

Marc De Hert, Davy Vancampfort, and Johan Detraux

Contents

23.1	Introduction	350
23.2	Relationship Between SMI, SUDs, and Medical Disorders	351
23.3	Major Medical Diseases in Dual Disorder Patients	353
23.3.1	Chronic Viral Infections	353
23.3.1.1	HIV Positivity	353
23.3.1.2	Hepatitis C Virus (HCV) Infection	354
23.3.2	Respiratory Tract Diseases	356
23.3.3	Cardiovascular Diseases	357
23.4	Quality of Medical Care in Psychiatric Patients with Dual Disorder	357
	References	359

Abstract

Individuals with severe mental illness (SMI) are prone to many different physical health problems. While these diseases are, compared with the general population, more prevalent among people with SMI, their impact on individuals with a dual disorder (=the co-occurrence of SMI with substance use disorder, SUD) seems even to be more significant. Although general research is limited, there is sufficient evidence to conclude that dual disorder patients have a significantly greater medical comorbidity than SMI patients without an SUD. This is confirmed by additional research on major medical diseases in these patients. Studies in SMI patients show a strong relationship between SUDs and human immunodeficiency virus and hepatitis C virus infection. Cigarette

M. De Hert (✉)

Department of Neurosciences, KU Leuven, Kortenberg, Belgium
e-mail: marc.de.hert@uc-kortenberg.be

D. Vancampfort • J. Detraux

University Psychiatric Centre, KU Leuven, Kortenberg, Belgium
e-mail: Davy.Vancampfort@uc-kortenberg.be

smoking and drug abuse, which are highly prevalent among SMI people, are implicated in a higher risk for developing respiratory tract diseases, such as chronic pulmonary disease, and cardiovascular diseases. However, although medical health problems are more prevalent in dual disorder patients, a substantial proportion of these patients do not receive any treatment for these somatic problems. Specific patient, provider, and system factors act as barriers to the recognition and the management of physical disease in these highly vulnerable patients.

23.1 Introduction

The life expectancy of people with severe mental illness (SMI), including schizophrenia, bipolar disorder, schizoaffective disorder, and major depressive disorder, is shorter compared to the general population. This excess mortality is mainly due to physical illness. Nutritional and metabolic diseases, cardiovascular diseases, viral diseases, respiratory tract diseases, musculoskeletal diseases, stomatognathic disease, and possibly obesity-related cancers are, compared to the general population, more prevalent among people with SMI. An unhealthy lifestyle as well as treatment-specific factors account for much of the increased risk for most of these physical diseases (De Hert et al. 2011a).

Adults with SMI have high rates of co-occurring substance use disorders (SUDs) (Tandon et al. 2009; Testa et al. 2013). The US Substance Abuse and Mental Health Services Administration (SAMHSA) (2010) reported that 11.4 million adults aged 18 or older (5 %) had an SMI in the past year. About a quarter of these adults (25.2 %) had a co-occurring SUD, compared with 6.1 % of adults who did not have a mental illness. Especially patients with schizophrenia or bipolar disorder have comorbidity of SUDs. For example, compared with the general population, persons with schizophrenia are almost five times more likely to have an SUD (Buckley 2006). Obviously, as has been shown by several non-American studies, dual disorder is a substantial problem around the world, with prevalence rates being lower, similar or even higher than those in the United States (Buckley 2006). Moreover, a primary non-substance-related mental disorder often precedes and is a robust risk factor for the later onset of an SUD (Swendsen et al. 2010).

It is commonly reported that the co-occurrence of an SUD with an SMI is generally more severe, chronic, and less likely to result in positive treatment outcomes than a single disorder (Matusow et al. 2013). Co-occurring substance abuse complicates the disease and is associated with a multitude of adverse outcomes including medication noncompliance and increased relapse and rehospitalization rates (Buckley 2006). Substance abuse in addition to an SMI can also be associated with poorer overall health and physical comorbidities, such as a poorer physical and mental hygiene (often including a sedentary lifestyle, poor eating, and sleeping habits), liver disease, and cardiac and pulmonary diseases. Other related medical problems involve the higher risk for infectious diseases, including human

immunodeficiency virus (HIV), hepatitis C virus (HCV) infection, and tuberculosis (Ziedonis et al. 2005). However, few reports have examined the association of SMI, SUDs, and medical disorders in order to clarify to what extent comorbid SUDs increase the prevalence of certain medical disorders beyond the effect of SMI alone.

