

REVIEW ARTICLE

Recent findings on subjective well-being and physical, psychiatric, and social comorbidities in individuals with schizophrenia: A literature review

Yupeng He¹  | Ayako Tanaka¹ | Taro Kishi²  | Yuanying Li¹ | Masaaki Matsunaga¹ | Shinichi Tanihara³ | Nakao Iwata² | Atsuhiko Ota¹ 

¹Department of Public Health, Fujita Health University School of Medicine, Toyoake, Aichi, Japan

²Department of Psychiatry, Fujita Health University School of Medicine, Toyoake, Aichi, Japan

³Department of Public Health, Kurume University School of Medicine, Kurume, Fukuoka, Japan

Correspondence

Atsuhiko Ota, Department of Public Health, Fujita Health University School of Medicine, 1-98 Dengakugakubo, Kutsukake-cho, Toyoake, Aichi 470-1192, Japan.
Email: ohata@fujita-hu.ac.jp

Funding information

Ministry of Health, Labour and Welfare, Japan, Grant/Award Number: JPMH21GC1018; Health and Labour Sciences Research Grant

Abstract

Aim: Care for people with schizophrenia is shifting the locus from long-stay mental hospitals to nonspecialized community-based settings. Knowledge on the care is not a sole property of psychiatric specialists. Community healthcare workers who do not specialize in psychiatry are recommended to learn more about schizophrenia. This review aimed to summarize recent findings on subjective well-being and physical, psychiatric, and social comorbidities in individuals with schizophrenia.

Methods: A literature review was conducted. We retrieved findings from existing systematic reviews and meta-analyses as our preferred method. When data were not available, we referred to other types of studies.

Results: As per our review, individuals with schizophrenia demonstrated poor subjective well-being, happiness, and life satisfaction despite individual differences. Pharmacotherapy caused weight gain and constipation, whereas race and hospitalization might affect weight reduction. Individuals with schizophrenia demonstrated poor oral health, a high prevalence of noncommunicable diseases, and unique eating behaviors. Depression, sleep disorders, smoking, and alcohol and drug consumption were frequently found in the individuals. Research findings regarding problematic internet and smartphone use and stress perception were limited. Low health literacy and neglect of preventable behaviors were frequently seen in individuals with schizophrenia. They tended to be less educated, poor, unemployed, unmarried/unattached, and had poor social cognition, resulting in little social support and a small social network.

Conclusion: Retrieving recent data, we confirmed that individuals with schizophrenia had poor subjective well-being and suffer from various physical, psychiatric, and social comorbidities.

KEYWORDS

comorbidity, epidemiology, literature review, schizophrenia, subjective well-being

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2022 The Authors. *Neuropsychopharmacology Reports* published by John Wiley & Sons Australia, Ltd on behalf of The Japanese Society of Neuropsychopharmacology.

1 | INTRODUCTION

Mental disorders have drawn much attention worldwide in recent years.¹ Schizophrenia is a common mental disorder that affects more than 20 million people worldwide.² A systematic review reported a median 12-month and lifetime prevalence of 0.33% and 0.48%.³ Another systematic review demonstrated a median point, 12-month, and lifetime prevalence as high as 0.39%, 0.40%, and 0.75%, respectively.⁴ In Japan, Okui estimated the point prevalence of schizophrenia, including schizotypal and delusional disorders, to be approximately 0.7% by using the national data of the Patient Survey.⁵ Japan has more than 300 000 psychiatric care beds.⁶ It is by far the biggest number among the member countries of the Organization for Economic Co-operation and Development (OECD).⁷ About half of psychiatric inpatients suffer from schizophrenia or its allied disorders, and more than 70% of those are admitted for more than a year.⁶

The World Health Organization (WHO) advocates the deinstitutionalization of individuals with schizophrenia, that is, a shift of the locus of care for people with mental disorders from long-stay mental hospitals to nonspecialized community-based health settings to provide comprehensive, integrated, and responsive mental health and social care in the Comprehensive Mental Health Action Plan 2013–2030.⁸ In these circumstances, knowledge on the care is not a sole property of psychiatric specialists. Community healthcare workers who do not specialize in psychiatry are recommended to learn more about schizophrenia. Individuals with schizophrenia exhibit various symptoms, including positive (eg delusions, hallucinations) and negative (eg blunted affect, avolition) symptoms, which lead to physical, psychiatric, and social comorbidities.^{9,10} This review summarizes relevant recent findings.

