


CASE REPORT

Online gaming reduces psychological distress in a patient with schizophrenia: A case report

Kazutaka Sakamoto OTR, PhD¹  | Ryota Kobayashi MD, PhD¹  |
Daichi Morioka MD¹ | Chihiro Abiko MD² | Masayuki Kimura MD² |
Akihito Suzuki MD, PhD¹

¹Department of Psychiatry, Yamagata University School of Medicine, Yamagata City, Yamagata, Japan

²Department of Psychiatry, Chitose Shinoda Hospital, Yamagata City, Yamagata, Japan

Correspondence

Kazutaka Sakamoto, OTR, PhD, Department of Psychiatry, Yamagata University School of Medicine, 2-2-2 Iidanishi, Yamagata City, Yamagata 990-9585, Japan.
Email: kaz.sakamoto@med.id.yamagata-u.ac.jp

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Abstract

Background: Schizophrenia often involves persecutory delusions, which cause psychological distress. Some patients use online gaming as a coping tool. However, excessive online gaming has raised concerns about internet gaming disorders (IGD), while any soothing effects of online gaming on psychological distress remain unclear. Herein, we report changes in anxiety and IGD severity, measured using rating scales, in a patient with schizophrenia who used online gaming as a coping strategy for psychological distress.

Case Presentation: A 43-year-old woman diagnosed with schizophrenia had worsening persecutory delusions, including that of being targeted by snipers, and had difficulty going out because of anxiety. She coped with her psychological distress using online shooting games. We assessed her state and trait anxiety, social anxiety, avoidance behavior when alone, and IGD severity. There was a notable reduction in the state anxiety score after the introduction of online gaming. The scores for trait anxiety, social anxiety, and avoidance behavior when alone decreased noticeably after the acquisition of coping strategies. This case demonstrates the presence of IGD only during the acquisition of coping strategies.

Conclusion: This case highlights the potential of online gaming as a coping strategy for schizophrenia-related anxiety. However, excessive gaming can lead to IGD and thus necessitates caution. Further research should explore the applicability and potential risks of using online gaming to cope with psychological distress among patients with schizophrenia.

KEYWORDS

avoidance behavior, internet gaming disorders, online gaming, persecutory delusion, schizophrenia

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BACKGROUND

Persecutory delusions, a major symptom of schizophrenia, are closely related to psychological distress, including anxiety.¹ Although mechanisms and treatments have been studied, existing pharmacotherapy and psychotherapy often remain ineffective.^{2,3} A cross-sectional study of 368 patients with schizophrenia spectrum disorders reported that patients may use online gaming as a coping strategy for psychological distress, especially anxiety.⁴ However, this strategy may cause internet gaming disorders (IGD).^{5,6} Verma et al.⁶ reported the first case of schizophrenia complicated by IGD and provided a detailed history and treatment course. However, no studies have longitudinally investigated changes in psychological distress and IGD severity due to online gaming. Herein, we report changes in anxiety and IGD severity, measured using rating scales, in a patient with schizophrenia who used online gaming as a coping strategy for psychological distress. We discuss the efficacy and concerns of online gaming as a coping strategy.

CASE PRESENTATION

The patient was a 43-year-old woman who had completed 12 years of education. She was unemployed, on welfare, and lived with her 10-year-old daughter. The patient had started playing role-playing and action/adventure games (excluding shooting games) when in elementary school and still played for approximately an hour daily. The patient had a history of depressive mood attributed to bullying when she was 16 years old. She had a history of auditory hallucinations; however, she had not sought medical attention. At X – 10 years (age 31), she had presented with bizarre behavior and agitation influenced by hallucinations and was hospitalized in several psychiatric hospitals. At X – 7 years (age 34), she had first visited our hospital. She had experienced hallucinations and delusions for >6 months and was diagnosed with schizophrenia.⁷ Although persecutory delusions persisted after treatment with olanzapine, other symptoms improved, and she continued to receive outpatient treatment. In X year, persecutory delusions (such as “I am being targeted by a sniper”) worsened, and she had difficulty venturing out owing to anxiety. Therefore, home-based nursing was introduced to support hospital visits. During outpatient treatment, the patient was taking lemborexant (5 mg/day), clonazepam (0.5 mg/day), and olanzapine (2.5 mg/day) with no medication changes.

