

# Cancer Risk Factors Among Adults with Serious Mental Illness

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## Background

There is strong evidence to suggest that adults living with serious mental illness have a higher risk of mortality and morbidity than the general U.S. population, including a higher risk of mortality associated with certain cancers and cancer-related deaths.<sup>1-5</sup> The potential loss of life expectancy among this population may be as high as 25 years compared to those without a mental illness.<sup>1,3,6</sup> There are numerous challenges faced by people with serious mental illness, and behavioral factors that may contribute to increased cancer risk, including high prevalence of smoking, obesity, physical inactivity, substance abuse, and infectious diseases.<sup>2,4,7-9</sup> Many of these individuals are uninsured, homeless, have a dual diagnosis of substance abuse, and are least likely to<sup>10</sup> access and use preventive healthcare services.<sup>1,3,11</sup> There is growing concern that those with serious mental illness experience disparities in health education, health prevention services, cancer screening, access to diagnostic testing, cancer case recognition, and higher cancer case fatalities.<sup>4,9</sup> Although there are many interrelated and complex factors associated with cancer-related risk among this vulnerable population, many of these factors can be addressed.<sup>3</sup> This paper aims to increase awareness of cancer risk factors and implications of employing innovative health promotion and cancer-prevention strategies among people with serious mental illness.

## Introduction

Health disparities among those with mental illness constitute a major public health problem in the U.S. Nationwide, one in four adults live with a mental illness.<sup>12</sup> The impact of mental disorders on the lives of individuals varies from minor functional impairments to widespread incapacitation in daily and social abilities, and even early death.<sup>12-14</sup> Compared to the general

population, adults with serious mental illness (including schizophrenia, bipolar disorder, or major depression) experience disparities in education, income, employment, housing, healthcare service use, community engagement, and life span.<sup>15-17</sup> Even within racial and ethnic groups, disparities exist in duration of course of illness, treatment modalities, disability associated with serious mental illness, and access to mental health services.<sup>14,18</sup> Although many adults living with serious mental illness are uninsured, 2012 estimates from the USDHHS indicate that 11 million new beneficiaries of the Affordable Care Act will be eligible for and need mental health and substance abuse services.

People with serious mental illness receive fewer preventive services and poorer access to high-quality medical care.<sup>19,20</sup> These patients often resort to using emergency services; they experience difficulty communicating with providers and across systems, scheduling appointments, and navigating health systems.<sup>15,21,22</sup> Even within healthcare systems, cognitive, behavioral, and social limitations associated with serious mental illness may contribute to primary care providers' difficulties in obtaining medical histories and planning care. This population also experiences difficulty adhering to medical regimens and faces challenges in obtaining and maintaining insurance for medical services.<sup>22</sup> Patient factors such as distrust and lack of motivation make adherence difficult.<sup>13,23</sup> Additionally, somatic complaints may be attributed to the psychiatric disorders, potentially resulting in underestimation of the care needed. Patients with co-occurring serious mental illness and substance use disorders often experience even greater challenges because as the morbidity associated with mental disorders increases, receipt of preventive care services tends to decrease.<sup>22</sup>

Those living with serious mental illness also experience higher rates of mortality and morbidity than the general population from cardiovascular disease, respiratory disease, diabetes, some cancers, and infectious diseases.<sup>6,15,23-25</sup> Excess mortality from laryngeal, hepatobiliary, and urinary tract cancers has been reported among this vulnerable population. This increase in death rates has been attributed to high prevalence of smoking, substance abuse, and chronic hepatic infections such as hepatitis B and C.<sup>4</sup> Lung, pharyngeal, and gallbladder

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cancer rates have been reported as higher among patients with schizophrenia than the general population.<sup>7</sup> Risk factors related to the higher incidences in these cancers among people with schizophrenia are associated with tobacco and alcohol use, obesity, and high-fat diets. Other studies have shown that although the incidence of cancer among those with mental illness is no higher than the general population, the likelihood of advanced staging at the time of diagnosis is greater.<sup>8,7</sup> This may be explained by inequities in cancer screening, access to care, reduced amount of specialty intervention, and delay of appropriate treatment following cancer diagnosis.<sup>8,9</sup>