2 | METHOD

In this review, we targeted the physical, psychiatric, and social comorbidities along with subjective well-being, happiness, and life satisfaction. Overweight and obesity, oral health, noncommunicable diseases (NCDs), constipation, and eating behaviors were examined as physical comorbidities. Depression and sleep disorders; smoking, alcohol, and drug consumption; problematic internet and smartphone use; and stress perception and allostatic load were adopted as psychiatric comorbidities. Social comorbidities included health literacy and behaviors, socioeconomic status (such as education, employment, income, marital status, and family structure), and social cognitive bias, support, and network. Using these terms, potentially relevant papers were collected. We retrieved the findings from existing systematic reviews and meta-analyses as our preferred method. When they were not available, we referred to existing cohort, case-control, and cross-sectional studies. We searched the literature published up to February 2022 through PubMed. The existing research employed for this review was limited to clinical and epidemiological studies written in English.

TABLE 1 Summary of findings

Subjective well-being, happiness, and life satisfaction
Worsened subjective well-being, happiness, and life satisfaction at a group level but varied by individual.
Overweight and obesity
High prevalence of obesity but varied by race.
Consequence of antipsychotics.
Oral health
Poor oral health: the greater number of missing and decayed teeth.
Noncommunicable diseases
High prevalence of chronic obstructive pulmonary disease, metabolic syndrome, type 2 diabetes, hypertension, and hypertriglyceridemia.
Constipation
Constipation and ileus caused by psychotropic medications, especially clozapine.
Eating behaviors
High dietary energy, sodium, and saturated fat.
Poor diet in fiber, fruit, and unsaturated fatty acids.
Depression and sleep disorders
High prevalence of comorbid major depressive disorder and sleep disturbances.
Smoking, alcohol, and drug consumption
High prevalence of smoking, drinking, and drug consumption.
Problematic internet and smartphone use
Problematic internet and smartphone use reported in South Korea.
Stress perception and allostatic load
Inconsistent evidence on whether to perceive more stress.
Related to greater allostatic load.
Health literacy and behaviors
Low health literacy and poor understanding of preventive behaviors.
Socioeconomic status: education, employment, income, marital status, and family structure
Low employment rate and income.
Less educated and likely to be unmarried/unattached.
Social cognitive bias, support, and network
Low ability to navigate social cues and behaviors.
Deficits in building relationships; lack of social support, community integration, and friends; and small size of social network.

3 | RESULTS

We summarized the results in [Table 1](#).

3.1 | Subjective well-being, happiness, and life satisfaction

A Canadian cross-sectional study by Fervaha et al¹¹ revealed that young adults with schizophrenia demonstrated worse subjective



well-being and less happiness and life satisfaction than those without schizophrenia at a group level. Similar findings were confirmed in other studies on adults in Spain¹² and United States.¹³ It was concurrently reported that a substantial number of individuals with schizophrenia felt high levels of subjective well-being¹¹ and happiness.¹³ Evidence for improvement of their subjective well-being by pharmacological treatment and psychosocial therapy has been clarified.^{14,15} Gutiérrez-Rojas et al¹² also reported that cognitive impairment might modulate the relationship between subjective happiness and functioning.

3.2 | Physical comorbidities

3.2.1 | Overweight and obesity

A meta-analysis reported that almost half of the individuals with schizophrenia were obese.¹⁶ Whether those with schizophrenia were overweight or obese might differ according to the treatment they were receiving. A review by Shah et al¹⁷ indicated that compared to healthy controls, individuals with schizophrenia who were antipsychotic-naïve and minimally treated showed lower body mass indices (BMIs) and no difference in waist circumferences. Antipsychotics would make those with schizophrenia overweight and obese. A review by Tarricone et al¹⁸ exhibited that weight and BMIs of antipsychotic-naïve patients increased after the beginning of antipsychotic medications. Another systematic review presented those antipsychotic medications, such as haloperidol, olanzapine, quetiapine, and risperidone, except for ziprasidone, were associated with weight gain and BMI increase in individuals with first-episode psychosis.¹⁹ The longer the duration of antipsychotic medication, the higher the weight gain.¹⁹

Weight gain in individuals with schizophrenia may differ according to race. A meta-analysis reported that Asian people presented lower weight gain than Western counterparts.¹⁹ A systematic review focused on underweight in individuals with schizophrenia and reported a high pooled prevalence of underweight of 17.6% in Japanese inpatients with schizophrenia, nearly 3-fold higher than that in the patients worldwide.²⁰

3.2.2 | Oral health

We found two meta-analyses reporting poor oral health in individuals with schizophrenia.^{21,22} In both of them, individuals with schizophrenia had higher decayed, missing, and filled teeth (DMFT) index scores. They had the greater number of missing and decayed teeth, but with fewer number of filled teeth, compared to healthy controls.

