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# Does the '*hikikomori*' syndrome of social withdrawal exist outside Japan?: A preliminary international investigation

**Takahiro A. Kato**[1,2,*], **Masaru Tateno**[3], **Naotaka Shinfuku**[4], **Daisuke Fujisawa**[5], **Alan R. Teo**[6], **Norman Sartorius**[7], **Tsuyoshi Akiyama**[8], **Tetsuya Ishida**[9], **Tae Young Choi**[10], **Yatan Pal Singh Balhara**[11,12], **Ryohei Matsumoto**[13], **Wakako Umene-Nakano**[14], **Yota Fujimura**[15], **Anne Wand**[16], **Jane Pei-Chen Chang**[17], **Rita Yuan-Feng Chang**[18], **Behrang Shadloo**[19], **Helal Uddin Ahmed**[20], **Tiraya Lerthattasilp**[21], and **Shigenobu Kanba**[1]

[1] Department of Neuropsychiatry, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan [2] Innovation Center for Medical Redox Navigation, Kyushu University, Fukuoka, Japan [3] Department of Neuropsychiatry, Sapporo Medical University, Sapporo, Japan [4] School of Human Sciences, Seinan Gakuin University, Fukuoka, Japan [5] Psycho-Oncology Division, Research Center for Innovative Oncology, National Cancer Center Hospital East, Kashiwa, Japan [6] Department of Psychiatry, University of California, San Francisco, CA, USA [7] Association for the Improvement of Mental Health Programmes, Geneva, Switzerland [8] Department of Psychiatry, NTT Medical Center Tokyo, Tokyo, Japan [9] Graduate School of Human-Environment Studies, Kyushu University, Fukuoka, Japan [10] Department of Psychiatry, Catholic University of Daegu School of Medicine, Daegu, South Korea [11] Department of Psychiatry and National Drug Dependence Treatment Centre, All India Institute of Medical Sciences (AIIMS), New Delhi, India [12] Department of Psychiatry and De-addiction, Lady Hardinge Medical College and SSK Hospital, New Delhi, India [13] Department of Psychiatry, Kyoto Prefectural University of Medicine, Kyoto, Japan [14] Department of Psychiatry, University of Occupational and Environmental Health, Fukuoka, Japan [15] Department of Psychiatry, Teikyo University, Tokyo, Japan [16] Consultation-Liaison Psychiatry, Canterbury Hospital, Sydney Local Health Network, and Sydney Medical School, University of Sydney, Sydney, New South Wales, Australia [17] Department of Psychiatry, China Medical University and Hospital, Taiwan [18] Department of psychiatry, ChiaYi Branch, Taichung General Veterans Hospital, Taiwan [19] Department of Psychiatry, Sina Hospital, Kamyaran, Iran [20] Department of Psychiatry, Bangabundhu Sheikh Mujib Medical University, Dhaka, Bangladesh [21] Faculty of Medicine, Thammasart University Hospital, Bangkok, Thailand

## Abstract

**Purpose—**To explore whether the '*hikikomori*' syndrome (social withdrawal) described in Japan exists in other countries, and if so, how patients with the syndrome are diagnosed and treated.

[*]**Correspondence**: Takahiro A. Kato, M.D., Ph.D., Department of Neuropsychiatry, Graduate School of Medical Sciences, Kyushu University, 3-1-1 Maidashi Higashi-ku Fukuoka, 812-8582 Japan, Phone: +81-92-642-5627, Fax: +81-92-642-5644, takahiro@npsych.med.kyushu-u.ac.jp.

Disclosures

All authors declare that they have no conflicts of interest.

**Methods—**Two *hikikomori* case vignettes were sent to psychiatrists in Australia, Bangladesh, India, Iran, Japan, Korea, Taiwan, Thailand and the USA. Participants rated the syndrome's prevalence in their country, etiology, diagnosis, suicide risk, and treatment.

**Results—**Out of 247 responses to the questionnaire (123 from Japan and 124 from other countries), 239 were enrolled in the analysis. Respondents' felt the *hikikomori* syndrome is seen in all countries examined and especially in urban areas. Biopsychosocial, cultural, and environmental factors were all listed as probable causes of *hikikomori*, and differences among countries were not significant. Japanese psychiatrists suggested treatment in outpatient wards and some did not think that psychiatric treatment is necessary. Psychiatrists in other countries opted for more active treatment such as hospitalization.

**Conclusions—**Patients with the *hikikomori* syndrome are perceived as occurring across a variety of cultures by psychiatrists in multiple countries. Our results provide a rational basis for study of the existence and epidemiology of *hikikomori* in clinical or community populations in international settings.

### Keywords

Hikikomori; social withdrawal; taijin kyofusho; amae; Internet addiction

## Introduction

Culture, society and history strongly influence the form of psychiatric diseases [1-3]. Japan has been experiencing very rapid socioeconomic and cultural changes, impacting the lifestyle, behavior and mentality of all Japanese [4]. It has been suggested that the unique cultural background and recent sociocultural changes in Japan have conspired to create a new syndrome of social withdrawal [5] called '*hikikomori*'. The *hikikomori* syndrome has been defined as complete withdrawal from society for 6 months or longer [6,7,5]. In the latest version (October 2010) of the Oxford dictionary an entry on *hikikomori* has been included: "(in Japan) the abnormal avoidance of social contact, typically by adolescent males/a person who avoids social contact [Origins] Japanese, literally 'staying indoors, (social) withdrawal'."

Though *hikikomori* was first described in Japan, it is unclear whether the phenomenon may exist elsewhere. Experts have debated as to whether *hikikomori* is a culture-bound syndrome specific to Japan or a syndrome that can be classified using the criteria of the ICD-10 or DSM-IV [8-10]. Furthermore, some have reported *hikikomori*-like phenomena in countries such as Oman, Spain and Korea [11-13]. However, the only rigorous epidemiological study of *hikikomori* is from Japan, and it indicated a lifetime prevalence of over 1% among young adults in Japan [14].

Thus, the main purpose of this study was to conduct a preliminary investigation of whether patients with typical *hikikomori* syndrome as perceived as occurring in Japan and other countries by psychiatrists, and if so how cases are evaluated and treated.

## Methods

### Participants

The participants of the study were psychiatric residents (trainees) and psychiatrists of varying ages in nine countries. They were asked to consider the two case vignettes and fill in an anonymous questionnaire dealing with the cases, diagnosis and other issues related to their understanding of the syndrome. The survey was conducted in two waves. In the first (May – July 2010), the survey in Japan was conducted by local coordinators who belong to two psychiatric hospitals (Hizen Psychiatric Center in Saga and Zikei Hospital in Okayama) and six university hospitals and their affiliated hospitals throughout Japan (Kyushu University in Fukuoka, University of Occupational and Environmental Health in Kitakyushu, Kyoto prefecture University in Kyoto, Keio University in Tokyo, Teikyo University in Tokyo, and Sapporo Medical University in Sapporo). Each local coordinator was instructed to distribute the survey to a convenience sample of psychiatrists, though we specifically requested recruitment of psychiatrists of differing ages and years of experience. The questionnaire was distributed in-person or via mail.