In the eight-state study on congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients, the relative risk of death was higher in all eight states (Arizona, Missouri, Oklahoma, Rhode Island, Texas, Utah, Vermont, and Virginia).<sup>2</sup> The leading cause of death in public mental health clients mirrored the general population, including heart disease, cancer, cerebrovascular disease, and pulmonary disease. Cancer ranked as the second highest cause of mortality in three states.<sup>2,23</sup> A Maryland study involving Medicaid adult beneficiaries with bipolar disorders and schizophrenia revealed an increased incidence in lung, colorectal, and breast cancer. The complex interrelatedness among serious mental illness, its relative social consequences, and cancer risk has important implications for prevention efforts.<sup>20,26</sup> Cigarette smoking, excessive body weight, infectious diseases, and increased prevalence of alcohol and substance use are major contributors to higher rates of poorer health outcomes associated with malignancies and chronic diseases among this vulnerable population.<sup>15,23,24,27</sup>

## Key Risk Factors

### Tobacco Use

Cigarette smoking, a leading cause of preventable disease and death, has been associated with an estimated \$96 billion in medical expenses and loss of productivity.<sup>28</sup> Tobacco use among individuals with serious mental illness contributes to development of cancer, respiratory disease, and cardiovascular disease and to worsening of other chronic conditions.<sup>29</sup> There is evidence of increasing tobacco-related cancers.<sup>30</sup> The single largest contributor to cancer worldwide is considered to be tobacco smoking.<sup>30</sup> Cancer of the lungs, larynx, bronchus, and trachea has been attributed to smoking.<sup>4,31</sup> Despite the known adverse health effects of smoking, rates of tobacco use are high in those with serious mental illness, with almost half of all adults in this population smoking cigarettes.<sup>15,22,23,27,28,32–36</sup> Data from the 2009–2011 National Survey on Drug Use and Health (NSDUH)<sup>28</sup>

indicated that 30.9% of all tobacco consumed from cigarette smoking among adults is attributable to consumption among those with serious mental illness. The highest prevalence of cigarette smoking among adults with mental illness was among men, those aged <45 years, those living below the poverty level, and those with less education. Although smoking rates among this vulnerable population were highest for those aged 18–24 (41.6%), smoking rates were also high among those aged 45–64 years (33.5%). The NSDUH did not include individuals living in mental health residential communities and individuals in the military, where rates could be higher. Additionally, individuals with schizophrenia have even higher rates of cigarette smoking and tend to have greater nicotine dependence and extraction.<sup>27,35,37</sup> Prevalence of cigarette smoking among individuals with schizophrenia may be as high as 90% compared to the general population, where smoking rates are between 20% and 25%.<sup>35,38</sup> In this population, cigarette smoking may be used as a way to improve cognitive function and self-management of symptoms associated with mental illness.<sup>27,28,39</sup> However, cigarette smoking can be an impediment in reaching therapeutic levels of certain medications used to treat some mental disorders.<sup>33,40</sup>

Compounding the problems associated with tobacco use, many adults with serious mental illness are in stressful and unstable living situations, have inadequate financial resources, are poorly informed of deleterious health effects of smoking, lack access to smoking-cessation treatment, and may experience greater difficulty with withdrawal symptoms.<sup>28,41,42</sup> Cessation programs are infrequently offered and underutilized among individuals with serious mental illness, and smoke quit rates are lower among this population. Thus, tailored and sustainable strategies to mitigate smoking or improve smoking cessation must be employed and may be the single most important intervention to reduce specific cancer risk among this vulnerable population.<sup>4,27,31,33,38,40</sup>

### Obesity

Excessive body weight is associated with increased risk of mortality from multiple cancers.<sup>43</sup> Higher rates of cancer of the esophagus, colorectum, breast, endometrium, and kidneys are associated with obesity and being overweight.<sup>4,44</sup> Researchers found that higher rates of death for all cancers combined at multiple specific sites were associated with an increase in body weight among both genders.<sup>43</sup> As the prevalence of obesity among the general population has risen to epidemic proportions, the prevalence of overweight and obese adults with serious mental illness has also increased and has exceeded rates in the general population.<sup>45–48</sup> Physical

inactivity, poor dietary choices, side effects associated with antipsychotic medications, and symptomatology associated with specific mental disorders contribute to the high rates of obesity in people with serious mental illness.<sup>15,45,47–50</sup> Physical activity among individuals with serious mental illness tends to be lower than in the general population,<sup>51,52</sup> probably because of a lack of social support, lethargy, and frequent illness. Lower levels of self-efficacy may be higher among women with serious mental illness.<sup>52,53</sup> Factors such as tobacco use and being overweight may also contribute to lower levels of physical activity in adults with bipolar disorders.<sup>47</sup>