3.2.3 | Noncommunicable diseases (NCDs)

Individuals with schizophrenia were more likely to suffer from NCDs. A systematic review showed an about 1.5-fold greater

likelihood of suffering from comorbid chronic obstructive pulmonary disease in those with schizophrenia compared to the general population.²³ Meta-analyses reported a high prevalence of metabolic syndrome of more than 30% in those with schizophrenia.^{16,24} Previous studies reported the prevalence of type 2 diabetes in individuals with schizophrenia, ranging between 8% and 23.3%.²⁵ Some studies also reported the genetic predisposition for comorbidity of schizophrenia and type 2 diabetes.^{26,27} A meta-analysis indicated that about 19% of those with schizophrenia had hyperglycemia.¹⁶ It also showed that 38.7% and 39.3% of individuals with schizophrenia had hypertension and hypertriglyceridemia, respectively.¹⁶

3.2.4 | Constipation

Constipation often occurs in individuals with schizophrenia. The association between clozapine and constipation and ileus has been well examined. A meta-analysis estimated that nearly one-third of individuals with schizophrenia who were using clozapine experienced constipation.²⁸ This study also reported that clozapine induced constipation more frequently than other antipsychotics. Another study showed that clozapine doubled the risk of ileus compared with other psychotropic medications.²⁹ It caused fatal ileus more frequently than other psychotropic medications.

3.2.5 | Eating behaviors

We found two systematic reviews that focused on the eating behaviors of individuals with schizophrenia. One suggested that those with schizophrenia consumed higher dietary energy and sodium compared to healthy controls.³⁰ Another revealed that, compared to healthy controls, those with schizophrenia were more likely to consume a poor diet in fiber, fruit, and unsaturated fatty acids and a diet rich in saturated fat.³¹

3.3 | Psychiatric comorbidities

3.3.1 | Depression and sleep disorders

Depression is also prevalent in individuals with schizophrenia. A systematic review reported that a pooled estimate of the prevalence of the comorbid major depressive disorder was 32.6% in those with schizophrenia.³² It is suggested that even individuals with first-episode schizophrenia indicated depressive symptoms more frequently than healthy controls.³³ Existing findings were inconsistent regarding which of the two, patients with early- or chronic-stage schizophrenia, expressed more severe depression.³³ No significant difference in the rates of major depressive disorder was detected between patients with first-episode schizophrenia and schizoaffective disorder.³⁴

Sleep disturbances are often observed in individuals with schizophrenia. A systematic review reported that those with remitted



schizophrenia showed a longer sleep duration, time in bed, and sleep latency than the healthy control.³⁵ Another study found that insomnia (50%) and nightmare disorder (48%) were the most prevalent sleep problems among individuals with schizophrenia.³⁶ Sleep disruption predicts the onset and persistence of psychotic experiences such as paranoia and hallucinations.

3.3.2 | Smoking, alcohol, and drug consumption

A multi-institutional study in the United States revealed that smoking, drinking, and drug consumption were more prevalent in those with schizophrenia than in the general population.³⁷ Smoking was suggested as a risk factor for schizophrenia incidence.^{38,39}

3.3.3 | Problematic internet and smartphone use

Problematic internet use, also called internet addiction, is characterized by persistent compulsive use of the internet that interferes with daily life.⁴⁰ Lee et al⁴⁰ reported that 22% of individuals with schizophrenia spectrum disorders suffered from problematic internet use in South Korea. They were more likely to have high levels of perceived stress and dysfunctional coping strategies.⁴⁰ With the popularity of smartphones in recent years, problematic internet use has gradually turned into a form of problematic smartphone use.⁴¹ The South Korean researchers reported that the severity of problematic smartphone use was significantly associated with both high anxiety and low agreeableness.⁴¹ Since the subjects in these studies did not include healthy controls, it is unclear whether internet addiction is comparatively more frequent in those with schizophrenia.