Before the acquisition of coping strategies using online shooting games

After worsening persecutory delusions, she believed she was “being targeted by snipers,” and always locked the doors and windows of her home, closed the curtains, and hid behind the couch. She also

thought that she would be “killed the moment she stepped out the front door” and could not go out or visit the hospital. She could not go shopping and used a food delivery service, but she could not open the boxes because she thought “people were hiding in them” or “the delivery boxes were bombs.” The patient experienced these delusions daily.

During the acquisition of coping strategies using online shooting games

After 7 months of worsening persecutory delusions, she defeated an enemy in an online shooting game (Fortnite Battle Royale) while hiding behind the couch and thought “I did it! Even I can be the hunter, not the hunted.” Thereafter, she realized that her anxiety had decreased owing to playing online shooting games. However, when an enemy defeated her, she felt depressed, and her anxiety increased. She noticed that the more enemies she defeated and the better she controlled the game, the less anxious and more at ease she felt. She played online shooting games for >10 h daily to cope with her delusions. She identified herself with the character in the game and thought “I am a hunter. I will defeat my enemies anytime.” However, she was never under the delusion that she had become a hunter. She had been addicted to gaming for approximately 2 months. A description of the online shooting game (Fortnite Battle Royale) is provided in [Data S1](#).

After the acquisitions of coping strategies using online shooting games

There was no change in the patient's persecutory delusions, but her game-playing time gradually decreased to approximately 1 h daily. Even when not playing the game, she told the imaginary sniper, “You can aim at me all you want. I can take you down anytime.” She could go out and started attending an employment support facility.

The patient found a way to cope with psychological distress attributed to persecutory delusions using online shooting games. A certified public psychologist (K.S.) assessed her state/trait anxiety, social anxiety, and avoidance behavior when alone using the State–Trait Anxiety Inventory,⁸ Liebowitz Social Anxiety Scale (LSAS),⁹ and Mobility Inventory for Agoraphobia (MIA),¹⁰ respectively. State anxiety was assessed twice during the acquisition of coping strategies (after 7 months of worsening persecutory delusions): once while playing online shooting games and once while not playing them. Trait anxiety, social anxiety, and avoidance behavior when alone were assessed before and after the acquisition of coping strategies (6 and 9 months after the worsening of persecutory delusions, respectively). IGD diagnosis and severity were assessed using the DSM-5⁷ and the Ten-Item IGD Test (IGDT-10),¹¹ respectively. The IGDT-10 was conducted thrice—6, 7, and 9 months (before, during, and after the acquisition of coping strategies, respectively) after the worsening of persecutory

