

Feasibility of Psychiatric Consultation by Metaverse for Youths with Mental Health Conditions

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Feasibility of Psychiatric Consultation by Metaverse for Youths with Mental Health Conditions

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Abstract

Background: The unmet needs of young people for mental health services (MHSs) remain a significant issue. Despite the high demand, many young people are unable to access timely and high-quality MHS. The Metaverse, a virtual space where people interact and communicate through avatars, is expected to introduce new possibilities for MHS.

Objective: This study aims to investigate the feasibility of using the Metaverse for mental health consultations with young people experiencing mental health conditions.

Methods: This qualitative observational study was conducted at a single institution via semistructured interviews. Participants aged 16–24 years who were aware of mental health conditions were assigned to experience a metaverse consultation with a psychiatrist through avatars. Afterward, participants were interviewed to assess the feasibility, usability, and influencing factors of metaverse-based consultation.

Results: Twenty-six participants were assigned, and all completed the study without any adverse psychological events. Some reported minor physical effects, such as headaches and VR-related sickness. The findings from the postinterview suggest that metaverse consultations may be particularly beneficial for individuals experiencing interpersonal anxiety, those with high sensory sensitivity due to autism spectrum disorder, those who struggle outside due to psychiatric conditions such as depression or agoraphobia, those with strong psychological resistance to receiving psychiatric care, and those who feel uncomfortable disclosing their own physical appearance in real-life settings (e.g., gender incongruence).

Conclusions: Metaverse psychiatric consultation is feasible for young people with mental health conditions, particularly for individuals with specific needs. Technical and accessibility issues must be addressed to enhance its effectiveness. Clinical Trial: Not applicable; observational study.

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Original Manuscript

Feasibility of Psychiatric Consultation by Metaverse for Youths with Mental Health Conditions

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Abstract

Background

The unmet needs of young people for mental health services (MHSs) remain a significant issue. Despite the high demand, many young people are unable to access timely and high-quality MHS. The Metaverse, a virtual space where people interact and communicate through avatars, is expected to introduce new possibilities for MHS.

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This study aims to investigate the feasibility of using the Metaverse for mental health consultations with young people experiencing mental health conditions.

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This qualitative observational study was conducted at a single institution via semistructured interviews. Participants aged 16–24 years who were aware of mental health conditions were assigned to experience a metaverse consultation with a psychiatrist through avatars. Afterward, participants were interviewed to assess the feasibility, usability, and influencing factors of metaverse-based consultation.

Results

Twenty-six participants were assigned, and all completed the study without any adverse psychological events. Some reported minor physical effects, such as headaches and VR-related sickness. The findings from the postinterview suggest that metaverse consultations may be particularly beneficial for individuals experiencing interpersonal anxiety, those with high sensory sensitivity due to autism spectrum disorder, those who struggle outside due to psychiatric conditions such as depression or agoraphobia, those with strong psychological resistance to receiving psychiatric care, and those who feel uncomfortable disclosing their own physical appearance in real-life settings (e.g., gender incongruence).

Conclusions

Metaverse psychiatric consultation is feasible for young people with mental health conditions, particularly for individuals with specific needs. Technical and accessibility issues must be addressed to enhance its effectiveness.

Trial Registration

Not applicable; observational study.

Key Words

Mental health, Metaverse, Adolescent psychiatry, Virtual reality, Telepsychiatry

Introduction

Youth mental health is a critical global issue that remains complex and challenging. Reports indicate that one in five young people experiences anxiety, and one in four faces depression due to factors such as poverty and shifts in lifestyle patterns (1,2). This prevalence doubled before and after the COVID-19 pandemic (3). With more than 25% of mental disorders beginning before the age of twenty-five years (4) and the significant socioeconomic impact of these conditions (5), the need for effective mental healthcare for young people is clear. Despite this, many young people struggle to access timely and high-quality mental health services (MHSs). Several factors contribute to this gap between the demand and supply of MHS for young people, including physical barriers such as the shortage and geographic distribution of child and adolescent psychiatrists, as well as psychological barriers such as stigma and low mental health literacy (6). Although various initiatives, such as school-based psychoeducation, peer training, and outreach programs, have been launched to address these barriers and improve access to mental health services, a breakthrough solution remains elusive (7–9), underscoring the need for further research.