3.3.4 | Stress perception and allostatic load

Stress has been linked to the etiology of schizophrenia because of its significant role in different stages of the illness.⁴² Gutiérrez-Rojas et al¹² did, and Nugent et al⁴² did not find that individuals with schizophrenia were more likely to perceive stress than healthy controls. Nugent et al focused on allostatic load, that is, the wear and tear of bodily experiences after responding to external stressors. They reported that those with schizophrenia had greater allostatic load compared to healthy controls, and greater allostatic load was found in both individuals with early course and chronic schizophrenia.⁴²

3.4 | Social comorbidities

3.4.1 | Health literacy and behaviors

A systematic review highlighted a low health literacy of individuals with schizophrenia.⁴³ A cross-sectional study reported that those

with psychosis, 85% of whom suffered from schizophrenia, demonstrated a lack of understanding of preventive behaviors and poor knowledge of physical illnesses.⁴⁴ Compared to the healthy control, they were less likely to undergo regular medical checkups and exercise, and to acknowledge the importance of early cancer detection and controlling NCDs.

3.4.2 | Socioeconomic status: education, employment, income, marital status, and family structure

Systematic reviews have indicated that individuals with schizophrenia tend to be less educated⁴⁵ and exhibit a low employment rate³³ than healthy controls. A Chinese study found that a lower income was associated with having schizophrenia at an individual level.⁴⁶ Research using Danish population-based data revealed that individuals with schizophrenia were likely to be unmarried/unattached.^{47,48} An association between social dysfunction and marital status was found in individuals with schizophrenia in China.⁴⁹ A Japanese study reported that approximately 10% of homeless people were diagnosed with schizophrenia or other psychotic disorders.⁵⁰

3.4.3 | Social cognitive bias, support, and network

A meta-analysis indicated that, compared to healthy controls, those with schizophrenia performed worse in social cognition, that is, a low ability to navigate social cues and behaviors inherently dependent on a knowledge base and set of skills.⁵¹ A psychological investigation revealed that social cognitive bias provided information about cognition, symptoms, and functioning related to interpersonal conflict in those with schizophrenia.⁵²

It was highlighted that individuals with schizophrenia often had loneliness, deficits in building relationships, and lack of social support, community integration, and friends.⁵³ A systematic review presented that a smaller social network size was associated with more severe psychiatric symptoms in individuals with schizophrenia.⁵⁴ In an Australian nationwide survey, adults with psychotic illness (47% with schizophrenia and 16% with schizoaffective disorder) presented a high frequency of experiencing loneliness (80.1%) and a need for more friends (48.1%).⁵⁵

A study in Taiwan reported a cross-sectional association between a high level of social support, especially support from family, and symptomatic nonremission.⁵⁶ A qualitative study in Pakistan suggested the association between social support and the willingness for treatment.⁵⁷ With support from family, peers, and friends, they received positive emotional feelings, reduced depression, and gradually accepted regular medication and proper treatment. On the other hand, a systematic review pointed out that evidence for the effectiveness of peer support was insufficient.⁵⁸



4 | DISCUSSION

Retrieving recent data, mainly from systematic reviews and meta-analyses, we have confirmed that individuals with schizophrenia suffer from poor subjective well-being and various physical, psychiatric, and social comorbidities. Our review helps not only psychiatric specialists but also community healthcare workers who do not specialize in psychiatry learn more about the disorder and its management.

Individuals with schizophrenia had worse subjective well-being and less happiness and life satisfaction than those without at the group level,^{11,12} while the substantial heterogeneity among individuals with schizophrenia was appreciable as well.^{11,13} This fact contributes to an elimination of the general misconception that all with schizophrenia are helpless. Given that cognition modulated the relationship between subjective happiness and functioning as reported,¹² rehabilitation programs for cognitive impairment might improve recovery outcomes with a focus on subjective happiness in individuals with schizophrenia.⁵⁹ Optimizing antipsychotic treatment, as well as psychosocial therapy, would improve subjective well-being for individuals with schizophrenia.^{14,15}

For physical comorbidities, we targeted overweight and obesity, oral health, NCDs, constipation, and eating behaviors. Existing reviews indicate pharmacotherapy as a cause of weight gain¹⁷⁻¹⁹ and constipation.^{28,29} Race^{19,20} and hospitalization²⁰ can also affect body weight. Individuals with schizophrenia tended to present a low DMFT index score,^{21,22} suggesting poor health awareness and few opportunities for dental care, prevention, and treatment. This idea might be supported by a systematic review showing their low health literacy and academic achievement and neglect of preventable behaviors.⁴³⁻⁴⁵ Unique eating behaviors^{30,31} and low health literacy and academic achievement⁴³⁻⁴⁵ could have contributed to the high prevalence of NCDs among the population.^{16,23-25} Weight gain¹⁶⁻¹⁹ and a high prevalence of smoking and drinking³⁷ must also be monitored to prevent NCDs. Genetic influences may also account for comorbid diabetes.^{26,27}