## Weight Gain

Dietary choices also contribute to obesity in this population. Although dietary habits vary among people with mental illness, there are many factors associated with weight gain. Excessive carbohydrate consumption including sweetened beverages, comorbid binge eating behaviors, use of medications with known weight gain side effects, and having frequent and prolonged depressive episodes contribute to higher risk of obesity.<sup>46,54,55</sup> In a small pilot study, diets high in sugar consumption were seen in patients with schizophrenia treated with certain antipsychotic medication.<sup>56</sup> A larger (N=146) study including dietary recall of patients with schizophrenia found that their dietary selection was similar to that of the general population, but they consumed larger quantities of the same foods and thus more calories.<sup>57</sup> Researchers in Scotland found that patients with schizophrenia consumed lower levels of fiber, fruits, and vegetables and higher levels of saturated fats.<sup>58</sup>

A body of knowledge regarding weight gain, lipid abnormalities, and hyperglycemia associated with the use of second-generation antipsychotics has also been amassed.<sup>15,53,59</sup> These antipsychotic medications are the most prescribed medications for schizophrenia.<sup>60</sup> They are usually selected for their reduced risk of neurologic side effects in patients, thus reducing medication non-adherence and stigmatization.<sup>53,59</sup> Weight gain is a common side effect of taking antipsychotic medication. The pattern of weight gain varies among different second-generation antipsychotics, ranging from 15 to 26 pounds during 1 year of treatment. These side effects have been attributed to increase rates of morbidity and influence patients' adherence and discontinuation of use despite their effectiveness.<sup>51,60</sup> Focus groups consisting of veterans with schizophrenia and schizoaffective disorder indicated that they valued weight management and appearance but thought that taking antipsychotic medications made it even more difficult to lose weight. Patients identified increase in appetite, low energy, and clumsiness as side effects contributing to a lack of weight

loss. Fast-food advertising, accessible food delivery, lack of portion control, irregular meals, unhealthy food choices, and residential barriers that undermined weight loss initiatives were also identified as obstacles to weight loss.<sup>61</sup>

## Alcohol and Substance Use

Approximately 5.2 million adults have coexisting mental health and addiction disorders.<sup>16,62</sup> According to the National Institute on Drug Abuse, co-occurrence of mental illness and drug abuse is highly prevalent and may derive from common predisposing factors such as overlapping genetic factors, environmental triggers, and similar brain regions affected by both disorders.<sup>62</sup> Results from the Epidemiologic Catchment Area study indicated that there were high rates of alcohol and other substance use among those with mental illness. Among 20,291 participants aged 18 and older, 37% of those with an alcohol disorder had a mental disorder, and 53% of those with a drug dependence disorder (other than alcohol) were found to also have a mental disorder. This study also revealed that people with one addictive disorder had a seven times greater risk than the general population of having another drug-related disorder.<sup>63</sup>

Findings from the National Epidemiologic Survey on Alcohol and Related Conditions showed high self-reported prevalence rates of psychotic disorders among those with substance use disorders compared to those without.<sup>64</sup> Co-occurring mental illness and substance use can lead to poor self-care, physical comorbidities, accidents, increased sexual behavior,<sup>15,65</sup> and increased risk of cancers associated with excessive alcohol consumption and viral infections.<sup>44,66,67</sup> Evidence suggests that regular alcohol consumption is a known cause of cancer second to tobacco smoking, and has been linked to cancers of the pharynx, larynx, oval cavity, esophagus, liver, colon, rectum, and breast.<sup>68,69</sup> The WHO International Agency for Research on Cancer Monograph Working Group reported that alcohol is an independent risk factor associated with primary liver cancer.<sup>69</sup>