23.2 Relationship Between SMI, SUDs, and Medical Disorders

A large-scale cross-sectional study ($N = 26,332$ of whom 11,185 have been treated for an SMI), controlling for other medical risk factors, such as poverty, did find that patients with an SMI and an SUD had the highest adjusted odds for five (of eight) investigated medical disorders, compared with SMI patients without an SUD and patients with an SUD but no SMI: heart disease (Odds ratio, OR = 4.24, 95 % CI: 3.19–5.63), asthma (OR = 3.29, 95 % CI: 2.63–4.13), gastrointestinal disorders (OR = 2.82, 95 % CI: 2.28–3.49), skin infections (OR = 1.97, 95 % CI: 1.26–1.77), and acute respiratory disorders (OR = 2.04, 95 % CI: 1.78–2.33). The odds ratios for SMI patients without a comorbid SUD were heart disease (OR = 3.19, 95 % CI: 2.51–4.07), asthma (OR = 1.99, 95 % CI: 1.65–2.39), gastrointestinal disorders (OR = 2.28, 95 % CI: 1.92–2.69), skin infections (OR = 1.49, 95 % CI: 1.26–1.77), and acute respiratory disorders (OR = 1.40, 95 % CI: 1.26–1.54). The reference group for all comparisons consisted of Medicaid beneficiaries without a psychotic disorder or SUD. To identify persons with an SUD, the authors used all ICD (International Classification of Diseases)-9 codes for alcohol and drug use or abuse. SMI was defined as having a diagnosis of schizophrenia, bipolar disorder, or another psychotic disorder (Dickey et al. 2002).

Lin et al. (2011) examined the association between mental illness and chronic physical conditions in older adults (≥ 65 years) and investigated whether co-occurring SUDs (including alcohol or drug abuse or dependence) are associated with greater risk of chronic physical conditions beyond mental illness alone. The study population ($N = 679,182$) was classified into three mutually exclusive mental illness groups: SMI (including schizophrenia, bipolar disorder, and major depression), other mental illness (all other psychiatric diagnoses), and no mental illness. Fifteen chronic physical conditions were selected: hypertension, ischemic heart disease, congestive heart failure, atrial fibrillation, stroke, chronic obstructive pulmonary disease or asthma, diabetes mellitus, chronic kidney disease, osteoporosis, arthritis, hip or pelvic fracture, cancer, dementia (including Alzheimer's disease), Parkinson's disease, and eye disease. They found that community-dwelling older adults with co-occurring SUDs and mental illness had the highest adjusted risk for 11 of the 15 selected chronic physical conditions, compared to those without these disorders ($N = 545,450$). Mental illness and SUDs were especially associated with a much greater risk of dementia and hip fractures. The adjusted prevalence ratios for older adults with an SMI and co-occurring SUD (vs. older adults with an SMI but without an SUD) for these chronic physical conditions were 9.9 (95 % CI: 9.5–10.2) vs. 5.9 (95 % CI: 5.8–6.0), and 9.5 (95 % CI: 8.3–10.9) vs. 3.9 (95 % CI: 3.7–4.1), respectively.

Table 23.1 Physical diseases with increased frequency in dual disorder patients, compared to severe mental illness patients without co-occurring substance use disorder

Disease category	Physical diseases with increased frequency
Virus diseases	Human immunodeficiency virus (HIV), hepatitis C virus
Neoplasms	Cancer
Musculoskeletal diseases	Osteoporosis/decreased bone mineral density, hip fractures, arthritis
Stomatognathic diseases	Poor dental status
Gastrointestinal diseases	Gastroesophageal reflux disease
Respiratory tract diseases	Chronic obstructive pulmonary disease (COPD), asthma, tuberculosis, bacterial pneumonia
Skin diseases	Skin infections
Cardiovascular diseases	Stroke, myocardial infarction, hypertension, ischemic heart disease, congestive heart failure, atrial fibrillation
Endocrine system diseases	Diabetes mellitus, hyperlipidemia
Mental disorders	Dementia
Kidney diseases	Chronic kidney disease

Batki et al. (2009) characterized the type and severity of medical comorbidity in patients with schizophrenia and co-occurring alcohol dependence ($n = 80$). The authors examined the influence of demographic factors as well as the severity of psychiatric illness, alcohol use, and non-alcohol substance use on medical illness burden. They found that patients with co-occurring alcohol use disorder (AUD) may have significantly more medical illness burden than patients with schizophrenia or schizoaffective disorder alone. Eighty-three percent of dual disorder patients had at least one chronic medical illness, hypertension being the most common (43 %). The medical illness burden was correlated with alcohol use severity (e.g., gamma-glutamyl-transpeptidase levels), but appeared to be independent of psychiatric severity or other substance use.

Although there are few data on HRQOL (Health-Related Quality of Life) in dual disorder patients, most of the studies show a worse HRQOL in these patients, compared with SMI patients without a comorbid SUD and with patients with an SUD alone (Benaiges et al. 2012).

