Central Cancer Registry: http://www.cdphe.state.co.us/pp/cccr/index.html
Office of Cancer Survivorship: http://cancercontrol.cancer.gov/ocs/office-survivorship.html
American Cancer Society: http://www.cancer.org/Treatment/SurvivorshipDuringandAfterTreatment/index
Centers for Disease Control and Prevention: http://www.cdc.gov/cancer/survivorship/

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[1] American Cancer Society. *Cancer Facts and Figures 2010.* Atlanta: American Cancer Society; 2010.
[2] Altekruse SF, Kosary CL, Krapcho M, Neyman N, Aminou R, Waldron W, Ruhl J, Howlader N, Tatalovich Z, Cho H, Mariotto A, Eisner MP, Lewis DR, Cronin K, Chen HS, Feuer EJ, Stinchcomb DG, Edwards BK (eds). SEER Cancer Statistics Review, 1975-2007, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2007/, based on November 2009 SEER data submission, posted to the SEER web site, 2010.
[3] Hewitt M, Greenfield S, Stovall E, Eds,. *From Cancer Patient to Cancer Survivor: Lost in Transition.* Washington, D.C.: National Academies Press; 2005.