As an innovative solution, information and communication technology (ICT) plays a pivotal role in the lives of young people, providing a critical platform for socialization and information gathering. Its widespread accessibility and integration into daily life position ICT as a promising tool for youth-friendly MHS, offering opportunities for prevention, early intervention, and accessible support tailored to the unique needs of this demographic (10). One particularly innovative approach is Metaverse—a virtual space where users, represented by avatars, can navigate, engage in various experiences, and interact with others. The Metaverse platform is not simply a virtual or augmented reality (VR/AR) platform; it enables immersive social activities that go beyond physical limitations. Key components include interactions via avatars in VR/AR spaces, economic activities through nonfungible tokens (NFTs), and decentralized, user-driven communities via decentralized autonomous organizations (DAOs).

For youth, the Metaverse presents the potential to create accessible, engaging, and flexible platforms. In Japan, for example, emerging initiatives in some cities use virtual reality-based support services for individuals with social withdrawal (Hikikomori) (11), exploring ways to reduce stigma and facilitate access to support. The Metaverse could extend these efforts internationally by offering an alternative environment where young people with mental health issues can seek help discreetly and interactively.

However, studies on the feasibility and effectiveness of metaverse-based MHS remain limited. This study aims to assess the feasibility of metaverse psychiatric consultations tailored for young people with mental health conditions. The findings will guide the development and implementation of future youth MHS, addressing key barriers to access and engagement.

Methods

Participants and Setting

The target group for this study consisted of young people aged 16 to 25 years who self-identified as experiencing mental health conditions. The participants were recruited from Yokohama University Hospital, nearby clinics, local universities, high schools, support groups, and social media. The study was conducted in a meeting room on the Yokohama University campus.

Inclusion criteria

1. Individuals aged 16-25 at the time of consent.
2. Individuals who are aware of their mental health conditions.
3. Individuals able to provide written consent in Japanese.

Exclusion criteria

- Individuals currently receiving treatment at a psychiatric medical institution who do not have permission from their primary physician to participate in this study.

Procedure

Baseline assessment

As a baseline assessment, the participants completed a self-administered questionnaire consisting of four parts: (1) mental and physical conditions, (2) living conditions over the past three months, (3) internet usage, and (4) perceptions of mental health and psychiatry.

Metaverse environment setup and technical support

After the baseline assessment, the participants entered the metaverse environment under the guidance of technical staff, wearing VR goggles and using a controller. Since the participants were unfamiliar with Metaverse operations, the technical staff provided detailed instructions for fitting the goggles, launching the application, and logging in.

For this study, experimental worlds and avatars were set up on commercially available Metaverse applications, VRChat® and Workrooms®. VRChat® is a social virtual reality platform that allows users to create, share, and explore user-generated virtual worlds through customizable avatars, fostering social interaction and creative expression in immersive settings. In contrast, Workrooms® is a virtual collaboration tool designed for professional and educational use, enabling users to hold virtual meetings in shared spaces with avatars and facilitating interactive discussions, presentations, and collaborative tasks. These applications provided structured and flexible virtual spaces suitable for the purposes of this study.

The virtual environments included three distinct spaces: an outer space environment, a hospital examination room, and a meeting room with selectable views of a beach or mountains. The avatars included both human and nonhuman fictional characters, providing participants with diverse ways of interacting and expressing themselves. Figure 1 illustrates one of the settings and avatars used in the study.

Figure 1 Image of the Metaverse Consultation(See Supplementary File3)

Metaverse Psychiatric Consultation

The metaverse consultations were conducted one-on-one in private virtual rooms with a psychiatrist, who also wore VR goggles and appeared as avatars from remote locations. The psychiatrists included both male and female professionals with an average of 19 years of clinical experience.

Each consultation lasted 30-40 minutes and followed a semistructured framework resembling a standard initial psychiatric consultation. The key components of the consultations were as follows:

1. Introduction and establishing rapport (5–10 minutes):
 - The psychiatrist greeted the participant using their avatar and introduced themselves, explaining the goals and structure of the session.
 - A brief discussion was conducted to help the participants feel comfortable in the virtual environment.
2. Review of medical and life history (10–15 minutes):
 - The psychiatrist inquired about the participant's medical history, including any previous mental health diagnoses or treatments.
 - Life history was reviewed to understand the participants' background, relationships, daily routines, and environmental stressors.
3. Symptom Observation and Assessment (10–15 minutes):

- The participants were guided to share their current mental health concerns, such as anxiety, mood fluctuations, or sleep disturbances.
- The psychiatrist observed verbal and nonverbal cues through avatar interactions to evaluate the participants' emotional state and engagement.
- 4. Providing guidance and recommendations (5–10 minutes):
 - Tailored advice was provided to address the participants' specific concerns.
 - Recommendations included coping strategies, lifestyle adjustments, and referrals to additional mental health resources when needed.
- 5. Closing and feedback (5 minutes):
 - The session concludes with a summary of the discussion and an opportunity for the participant to ask questions or provide feedback on the experience.