Thus, although general research is limited, there is sufficient evidence to conclude that dual disorder patients have substantially greater medical comorbidity than SMI patients without an SUD. This is confirmed by additional research on major medical diseases in dual disorder patients (see Sect. 23.3). Interventions to decrease substance use and abuse may therefore be critically in reducing medical morbidity in this patient population (Table 23.1).

23.3 Major Medical Diseases in Dual Disorder Patients

23.3.1 Chronic Viral Infections

Individuals with SMI have been shown to be at significantly increased risk for a variety of chronic viral infections, of which the most serious are the diseases associated with human immunodeficiency virus (HIV) and hepatitis C virus (HCV) infection. This increased risk is largely due to co-occurring use of substances and specifically elevated rates of high-risk drug-related behaviors (Meyer 2003). Studies in SMI patients show a strong relationship between SUDs and HIV and HCV infection.

23.3.1.1 HIV Positivity

The role of substance abuse in HIV infection is well documented. According to a report of the US SAMHSA, drug abuse behavior plays the single largest role in the spread of HIV infection in the United States today. Half of all new HIV infections now occur among injection drug users (Department of Health and Human Services 2008).

Although the prevalence of HIV positivity in people with SMI varies substantially (1.3–23.9 %), it is much higher than the HIV prevalence rate found in the general population (De Hert et al. 2009a, 2011a). Next to injection drug use, substance abuse-associated sexual risk behaviors, as well as a reduced knowledge about HIV-related issues, contribute to these higher HIV prevalence rates (Himelhoch et al. 2007; De Hert et al. 2011a, b). Meade (2006), for example, found that among persons with dual disorders, active substance abusers engaged in the highest rates of sexual activity (56 %), followed by persons with remitted SUD (46 %), and, finally, by those with no lifetime history of SUD (23 %). SMI persons with lifetime SUD were more than 14 times more likely than persons with no SUD to report partner-related risks, including multiple partners, non-monogamous partners, sex with prostitutes or strangers, and sex trade. Individuals with SMI who have a history of childhood abuse may be at particularly high risk for HIV. Childhood abuse, and in particular associated cognitive, emotional, and social impairments, in people with SMI is directly and indirectly related to HIV risk behavior with substance abuse and adult victimization as mediators (Meade et al. 2009).

A longitudinal analysis (Prince et al. 2012), exploring the relationships between diagnosis of SMI and subsequent new diagnoses of HIV among Medicaid beneficiaries in eight US states ($N = 6,417,676$), underscored the link between substance abuse and the risk of new HIV diagnoses in SMI patients. Among people with major depressive disorder, bipolar disorder, and schizophrenia, those with substance abuse or dependence were, respectively, 3 (adjusted OR = 3.04), 2.5 (adjusted OR = 2.45), and 1.6 (adjusted OR = 1.63) times as likely ($p < 0.001$) as those without substance abuse or dependence to be diagnosed with HIV during the next 3 years. These results therefore suggest once again that assessing and addressing substance abuse, as well as associated high-risk behaviors, are essential

factors to reduce HIV/AIDS risk among persons with SMI. In contrast to what might be expected on the basis of earlier reports of associations between SMI and HIV risk, the authors did not find SMI diagnosis in the absence of substance abuse to be associated with increased risk of HIV/AIDS. People with SMI but without an SUD in 2001 were 23 % less likely (adjusted OR = 0.77, $p < 0.001$) than people without SMI or an SUD to receive a new HIV diagnosis during the next 3 years. Only major depressive disorder seemed to confer such risk (12 % increase, adjusted OR = 1.12, $p < 0.01$). After adjustment for substance abuse or dependence diagnosis and demographic and selecting other characteristics, the presence of bipolar disorder was not associated with higher odds of new HIV/AIDS diagnoses, and the presence of schizophrenia was even associated with lower odds of new HIV/AIDS diagnoses (OR = 0.56, $p < 0.001$). Prince et al. (2012) therefore conclude that it remains unclear whether behavioral factors associated with SMI, other than those captured by a substance abuse or dependence diagnosis, also increase the risk of HIV/AIDS diagnoses.

Nevertheless, because of the high HIV prevalence rates, it is important that dual disorder patients are tested for HIV. However, studies investigating HIV testing rates among individuals with an SMI indicate that fewer than half of these patients (percentages ranging from 17 % to 47 %) have been tested in the past year (De Hert et al. 2011a). Since many patients with SMI are exposed to atypical antipsychotics, which have been associated with metabolic abnormalities, and since patients infected with HIV and on highly active antiretroviral therapy may also develop metabolic abnormalities, this group of patients is at particularly high risk for developing the metabolic syndrome and ultimately cardiovascular diseases (Vergara-Rodriguez et al. 2009).