In the second wave, the survey was translated between Japanese and English using backtranslation. We identified – with the help of the international section of the Japanese Society of Psychiatry and Neurology (JSPN) and the network of Young Psychiatrists Organization in each country – local coordinators in each country who were given instructions identical to those in Japan. Surveys were collected (especially in their own local community), and returned to the principal investigator (T.A.K.) by August 2010.

### The questionnaire

We developed two case vignettes of *hikikomori* in Japan based on a review of the literature and experts' comments [5,8,9]. *Hikikomori* experts in Japan suggest a focus on prolonged cases with problematic behaviors [15-17], which we incorporated into the case vignettes. Also, researchers and clinicians have described a number of clinical and historical correlations with *hikikomori* (e.g., being bullied in school, poor academic performance, and intermittent violent outbursts) that we included [15-17]. A complete mental status examination and follow-up data were not described for cases in order to stimulate the imagination of participants. The second case vignette was adapted from one previously published [8]. The questionnaire was self-administered and participants evaluated the following on a 5-point Likert scales after reading each case vignette: Frequency of the case in one's country, cause, diagnosis, suicide risk assessment, and treatment plan. Demographic information about the participants including their experience and length of training in psychiatry were also noted.

The case vignettes were described as follows:

<Clinical case A>

Case: Mr. A, a 15-year-old junior high school student. (His parents say) He obstinately refuses to see us and never comes out of his own room.

Social history: He is the first son, with a younger brother. He is brought up by his father who is a company employee and his mother who works part-time. His father, a salesman, has been transferred every 2-3 years and moved with his whole family, but when he entered junior high school, his father moved by himself, so he now lives with his mother and a brother 3 years his junior. There was nothing particularly problematic during his development and his school grades were medium, but not bad. He naturally found it hard to make friends and he would prefer reading books rather than sports. Half a year after entering junior high school, he suddenly stopped going to school. At home, he is absorbed in PC games and Internet, he hardly ever leaves his room, and his day and night are reversed.

Past psychiatric history: None

Family history: None

History of Present Illness: After 2 years of his school absenteeism, when his entrance exams for senior high school were near at hand, his father returned home and warned him: “Why don't you go to school once in a while? Can't you be serious about your future?”, to which he yelled: “I don't need you tell me that!” and he suddenly used violence on his father. While his father was dumbfounded, he headed back to his room. A few days later, his parents made up their mind to force him to come with them to the nearby psychiatric faculty where he is examined by you.

Drug history: None

Mental Status Exam on First Interview:

Mr. A, just standing between his parents kept silent, with his head hung down. His parents bowed and described his life history and problematic situations. From beginning to end, he just kept looking downwards. His attitude does not imply any psychotic experience, such as delusion/hallucination. He just seems to be withdrawn into his own shell. Even when you addressed him: “Mr. A”, he did not reply at all.

<Clinical case B>

Case: Mr. B, a 24-year-old male living with his parents. (His parents say) He never comes out of his own room. (Mr. B) just keeps saying “I don't know”.

Social history: He is an only child. He is brought up by his parents in a two-bedroom urban apartment. There was nothing particularly problematic during his development until elementary school. In junior high school, he often skipped school and avoided mingling with peers, which he linked to experiences such as being bullied by classmates in elementary school. His academic performance was historically good, and he directly entered a middle-class university of engineering faculty, but three years ago (third grade, 21 years old) Mr. B dropped out of university for lack of motivation.

Family history: None

History of Present Illness: For the last three years he has hardly ever left his room, spending 23 hours a day behind its closed door. He eats food prepared by his mother who leaves trays outside his bedroom. He sleeps all day, then awakes in the evening to spend his time surfing the Internet, chatting on online bulletin boards, reading manga (comic books), and playing video games. Despite parental encouragement, he has repeatedly resisted going to vocational school or taking a job.

Psychiatric history: Since last year, his parents have taken him to several local hospitals where he was variously diagnosed with ‘depression’ and 'latent schizophrenia’. On mental status exam, he had a flat affect, denied depressed mood or anxiety, and answered most questions by saying ‘I don't know’. Neuro-psychological testing revealed no cognitive abnormalities. Brain imaging and standard screening laboratory studies for altered mental status were unremarkable. He failed trials of psychotropic medications including antidepressants and antipsychotics.

Mental Status Exam on First Interview:

Expecting a possible solution of his social withdrawal, his parents brought him to the psychiatric faculty where he is examined by you. Mr. B, just standing between his parents kept silent politely. His attitude does not imply any psychotic experience, such as delusion/hallucination. He just seems to be a quiet person. Even when you addressed him, he just replied “I don't know”.

### Statistical Analysis

Statistical analysis was performed using SPSS 16.0J (SPSS Japan Inc., Tokyo, Japan). Data were expressed with mean and standard deviation (SD). Data from Japan and all other countries were split into two groups and compared by unpaired t-test. In addition, data from Japan, Korea, Australia and Taiwan each met the criteria of $n > 18$, and thus were analyzed by a one-way analysis of variance (ANOVA) followed by Tukey honestly significant difference (HSD) post hoc test. Significance was set at a level of $p < 0.05$.

## Results

### Participants

The Japanese questionnaire was distributed to 165 psychiatrists in Japan and 123 responded (response rate: 74.5%). The English translated questionnaire was distributed to 144 psychiatrists in other countries and 124 responded: 34 from Korea, 22 from Australia, 19 from Taiwan, 10 from each of Bangladesh, Iran, India, and the USA, and 9 from Thailand (response rate: 86.1%). Eight subjects were excluded because of incomplete data, for a final n of 239 participants (male/female/sex-unknown=145/91/3) enrolled in analysis. Details of participants are shown in **Table 1**.

### Frequency

The participants felt that people with *hikikomori* syndrome were seen in all countries and that they are more frequently seen in urban areas, especially in Taiwan (**Table 2**). In the majority of countries, adults with *hikikomori* syndrome (case B) were less frequently seen than teenagers with the *hikikomori* syndrome (case A).

### Causes

Psychological factors were reported to be extremely common causes of *hikikomori* in many countries including Japan, especially for teen *hikikomori* (**Table 2**). Social and cultural factors were also often noted, except in Bangladesh and Iran. Others pointed to parental influences, especially in relation to teen *hikikomori*. However, for adult *hikikomori*, brain (biological) factors were highlighted. Japanese psychiatrists regarded factors of psychosis, mood and personality equally as causes, while other countries' psychiatrists valued factors of mood and personality to be more significant, especially regarding teen *hikikomori*. Factors of psychosis were raised in particular for teen *hikikomori* by psychiatrists in India, Iran, Korea, the USA, and Japan.