The consultations were designed to balance structure and flexibility, providing participants with a supportive environment to explore their mental health concerns in a novel, virtual setting. During the session, the participants navigated the three distinct spaces within Metaverse alongside the psychiatrist and interacted via various types of avatars. Technical staff were available to assist as needed, ensuring a seamless and accessible experience.

Postconsultation interviews and feedback

After the metaverse consultation, the participants were individually interviewed to gather insights into their experiences and acceptance of the metaverse consultation. The semi-structured interview guide used in this study was developed specifically for this project. An English version of the interview form is provided as Supplementary File 2 for reference. The interviews also aimed to identify challenges associated with using the Metaverse for mental health support. Specifically, the interview topics included the following:

- The usability of metaverse devices.
- Physical or psychological discomfort and adverse effects experienced.
- Acceptance of metaverse consultations compared with face-to-face consultations.
- Opinions on the types of individuals and situations where metaverse consultations might be useful.
- Key requirements and concerns regarding metaverse consultations.

Following the interviews, the psychiatrists who conducted the metaverse consultations, along with the research team—including psychiatric social workers and a nurse—discussed the usability, expectations, and concerns related to metaverse consultations. Specifically, they provided feedback on the following:

- The functionality and user experience of the Metaverse platform.
- The technical environment.
- Differences between metaverse consultations and face-to-face consultations.
- The compatibility of the metaverse with the characteristics and conditions of participants.
- Any other observations or insights noted during the study. This was an observational study involving semistructured interviews. After experiencing a metaverse consultation with a psychiatrist, the participants were individually interviewed. This qualitative design was used to assess participants' opinions on the usability and feasibility of the metaverse consultation.

Data analysis

The interview data were analyzed via thematic analysis following established qualitative research methodologies. First, all the interviews were transcribed verbatim to ensure accuracy. The transcripts were then reviewed multiple times to facilitate familiarity with the data and identify potential patterns.

Initial coding was conducted by systematically highlighting recurring phrases, concepts, and key statements. These codes were grouped into broader categories that represented emerging themes. To enhance rigor, the themes were independently reviewed and refined by multiple researchers to ensure consistency and reduce bias.

The analysis focused on three primary domains:

1. Usability of the Metaverse Platform: Exploring participants' experiences with the technical aspects, including VR device operation, comfort, and adaptability.
2. Acceptance of Metaverse Consultations: Assessing participants' preferences, perceptions, and satisfaction with metaverse consultations compared with face-to-face interactions.
3. Conditions or Characteristics Beneficial for Metaverse Consultations: Identifying specific participant profiles or conditions, such as social anxiety or sensory sensitivities, where metaverse consultations may offer unique advantages.

Results

Baseline characteristics

A total of 26 young people were assigned from a pool of 33 volunteers. One individual was excluded for not meeting the inclusion criteria, five lost contacts before providing informed consent, and one could not participate because of his condition on the day. Table 1 summarizes the baseline characteristics, while Table 2 presents the results of the baseline assessments of the participants (See Supplementary File3). The mental and physical conditions of the participants varied, with many expressing difficulties in social interactions, feelings of isolation, and discomfort in seeking support from others. Most participants reported frequent internet use, although their levels of social engagement and self-care practices differed. All the participants owned internet-enabled devices, and most used the internet daily. However, some participants acknowledged neglecting essential tasks due to internet use, whereas others reported difficulties in limiting their internet usage. The participants' initial impressions of the Metaverse also varied. While only a minority had extensive knowledge or prior experience with the Metaverse, many expressed curiosity. Their views on associating with individuals who had a history of psychiatric treatment ranged widely, with some expressing comfort and acceptance, whereas others showed apprehension or stigma toward mental health issues.

Interviews

Usability of the Metaverse Device

The participants' responses regarding the usability of the Metaverse device fell into three categories:

Positive Opinions (12 responses, 46%)

Some participants noted that they "quickly got used to the controls" and found the device "easy to use due to regular use of gaming devices." Optimism for future accessibility was evident in comments such as "I would like to use it when it becomes easier and more affordable."

