

Public Stigma Related to People With Mental Health Conditions Among Japanese Company Employees

Wey Guan Lem^{a, b}, Kelssy Hitomi dos Santos Kawata^a, Takashi Kobayashi^a, Hiroshi Oyama^a

Abstract

Background: The public stigma related to mental illness is the general public's negative misconceptions about people with mental health conditions (PMHCs). The public stigma of mental illness is detrimental to PMHC as it leads to loss of opportunities and unemployment. The aim of the study was to clarify the status of public stigma related to PMHC, focusing on knowledge about mental illness and social distance concerning PMHC.

Methods: A survey was conducted among 970 Japanese office workers aged 20 to 60 years. Accurate knowledge of mental illness was assessed using the Mental Illness and Disorder Understanding Scale (MIDUS). The Attitudinal Social Distance (ASD) was used to determine social distance in relation to PMHC. The demographic characteristics of the participants evaluated were sex, age group measured in years, employment position, employment status, and attendance at mental illness stigma training.

Results: Regular employees ($P = 0.03$) and those having prior contact experience ($P = 0.01$) had more accurate knowledge. Participants between 50 to 59 years old ($M = 15.87$, standard deviation (SD) = 3.35) had greater social distance than those under 30 years old ($M = 14.78$, $SD = 3.97$, $P < 0.05$). The results of multiple linear regression analysis found that employment status (partial $r = -0.07$, $P < 0.05$) and prior contact experience (partial $r = -0.15$, $P < 0.01$) significantly affected the MIDUS score, whereas no variable had a significant effect on the ASD score.

Conclusions: Accurate knowledge of mental illness was significantly higher among regular employees and those with contact experience. Social distance was significantly lower among those under the age of 30 years.

Keywords: Public stigma; Mental illness; Knowledge of mental illness; Social distance

Introduction

Public stigma related to mental illness involves the general public's negative misconceptions about people with mental health conditions (PMHCs) [1]. These negative misconceptions motivate individuals to fear and discriminate against PMHC, resulting in PMHC being shunned by society and losing opportunities [1]. Public stigma related to mental illness is becoming a significant concern and is detrimental to PMHC as it also leads to unemployment [2]. Stigma is a major issue because it leads to bullying, and a recent study has focused on public stigma-based bullying [3].

The structure of public stigma related to mental illness can be explained using the social cognitive model [4]. Based on this model, stigma comprises three components: stereotypes, prejudice, and discrimination [4]. Stereotypes are public attitudes (e.g., "Most people think PMHC are dangerous."), prejudice is the emotional reaction to agreeing with the public attitude (e.g., "Yes, PMHC are dangerous, and I am afraid to work with them."), discrimination is the behavior that results from stereotypes and prejudice (e.g., PMHC are denied a job due to psychiatric status, irrespective of their qualification) [2, 4]. In other words, stereotypes are associated with knowledge of the mental illness, prejudice is related to emotional reactions (such as fear or anger) toward patients, and discrimination is associated with behavior change such as social distance [4].

A review in 2013 based on studies from 2001 to 2011 found that Japan has intense stigmatization of PMHC [5]. This strong stigma was suggested to be, in part, a result of the culture of Japan [5]; discussing mental illness in Japan has been taboo in the past [6], given the influence of the *honne/tatemae* culture, which promotes maintenance of harmony [7]. Japanese are hesitant to express their true feelings and provide their real opinions (*honne*) and are more inclined to give opinions that are less likely to cause disputes, to maintain harmony (*tatemae*). In addition, insufficient education, anti-stigma campaigns, and the high institutionalization rate of PMHC decrease the public's opportunity to have contact with PMHC and have been sug-

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^aDepartment of Clinical Information Engineering, Graduate School of Medicine, The University of Tokyo, Bunkyo-ku, Tokyo 113-0033, Japan

^bCorresponding Author: Wey Guan Lem, Department of Clinical Information Engineering, Health Services Science, Graduate School of Medicine, The University of Tokyo 7-3-1 Hongo, Bunkyo-Ku, Tokyo 113-0033, Japan.
Email: vyrolwg@m.u-tokyo.ac.jp

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gested to contribute to the stigma of mental illness in Japan [5].