### Diagnosis

Just 30 % of Japanese psychiatrists reported that both *hikikomori* cases could be diagnosed using ICD-10/DSV-IV criteria, whereas about 50 % of them did not consider ICD-10/DSV-IV criteria to apply to these cases. On the other hand, psychiatrists in other countries have differing opinions regarding the application of the ICD-10/DSV-IV criteria (**Table 3**). When participants were asked details for their diagnosis, they offered a variety of diagnoses such as adjustment disorder, anxiety disorder, autism spectrum disorders, conduct disorder, dysthymia, impulse control disorder, prodromal schizophrenia, schizoid personality disorder, simple schizophrenia, and social phobia. Some participants from Japan, Korea, Taiwan, Thailand and the USA diagnosed the cases as *hikikomori*. In addition, some Korean psychiatrists diagnosed the patients described in the vignettes as having Internet Addiction.

### Suicide Risk

Korean psychiatrists estimated suicide risk for the both cases to be significantly higher than all other countries (**Table 4**).

### Treatment Setting

A large difference in selection of treatment method was found between psychiatrists in Japan and other countries (**Figure 1**). Japanese psychiatrists suggested treatment in outpatient wards and some even said no psychiatric treatment was necessary. Participants in other countries opted for more active treatments, and some Korean psychiatrists felt that the treatment of choice would be locked ward hospitalization.

### Interventions

Therapeutic interventions that were recommended are shown in **Table 4**. Overall, there were no significant differences found between treatment recommendations made by Japanese psychiatrists and those from other countries. There were a number of significant differences

between specific countries, however. Japanese psychiatrists tended to choose psychotherapy as the most favored approach for the cases, especially for teen *hikikomori*. Pharmacotherapy was preferred by Bangladeshi, Iranian and Korean psychiatrists. Psychiatrists from all countries, especially Australia and Japan, recommended environmental interventions. Taiwanese psychiatrists choose self-help as the most preferable intervention for adult *hikikomori*. Alternative treatments such as traditional Chinese medicine and yoga for the teen *hikikomori* were recommended in many countries except Japan.

## Discussion

To our knowledge, this is the first international study to explore the opinions of clinicians about the *hikikomori* syndrome in Japan and other countries. It revealed that typical *hikikomori* cases seem to exist not only in Japan but also in other parts of Asia, Australia and the USA.

There was no consensus among the psychiatrists about the causes of the syndrome. Biopsychosocial, cultural, and environmental factors including parental and school factors were all regarded as probable causes of *hikikomori*. These factors have significant influence on various psychiatric diseases and problematic behaviors such as juvenile delinquency and bullying [18-23]. Since these problematic behaviors found in modern society are also seen as related to *hikikomori* [15-17], we may have found results suggesting higher prevalence in urban areas.

Surprisingly, some psychiatrists in Japan felt people with the *hikikomori* syndrome do not need psychiatric treatment. Most psychiatrists from other countries suggested that hospitalization is the preferred treatment. This difference might be related to the fact that *hikikomori*-like phenomena have been seen in Japan for a long time and have become somewhat acceptable behavior within Japanese society [24,8]. Japanese cultural acceptance of *hikikomori* may be considered within the concept of '*amae*' [25]. Takeo Doi, a psychiatrist and psychoanalyst, described Japanese dependent behaviors with the word *amae*. The person who is acting *amae* may beg or plead, or alternatively act selfishly and indulgently, while secure in the knowledge that the caregiver will forgive this. The behavior of children towards their parents is the most typical example of *amae*. Doi argued that child-rearing practices in the Western society seek to stop this kind of dependence in children, whereas in Japan it persists into adulthood in all kinds of social relationships [25]. Even now, compared to Western societies, in Asian societies including Korea, Japan and Taiwan, young people tend to be more economically dependent on their parents, and this phenomenon seems to be one of the expressed form of *amae* [26]. *Hikikomori* may be indirectly promoted by *amae* which makes parents accept their child staying at home. Even though the concept of *amae* was originally considered to be uniquely Japanese, contemporary opinions suggest that *amae* is actually more universal in nature [27]. Thus, there is an interesting parallel to *hikikomori* that has been thought of as unique to Japan but, as our preliminary results show, is perceived by psychiatrists as occurring in a variety of other countries.

Our results extend rather than clarify the debate over diagnosis of *hikikomori*. In our survey, a variety of diagnoses, such as psychosis, depression anxiety and personality disorders, were proffered. Opinions as to whether *hikikomori* cases can be diagnosed using ICD-10/DSV-IV criteria differed depending on the participants' countries and the cases' age of onset. Similarly, Kondo and his colleagues recently reported that among 29 *hikikomori* cases who visited one prefectural mental health welfare center in Japan, 24 cases could be diagnosed using the DSM-IV criteria such as schizophrenia (3 cases), Asperger's syndrome (6), personality disorders (4), social phobia (4), and adjustment disorders (2). Based on this survey, Kondo et al. suggested that most *hikikomori* cases could be diagnosed with the present diagnostic criteria [16]. However, a recent epidemiological survey in Japan reported approximately a fifty-fifty split between *hikikomori* who had experienced a psychiatric disorder and had not [14]. These data and other studies that have not been able to diagnose all cases of *hikikomori* may suggest the existence of 'primary *hikikomori*' that is not an expression of any other psychiatric disorder [28,8,9,5,29]. In order to clarify differences between 'primary *hikikomori*' (social withdrawal not associated with any underlying psychiatric disorder) and 'secondary *hikikomori*' (social withdrawal caused by an established psychiatric disorder), further epidemiological and psychopathological studies are needed. Structured diagnostic interviews such as the SCID (Structured Clinical Interview for DSM-IV) should be applied. If some *hikikomori* cases prove to be not associated with any conventional psychiatric diagnoses, *hikikomori* should be added to the DSM-5 or the ICD-11. Even if all *hikikomori* cases prove to be within some kind of psychiatric disorders, it is valuable to continue to focus on the *hikikomori* phenomenon because of its associated morbidity, similar to how suicidality is examined in various fields of psychiatry [30]. Reducing the burden of *hikikomori* symptoms, regardless of what psychiatric disorders patients may have, may provide a worthwhile improvement in their quality of life, and this suggests another direction of future *hikikomori* research.

There are historical examples that may have lessons for the *hikikomori* debate. First, eating disorders emerged during an era of rapid sociocultural changes in the 1950-1970s [31-33]. Thus, it might be that the *hikikomori* phenomenon is a particular contemporary expression of psychopathology too.