23.3.1.2 Hepatitis C Virus (HCV) Infection

Across different continents, markedly elevated rates of hepatitis virus infection have been reported in persons with SMI, compared to the general population. Overall, an estimated 20–25 % of persons with SMI are infected with HCV (De Hert et al. 2011a). Several studies have shown that SMI patients with SUDs even have higher rates of HCV infection (Mistler et al. 2006; Huckans et al. 2006; Matthews et al. 2008). Matthews et al. (2008) collected retrospectively data on 325,410 patients from electronic medical records and compared HCV prevalence rates in bipolar disorder patients with and without SUDs ($N = 9,750$). Compared with a control group with no history of either bipolar disorder or SUD, patients in the dual disorder group ($N = 4,724$) had a 5.46-fold increase in the relative risk of HCV infection, followed by the SUD group without a bipolar disorder ($N = 37,970$) (4.86-fold risk increase) and the bipolar disorder group without an SUD ($N = 5,026$) (1.31-fold risk increase). Huckans et al. (2006), utilizing a Veterans Healthcare Administration medical record database, found that, of those tested for HCV, 31.1 % (943/3,029) of veterans with comorbid schizophrenia and SUD were confirmed to have HCV, compared with 9.9 % (219/2,207) of veterans with schizophrenia but no documented history of SUD. Respectively, these groups were approximately eight (OR = 8.12, 95 % CI: 7.47–8.82, $p < 0.001$) and two

times (OR = 1.98, 95 % CI: 1.71–2.28, $p < 0.001$) as likely as the control group of patients without these diagnoses to have HCV infection. As even patients in the schizophrenia group with no SUD history were twice as likely as those in the control group to have HCV infection, these results equally show that a diagnosis of schizophrenia may be a risk factor independent of SUD.

HCV infection is a major cause of liver disease, including cirrhosis and hepatocellular carcinoma (Loftis et al. 2006). The most common routes of HCV transmission for persons with SMI are drug-use behaviors and sexual behaviors related to drug use (Mistler et al. 2006). For example, increased risk of bipolar disorder patients for both HCV and its related hepatic morbidity may come from some patients' participation in high-risk behaviors like intermittent/episodic drug use or hypersexuality when manic. In addition, AUDs are relatively common in bipolar patients, which may increase the likelihood of high-risk behaviors as well as increase risk of progression of liver disease secondary to alcohol use in those patients with HCV (Matthews et al. 2008). Rosenberg et al. (2001) found, in a large sample ($N = 931$) of patients with an SMI undergoing inpatient or outpatient treatment, that being positive for HCV was associated with several substance using variables, including the presence of an SUD (alcohol, cannabis, and cocaine), a lifetime history of injection drug use, a lifetime history of sniffing or snorting drugs, and a lifetime use of crack. Injection drug use, compared with those without injection drug use, increased the risk of HCV infection to more than 31-fold (OR = 31.25, 95 % CI: 18.47–49.52, $p < 0.001$). A study of Klinkenberg et al. (2003), trying to estimate the prevalence of HCV among homeless persons with dual disorders, found 29.8 % (34/114) were antibody positive for HCV. Substance use variables having a significant bivariate relationship with HCV status were having a history of injection drug use ($p < 0.01$) and needle sharing ($p < 0.01$). SMI persons with a history of injection drug use were about three times more likely (OR = 3.19) to have a reactive test for HCV as SMI persons without a history of injection drug use.

These results underline the centrality of SUD, particularly injection drug abuse, in HCV infection. Therefore, especially patients with dual disorders should have routine screening and treatment for HCV infection to prevent associated morbidity and mortality (De Hert et al. 2011a). Unfortunately, although there is an overwhelming body of evidence that HCV-infected patients with psychiatric and addiction comorbidities can safely and effectively undergo antiviral treatment with similar sustained viral responses, many dual disorder patients are left untreated. If these patients undergo therapy, it is important that such treatment is delivered within the context of a multidisciplinary setting. In particular multidisciplinary approaches that combine HCV treating providers with mental health, addictions, and other support systems can facilitate preparation and successful treatment of these patients (Bonner et al. 2012).

23.3.2 Respiratory Tract Diseases

Up until 50 years ago, respiratory diseases, such as pneumonia and tuberculosis, accounted for the majority of deaths among people with SMI who lived in institutions. Nevertheless, respiratory diseases are still prevalent in people with SMI (De Hert et al. 2011a). Studies consistently show a higher incidence of tuberculosis among patients with schizophrenia compared with the general population (De Hert et al. 2011a). Filik et al. (2006) found that people with SMI have a higher prevalence of angina and respiratory symptoms and impaired lung function when compared with the general population. A nationwide, population-based study found schizophrenia to be associated with a 1.37 times greater risk of acute respiratory failure and a 1.34-fold greater risk of mechanical ventilation, compared to those without schizophrenia. In this study patients with an SUD were excluded from both the schizophrenia and comparison groups (Chen et al. 2011).