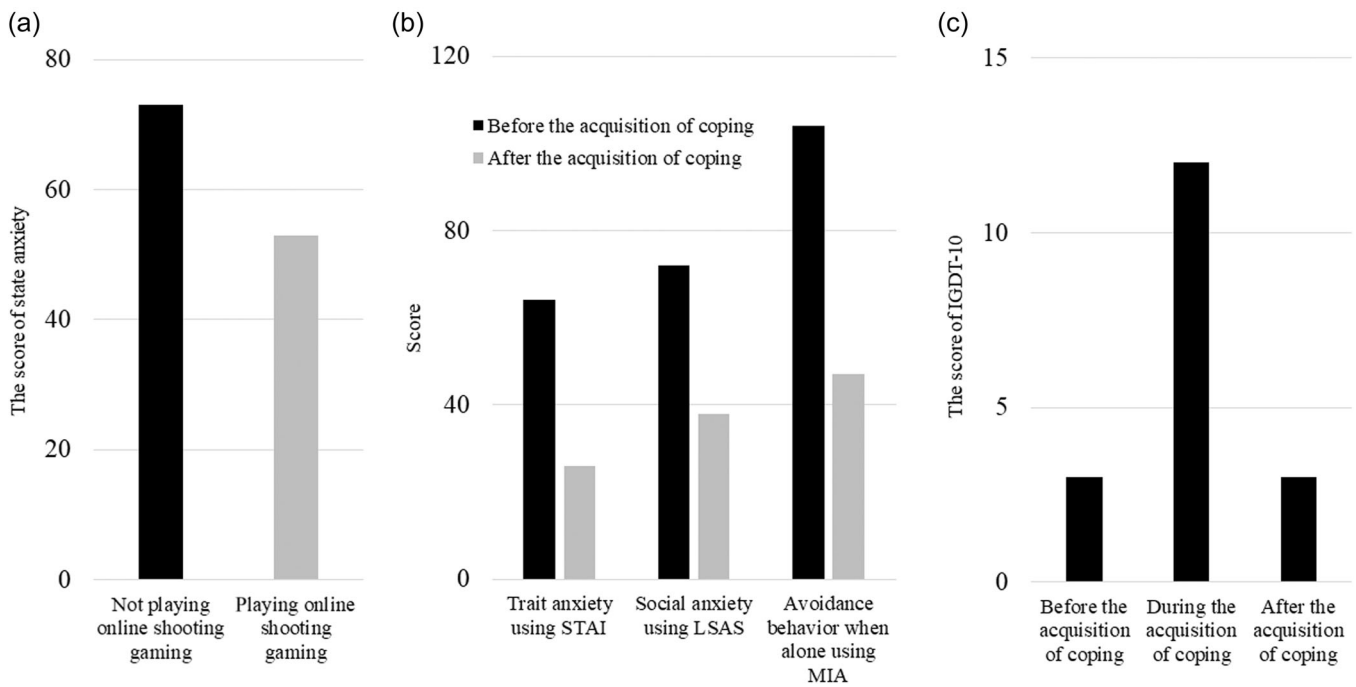


FIGURE 1 The patient's (a, b) psychological distress and (c) Ten-Item Internet Gaming Disorder Test (IGDT-10) results. (a) State anxiety was assessed twice during the acquisition of coping strategies (after 7 months of persecutory delusion worsening), once while playing online shooting games, and once while not playing these games, using the State-Trait Anxiety Inventory (STAI). Her state anxiety score was 73 points when she was not playing online shooting games but dropped to 53 points when she was playing them. A score ≥ 42 points indicates high anxiety. (b) Trait anxiety, social anxiety, and avoidance behavior when alone were assessed before and after the acquisition of coping strategies (6 and 9 months of persecutory delusion worsening, respectively), using STAI, Liebowitz Social Anxiety Scale (LSAS), and Mobility Inventory for Agoraphobia (MIA), respectively. Per STAI, her trait anxiety score was 64 points before the acquisition of coping but dropped to 26 points after the acquisition of coping. A score ≥ 45 points indicates high anxiety. Regarding social anxiety, her LSAS score was 72/72 points before the acquisition of coping but decreased to 36/72 points after the acquisition of coping. For avoidance behavior when alone, her MIA score was 104/135 points before the acquisition of coping but decreased to 47/135 after the acquisition of coping. (c) On IGDT-10, the score was 3 points before and after the acquisition of coping but increased to 12 points during the acquisition of coping. She met the criteria for the diagnosis of IGD only during the acquisition of coping. A score ≥ 5 points indicates probable IGD.

delusions. The state anxiety score greatly decreased while playing the online shooting game compared to that while not playing the game (Figure 1a). The scores for trait anxiety, social anxiety, and avoidance behavior when alone greatly decreased after the acquisition of coping strategies compared with those before the acquisition of coping strategies (Figure 1b). This case demonstrates the presence of IGD only during the acquisition of coping strategies (Figure 1c). Although the patient continues to have persecutory delusions 1.5 years after the acquisition of coping strategies, she can visit the hospital and go out without developing IGD.