Neutral Opinions (6 responses, 23%)

Several participants were neutral about the device, stating that while they adapted to its operations, they would require assistance for more complex tasks. One participant commented, "I feel comfortable for short sessions, but longer sessions might be tough with these devices."

Negative Opinions (8 responses, 31%)

Some participants raised concerns about the device's physical fit and comfort. Nine participants experienced issues such as the goggles feeling "too tight," "too loose and slipping," or challenging to fit over glasses. Five participants reported mild physical discomfort, including VR sickness or head heaviness, although no psychological discomfort was noted. A participant remarked, "It might be difficult to connect and operate remotely without staff assistance," highlighting barriers to independent use.

Acceptance of the Metaverse Consultation

Responses regarding the acceptance of metaverse consultations revealed a range of perspectives:

Positive opinions (10 responses, 38%)

The participants who preferred metaverse consultations over face-to-face sessions cited benefits such as reduced psychological pressure and convenience. The comments included "It's a big help not having to leave home when I'm feeling too unwell to go out" and "Meeting a new doctor is less nerve-wracking through an avatar." Another participant noted, "I don't have to endure the intimidating atmosphere of psychiatric institutions or the doctor's imposing presence."

Neutral Opinions (10 responses, 38%)

Neutral responses indicated that participants found the content and quality of metaverse consultations comparable to those of face-to-face consultations. Many noted that their preference would depend on their condition at the time. For example, one participant remarked, "I prefer face-to-face if I can go out, but there are times I'd rather use the Metaverse." Others suggested that "The Metaverse would be preferable if issues such as cost, ease of access, and privacy were addressed."

Negative Opinions (6 responses, 24%)

The participants who preferred face-to-face consultations emphasized the reassurance of observing expressions and body language. One participant shared, "If I can't see their face, I worry whether they're truly understanding or accurately interpreting what I want to convey." Another participant added, "For personal and serious discussions, I want to see the person face-to-face."

The participants also shared insights into specific scenarios where metaverse consultations might be beneficial. One participant stated, "It's ideal for people like me who are self-conscious about being seen. I can focus more on the consultation and express what I truly want to say." Another remarked, "It's helpful for those who find it challenging to visit psychiatric clinics."

Keywords and Concerns for Metaverse Consultations

The participants highlighted several key requirements and concerns regarding metaverse consultations:

Security and privacy concerns

The importance of a secure and private consultation environment was frequently mentioned. The participants requested assurances that psychiatrists understood them accurately. One participant commented, "I don't want to show my face, but if the avatar's facial expressions and body movements are synchronized with reality, it feels more reassuring than a phone call." Concerns about information security for private consultations were also raised.

Preferences for Avatars and Room Settings

The participants frequently emphasized the importance of customizable settings, using terms such as "relaxing," "free from distractions," and "self-selectable." Twelve participants expressed a

preference for avatars that felt authentic to them, with one stating, “choosing my avatar is a way of expressing myself, and it makes me feel more comfortable in the consultation.” Preferences for human avatars (6 participants) and nonhuman characters (6 participants) were evenly split.

Psychiatric team’s perspective

The psychiatric team provided valuable insights into the potential benefits and challenges of metaverse consultations:

Positive Opinion

Team members noted that individuals with sensory hypersensitivity, such as those associated with ASD traits, appeared to focus more effectively in the immersive VR environment. They also reported that individuals with significant social anxiety or tension seemed to relax more quickly, enabling broader and deeper conversations.

Concerns and suggestions

The team expressed concerns about the limitations of metaverse consultations for participants with pronounced symptoms, as these limitations may hinder accurate diagnoses. Suggestions included simplifying metaverse operations for easier access and expanding the range of avatars and room settings to allow for more personalized consultations. They also recommended developing diagnostic support tools to enhance the consultation experience.

Discussion

Principal Findings

In this study, we investigated the feasibility of metaverse psychiatric consultations for young people with mental health conditions. This is the first observational trial to evaluate the feasibility of metaverse consultations in psychiatry. A total of 26 young people participated and completed the study. Despite the mild physical discomfort reported by some participants, such as VR sickness and head heaviness, no significant adverse psychological events occurred, ensuring the study’s successful completion. Postexperience interviews provided valuable insights into both the advantages and challenges of metaverse consultations, offering a roadmap for the future development and implementation of these services.