For psychiatric comorbidities, we examined depression and sleep disorders, smoking, alcohol, and other drug consumption, problematic Internet and smartphone use, and stress perception and allostatic load. Depression and sleep disorders have long been known to be common psychiatric comorbidities. Our review confirms this finding.³²⁻³⁶ We found a clear indication of high prevalence of smoking, drinking, and drug consumption in the U.S. among individuals with schizophrenia.³⁷ Problematic internet and smartphone use, an emerging addiction of the 21st century, was so far investigated only in South Korea.^{40,41} Such findings should be duplicated in other countries. The existing findings were split regarding stress perception among individuals with schizophrenia.^{12,42} More study findings are necessary to clarify this topic.

For social comorbidities, we explored health literacy and behaviors, socioeconomic status, and social cognitive bias, support, and network. As mentioned above, low health literacy and neglect of preventable behaviors were noted in individuals with schizophrenia.^{43,44}

This could contribute to a high prevalence of NCDs,^{16,23-27} which are preventable to some extent. Being less educated,⁴⁵ poor,⁴⁶ unemployed,³³ and unmarried/unattached⁴⁷⁻⁴⁹ were found as the features of individuals with schizophrenia. They also tend to perform worse in social cognition.⁵¹ As a result, they would have little social support and a small social network. This finding justifies the necessity of psychosocial treatment such as cognitive behavioral therapy, family interventions, social skills training, and supported employment.⁶⁰

The strength of our review is that we summarized various fields of relevant studies in terms of subjective well-being and physical, psychiatric, and social comorbidities. It is helpful for community healthcare workers who do not specialize in psychiatry. Systematic reviews and meta-analyses were primarily included to ensure the findings are comprehensive and persuasive. We revealed under-researched areas related to well-being and comorbidities in individuals with schizophrenia and also provided indications for promising future research. A limitation of this study is that we did not conduct a systematic review with a meta-analysis. Although we preferred recently published systematic reviews and meta-analyses, our interpretation might have been biased by our subjective choices from the existing literature.

AUTHOR CONTRIBUTIONS

AO conceived the study design; YH, TK, YL, MM, ST, and NI helped complete it. YH, AT, and AO collected and interpreted the references. YH, AT, and AO drafted the manuscript. The other authors revised the manuscript critically for important intellectual content. All authors have approved the final version of the manuscript for publication.

ACKNOWLEDGMENTS

This study was supported by the Health and Labour Sciences Research grant from the Ministry of Health, Labour and Welfare, Japan (JPMH21GC1018). The founder did not interfere with the authors' discretion to conduct this study.

FUNDING INFORMATION

This study was supported by the Health and Labour Sciences Research Grant from the Ministry of Health, Labour and Welfare, Japan.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ORCID

