mon biopsychosocial factors that are associated with the development of dual disorders.
- The high prevalence and related disability of dual disorders require active intervention from policy-makers at a systems level and active advocacy from health professionals.
- Service providers should be trained in the management of dual disorders and sufficient financial support should be granted for this purpose.
- Systematic screening for other mental disorders through validated instruments by trained health service providers is an essential component of adequate care for people with drug use disorders.
- Availability of and accessibility to adequate treatment should be provided, regardless of the entry point to care systems, in line with the principle of "no wrong door".
- Sex- and gender-based knowledge and a stigma-free approach are required in the effective management of dual disorders.
- Age-specific interventions are required across the lifespan, especially for minors and the elderly.
- Science-informed prevention interventions that address common risk factors, such as early life adversity, should be available to children living with parents and/or caregivers with dual disorders.
- Attention should also be given to other at-risk and vulnerable populations, in accordance with local needs.
- Access to services for dual disorders in the criminal justice system, particularly in prison settings, youth detention or correctional centres, should be secured.
- Collection and analysis of data to monitor the magnitude of the problem, the quality of care and the outcomes of policies and interventions should be encouraged.
- Implementation and scale up of effective and efficient interventions, with consideration of cultural and country specificities, is a priority.
- Finally, the Informal Scientific Network urges UN Member States to further support scientific research on new and enhanced interventions to effectively prevent and treat psychiatric comorbidities in people with drug use disorders.

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A 16-year follow-up of patients with serious mental illness and co-occurring substance use disorder

Individuals with serious mental illnesses, such as schizophrenia and bipolar disorder, experience high rates of co-occurring substance use disorders (approximately 41% across many studies)[1]. Patients with these co-occurring disorders are prone to a range of short-term adverse outcomes: relapses, hospitalizations, violence, homelessness, incarceration, family problems, suicide, and serious medical illnesses such as HIV and hepatitis C[2]. Despite these negative prognostic indicators, few studies have addressed the long-term course of patients with co-occurring disorders.

We previously reported on a cohort of such patients in New Hampshire who were followed prospectively for 10 years[3,4]. Our follow-up study showed that those who avoided early mortality tended to improve steadily over time, not only in terms of psychiatric symptoms and substance abuse, but also in functional areas such as independent living and employment. The present report extends the follow-up of the New Hampshire cohort to 16 years.

A grant from the Robert Wood Johnson Foundation facilitated implementation of integrated treatment services for patients with co-occurring disorders in New Hampshire in 1988. The integrated services included residential dual-diagnosis treatment, assertive community treatment teams, dual-diagnosis groups, illness management training, family psychoeducation, supported employment, and other evidence-based practices. A subsequent grant from the National Institute of Mental Health extended the follow-up of these patients prospectively for 16 years.

At baseline and yearly thereafter, our interviewers assessed 223 adults with co-occurring serious mental illness (schizophrenia spectrum or bipolar disorder) and substance use disorder (predominantly alcohol and cannabis) in New Hampshire, which is a rural Northeast state in the US. We used standardized measures, described elsewhere in detail[3], to assess diagnoses, psychiatric symptoms, substance abuse, independent living, competitive employment, social supports, and quality of life.

We defined dichotomous recovery outcomes as follows: a) psychiatric symptoms: no subscale of the Brief Psychiatric Rating Scale with an average score higher than 3; b) substance abuse: no use in the past month and pursuing long-term abstinence; c) independent living: residing independently and responsible for paying rent and making housing decisions; d) competitive employment: working in a regular job in an integrated setting and earning at least minimum wage, with a contract to the individual rather than to a social service agency; e) social support: regular contacts with friends who were not abusing substances; f) quality of life: expressing general satisfaction with one's life (>5 on the 7-point Quality of Life Inventory global satisfaction rating).

At baseline, the 223 patients were predominantly young (average age 34.4 years), male (74%), white (96%), and never married (61%). Diagnostically, 74% had schizophrenia spectrum disorders and 26% had bipolar disorder. The most common substances of abuse were alcohol, cannabis and cocaine. By the 16-year follow-up, 42 patients (19%) in the study group had died, 60 (27%) had been lost or dropped out, and 121 (54%) remained in the study. Thus, the 16-year follow-up on 121 patients included 54% of the original study group and 81% of the surviving patients. The attrition analysis showed that only older age predicted early mortality.

The proportion of patients in recovery on each of our six measures increased steadily and significantly over 16 years, including the interval between 10 and 16 years. For each outcome, the results (improvement reflected by time trend) from linear mixed-effects models were significant at $p<0.001$ (estimate = 0.014 for psychiatric symptoms; 0.037 for substance abuse; 0.018 for independent living; 0.009 for competitive employment; 0.017 for social support; and 0.012 for quality of life). The proportion of participants living independently increased from less than 40% in the first three years to more than 65% in the last three years, and the proportion in substance abuse recovery increased from less than 30% in the first three years to more than 65% in the last three years.

Thus, these patients with co-occurring serious mental illness and substance use disorders, despite having poor adjustment and numerous risk factors at baseline, tended to improve steadily and achieve multi-dimensional recovery outcomes over many years, as long as they did not succumb to early mortality. Recovery encompassed not just clinical domains, such as psychiatric symptoms and substance abuse, but also functional domains, such as independent living, social support, and employment. Quality of life also improved.

The most parsimonious interpretation of these findings is that the course of patients with co-occurring disorders who receive evidence-based treatments involves gradual but substantial improvements over many years. These patients often appear to be extremely impaired early in the course of co-occurring disorders, perhaps because the disorders exacerbate each other. For example, patients who are using street drugs often stop using antipsychotic medications, and psychosis often interferes with participation in substance abuse treatments. Both of these interactions increase the risks of negative outcomes. Nevertheless, these patients tend to recover over many years.

This interpretation accords with long-term studies of individuals with serious mental disorders, as documented by E. Bleuler[5] over 100 years ago and more recently by others[6]. Long-term studies of individuals with substance use disorders have also documented a trend toward recovery[7].

Several caveats deserve mention. Our New Hampshire cohort could have responded to unusually strong dual-disorder treatment services, which were widespread in the state due to a series of federal research projects and policy supports from local leaders. Beginning in the 1980s, effective treatments for patients with co-occurring disorders developed steadily[8]. The most effective interventions, such as residential treatment, peer groups, and assertive community treatment, were available in New Hampshire during this period. All these elements could limit the generalizability of the findings reported here.

Patients could also have benefitted from the relatively rural and benign environment of New Hampshire, although we found similar positive outcomes over several years in an urban dual-diagnosis study[9]. Differential attrition could have influenced the results, because more severely ill patients may have dropped out or died early, although this interpretation was not supported by our attrition analysis. In addition, specific drugs of abuse change over time: the current increased prevalence of methamphetamine and opioid abuse in the US may be producing greater rates of negative outcomes.

In summary, patients with serious mental illnesses (schizophrenia spectrum and bipolar disorders) and co-occurring substance use disorders (primarily alcohol and cannabis) are poorly adjusted and at high risk of negative outcomes in the short term. However, they tend to improve steadily over many years if they avoid early mortality. Participation in evidence-based integrated treatments for dual disorders is likely to contribute to recovery outcomes. These positive long-term outcomes should be a hopeful message for patients, families and clinicians, and an incentive to develop and implement integrated treatments for patients with co-occurring serious mental illness and substance use disorders.

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