High affinity for metaverse psychiatric consultations

This study identified specific groups with a strong affinity for metaverse-based psychiatric consultations. Five distinct groups are highlighted:

Individuals with Interpersonal Anxiety

The participants who struggled with accessing medical facilities or engaging in face-to-face conversations due to anxiety expressed that avatar-based communication significantly reduced their psychological burden. The ability to interact from a safe and familiar environment helped participants focus better on the consultation.

Individuals with sensory sensitivities (e.g., ASD)

The immersive experience provided by VR goggles allowed some participants with sensory sensitivities to block overwhelming external stimuli, enabling better concentration during consultations. One participant remarked, “After experiencing the metaverse consultation, I felt I truly understood what a consultation was meant to be for the first time.”

However, this benefit must be interpreted cautiously. Previous studies have noted VR-related

discomfort among individuals with ASD, including VR sickness, sensitivity to brightness, and challenges adapting to immersive environments (12). This highlights the need for further investigations to tailor VR interventions appropriately for sensory-sensitive populations.

Individuals Struggling to Leave Their Homes Due to Psychiatric Conditions

Conditions such as depression, agoraphobia, or Hikikomori make in-person consultations inaccessible for some individuals. The Metaverse offers a safe and private platform, allowing participants to connect with mental health professionals without leaving their homes. Avatars also serve as a psychological bridge, facilitating more comfortable communication.

Individuals Facing Stigma or Resistance to Psychiatric Care

Stigma around mental health often discourages help-seeking behaviors. The participants noted that avatar-based consultations reduced the fear of judgment and made accessing services more approachable. For many, this initial step provided a reassuring and nonthreatening introduction to mental health care, potentially easing its transition into traditional services.

Individuals Uncomfortable with Disclosing Their Physical Appearance

The participants with gender incongruence, negative body image, or other appearance-related discomforts expressed that avatars provided a sense of safety and self-expression. They felt more comfortable engaging in consultations through avatars than in real-life settings.

Challenges in Implementing Metaverse Consultations

While the Metaverse presents significant opportunities for MHSs, several challenges must be addressed to enable its effective implementation:

Accessibility Issues

The current process of accessing and using Metaverse platforms remains complex. Technical staff were required to assist participants with the VR goggle setup, navigation, and operation. Improving accessibility and ease of use, including simplifying VR operations, will be essential for making these services universally available. Reliable internet access and more affordable VR equipment are also necessary for broader adoption.

Physical Discomfort

Physical challenges such as VR sickness, head heaviness, and discomfort while wearing goggles were common barriers to engagement. Although the immersive experience was seen as a significant advantage, this discomfort must be mitigated to maximize the benefits of metaverse consultations.

Potential for “Light Metaverse” Options

Metaverse platforms can often be classified based on the devices, technologies, and functionalities they utilize. In this study, we distinguish between Light Metaverse and Heavy Metaverse as two broad categories. The Light Metaverse refers to experiences that do not require advanced equipment, such as VR goggles; instead, they are accessible via smartphones or PC browsers, offering a more simplified and accessible form of interaction. In contrast, the Heavy Metaverse involves immersive experiences that utilize advanced technologies such as VR goggles and related equipment, providing a fully immersive and engaging digital environment.

Expanding beyond VR-based platforms to include Light Metaverse options could significantly increase accessibility for a broader population, particularly for individuals who may lack access to

VR technology or experience physical discomfort or other limitations while using it. Light Metaverse options hold the potential to enhance inclusivity and convenience, reduce technological and financial barriers, and still facilitate meaningful virtual interactions.

To better understand the efficacy and inclusivity of these options, comparative studies evaluating VR-based (Heavy Metaverse) and non-VR-based (Light Metaverse) approaches are essential. Such studies can provide valuable insights into the most effective and user-friendly strategies for delivering mental health services through the Metaverse, tailored to the diverse needs of different populations.

Ethical considerations

The ethical challenges of metaverse consultations remain unresolved. In this study, eligibility confirmation and consent were obtained in person, but future implementations will require robust mechanisms for ensuring informed consent, safeguarding privacy, and maintaining secure interactions entirely within virtual platforms. These measures are critical for building trust and maintaining the integrity of therapeutic environments.

Encouraging Autonomy in Mental Health Services

A key insight from this study is the importance of autonomy in MHSs for young people. The concept of “choice” emerged consistently in participant responses, highlighting their desire for flexibility and personalization. The choice of avatars enabled participants to express their identities, creating a more comfortable and engaging consultation experience.