Yupeng He  <https://orcid.org/0000-0003-3162-0176>

Taro Kishi  <https://orcid.org/0000-0002-9237-2236>

Atsuhiko Ota  <https://orcid.org/0000-0001-6452-1823>

REFERENCES

- Steel Z, Marnane C, Iranpour C, Chey T, Jackson JW, Patel V, et al. The global prevalence of common mental disorders: a systematic review and meta-analysis 1980-2013. *Int J Epidemiol*. 2014;43:476-93.
- GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the global burden of disease study 2017. *Lancet*. 2018;392:1789-858.
- Simeone JC, Ward AJ, Rotella P, Collins J, Windisch R. An evaluation of variation in published estimates of schizophrenia prevalence from 1990-2013: a systematic literature review. *BMC Psychiatry*. 2015;15:193.
- Moreno-Küstner B, Martín C, Pastor L. Prevalence of psychotic disorders and its association with methodological issues. A systematic review and meta-analyses. *PLoS One*. 2018;13:e0195687.
- Okui T. An age-period-cohort analysis for prevalence of common psychiatric disorders in Japan, 1999-2017. *Soc Psychiatry Psychiatr Epidemiol*. 2021;56:639-48.
- National Institute of Mental Health (NIMH), National Center of neurology and psychiatry, Japan (NCNPJ). 630 Chosa, Seishin hoken fukushi shiryō (630 survey, data on mental health, medicine, and welfare) (written in Japanese). Tokyo: NIMH, NCNPJ; 2022 [cited 2022 May 4]. Available from <https://www.ncnp.go.jp/nimh/seisaku/data/>
- OECD. Hospital beds, OECD data. Paris: OECD; 2022 [cited 2022 May 4]. Available from <https://data.oecd.org/healthqt/hospital-beds.htm>
- The World Health Organization (WHO). Comprehensive Mental Health Action Plan 2013-2030. WHO; 2021 [cited 2022 May 4]. Available from <https://www.who.int/publications/i/item/9789240031029>
- Mueser KT, McGurk SR. Schizophrenia. *Lancet*. 2004;363:2063-72.
- WHO. Schizophrenia. Geneva: WHO; 2022 [cited 2022 May 4]. Available from <https://www.who.int/en/news-room/fact-sheets/detail/schizophrenia>
- Fervaha G, Agid O, Takeuchi H, Foussias G, Remington G. Life satisfaction and happiness among young adults with schizophrenia. *Psychiatry Res*. 2016;242:174-9.
- Gutiérrez-Rojas L, González-Domenech PJ, Junquera G, Halverson TF, Lahera G. Functioning and happiness in people with schizophrenia: analyzing the role of cognitive impairment. *Int J Environ Res Public Health*. 2021;18:7706.
- Palmer BW, Martin AS, Depp CA, Glorioso DK, Jeste DV. Wellness within illness: happiness in schizophrenia. *Schizophr Res*. 2014;159:151-6.
- Vothknecht S, Schoevers RA, de Haan L. Subjective well-being in schizophrenia as measured with the subjective well-being under neuroleptic treatment scale: a review. *Aust N Z J Psychiatry*. 2011;45:182-92.
- Shinozaki A, Hayashi T, Okamura H. Effects of a psychoeducation program for people with schizophrenia aimed at increasing subjective well-being and the factors influencing those effects: a preliminary study. *Psychiatry Q*. 2020;91:45-52.
- Mitchell AJ, Vancampfort D, Sweers K, van Winkel R, Yu W, De Hert M. Prevalence of metabolic syndrome and metabolic abnormalities in schizophrenia and related disorders--a systematic review and meta-analysis. *Schizophr Bull*. 2013;39:306-18.
- Shah P, Iwata Y, Caravaggio F, Plitman E, Brown EE, Kim J, et al. Alterations in body mass index and waist-to-hip ratio in never and minimally treated patients with psychosis: a systematic review and meta-analysis. *Schizophr Res*. 2019;208:420-9.
- Tarricone I, Ferrari Gozzi B, Serretti A, Grieco D, Berardi D. Weight gain in antipsychotic-naïve patients: a review and meta-analysis. *Psychol Med*. 2010;40:187-200.