Therefore, the Japanese government has tried reducing public stigma and improving knowledge about mental illness. In 2002, the Japanese Society of Psychiatry and Neurology changed the name of schizophrenia (known as *Seishin-Bunretsu-Byo*/mind-split-disease) to remove the harmful impact of the old naming term on patients and their families [8]. As a result, patients reporting their diagnosis increased from 36.7% to 69.7% from 2002 to 2004 [8]. Since then, the mental health system in Japan has undergone continuous changes for reasons such as a lack of mental health literacy and a shift toward community-based care [9]. One of the more notable reforms was the 2004 Reform Vision for Health, Medical Care and Mental Health Welfare, which promoted the transition to community-based care [10], and decreased the number of psychiatric care beds by approximately 25,000 from 2004 to 2018 [11]. In 2014, the Japanese government passed the Act on Promotion of Preventive Measures against Karoshi (death from overwork) and Other Overwork-Related Health Disorders, which enhanced the public's knowledge of occupational mental disorders [12]. Researchers have also adopted educational interventions to reduce stigma since 2013, which have proven effective [13-15]. As a result, a new educational curriculum on mental illness will be implemented in schools in 2022 [16].

Various surveys on the level of public stigma of mental illness have been conducted in Japan. In 2003, a Japanese survey found that respondents below 30 years old have lower understanding and knowledge on stigma, implying that those below 30 years old have had less chance of interaction with patients or attended lectures [17]. Another study in 2005 found significant effect of age on stigma, with older participant tend to be less socially accepting towards patients with schizophrenia [18]. The association between sex and mental illness stigma is more complex as it varies from regions to regions [19], but prior studies found that male tended to have lower understanding of mental illness compared to female [17, 19]. Employment position such as being a workplace manager, who is a decision maker in employment, is associated with knowledge of mental illness [20].

Consequently, those with experience in employing PMHC were more knowledgeable about mental illness [20]. Concerning employment status, regular employees in a Japanese company are given induction training, which may include mental health and work stress management [21], affecting their knowledge of mental illness. In addition to the demographic information, attendance in mental health lectures also affect knowledge on mental illness [17]. As for prior contact experience, a prior study [5] suggested that the lack of prior contact experience due to PMHC being admitted into the hospital resulted in a more substantial stigma among the Japanese.

However, most of the surveys in Japan used different stigma scales [7, 17, 19] and it may be difficult to look at the trend of public stigma in the past 20 years based on the results of different stigma scale. Although it was an indirect comparison, a survey conducted in 2012 [19] found that respondents associating depression to personal weakness to likely have decreased compared to the previous study [7]. Another survey in 2018 [22] found that most Japanese believed that mental illness could be cured via treatment, but still have slightly strong

stigma towards schizophrenia. As such, it is expected that the state of mental illness stigma in Japan at present might have improved much more compared to the past survey conducted on knowledge of mental illness [17] or social distance towards mental illness [7] among the Japanese. Thus, the purpose of this study was to clarify the characteristics of public stigma toward PMHC in Japan in recent years, focusing on knowledge about mental illness using the Mental Illness and Disorder Understanding Scale (MIDUS) and social distance toward PMHC using Attitudinal Social Distance (ASD) scale employed in previous survey [7, 15, 17].

Materials and Methods

Participants and procedure

This study was a cross-sectional, population-based design. Healthy participants without mental health conditions were recruited from employees of three companies (one company was related to engineering while two were related to customer service), located in a standard regional city with a population of 270,000 in Japan. In this study, we requested the participation of occupational health physicians and public health nurses affiliated with the company by using the kinship method. The survey instrument was designed using Google Forms so participants could complete it online. The advantages of using online Google Form were that it was convenient and can be completed anonymously at any time but was less accessible to the older generations who were not familiar with recent technologies. In the second week of January 2022, 1,468 participants were informed of the online survey by the occupational physician at their workplace. They were provided a quick response (QR) code to access the survey online via mobile phone. Once a week, the occupational physician reminded participants to complete the survey online. Data collection lasted about 3 weeks and ended on January 31st, 2022. Of the 1,468 participants, 970 did, and 498 did not respond to the survey, respectively; thus, the response rate was 66.1%.