The participants emphasized the value of having both metaverse-based and in-person options available. This aligns with prior research indicating that traditional, paternalistic models often discourage help-seeking behaviors among young people by limiting autonomy (13,14). In contrast, youth-friendly services that prioritize choice and personalization have been shown to foster greater engagement and trust (15).

The Metaverse has significant potential to support these preferences. By integrating flexibility, personalization, and nonjudgmental environments, metaverse-based services can bridge the gap between accessibility and engagement, creating a supportive platform where young people feel empowered to seek help. This study is the first to evaluate Metaverse psychiatric consultations for youth mental health. Consultations were feasible and safe, with no major adverse events. Participants valued reduced psychological burden and increased autonomy through avatars. Challenges include accessibility, physical discomfort, and ethical considerations.

High affinity was observed among subgroups such as those with social anxiety, ASD traits, and difficulty accessing in-person care. Ethical issues, including privacy and consent in virtual settings, must be addressed. Youth autonomy emerged as a critical factor, with participants emphasizing the importance of choice.

Strengths and Limitations

Strengths

This study has several strengths:

Innovative Contribution

This is the first observational trial to explore the feasibility of metaverse consultations in psychiatry, offering a pioneering investigation into a novel approach for mental health support.

Potential to expand access:

The identification of specific groups with a high affinity for metaverse consultations provides a roadmap for addressing barriers to traditional mental health support, particularly for underserved populations. Strengths include being the first observational trial on this topic, user-centered design, and engagement of youth in shaping services. Limitations include small sample size, recruitment bias, and focus only on VR components of the Metaverse.

Limitations

Small and Limited Samples:

The sample size was small, and participants were recruited from areas near the university, limiting generalizability. Future studies should include a broader range of participants, particularly those who may benefit most from the Metaverse, such as individuals with severe physical or mental limitations.

Narrow Scope of Metaverse Functionality:

The study focused solely on avatar-based communication via VR, without exploring broader metaverse features. Prior studies suggest that one of the key elements of the metaverse, decentralized autonomous organizations (DAOs), has the potential to foster inclusive and collaborative environments for mental health support by enabling user-governed networks, promoting shared decision-making, and facilitating collective healing (16). Future research should incorporate these elements to fully evaluate the potential of the metaverse.

Excluded Populations:

Certain groups, such as individuals with speech difficulties or nonnative speakers, were not included in this study. Future research should consider these populations to enhance the inclusivity of metaverse-based MHS.

Conclusions

This qualitative observational study suggests that metaverse-based psychiatric consultations are feasible for young people with mental health conditions. While challenges persist, further research is necessary to evaluate the utility of this service across a broader target population and a wider range of applications, thereby supporting the development of a truly impactful and effective mental health intervention.

Abbreviations

ASD: autism spectrum disorder
DAO: decentralized autonomous organization
ICT: information and communication technology
MHS: mental health service
NFT: non-fungible token
PC: personal computer
VR: virtual reality
AR: augmented reality

Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board (IRB) of Yokohama City University, Japan (Approval No. F230400055). Written informed consent was obtained from all participants. For participants younger than 18 years, written informed consent was additionally obtained from their legal guardians.

The study was conducted in accordance with the Declaration of Helsinki and the Ethical Guidelines for Life Science and Medical Research Involving Human Subjects.

Since this study was conducted as an observational study, clinical trial registration was not applicable.

This manuscript also includes images of staff members demonstrating the Metaverse consultation sessions. All individuals appearing in the images provided written informed consent for publication, and copies of signed consent forms were submitted with the manuscript.

Availability of data and materials

The datasets generated and/or analyzed during this study are available from the corresponding author upon reasonable request.

Competing interests

MI, NT, KI, TM, MT, TA, and TM declare no competing interests.

JF serves as the Executive Director of the Seisa Yokohama Education Counselling Center.

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Authors' contributions

MI, JF, NT, KI, and TM designed the study. Participants were recruited by MI, JF, KI, TA, TM, and MT. MI and JF administered assessments, interventions, and interviews, with support from TM and

MI, NT, TM, and MT scored all assessments, managed data, and transcribed qualitative interviews. Transcripts were analyzed by MI, JF, and NT. MI drafted the initial manuscript with JF. All authors reviewed and revised subsequent drafts and approved the final manuscript.

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Supplementary Files

Figures

Image of the Metaverse Consultation.



CONSORT (or other) checklists

COREQ checklist.

URL: <http://asset.jmir.pub/assets/b6ddef4f43d6ad1c0fb3409e311c8d88.pdf>