Second, taijin kyofusho, a Japanese cultural variant of social phobia included in the DSM-IV TR appendix of culture-bound syndromes, is relevant to the *hikikomori* discussion [34]. Teo and Gaw compared the psychiatric literature's discussion of taijin kyofusho and *hikikomori*, proposing *hikikomori* as another type of culture-bound syndrome [8,9] as follows; The two conditions share similar epidemiological factors. Taijin kyofusho is known to be common among the same youthful age group and have the same bias toward males [35]. Nakamura and Shioji reported a case series study of 24 consecutive taijin kyofusho treated on an inpatient unit, and they revealed that 7 (29%) of the patients fit what they regarded to be a "*hikikomori* subtype" [36]. Taijin kyofusho's core feature is fear of offence or hurting others through awkward social interaction or because of perceived physical defect such as body odor, blushing, and eye-to-eye contact [37], while such features are not obviously expressed by typical cases of *hikikomori* including our vignette cases. To clarify the similarity and difference between the two conditions, further epidemiological, psychopathological and cultural studies are warranted. Previous study of DSM diagnosis of taijin kyofusho by

American mental health practitioners revealed a tendency similar to psychiatrists in our study to apply a range of personality, anxiety, and psychotic diagnostic labels (Tanaka-Matsumi, 1979). Given this diagnostic heterogeneity based on ICD and DSM criteria, there may be utility in creating and using specific diagnostic criteria for the *hikikomori* syndrome [28,8,9].

Third, there were great debates on Latah paradox in the early 1980's between psychiatrists and medical anthropologists [38,39]. They argued whether Latah is a locally specific phenomenon (a culture-bound syndrome) or a common syndrome that can be classified in a taxonomy. The modern discussion as to whether *hikikomori* is a culture-bound syndrome or not bears similarity to the argument of the Latah paradox. Further appropriate studies are needed to clarify this issue.

Interestingly, some Korean psychiatrists diagnosed the vignette cases as Internet addiction. Korea is one of the first countries to describe Internet addiction among the young [40-42]. In Korea, Internet addiction is often actively treated [43]. In addition, risk of suicide among younger generations is high in Korea [44]. Limited evidence has supported a connection between Internet usage and suicide [45], and this might have influenced the preference of Korean psychiatrists for very active therapeutic strategies, such as the hospitalization of patients with the *hikikomori* syndrome in locked wards. On the other hand, Japanese psychiatrists tend to regard the risk of suicide to be low and choose relatively passive interventions for the *hikikomori*. This is in contrast to the recently reported Internet-related suicide pacts in Japan [45-47]. Ozawa-de Silva pointed out a clear resemblance between *hikikomori* and Internet suicide pacts as their main communication tool is the Internet, and these individuals have reduced social interaction and social support. Perhaps then Japanese psychiatrists should pay much more attention to *hikikomori* and associated Internet addiction and suicide.

Our result from Japanese psychiatrists revealed that psychotherapy is regarded to be the most favored approach for the cases especially for teen *hikikomori*. Various psychotherapeutic approaches such as psychodynamic psychotherapy, group therapy and family therapy have been conducted and reported to be effective by Japanese psychiatrists [15-17]. Also, home visits were reported to be effective intervention for *hikikomori* cases, especially to reduce violent behaviors [48]. Therapeutic strategies based on Japanese psychiatrists' experience with *hikikomori* may be useful to psychiatrists and mental health professionals in other countries.

## Limitations

The first limitation of this study is that data are a convenience sample from limited areas in the countries concerned, and therefore may not reflect the opinion of all psychiatrists in these countries. In addition, the different length of psychiatric training in each country and predominance of young psychiatrists may have influenced our results. Our recent international survey focusing on impacts of biopsychosocial factors on psychiatric training revealed that psychiatric diagnosis and treatment strategy is significantly influenced by psychiatric education in each country [49], and this may have also influenced diagnostic and therapeutic decisions in each country. The sample in this study may not be representative of

the wide spectrum of psychiatrists' experience and theoretical orientations since detailed characteristics of the participants were not obtained. Our results should not be interpreted as offering actual epidemiological data on frequency and etiology of *hikikomori* across cultures. Second, the questionnaire was developed for this study, and its psychometric characteristics have not been established. Third, vignettes inherently offer a limited clinical picture and might not reflect what would happen in real clinical settings. Nonetheless, the utility of clinical vignette surveys in comparing perceptions of diagnoses by clinicians in different countries has been established [50].

### Conclusion

Our case vignette survey indicates that the *hikikomori* syndrome, previously thought to exist only in Japan, is perceived by psychiatrists to exist in many other countries. It is particularly perceived as occurring in urban areas and might be associated with rapid global sociocultural changes. There is no consensus among psychiatrists within or across countries about the causes, diagnosis and therapeutic interventions for *hikikomori* yet. International collaboration should help to clarify the nature of the syndrome and produce guidelines regarding the diagnosis and treatment of the syndrome. Further epidemiological and psychopathological studies using structured diagnostic interviews and validated psychometric instruments would also be needed to confirm our findings, and to produce information about the public health importance of the *hikikomori* syndrome.