The protocol received approval from the Ethics Committees of the University Hospital Medical Information Network Clinical Trials Registry (UMIN-CTR) (UMIN000043020) and the Research Ethics Committee of the Faculty of Medicine and Graduate School of Medicine of the University of Tokyo (2019099NI). All procedures performed in this study followed the ethical standards of the Institutional Research Committee and the 1964 Helsinki Declaration and its later amendments.

Survey questionnaire

The stigma of mental illness is typically measured using a self-reported stigma scale [23] together with demographic variables such as age [17-19], sex [17-19], employment position [20], employment status [24] (Regular employees are not in a temporary status and are regularly scheduled to work the company's full-time schedule, while non-regular employees are those who are employed on a part-time basis), attendance at

mental health lectures or training [17], and prior contact experience of PMHC [5].

The knowledge component of the stigma of mental illness was measured using the MIDUS [15, 17]. The social distance component of mental illness stigma was measured using the ASD scale [7]. Prior contact experience of PMHC was measured using the Reported Intended Behavior Scale-Japanese (RIBS-J) [25, 26]. We used the MIDUS, ASD, and RIBS-J because their internal consistency and validity have been confirmed [7, 17, 25, 27].

The survey had two parts. Part one consisted of the demographic characteristics of the participants in the form of multiple-choice questions, sex (male, female, refused to answer), and age group measured in years (< 30, 30 - 39, 40 - 49, 50 - 59, and \geq 60 years) [17], employment position (manager, non-manager), employment status (regular employee, non-regular employee), and attendance at mental illness stigma training (yes, no). Part two consisted of questions on knowledge of mental illness measured by MIDUS, social distance toward PMHC measured by the ASD scale, and prior contact experience of PMHC measured using the RIBS-J.

Accurate knowledge of mental illness

The MIDUS assessed the participants' accurate knowledge of mental illness [17]. The MIDUS consisted of 15 items with three subscales: treatability of illness, the efficacy of medication, and social recognition of disease. All items were rated on a 5-point Likert scale (0, strongly agree; 4, strongly disagree; range, 0 - 60). The MIDUS scale was developed in Japan, confirming its internal consistency and validity [17]. The Cronbach's α was 0.81 in the present sample. We used the mean total MIDUS score, as in the prior survey [17]. A low total score indicates good understanding.

Social distance

The ASD measured the social distance of participants in relation to PMHC [7, 28]. The five items were rated on a 5-point Likert scale (1, strongly agree; 5, strongly disagree; range, 5 - 25). We used the mean total ASD score, with a low score indicating favorable attitudes. The five items of the ASD were: 1) move next door to the person; 2) spend an evening socializing with the person; 3) make friends with the person; 4) work closely on a job with the person; and 5) have the person marry into the family. Participants were given a vignette depicting a patient with depression and were instructed to rate their social distance in relation to the person in the vignette. The vignette using patient with depression was chosen in this study because depression has been closely associated with malingering, such as being absent from work using depression as an excuse [29], which may influence the stigmatized view of public towards patients with depression in a workplace environment. The ASD scale was developed [30] and has been validated [27] (Cronbach's α of 0.89 in the present sample), and we used the Japanese version of the scale [7, 28].

Prior contact experience with mental illness patients

We measured the prior contact experience of participants with PMHC using the RIBS-J [25, 26]. The scale consisted of four binary items for prior contact experience with patients of mental illness: 1) Are you currently living with, or have you ever lived with, someone with a mental health problem? 2) Are you currently working with, or have you ever worked with, someone with a mental health problem? 3) Do you currently have, or have you ever had, a neighbor with a mental health problem? and 4) Do you currently have, or have you ever had, a close friend with a mental health problem? (0, no or do not know; 1, yes; range, 0 - 4). The participants' data were analyzed based on having prior contact experience (total score > 0) to no previous contact experience (total score 0). The Japanese version has good reliability and validity [25]. The Cronbach's α was 0.81 for present sample.

Statistical analysis

Demographic variables and public stigma

A *t*-test was used to compare the MIDUS and ASD scores separately by the independent variables sex, employment position, employment status, attendance at mental illness stigma training, and prior contact experience with mental illness patients.