Several risk factors are implicated in adverse outcomes for respiratory diseases. In particular cigarette smoking and alcohol abuse, which are more prevalent among SMI people, are important in this regard (Chen et al. 2011). For example, a meta-analysis of worldwide studies demonstrated that, compared with the general population, patients with schizophrenia have a higher prevalence of ever smoking, heavy smoking, and high nicotine dependence, as well as of risk factors that make them more vulnerable to start smoking (De Leon and Diaz 2005). Moreover, up to 85 % of individuals with SMI will die and/or have a reduced quality of life because of a tobacco-related disease (De Hert et al. 2011c). As chronic obstructive pulmonary disease (COPD), i.e., chronic bronchitis and emphysema, is caused primarily by cigarette smoking (Forey et al. 2011), individuals with SMI are likely to be at higher risk for developing this disease (De Hert et al. 2011a). In a sample of 200 SMI patients, overall, the reported prevalence of COPD was 22.6 %. Compared to national comparison subjects who were matched on age, gender, and race, those with SMI were significantly more likely to report a diagnosis of chronic bronchitis (19.5 % versus 6.1 %, OR = 3.75, 95 % CI: 2.53–5.55) as well as emphysema (7.9 % versus 1.5 %, OR = 5.69, 95 % CI: 3.08–10.48). Not surprisingly, smoking was the strongest independent predictor of COPD, with smokers having 8 times higher risk of COPD than the nonsmokers in the same group (adjusted OR = 8.83, 95 % CI: 1.98–39.34, $p = 0.004$) (Himelhoch et al. 2004).

Smoking of illicit drugs has been associated with the transmission of respiratory pathogens including bacterial pneumonia and tuberculosis (Welsh et al. 2012). “Shotgunning” or “doing a shotgun,” referring to the practice of one individual forcibly exhaling (blowing) smoke into the mouth (or, rarely, nose) of another, has been associated with potential increased transmission of respiratory pathogens, including tuberculosis. However, a recent study ($n = 236$) demonstrated shotgunning was not associated with tuberculosis, or history of positive purified protein derivative tuberculin skin test in SMI patients with a lifetime substance abuse history and engaged in shotgunning (61 %) (Welsh et al. 2012).

23.3.3 Cardiovascular Diseases

In SMI patients, cardiovascular diseases (CVD) are the commonest cause of death. The prevalence of CVD in people with schizophrenia and bipolar disorder is approximately two- to threefold increased. The risk of coronary heart disease seems to be 2- to 3.6-fold higher in patients with schizophrenia; people with bipolar disorder have a 2.1-fold higher risk. The risk of cerebrovascular accident is 1.5- to 2.9-fold higher in patients with schizophrenia, and 2.1- to 3.3-fold higher in patients with bipolar disorder (De Hert et al. 2011a).

Next to obesity, physical inactivity, hypertension, dyslipidemia, diabetes mellitus, and use of psychotropic medication, smoking undoubtedly is a risk factor for CVD (ischemic heart disease, cerebrovascular disease, atherosclerosis, aneurysm) and associated mortality in SMI patients (Kelly et al. 2011; De Hert et al. 2009b, 2011a, 2012). A US study of patients with mental disorders, including SMI patients, found that smoking (Hazard ratio, HR = 1.32, 95 % CI: 1.26–1.39, $p < 0.001$) was the second most important behavioral cardiovascular mortality risk factor, behind physical inactivity (HR = 1.66, 95 % CI: 1.59–1.74, $p < 0.001$) (Kilbourne et al. 2009). Kelly et al. (2011), examining the effects of cigarette smoking on mortality risk in 1,213 persons with schizophrenia-related psychotic disorders, identified cardiac causes in 43 % of deaths in smokers versus 19 % of deaths in nonsmokers ($p < 0.006$). For those aged 35–54 years, the odds of cardiac-related death was increased by 12-fold in smokers relative to nonsmokers (HR = 12.4, $p = 0.0005$). SUDs, including the use of cocaine or stimulants, also are a risk factor for cardiovascular events (De Hert et al. 2011d; Testa et al. 2013). Cocaine's toxic effects on the cardiovascular system include hypertensive crisis, myocardial infarction, tachyarrhythmia, and sudden death (Devlin and Henry 2008; Testa et al. 2013). Other substances associated with cardiac arrhythmias and sudden death include 3,4-methylenedioxymethamphetamine (MDMA or “ecstasy”), amphetamines, and cannabis (Devlin and Henry 2008). Although excessive alcohol use increases the likelihood of developing a wide range of medical problems, it also harms the cardiovascular system (Batki et al. 2009). Binge drinking is a significant risk factor for stroke, particularly in hypertensive patients (Hillbom et al. 2011).