- Tek C, Kucukgoncu S, Guloksuz S, Woods SW, Srihari VH, Annamalai A. Antipsychotic-induced weight gain in first-episode psychosis patients: a meta-analysis of differential effects of antipsychotic medications. *Early Interv Psychiatry*. 2016;10:193-202.
- Sugawara N, Maruo K, Sugai T, Suzuki Y, Ozeki Y, Shimoda K, et al. Prevalence of underweight in patients with schizophrenia: a meta-analysis. *Schizophr Res*. 2018;195:67-73.
- Yang M, Chen P, He MX, Lu M, Wang HM, Soares JC, et al. Poor oral health in patients with schizophrenia: a systematic review and meta-analysis. *Schizophr Res*. 2018;201:3-9.
- Sun XN, Zhou JB, Li N. Poor oral health in patients with schizophrenia: a meta-analysis of case-control studies. *Psychiatry Q*. 2021;92:135-45.
- Zareifopoulos N, Bellou A, Spiropoulou A, Spiropoulos K. Prevalence of comorbid chronic obstructive pulmonary disease in individuals suffering from schizophrenia and bipolar disorder: a systematic review. *COPD*. 2018;15:612-20.
- Vancampfort D, Stubbs B, Mitchell AJ, de Hert M, Wampers M, Ward PB, et al. Risk of metabolic syndrome and its components in people with schizophrenia and related psychotic disorders, bipolar disorder and major depressive disorder: a systematic review and meta-analysis. *World Psychiatry*. 2015;14:339-47.
- Mamakou V, Thanopoulou A, Gonidakis F, Tentolouris N, Kontaxakis V. Schizophrenia and type 2 diabetes mellitus. *Psychiatriki*. 2018;29:64-73.
- Hansen T, Ingason A, Djurovic S, Melle I, Fenger M, Gustafsson O, et al. At-risk variant in TCF7L2 for type II diabetes increases risk of schizophrenia. *Biol Psychiatry*. 2011;70:59-63.
- Gragoli C, Reeves GM, Reazer J, Postolache TT. Dopamine-prolactin pathway potentially contributes to the schizophrenia and type 2 diabetes comorbidity. *Transl Psychiatry*. 2016;6:e785.
- Shirazi A, Stubbs B, Gomez L, Moore S, Gaughran F, Flanagan R, et al. Prevalence and predictors of clozapine-associated constipation: a systematic review and meta-analysis. *Int J Mol Sci*. 2016;17:863.
- Nielsen J, Meyer JM. Risk factors for ileus in patients with schizophrenia. *Schizophr Bull*. 2012;38:592-8.
- Teasdale SB, Ward PB, Samaras K, Firth J, Stubbs B, Tripodi E, et al. Dietary intake of people with severe mental illness: systematic review and meta-analysis. *Br J Psychiatry*. 2019;214:251-9.
- Dipasquale S, Pariante CM, Dazzan P, Aguglia E, McGuire P, Mondelli V. The dietary pattern of patients with schizophrenia: a systematic review. *J Psychiatr Res*. 2013;47:197-207.
- Etchecopar-Etchart D, Korchia T, Loundou A, Llorca PM, Auquier P, Lançon C, et al. Comorbid major depressive disorder in schizophrenia: a systematic review and meta-analysis. *Schizophr Bull*. 2021;47:298-308.
- Crespo-Facorro B, Such P, Nylander AG, Madera J, Resemann HK, Worthington E, et al. The burden of disease in early schizophrenia - a systematic literature review. *Curr Med Res Opin*. 2021;37:109-21.
- Cotton SM, Lambert M, Schimmelmann BG, Mackinnon A, Gleeson JFM, Berk M, et al. Differences between first episode schizophrenia and schizoaffective disorder. *Schizophr Res*. 2013;147:169-74.
- Meyer N, Faulkner SM, McCutcheon RA, Pillinger T, Dijk DJ, MacCabe JH. Sleep and circadian rhythm disturbance in remitted schizophrenia and bipolar disorder: a systematic review and meta-analysis. *Schizophr Bull*. 2020;46:1126-43.
- Waite F, Sheaves B, Isham L, Reeve S, Freeman D. Sleep and schizophrenia: from epiphenomenon to treatable causal target. *Schizophr Res*. 2020;221:44-56.
- Hartz SM, Pato CN, Medeiros H, Cavazos-Rehg P, Sobell JL, Knowles JA, et al. Genomic psychiatry cohort consortium. Comorbidity of