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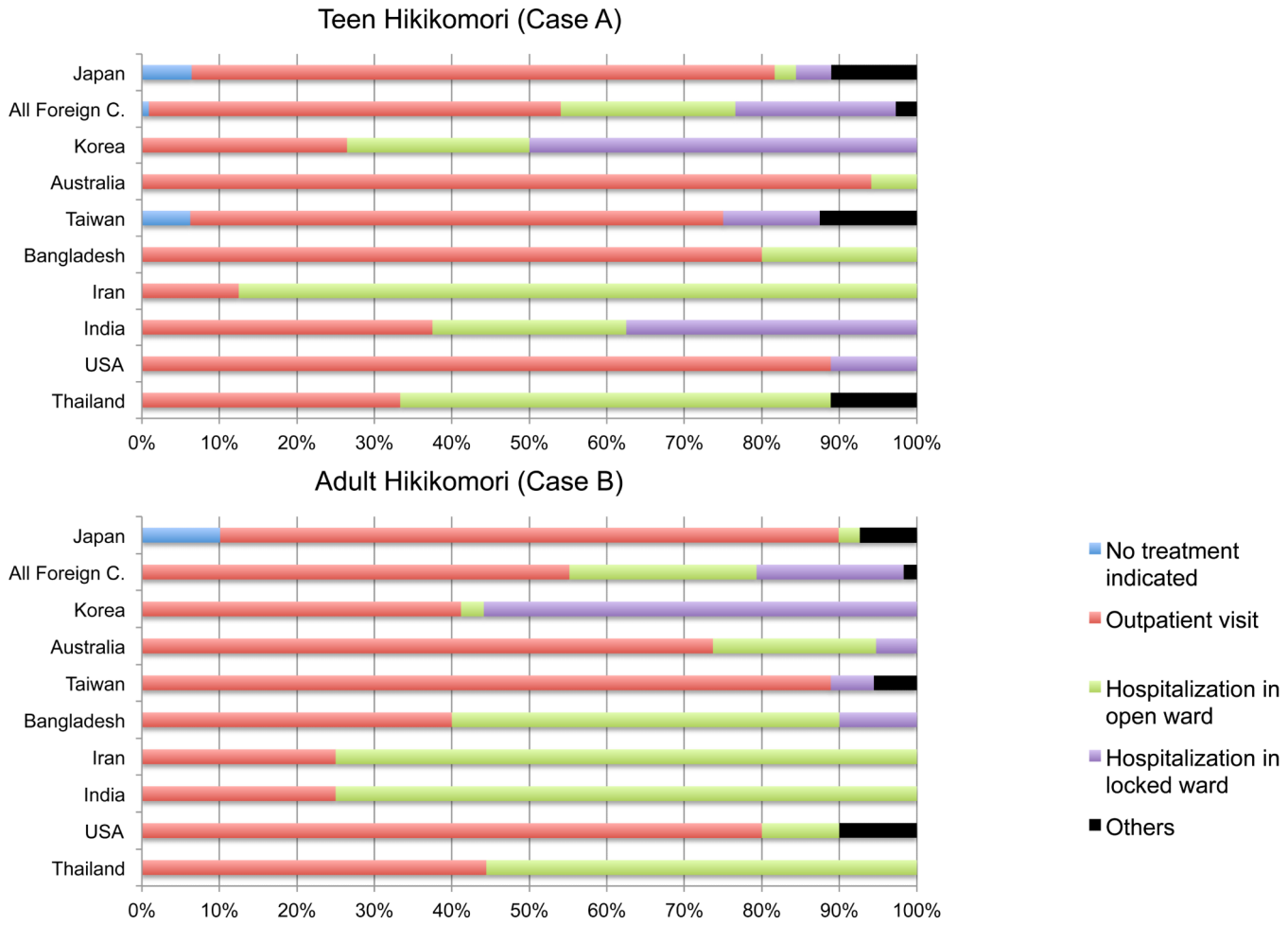


**Figure 1.**

Where should the *hikikomori* cases be treated?

Participants were asked the following question [Where should the case A/B be treated at this point?]. Their choices were expressed as percentage in each country.

**Table. 1**

Demographics of participants.

| | | Japan | All other countries | Korea | Australia | Taiwan | Bangladish | Iran | India | USA | Thailand |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Delivered** | **n** | **165** | **144** | **44** | **30** | **20** | **10** | **10** | **10** | **10** | **10** |
| **Responded** | **n** | **123** | **124** | **34** | **22** | **19** | **10** | **10** | **10** | **10** | **9** |
| **Response Rate** | **%** | **74.5** | **86.1** | **77.3** | **73.3** | **95.0** | **100** | **100** | **100** | **100** | **90.0** |
| **Valid Response** | **n** | **117** | **122** | **34** | **21** | **19** | **10** | **9** | **10** | **10** | **9** |
| **[Male]** | **n** | 79 | 66 | 20 | 7 | 10 | 7 | 8 | 7 | 5 | 2 |
| **[Female]** | **n** | 36 | 55 | 14 | 14 | 9 | 3 | 1 | 3 | 5 | 6 |
| **[Sex unknown]** | **n** | 2 | 1 | | | | | | | | **1** |
| **Age** | **Mean** | **35.6** | **33.7** | **29.4** | **35.4** | **33.2** | **36.8** | **36.9** | **27.7** | **44.8** | **33.0** |
| | SD | 7.37 | 7.18 | 2.95 | 6.24 | 4.55 | 4.34 | 4.54 | 3.23 | 13.59 | 3.85 |
| **Experience Years of Psychiatry** | **Mean** | **8.7** | **6.5** | **3.1** | **8.2** | **7.2** | **8.7** | **6.2** | **5.0** | **9.3** | **7.1** |
| | SD | 7.19 | 4.78 | 2.8 | 6.99 | 3.85 | 3.02 | 1.47 | 2.94 | 5.65 | 4.06 |

**Table. 2**

Participants' opinions regarding the prevalence and causes of the *hikikomori* vignette cases.