Age and public stigma

One-way analysis of variance (ANOVA) was conducted on the MIDUS and ASD scores by the independent variable age group (< 30, 30 - 39, 40 - 49, 50 - 59, and \geq 60 years). *Post hoc* pairwise comparisons between the age groups were performed using Bonferroni correction. Independent variables that achieved significance were added as covariates to a one-way analysis of covariance (ANCOVA) by age group to test their effects on the MIDUS and ASD scores. A one-to-one case-controlled ANOVA controlling for covariates that achieved significance was conducted to confirm the effects of these covariates on the ANOVA results.

Relationship of the independent variables on MIDUS and ASD score

A multiple regression analysis was performed to assess the relationship of the independent variables on the MIDUS and ASD scores for the current sample.

Comparisons with previous studies

We calculated effect sizes (Cohen's *d*) using Welch's *t*-test by subtracting the mean MIDUS and ASD scores from the mean MIDUS [17] and ASD [28] scores in the previous studies and dividing the results by the pooled standard deviations of the

Table 1. Mental Illness and Disorder Understanding Scale (MIDUS) and Attitudinal Social Distance (ASD) Scores

| | N | % | MIDUS | | | ASD | | |
|--------------------------|-----|------|-------|------|---------|-------|------|---------|
| | | | Mean | SD | P value | Mean | SD | P value |
| Overall score | 955 | 100 | 17.40 | 7.12 | | 15.32 | 3.52 | |
| Sex | | | | | | | | |
| Male | 474 | 49.6 | 17.51 | 7.08 | 0.62 | 15.15 | 3.65 | 0.13 |
| Female | 481 | 50.4 | 17.28 | 7.16 | | 15.49 | 3.37 | |
| Age group (y) | | | | | | | | |
| Below 30 | 141 | 14.8 | 18.00 | 7.06 | 0.23 | 14.78 | 3.97 | 0.04 |
| 30 - 39 | 232 | 24.3 | 17.60 | 6.43 | | 15.07 | 3.67 | |
| 40 - 49 | 250 | 26.2 | 17.80 | 7.80 | | 15.38 | 3.32 | |
| 50 - 59 | 230 | 24.1 | 16.82 | 7.21 | | 15.87 | 3.35 | |
| 60 and above | 102 | 10.7 | 16.39 | 6.64 | | 15.25 | 3.23 | |
| Employment position | | | | | | | | |
| Manager | 217 | 22.7 | 16.77 | 7.05 | 0.14 | 15.51 | 3.40 | 0.36 |
| Non-manager | 738 | 77.3 | 17.58 | 7.13 | | 15.26 | 3.55 | |
| Employment status | | | | | | | | |
| Regular | 511 | 53.5 | 16.94 | 6.89 | 0.03 | 15.17 | 3.58 | 0.17 |
| Non-regular | 444 | 46.5 | 17.92 | 7.35 | | 15.49 | 3.44 | |
| Training attendance | | | | | | | | |
| Yes | 20 | 2.1 | 16.60 | 6.85 | 0.61 | 14.15 | 3.50 | 0.13 |
| No | 935 | 97.9 | 17.41 | 7.13 | | 15.34 | 3.51 | |
| Prior contact experience | | | | | | | | |
| Yes | 665 | 69.6 | 16.61 | 6.84 | 0.01 | 15.21 | 3.62 | 0.14 |
| No | 290 | 30.4 | 19.20 | 7.42 | | 15.58 | 3.26 | |

SD: standard deviation; y: years.

respective surveys. We refer to effect sizes as small ($d = 0.20$), medium ($d = 0.50$), and large ($d = 0.80$) based on benchmarks suggested by Cohen [31]. Comparisons between past contact experience and our results could not be made because no previous study used the same evaluation scale.

Participants with no MIDUS or ASD scores, as well as those with missing data for the key demographic variables (age group, sex, employment position, employment status, attendance in mental illness stigma training, and prior contact experience with mental illness patients) were not included in the analyses because these variables were required for weighing.

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 25 (IBM SPSS Inc. Chicago, IL) for Windows. The level of statistical significance was set at $P < 0.05$.