Despite the increased risk for cardiovascular morbidity and mortality, SMI patients have a limited access to general health care with less opportunity for cardiovascular risk screening and prevention (De Hert et al. 2009b; Testa et al. 2013), as well as a significantly reduced chance of receiving many specialized interventions or circulatory medications (De Hert et al. 2011a).

23.4 Quality of Medical Care in Psychiatric Patients with Dual Disorder

A substantial proportion of adults with comorbid mental health problems and an SUD do not receive any treatment. Therefore, medical problems may go undetected or undiagnosed in these dual disorder patients. Harris and Edlund (2005) examined

the rates of substance abuse treatment and mental health care use among five groups that were formed on the basis of the presence of an SUD (alcohol or any drug), mental health problems, or both in the past year. Although the likelihood of receiving any substance abuse treatment increased with the presence and severity of mental health problems, still 45.9 % of dual disorder patients with an SMI (defined as having at least one 12-month DSM-IV disorder, excluding SUDs, along with functional impairment, $N=7,530$) and 65 % of those with one or more mental health symptoms (representing key constructs from the major disorders, $N=13,759$) received neither mental health nor substance abuse treatment. Only 31.2 % of mental health users with SMI and an SUD ($N=1,872$) received any substance abuse treatment. This low rate of substance abuse treatment among SMI patients who use mental health care raises policy concerns, because mental health treatment alone for co-occurring disorders may be ineffective.

Possible reasons for these low rates of treatment include stigma, denial, financial barriers, inadequate recognition of medical illness and poor access to care, a shortage of trained providers, and the lack of a strong clinical consensus about the best way to treat dual disorder patients (Harris and Edlund 2005; Ziedonis et al. 2005; De Hert et al. 2011c). Under these circumstances, SMI patients may continue to engage in risky behavior. Moreover, it also seems that dual disorder patients underreport their medical problems significantly more than patients with an SUD only. Meszaros et al. (2011) showed that patients with schizophrenia or schizoaffective disorder and co-occurring AUD underreport their medical problems significantly more than patients with AUD only and controls. Accuracy of self-report also was significantly lower in patients with schizophrenia-spectrum disorders and co-occurring alcohol dependence than in patients with AUD only or in controls. The most commonly underreported diagnoses included coronary artery disease, chronic renal failure, seizure disorder, hyperlipidemia, asthma, and hypertension.

To improve the care of dual disorder patients, screening should include testing medical comorbidity, as well as risky behaviors such as intravenous needle use. Furthermore, assessment should include an evaluation of the severity of the SMI and the addiction, the scope of the patient's disabilities, as well as the patient's capacity and resources of support to overcome the dual disorder (Buckley 2006). Although integrated treatment should be the new standard for evidence-based treatment for this population (Ziedonis et al. 2005), there are still barriers to overcome. In our nationwide cross-sectional study ($N=1,420$), evaluating to which extent treatment programs in Belgian psychiatric services were in accordance with an integrated treatment philosophy, we found only 50 % of the clinicians in this study mentioned the use of cross-trained teams in the treatment of dually diagnosed patients (De Hert et al. 2010). Therefore, there is still a high need for cross-trained teams and a high need to develop specific integrated treatment programs that address both disorders. Finally, after an integrated dual disorder treatment plan, aftercare should be provided, as well as other care, to address the social and vocational needs of the patient.

Conclusion

Physical disorders are, compared to the general population and SMI patients without a co-occurring SUD, more prevalent in dual disorder patients. In spite of this, the screening and assessment of physical health aspects in these patients remains poor, even in developed countries. Specific patient (e.g., unawareness of physical problems due to cognitive deficits, difficulties in communicating physical needs), provider (e.g., tendency of psychiatrist to focus on mental rather than physical health, poor communication with patient or primary care health workers), and system (lack of awareness of the physical health and health care access problems for people with SMI, stigma and discrimination, gap between physical and mental health care) factors act as barriers to the recognition and the management of physical diseases in dual disorder patients (De Hert et al. 2011c). This highlights the urgent need to improve the coordination of care across the physical, mental, and addiction health care delivery systems. Although medical staff, guided by negative stereotypes, often tend to treat the physical illnesses of people with SMI less thoroughly and less effectively, even simple and very basic monitoring and treatment actions, undertaken by the treating clinician, can already improve the problem of suboptimal medical care in this population. Adhering to monitoring and treatment guidelines will result in a substantial enhancement of physical health outcomes in this vulnerable population (De Hert et al. 2011c).