| Case A (teen Hikikomori) | | Japan | All other Countries | Korea | Australia | Taiwan | Bangladish | Iran | India | USA | Thailand | p-value (t-test*) | Significance (ANOVA**) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Do you think this kind of case is common or rare in your country (Urban or Rural area)?** | | | | | | | | | | | | | |
| **Urban Area** | **Mean** | **3.18** | **3.20** | **3.29** | **3.14** | **3.95** | **3.40** | **2.67** | **2.70** | **2.70** | **2.78** | **0.904** | **TW > JP, AU** |
| | SD | 0.86 | 1.00 | 0.76 | 1.06 | 1.08 | 0.97 | 0.87 | 0.82 | 0.95 | 1.09 | | |
| **Rural Area** | **Mean** | **2.80** | **2.43** | **2.27** | **2.72** | **2.58** | **2.80** | **2.50** | **2.10** | **2.44** | **1.88** | **0.002** | **JP > KR** |
| | SD | 0.79 | 0.97 | 0.69 | 1.13 | 1.12 | 1.14 | 0.53 | 0.74 | 1.01 | 1.36 | | |
| **To what extent do you think he has been affected by?** | | | | | | | | | | | | | |
| **Mind** | **Mean** | **3.99** | **3.83** | **3.39** | **4.25** | **4.16** | **4.20** | **2.89** | **3.10** | **4.30** | **4.56** | **0.160** | **AU, TW, JP > KR** |
| | SD | 0.88 | 0.92 | 0.70 | 0.44 | 0.76 | 1.14 | 1.05 | 0.99 | 0.82 | 0.53 | | |
| **Brain** | **Mean** | **3.19** | **3.16** | **3.27** | **2.90** | **3.05** | **3.20** | **3.33** | **3.56** | **3.50** | **2.56** | **0.806** | - |
| | SD | 0.99 | 0.97 | 0.91 | 0.79 | 1.08 | 1.03 | 1.00 | 0.88 | 1.18 | 1.01 | | |
| **Social factors** | **Mean** | **3.86** | **3.45** | **3.44** | **4.10** | **3.58** | **2.80** | **2.33** | **2.90** | **3.80** | **3.89** | **0.001** | **AU, JP > KR** |
| | SD | 0.86 | 1.05 | 0.79 | 0.72 | 0.96 | 1.23 | 0.87 | 1.29 | 1.03 | 1.17 | | |
| **Cultural factors** | **Mean** | **3.69** | **2.98** | **3.03** | **3.70** | **3.16** | **1.40** | **1.89** | **2.60** | **3.60** | **3.44** | **< 0.001** | **JP > KR** |
| | SD | 1.00 | 1.18 | 0.94 | 0.98 | 1.07 | 0.70 | 0.60 | 1.07 | 0.97 | 1.59 | | |
| **Family relationship (Mother)** | **Mean** | **3.81** | **3.35** | **3.23** | **3.65** | **4.00** | **3.30** | **2.11** | **2.90** | **3.40** | **3.33** | **0.001** | **TW, JP > KR** |
| | SD | 0.93 | 1.11 | 0.91 | 0.81 | 0.84 | 1.34 | 1.36 | 1.29 | 0.97 | 1.41 | | |
| **Family relationship (Father)** | **Mean** | **3.88** | **3.56** | **3.29** | **4.05** | **3.89** | **4.00** | **2.67** | **3.11** | **3.90** | **3.33** | **0.012** | **AU, JP > KR** |
| | SD | 0.81 | 1.07 | 0.94 | 0.94 | 0.76 | 0.94 | 1.12 | 1.27 | 1.10 | 1.41 | | |
| **School environment** | **Mean** | **3.39** | **3.11** | **2.85** | **3.70** | **3.37** | **2.90** | **1.89** | **2.78** | **3.50** | **3.56** | **0.032** | **AU, JP > KR** |
| | SD | 0.90 | 1.10 | 0.89 | 0.80 | 1.07 | 1.10 | 1.05 | 0.97 | 1.18 | 1.42 | | |
| **Economical environment** | **Mean** | **2.35** | **2.23** | **2.50** | **2.35** | **2.21** | **1.67** | **1.78** | **1.90** | **2.40** | **2.22** | **0.382** | - |
| | SD | 1.07 | 1.03 | 0.90 | 1.14 | 1.18 | 0.71 | 1.39 | 0.74 | 0.97 | 1.09 | | |
| **Factors of Psychosis** | **Mean** | **2.72** | **2.45** | **2.88** | **2.05** | **2.00** | **1.78** | **3.13** | **2.90** | **2.80** | **1.89** | **0.082** | **KR > AU, TW; JP > TW** |
| | SD | 1.09 | 1.29 | 1.05 | 1.47 | 1.11 | 1.30 | 1.46 | 1.37 | 1.23 | 1.05 | | |
| **Factors of Mood** | **Mean** | **2.58** | **3.32** | **3.00** | **3.89** | **3.53** | **3.50** | **3.13** | **2.20** | **3.70** | **3.67** | **< 0.001** | **AU, TW > JP; AU > KR** |
| | SD | 0.91 | 1.04 | 0.87 | 0.76 | 0.77 | 1.18 | 1.55 | 1.14 | 0.67 | 1.12 | | |
| **Factors of Personality** | **Mean** | **2.99** | **3.71** | **3.32** | **3.89** | **4.00** | **4.20** | **3.12** | **3.80** | **4.00** | **3.67** | **< 0.001** | **TW > KR, JP; AU > JP** |
| | SD | 0.95 | 0.94 | 0.64 | 0.74 | 1.11 | 1.03 | 0.99 | 1.32 | 0.82 | 1.00 | | |

| Case B (adult Hikikomori) | | Japan | All other Countries | Korea | Australia | Taiwan | Bangladish | Iran | India | USA | Thailand | p-value (t-test *) | Significance (ANOVA **) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Do you think this kind of case is common or rare in your country (Urban or Rural area)?** | | | | | | | | | | | | | |
| **Urban Area** | **Mean** | **3.10** | **2.86** | **3.12** | **2.40** | **3.26** | **2.90** | **2.67** | **2.80** | **2.50** | **2.67** | **0.057** | **TW, KR, JP > AU** |
| | SD | 0.96 | 0.95 | 0.84 | 1.14 | 0.87 | 0.74 | 1.00 | 0.92 | 0.85 | 1.00 | | |
| **Rural Area** | **Mean** | **2.57** | **2.21** | **2.37** | **2.00** | **2.32** | **2.10** | **2.13** | **2.10** | **2.22** | **2.13** | **0.002** | **JP > AU** |
| | SD | 0.83 | 0.86 | 0.72 | 0.97 | 0.95 | 0.74 | 0.83 | 1.20 | 0.83 | 0.83 | | |
| **To what extent do you think he has been affected by?** | | | | | | | | | | | | | |
| **Mind** | **Mean** | **3.82** | **3.50** | **3.00** | **3.95** | **3.63** | **3.30** | **3.11** | **3.70** | **3.90** | **4.00** | **0.008** | **AU, JP > KR** |
| | SD | 0.84 | 1.01 | 0.92 | 0.86 | 1.01 | 1.42 | 0.78 | 1.06 | 0.88 | 0.71 | | |
| **Brain** | **Mean** | **3.27** | **3.54** | **3.59** | **3.29** | **3.58** | **3.90** | **3.44** | **3.67** | **3.50** | **3.44** | **0.048** | - |
| | SD | 1.04 | 1.01 | 0.82 | 0.90 | 1.26 | 1.37 | 1.01 | 0.71 | 1.18 | 1.13 | | |
| **Social factors** | **Mean** | **3.76** | **3.18** | **3.09** | **3.76** | **3.26** | **2.70** | **2.00** | **2.70** | **3.89** | **3.44** | **< 0.001** | **JP, AU > KR** |
| | SD | 0.91 | 1.07 | 0.68 | 1.18 | 0.99 | 1.06 | 1.07 | 1.34 | 0.78 | 1.01 | | |
| **Cultural factors** | **Mean** | **3.59** | **2.94** | **3.03** | **3.38** | **2.84** | **2.30** | **1.67** | **2.60** | **3.60** | **3.44** | **< 0.001** | **JP > KR, TW** |
| | SD | 0.98 | 1.01 | 0.72 | 1.16 | 0.83 | 0.95 | 0.71 | 0.97 | 0.97 | 1.01 | | |
| **Family relationship (Mother)** | **Mean** | **3.41** | **2.87** | **2.85** | **3.33** | **3.11** | **2.20** | **1.78** | **2.50** | **3.20** | **3.22** | **< 0.001** | **JP > KR** |
| | SD | 0.99 | 1.01 | 0.78 | 0.86 | 0.99 | 0.92 | 0.83 | 1.18 | 0.92 | 1.30 | | |
| **Family relationship (Father)** | **Mean** | **3.26** | **2.84** | **2.88** | **3.24** | **3.11** | **2.30** | **1.78** | **2.44** | **3.20** | **2.89** | **0.001** | - |
| | SD | 0.98 | 0.96 | 0.77 | 0.77 | 0.99 | 0.67 | 0.83 | 1.24 | 0.92 | 1.17 | | |
| **School environment** | **Mean** | **3.02** | **2.93** | **3.00** | **3.19** | **3.16** | **2.60** | **1.56** | **2.50** | **3.30** | **3.33** | **0.488** | - |
| | SD | 0.96 | 1.05 | 0.85 | 1.03 | 1.07 | 1.17 | 0.53 | 1.18 | 0.95 | 1.00 | | |
| **Economical environment** | **Mean** | **2.45** | **2.29** | **2.42** | **2.48** | **2.16** | **2.44** | **1.67** | **2.00** | **2.60** | **2.11** | **0.241** | - |
| | SD | 1.15 | 0.91 | 0.79 | 0.87 | 1.01 | 1.13 | 1.00 | 0.87 | 0.84 | 0.93 | | |
| **Factors of Psychosis** | **Mean** | **2.75** | **3.21** | **3.67** | **2.76** | **2.58** | **3.40** | **3.89** | **3.10** | **3.10** | **3.33** | **0.003** | **KR > AU, JP, TW** |
| | SD | 1.12 | 1.22 | 0.92 | 1.14 | 1.12 | 1.58 | 1.17 | 1.20 | 1.52 | 1.22 | | |
| **Factors of Mood** | **Mean** | **2.61** | **3.15** | **3.21** | **3.57** | **3.16** | **2.90** | **2.88** | **2.44** | **3.50** | **2.78** | **< 0.001** | **AU > KR > JP** |
| | SD | 0.96 | 0.90 | 0.74 | 0.93 | 0.90 | 0.99 | 0.83 | 0.88 | 0.85 | 0.97 | | |
| **Factors of Personality** | **Mean** | **3.11** | **3.55** | **3.21** | **3.80** | **4.16** | **3.30** | **2.75** | **3.40** | **3.80** | **3.89** | **0.001** | **TW > KR, JP; AU > JP** |
| | SD | 1.00 | 1.05 | 0.77 | 1.01 | 0.83 | 1.34 | 1.16 | 1.58 | 0.92 | 0.78 | | |