## Sleep

Sleep and circadian rhythm disruption among patients with schizophrenia have been widely reported.<sup>70–74</sup> Reports of patients with schizophrenia experiencing sleep and circadian rhythm disruption have been as high as 30%–80%, depending on the extent of illness and symptoms.<sup>70,75</sup> Sleep disruptions can range from insomnia to courses of total sleeplessness.<sup>76</sup> Reduction in sleep time and sleep efficiency, increases in sleep latency, and alteration in rapid eye movement sleep may occur in patients with schizophrenia.<sup>73–75</sup> Additionally, sleep in

patients with schizophrenia may be agitated and restless.<sup>76</sup> Sleep disturbances may have a more profound effect on people with schizophrenia, including altered cognitive performance, impaired social and occupational functioning, fragmented daytime sleep, anergia, excitement, poor coping ability, and reduced quality of life.<sup>70,71,75</sup> There is strong evidence that obesity is a major contributor to sleep apnea among those with serious mental illness, and such disruption in sleep and circadian rhythms can contribute to mood destabilization.<sup>48,77</sup> There is limited evidence to suggest that sleep disturbances may also have a role in cancer risk, and that disturbances in sleep may promote the predominance of cancer-stimulatory cytokines, contributing to immune suppression and cancer development.<sup>71,78</sup> However, evidence regarding the role of sleep disturbance in cancer risk among those with serious mental illness is lacking.<sup>79</sup>

### Homelessness

Adults with a serious mental illness have a greater risk (25%–50%) of homelessness over a lifetime. This increase in risk is 20 times that of the general population.<sup>81</sup> Homelessness presents greater challenges for people with serious mental illness and can further exacerbate cancer risk-related factors.<sup>18,79–81</sup> For example, homeless individuals have greater exposure to environmental elements, inadequate nutrition, and higher rates of injury, heart disease, liver disease, and other chronic conditions and limited access to regular health care.<sup>19,80–85</sup> Disproportionately high rates of hepatitis B and hepatitis C infection have also been reported among the homeless populations because of high-risk sexual behavior and intravenous drug use,<sup>86–88</sup> with rates as high as 17% to 31% for hepatitis B, and 17% to 53% for hepatitis C.<sup>89</sup> Homelessness is also associated with certain cancer risk-related behaviors. According to Chau et al.,<sup>83</sup> there is an increased prevalence of alcohol consumption, obesity, greater sun exposure, increased outdoor time, and increased number of sexual partners among women, which placed them at greater risk for cervical cancer. These issues compound the challenges for cancer-prevention strategies among those with serious mental illness and create a need for multiple system approaches.

### Implications for Cancer Prevention

Individuals with serious mental illness are at increased risk for chronic disease, different types of cancers, and early death.<sup>6,15,23–25</sup> This vulnerable population merits quality care, equitable access, and innovative approaches to cancer-prevention efforts that will enhance their ability to live full, productive lives.<sup>15</sup> In developing public health strategies, racial and ethnic disparities, health

literacy, and difficulty navigating health systems should also be considered.<sup>14,15,90</sup> Although research has been conducted to examine cancer causes and ways to prevent various cancers, there is a need for parity in prevention efforts between people with serious mental illness and the general population. Thus far, there has been minimal focus on cancer-prevention initiatives among this population, despite the alarmingly high rates of tobacco use, alcohol consumption, obesity, viral infection, sleep disturbances, and prolonged exposure to environmental elements.

Approaches to address these risk factors may be complex and require comprehensive community-based mental health and evidence-based practices that include coordination across government agencies, community centers, academic institutions, and the private sector.<sup>15,27,33,40</sup> Effective and innovative strategies to build capacity among primary care and mental health providers offer opportunities to meet the unique needs of those experiencing serious mental illness.<sup>91</sup> Cancer prevention models utilizing interprofessional teams that have been used for other groups with complex needs can be tailored for those with serious mental illness, particularly those experiencing homelessness. Surveillance of cancer rates among these vulnerable populations is also warranted. Research to evaluate effective strategies to prevent weight gain and to facilitate prevention and cessation of alcohol and substance use in those with serious mental illness must be developed.<sup>15,92</sup> Robust and sustained efforts are necessary for smoking-cessation programs targeting this population.<sup>27,33,38,40</sup> Increased support to create and test cancer-prevention programs among these vulnerable groups designed by community partners and other stakeholders should be employed and considered a public health priority that informs both practice and policy.

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