DISCUSSION

A patient with schizophrenia who presented with persecutory delusions of being targeted by snipers discovered that online shooting games were an effective way to cope with her anxiety. We assessed the effects of online shooting games on anxiety. Online shooting games significantly reduced anxiety. The patient temporarily met the criteria for IGD but then quickly improved and had no worsening of

psychiatric symptoms. To our knowledge, this is the first study in which changes in anxiety and IGD severity were evaluated during the acquisition of coping strategies using online gaming for psychological distress in a patient with schizophrenia.

Addicted gamers tend to strongly identify with online characters^{12,13} and can blur the distinction between the real and virtual worlds.¹⁴ In this case, the patient could possibly reduce her anxiety by identifying with the online character and associating with the hunter rather than the hunted. This result may also have contributed to her addiction to online gaming (>10 h daily).

While online gaming has been shown to reduce psychological distress in patients with schizophrenia, anxiety may occur due to internet dependency in cases of co-occurring IGD and can exacerbate schizophrenic symptoms.⁴ Recently, it was reported that schizophrenia patients have a higher prevalence of internet addiction than healthy individuals. Moreover, the high prevalence of internet addiction in schizophrenia patients was believed to be related to dopamine dysregulation and social withdrawal.¹⁵ Fortunately, the present case met the criteria for IGD only during the acquisition of coping strategies; following this, the IGD symptoms improved, while

psychological distress was reduced. In addition, persecutory-delusions-based withdrawals were resolved as anxiety improved. Given that this patient may have had a mild level of addiction, it is possible that the reduction in IGD symptoms, alongside decreased anxiety, highlighted the benefits of using online shooting games. When considered together, online gaming for patients with schizophrenia presents a complex risk/benefit trade-off.⁶ Future research is needed to assess the application of online gaming to alleviate psychological distress in patients with schizophrenia without causing addiction.

This study has some limitations. First, it is unclear whether similar results can be obtained regardless of the content of delusions or game type. In this case, the patient experienced delusions that a sniper was targeting her; thus, online shooting games were effective. Large-scale studies are needed to investigate whether the effect varies with the extent of the delusion and game type. Second, anxiety in this case reduced, but persecutory delusions did not change. Despite the close relationship between persecutory delusions and anxiety, it was not possible to investigate why there was no change in the delusional symptoms. Finally, this was a single case report, and the results cannot be generalized. Nonetheless, this case report provides useful information on coping strategies for patients with schizophrenia who experience anxiety and other psychological distress symptoms. Online gaming may be an effective intervention for managing anxiety in patients with schizophrenia.

AUTHOR CONTRIBUTIONS

Kazutaka Sakamoto designed the study, examined the patient, conducted psychological examinations, analyzed the data, and drafted the manuscript. Ryota Kobayashi analyzed the data and drafted the manuscript. Chihiro Abiko examined the patient and revised the manuscript. Daichi Morioka, Masayuki Kimura, and Akihito Suzuki analyzed the data and revised the manuscript. All authors have read and approved the final version of this manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

The data of this case report are available from the corresponding author upon request.

ETHICS APPROVAL STATEMENT

This study was approved by the Ethical Review Committee of Yamagata University Faculty of Medicine.

PATIENT CONSENT STATEMENT

Written informed consent was obtained from the patient and her family to participate in this study and publish the data. Written

consent for the publication of the anonymized case details was obtained from the patient's family.

CLINICAL TRIAL REGISTRATION

N/A

ORCID

Kazutaka Sakamoto  <http://orcid.org/0000-0003-0359-3529>

Ryota Kobayashi  <http://orcid.org/0000-0002-4213-618X>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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