Each group's score, rated by 5-point Likert scale, is expressed as mean / SD.

*Unpaired t-test between data from Japan and data combined from all other countries.

**ANOVA followed by Tukey honestly significant difference post-hoc test (4 groups' comparison among Japan (JP), Korea (KR), Australia (AU) and Taiwan (TW)). Significance differences at a level of $p < 0.05$ were shown in the table.

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**Table. 3**

Participants' opinions regarding the diagnosis of the *hikikomori* vignette cases

| | | Japan | All other Countries | Korea | Australia | Taiwan | Bangladish | Iran | India | USA | Thailand |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Do you think the Case A can be applied to ICD-10 criteria or not?** | | | | | | | | | | | |
| **Yes** | n | 38 | 40 | 8 | 4 | 2 | 8 | 3 | 5 | 5 | 5 |
| | % | 32.5 | 32.8 | 23.5 | 19.0 | 10.5 | 80.0 | 33.3 | 50.0 | 50.0 | 55.6 |
| **No** | n | 65 | 50 | 16 | 9 | 13 | 1 | 2 | 3 | 2 | 4 |
| | % | 55.6 | 41.0 | 47.1 | 42.9 | 68.4 | 10.0 | 22.2 | 30.0 | 20.0 | 44.4 |
| **No response** | n | 14 | 32 | 10 | 8 | 4 | 1 | 4 | 2 | 3 | 0 |
| | % | 12.0 | 26.2 | 29.4 | 38.1 | 21.1 | 10.0 | 44.4 | 20.0 | 30.0 | - |
| **Do you think the Case A can be applied to DSV-IV criteria or not?** | | | | | | | | | | | |
| **Yes** | n | 31 | 69 | 27 | 8 | 8 | 9 | 3 | 2 | 7 | 5 |
| | % | 26.5 | 56.6 | 79.4 | 38.1 | 42.1 | 90.0 | 33.3 | 20.0 | 70.0 | 55.6 |
| **No** | n | 64 | 41 | 6 | 11 | 10 | 1 | 3 | 3 | 3 | 4 |
| | % | 54.7 | 33.6 | 17.6 | 52.4 | 52.6 | 10.0 | 33.3 | 30.0 | 30.0 | 44.4 |
| **No response** | n | 22 | 12 | 1 | 2 | 1 | 0 | 3 | 5 | 0 | 0 |
| | % | 18.8 | 9.8 | 2.9 | 9.5 | 5.3 | - | 33.3 | 50.0 | - | - |
| **Do you think the Case B can be applied to ICD-10 criteria or not?** | | | | | | | | | | | |
| **Yes** | n | 39 | 40 | 8 | 4 | 9 | 6 | 2 | 5 | 3 | 3 |
| | % | 33.3 | 32.8 | 23.5 | 19.0 | 47.4 | 60.0 | 22.2 | 50.0 | 30.0 | 33.3 |
| **No** | n | 64 | 45 | 13 | 9 | 6 | 3 | 3 | 2 | 3 | 6 |
| | % | 54.7 | 36.9 | 38.2 | 42.9 | 31.6 | 30.0 | 33.3 | 20.0 | 30.0 | 66.7 |
| **No response** | n | 14 | 37 | 13 | 8 | 4 | 1 | 4 | 3 | 4 | 0 |
| | % | 12.0 | 30.3 | 38.2 | 38.1 | 21.1 | 10.0 | 44.4 | 30.0 | 40.0 | - |
| **Do you think the Case B can be applied to DSV-IV criteria or not?** | | | | | | | | | | | |
| **Yes** | n | 37 | 63 | 23 | 7 | 12 | 6 | 3 | 3 | 6 | 3 |
| | % | 31.6 | 51.6 | 67.6 | 33.3 | 63.2 | 60.0 | 33.3 | 30.0 | 60.0 | 33.3 |
| **No** | n | 59 | 49 | 11 | 12 | 7 | 3 | 4 | 2 | 4 | 6 |
| | % | 50.4 | 40.2 | 32.4 | 57.1 | 36.8 | 30.0 | 44.4 | 20.0 | 40.0 | 66.7 |
| **No response** | n | 21 | 10 | 0 | 2 | 0 | 1 | 2 | 5 | 0 | 0 |
| | % | 17.9 | 8.2 | - | 9.5 | - | 10.0 | 22.2 | 50.0 | - | - |

Each group's choices are expressed as n (number) / % (percentage).