References

- Batki SL, Meszaros ZS, Strutynski K et al (2009) Medical comorbidity in patients with schizophrenia and alcohol dependence. *Schizophr Res* 107(2–3):139–146
- Benaiges I, Prat G, Adan A (2012) Health-related quality of life in patients with dual diagnosis: clinical correlates. *Health Qual Life Outcomes* 10:106
- Bonner JE, Barritt AS 4th, Fried MW et al (2012) Time to rethink antiviral treatment for hepatitis C in patients with coexisting mental health/substance abuse issues. *Dig Dis Sci* 57(6):1469–1474
- Buckley PF (2006) Prevalence and consequences of the dual diagnosis of substance abuse and severe mental illness. *J Clin Psychiatry* 67(Suppl 7):5–9
- Chen YH, Lin HC, Lin HC (2011) Poor clinical outcomes among pneumonia patients with schizophrenia. *Schizophr Bull* 37(5):1088–1094
- De Hert M, Detraux J, Vancampfort D et al (2012) Severe mental illness and diabetes mellitus type 2. *Die Psychiatrie* 9(3):159–164
- De Hert M, Correll CU, Bobes J et al (2011a) Physical illness in patients with severe mental disorders. I. Prevalence, impact of medications and disparities in health care. *World Psychiatry* 10(1):52–77
- De Hert M, Trappeniers L, Wampers M et al (2011b) Knowledge about HIV in people with schizophrenia: a general population comparison. *Clin Schizophr Relat Psychoses* 5(2):80–86
- De Hert M, Cohen D, Bobes J et al (2011c) Physical illness in patients with severe mental disorders. II. Barriers to care, monitoring and treatment guidelines, plus recommendations at the system and individual level. *World Psychiatry* 10(2):138–151
- De Hert M, Detraux J, van Winkel R et al (2011d) Metabolic and cardiovascular adverse effects associated with antipsychotic drugs. *Nat Rev Endocrinol* 8(2):114–126

- De Hert M, Katarina R, Benoit G et al (2010) Dual diagnosis among schizophrenic patients in Belgian psychiatric services: prevalence and available treatment options. *Acta Psychiatr Belg* 110(2):43–50
- De Hert M, Wampers M, Van Eyck D et al (2009a) Prevalence of HIV and hepatitis C infection among patients with schizophrenia. *Schizophr Res* 108(1–3):307–308
- De Hert M, Dekker JM, Wood D et al (2009b) Cardiovascular disease and diabetes in people with severe mental illness position statement from the European Psychiatric Association (EPA), supported by the European Association for the Study of Diabetes (EASD) and the European Society of Cardiology (ESC). *Eur Psychiatry* 24(6):412–424
- De Leon J, Diaz FJ (2005) A meta-analysis of worldwide studies demonstrates an association between schizophrenia and tobacco smoking behaviors. *Schizophr Res* 76(2–3):135–157
- Department Of Health And Human Services, Substance Abuse and Mental Health Services Administration Center for Substance Abuse Treatment (2008). Drugs, alcohol and HIV/AIDS. A consumer Guide. U.S. <http://www.samhsa.gov>. Accessed 28 June 2013
- Devlin RJ, Henry JA (2008) Clinical review: major consequences of illicit drug consumption. *Crit Care* 12(1):202
- Dickey B, Normand SL, Weiss RD et al (2002) Medical morbidity, mental illness, and substance use disorders. *Psychiatr Serv* 53(7):861–867
- Filik R, Sipos A, Kehoe PG et al (2006) The cardiovascular and respiratory health of people with schizophrenia. *Acta Psychiatr Scand* 113(4):298–305
- Forey BA, Thornton AJ, Lee PN (2011) Systematic review with meta-analysis of the epidemiological evidence relating smoking to COPD, chronic bronchitis and emphysema. *BMC Pulm Med* 14(11):36
- Harris KM, Edlund MJ (2005) Use of mental health care and substance abuse treatment among adults with co-occurring disorders. *Psychiatr Serv* 56(8):954–959
- Hillbom M, Saloheimo P, Juvela S (2011) Alcohol consumption, blood pressure, and the risk of stroke. *Curr Hypertens Rep* 13(3):208–213
- Himelhoch S, Lehman A, Kreyenbuhl J et al (2004) Prevalence of chronic obstructive pulmonary disease among those with serious mental illness. *Am J Psychiatry* 161(12):2317–2319
- Himelhoch S, McCarthy JF, Ganoczy D et al (2007) Understanding associations between serious mental illness and HIV among patients in the VA health system. *Psychiatr Serv* 58:1165–1172
- Huckans MS, Blackwell AD, Harms TA et al (2006) Management of hepatitis C disease among VA patients with schizophrenia and substance use disorders. *Psychiatr Serv* 57(3):403–406
- Kelly DL, McMahon RP, Wehring HJ et al (2011) Cigarette smoking and mortality risk in people with schizophrenia. *Schizophr Bull* 37(4):832–838
- Kilbourne AM, Morden NE, Austin K et al (2009) Excess heart-disease-related mortality in a national study of patients with mental disorders: identifying modifiable risk factors. *Gen Hosp Psychiatry* 31(6):555–563
- Klinkenberg WD, Caslyn RJ, Morse GA et al (2003) Prevalence of human immunodeficiency virus, hepatitis B, and hepatitis C among homeless persons with co-occurring severe mental illness and substance use disorders. *Compr Psychiatry* 44(4):293–302
- Lin WC, Zhang J, Leung GY et al (2011) Chronic physical conditions in older adults with mental illness and/or substance use disorders. *J Am Geriatr Soc* 59(10):1913–1921
- Loftis JM, Matthews AM, Hauser P (2006) Psychiatric and substance use disorders in individuals with hepatitis C: epidemiology and management. *Drugs* 66(2):155–174
- Matthews AM, Huckans MS, Blackwell AD et al (2008) Hepatitis C testing and infection rates in bipolar patients with and without comorbid substance use disorders. *Bipolar Disord* 10(2):266–270
- Matusow H, Guarino H, Rosenblum A et al (2013) Consumers' experiences in dual focus mutual aid for co-occurring substance use and mental health disorders. *Subst Abuse* 7:39–47
- Meade CS (2006) Sexual risk behavior among persons dually diagnosed with severe mental illness and substance use disorder. *J Subst Abuse Treat* 30(2):147–157