- severe psychotic disorders with measures of substance use. *JAMA Psychiatry*. 2014;71:248–54.
38. Hunter A, Murray R, Asher L, Leonardi-Bee J. The effects of tobacco smoking, and prenatal tobacco smoke exposure, on risk of schizophrenia: a systematic review and meta-analysis. *Nicotine Tob Res*. 2020;22:3–10.
 39. Wootton RE, Richmond RC, Stuijzand BG, Lawn RB, Sallis HM, Taylor GMJ, et al. Evidence for causal effects of lifetime smoking on risk for depression and schizophrenia: a mendelian randomization study. *Psychol Med*. 2020;50:2435–43.
 40. Lee JY, Chung YC, Song JH, Lee YH, Kim JM, Shin IS, et al. Contribution of stress and coping strategies to problematic internet use in patients with schizophrenia spectrum disorders. *Compr Psychiatry*. 2018;87:89–94.
 41. Lee JY, Chung YC, Kim SY, Kim JM, Shin IS, Yoon JS, et al. Problematic smartphone use and related factors in young patients with schizophrenia. *Asia Pac Psychiatry*. 2019;11:e12357.
 42. Nugent KL, Chiappelli J, Rowland LM, Hong LE. Cumulative stress pathophysiology in schizophrenia as indexed by allostatic load. *Psychoneuroendocrinology*. 2015;60:120–9.
 43. Degan TJ, Kelly PJ, Robinson LD, Deane FP, Smith AM. Health literacy of people living with mental illness or substance use disorders: a systematic review. *Early Interv Psychiatry*. 2021;15:1454–69.
 44. Kim SW, Park WY, Jhon M, Kim M, Lee JY, Kim SY, et al. Physical health literacy and health-related behaviors in patients with psychosis. *Clin Psychopharmacol Neurosci*. 2019;17:279–87.
 45. Dickson H, Hedges EP, Ma SY, Cullen AE, MacCabe JH, Kempton MJ, et al. Academic achievement and schizophrenia: a systematic meta-analysis. *Psychol Med*. 2020;50:1949–65.
 46. Ding R, Zhang L, He P, Song X, Zheng X. Income, income inequality and schizophrenia in China: a population-based multilevel analysis. *J Epidemiol Community Health*. 2020;74:719–25.
 47. Agerbo E, Byrne M, Eaton WW, Mortensen PB. Marital and labor market status in the long run in schizophrenia. *Arch Gen Psychiatry*. 2004;61:28–33.
 48. Hakulinen C, McGrath JJ, Timmerman A, Skipper N, Mortensen PB, Pedersen CB, et al. The association between early-onset schizophrenia with employment, income, education, and cohabitation status: nationwide study with 35 years of follow-up. *Soc Psychiatry Psychiatr Epidemiol*. 2019;54:1343–51.
 49. Li XJ, Wu JH, Liu JB, Li KP, Wang F, Sun XH, et al. The influence of marital status on the social dysfunction of schizophrenia patients in community. *Int J Nurs Sci* 2015; 2: 149–152.
 50. Nishio A, Horita R, Sado T, Mizutani S, Watanabe T, Uehara R, et al. Causes of homelessness prevalence: relationship between homelessness and disability. *Psychiatry Clin Neurosci*. 2017;71:180–8.
 51. Savla GN, Vella L, Armstrong CC, Penn DL, Twamley EW. Deficits in domains of social cognition in schizophrenia: a meta-analysis of the empirical evidence. *Schizophr Bull*. 2013;39:979–92.
 52. Buck BE, Pinkham AE, Harvey PD, Penn DL. Revisiting the validity of measures of social cognitive bias in schizophrenia: additional results from the social cognition psychometric evaluation (SCOPE) study. *Br J Clin Psychol*. 2016;55:441–54.
 53. Perese EF, Wolf M. Combating loneliness among persons with severe mental illness: social network interventions' characteristics, effectiveness, and applicability. *Issues Ment Health Nurs*. 2005;26:591–609.
 54. Degan A, Berry K, Sweet D, Abel K, Crossley N, Edge D. Social networks and symptomatic and functional outcomes in schizophrenia: a systematic review and meta-analysis. *Soc Psychiatry Psychiatr Epidemiol*. 2018;53:873–88.
 55. Stain HJ, Galletly CA, Clark S, Wilson J, Killen EA, Anthes L, et al. Understanding the social costs of psychosis: the experience of adults affected by psychosis identified within the second Australian National Survey of psychosis. *Aust N Z J Psychiatry*. 2012;46:879–89.
 56. Fan CH, Hsu SC, Hsiao FH, Chang CM, Liu CY, Lai YM, et al. The association of social support and symptomatic remission among community-dwelling schizophrenia patients: a cross-sectional study. *Int J Environ Res Public Health*. 2021;18:3977.
 57. Jameel HT, Panatik SA, Nabeel T, Sarwar F, Yaseen M, Jakerst T, et al. Observed social support and willingness for the treatment of patients with schizophrenia. *Psychol Res Behav Manag*. 2020;13:193–201.
 58. Chien WT, Clifton AV, Zhao S, Lui S. Peer support for people with schizophrenia or other serious mental illness. *Cochrane Database Syst Rev*. 2019;4:CD010880.
 59. Christensen TN, Wallstrøm IG, Stenager E, Bojesen AB, Gluud C, Nordentoft M, et al. Effects of individual placement and support supplemented with cognitive remediation and work-focused social skills training for people with severe mental illness: a randomized clinical trial. *JAMA Psychiatr*. 2019;76:1232–40.
 60. McDonagh MS, Dana T, Kopelovich SL, Monroe-DeVita M, Blazina I, Bougatsos C, et al. Psychosocial interventions for adults with schizophrenia: an overview and update of systematic reviews. *Psychiatr Serv*. 2022;73:299–312.

How to cite this article: He Y, Tanaka A, Kishi T, Li Y, Matsunaga M & Tanihara S et al. Recent findings on subjective well-being and physical, psychiatric, and social comorbidities in individuals with schizophrenia: A literature review. *Neuropsychopharmacol Rep*. 2022;42:430–436. <https://doi.org/10.1002/npr2.12286>