**Table. 4**

Participants' opinions regarding the suicide risk of the *hikikomori* vignette cases and the preferable interventions.

| Case A (teen Hikikomori) | | Japan | All other Countries | Korea | Australia | Taiwan | Bangladesh | Iran | India | USA | Thailand | p-value (t-test*) | Significance (ANOVA**) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **To what extent do you think he is likely to be at risk of committing a suicide?** | | | | | | | | | | | | | |
| | **Mean** | **2.41** | **2.88** | **3.41** | **2.75** | **2.89** | **2.00** | **2.78** | **2.40** | **2.90** | **2.78** | **< 0.001** | **KR > AU, JP** |
| | SD | 0.84 | 1.02 | 0.86 | 1.07 | 0.88 | 1.41 | 1.20 | 0.70 | 0.88 | 0.67 | | |
| **To what extent do you think the following interventions will be effective?** | | | | | | | | | | | | | |
| **Psychotherapy** | **Mean** | **4.17** | **3.75** | **3.56** | **3.90** | **4.18** | **4.40** | **2.50** | **3.20** | **3.80** | **4.22** | **0.002** | **JP > KR** |
| | SD | 0.97 | 1.05 | 0.82 | 0.70 | 0.73 | 0.70 | 1.77 | 1.40 | 1.03 | 1.09 | | |
| **Pharmacotherapy** | **Mean** | **2.57** | **3.21** | **3.65** | **2.90** | **2.76** | **3.50** | **3.89** | **3.11** | **2.60** | **2.89** | **< 0.001** | **KR > AU, TW, JP** |
| | SD | 1.25 | 1.17 | 0.65 | 1.14 | 1.15 | 1.43 | 1.17 | 1.17 | 1.71 | 1.27 | | |
| **Non-pharmacologic biological treatment (such as ECT, TMS...etc)** | **Mean** | **1.44** | **1.61** | **1.91** | **1.52** | **1.59** | **1.20** | **1.63** | **1.30** | **1.80** | **1.22** | **0.142** | **KR > JP** |
| | SD | 0.82 | 0.86 | 0.87 | 0.93 | 0.94 | 0.42 | 0.74 | 0.67 | 1.14 | 0.44 | | |
| **Environmental intervention** | **Mean** | **3.87** | **3.36** | **3.03** | **4.10** | **3.41** | **3.60** | **2.13** | **2.50** | **4.00** | **3.88** | **0.001** | **AU, JP > KR** |
| | SD | 1.16 | 1.16 | 1.06 | 0.77 | 1.00 | 1.17 | 0.99 | 0.97 | 1.05 | 1.36 | | |
| **Alternative treatment (oriental medicine, yoga..etc)** | **Mean** | **1.75** | **2.09** | **2.24** | **2.40** | **2.18** | **1.56** | **1.14** | **2.10** | **2.60** | **1.44** | **0.008** | **AU, KR, TW > JP** |
| | SD | 0.97 | 0.94 | 0.85 | 1.14 | 1.01 | 1.01 | 0.38 | 0.57 | 0.70 | 0.53 | | |
| **Self-Help (exercise, lifestyle guidance...etc)** | **Mean** | **3.51** | **3.03** | **2.94** | **3.00** | **3.65** | **3.20** | **2.14** | **2.20** | **3.30** | **3.44** | **0.002** | - |
| | SD | 1.22 | 1.07 | 0.95 | 0.89 | 1.27 | 1.14 | 0.90 | 0.92 | 0.95 | 1.01 | | |

| Case B (adult Hikikomori) | | Japan | All other Countries | Korea | Australia | Taiwan | Bangladish | Iran | India | USA | Thailand | p-value (t-test*) | Significance (ANOVA**) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **To what extent do you think he is likely to be at risk of committing a suicide?** | | | | | | | | | | | | | |
| | **Mean** | **2.21** | **2.67** | **3.35** | **2.71** | **2.53** | **2.00** | **2.22** | **2.40** | **2.70** | **1.78** | **< 0.001** | **KR > AU, TW, JP** |
| | SD | 0.83 | 1.05 | 0.98 | 1.01 | 0.90 | 0.67 | 0.97 | 1.07 | 1.06 | 0.67 | | |
| **To what extent do you think the following interventions will be effective:** | | | | | | | | | | | | | |
| **Psychotherapy** | **Mean** | **3.94** | **3.12** | **3.15** | **3.33** | **3.26** | **2.20** | **2.22** | **3.22** | **3.70** | **3.44** | **< 0.001** | **JP > AU, TW, KR** |
| | SD | 0.99 | 1.13 | 0.89 | 1.15 | 0.99 | 1.23 | 1.09 | 1.20 | 1.16 | 1.33 | | |
| **Pharmacotherapy** | **Mean** | **2.59** | **3.45** | **4.00** | **2.90** | **3.11** | **4.40** | **3.78** | **3.22** | **2.50** | **3.22** | **< 0.001** | **KR > TW, AU, JP** |
| | SD | 1.18 | 1.24 | 0.65 | 1.37 | 1.15 | 0.97 | 1.39 | 1.09 | 1.65 | 1.30 | | |
| **Non-pharmacologic biological treatment (such as ECT, TMS...etc)** | **Mean** | **1.47** | **1.97** | **2.15** | **1.85** | **1.84** | **2.50** | **1.63** | **1.78** | **1.80** | **2.00** | **< 0.001** | **KR > JP** |
| | SD | 0.83 | 1.03 | 0.82 | 1.04 | 0.90 | 1.58 | 0.74 | 1.09 | 1.14 | 1.32 | | |

| Case B (adult Hikikomori) | | Japan | All other Countries | Korea | Australia | Taiwan | Bangladish | Iran | India | USA | Thailand | p-value (t-test *) | Significance (ANOVA **) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Environmental intervention** | **Mean** | **3.60** | **3.23** | **3.12** | **4.05** | **3.37** | **2.80** | **2.13** | **2.56** | **3.20** | **3.56** | **0.008** | **AU > KR** |
| | SD | 1.05 | 1.11 | 1.01 | 0.67 | 1.07 | 0.92 | 0.83 | 1.42 | 1.23 | 1.13 | | |
| **Alternative treatment (oriental medicine, yoga..etc)** | **Mean** | **1.75** | **1.96** | **2.06** | **2.25** | **2.21** | **1.40** | **1.00** | **1.78** | **2.40** | **1.56** | **0.086** | **-** |
| | SD | 0.91 | 0.93 | 0.78 | 0.97 | 0.98 | 0.97 | 0.00 | 1.09 | 0.84 | 0.88 | | |
| **Self-Help (exercise, lifestyle guidance...etc)** | **Mean** | **3.63** | **2.91** | **2.74** | **3.24** | **3.53** | **2.30** | **1.75** | **2.11** | **3.40** | **3.44** | **< 0.001** | **JP > KR** |
| | SD | 1.20 | 1.14 | 0.96 | 1.04 | 0.96 | 1.25 | 1.04 | 1.05 | 1.17 | 0.88 | | |

Each group's score, rated by 5-point Likert scale, is expressed as mean / SD.

*Unpaired t-test between data from Japan and data summed up from all other eight countries.

**ANOVA followed by Tukey honestly significant difference post-hoc test (4 groups' comparison among Japan (JP), Korea (KR), Australia (AU) and Taiwan (TW)). Significance differences at a level of $p < 0.05$ were shown in the table.