- Meade CS, Kershaw TS, Hansen NB et al (2009) Long-term correlates of childhood abuse among adults with severe mental illness: adult victimization, substance abuse, and HIV sexual risk behavior. *AIDS Behav* 13(2):207–216
- Meszáros ZS, Dimmock JA, Ploutz-Snyder R et al (2011) Accuracy of self-reported medical problems in patients with alcohol dependence and co-occurring schizophrenia or schizoaffective disorder. *Schizophr Res* 132(2–3):190–193
- Meyer JM (2003) Prevalence of hepatitis A, hepatitis B, and HIV among hepatitis C-seropositive state hospital patients: results from Oregon State Hospital. *J Clin Psychiatry* 64(5):540–545
- Mistler LA, Brunette MF, Marsh BJ et al (2006) Hepatitis C treatment for people with severe mental illness. *Psychosomatics* 47(2):93–107
- Prince JD, Walkup J, Akincigil A et al (2012) Serious mental illness and risk of new HIV/AIDS diagnoses: an analysis of Medicaid beneficiaries in eight states. *Psychiatr Serv* 63(10):1032–1038
- Rosenberg SD, Goodman LA, Osher FC et al (2001) Prevalence of HIV, hepatitis B, and hepatitis C in people with severe mental illness. *Am J Public Health* 91(1):31–37
- Swendsen J, Conway KP, Degenhardt L et al (2010) Mental disorders as risk factors for substance use, abuse and dependence: results from the 10-year follow-up of the National Comorbidity Survey. *Addiction* 105(6):1117–1128
- Tandon R, Nasrallah HA, Keshavan MS (2009) Schizophrenia, “just the facts” 4. Clinical features and conceptualization. *Schizophr Res* 110(1–3):1–23
- Testa A, Giannuzzi R, Sollazzo F et al (2013) Psychiatric emergencies (part II): psychiatric disorders coexisting with organic diseases. *Eur Rev Med Pharmacol Sci* 17(Suppl 1):65–85
- U.S. Department of health and human services. Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality. Results from the 2010 National Survey on Drug Use and Health: Mental Health Findings. http://www.samhsa.gov/data/nsduh/2k10MH_Findings/2k10MHResults.pdf. Accessed 28 June 2013
- Vergara-Rodriguez P, Vibhakar S, Watts J (2009) Metabolic syndrome and associated cardiovascular risk factors in the treatment of persons with human immunodeficiency virus and severe mental illness. *Pharmacol Ther* 124:269–278
- Welsh C, Goldberg R, Tapscott S et al (2012) “Shotgunning” in a population of patients with severe mental illness and comorbid substance use disorders. *Am J Addict* 21(2):120–125
- Ziedonis DM, Smelson D, Rosenthal RN et al (2005) Improving the care of individuals with schizophrenia and substance use disorders: consensus recommendations. *J Psychiatr Pract* 11(5):315–339