Results

Demographic characteristics

Among the 970 participants, 474 (48.9%) were males, 481 (49.6%) were females, and 15 (1.6%) refused to provide infor-

mation on sex. Thus, these 15 participants met the exclusion criteria. Of the 970 participants, 955 (98.5%) had no missing values among the MIDUS score, ASD score, and demographic variables and were eligible for analyses. Among the 955 participants, 40 - 49 years old (250 participants, 26.2%) was the largest age group. Regarding employment positions, 217 (22.7%) participants were managers, and 738 (77.3%) were non-managers. For employment status, 511 (53.5%) participants were regular employees, and 444 (46.5%) were non-regular employees. Among the 955 participants, 20 (2.1%) had attended mental illness stigma training. Concerning prior contact experience with PMHC, 665 (69.6%) participants had previous contact experience, and 290 (30.4%) did not. The demographic characteristics of the participants are provided in Table 1. There was no significant difference in the mean MIDUS ($F(2,952) = 2.91, P = 0.06$) and ASD ($F(2,950) = 0.60, P = 0.55$) scores between the companies.

Effects of demographic variables and age on accurate knowledge (MIDUS)

The MIDUS scores are listed in Table 1. There were statistically significant differences in MIDUS score by employment status ($P < 0.05$) and prior contact experience ($P < 0.01$) but

Table 2. Case-Controlled Sample for Mental Illness and Disorder Understanding Scale (MIDUS) Score

| Age group (y) | Regular employee | | | | | | Non-regular employee | | | | | |
|---------------|--|------|---------|--|------|---------|---|------|---------|--|------|---------|
| | No prior contact experience (n = 88, 22 per group) | | | Prior contact experience (n = 35, 7 per group) | | | No prior contact experience (n = 105, 21 per group) | | | Prior contact experience (n = 175, 35 per group) | | |
| | Mean | SD | P value | Mean | SD | P value | Mean | SD | P value | Mean | SD | P value |
| Below 30 | 17.50 | 6.42 | 0.17 | 16.86 | 5.93 | 0.20 | 23.24 | 6.96 | 0.06 | 15.66 | 6.37 | 0.20 |
| 30 - 39 | 19.41 | 6.73 | | 16.00 | 4.90 | | 19.43 | 6.16 | | 18.89 | 6.24 | |
| 40 - 49 | 19.55 | 8.54 | | 13.86 | 9.04 | | 23.52 | 9.78 | | 16.57 | 7.74 | |
| 50 - 59 | 15.27 | 6.73 | | 18.43 | 7.07 | | 18.81 | 7.17 | | 15.00 | 8.04 | |
| ≥ 60 | - | - | | 9.86 | 6.69 | | 18.43 | 6.29 | | 16.43 | 6.58 | |

SD: standard deviation; y: years.

not by age group, sex, employment position, and mental illness stigma training attendance.

ANCOVA comparing age groups was performed with employment status and prior contact experience as covariates. The results showed statistical significance in MIDUS scores by employment status ($F(1,948) = 5.40, P = 0.03$) and prior contact experience ($F(1,948) = 25.75, P = 0.01$). The participants were matched according to age group based on employment status (regular or non-regular employee) and prior contact experience with PMHC (with or without prior contact experience). The resulting four categories were divided by age group (< 30, 30 - 39, 40 - 49, 50 - 59, ≥ 60 years) as follows: regular employees without prior contact experience (n = 22, per age group), regular employees with prior contact experience (n = 7, per age group), non-regular employees without prior contact experience (n = 21, per age group), and non-regular employees with prior contact experience (n = 35, per age group). For the regular employee without prior contact experience group, the age group of ≥ 60 years was insufficient for comparison purposes. One-way ANOVAs of these four matched categories showed no significant difference in MIDUS score by age group (Table 2).

Effects of demographic variables and age on social distance (ASD)

The ASD scores are listed in Table 1. ANOVA revealed significant differences in ASD score by age group, ($F(4,950) = 2.54, P = 0.04$). The Bonferroni test for multiple comparisons showed that the mean score was significantly different between participants < 30 years old ($M = 14.78, SD = 3.97$) and those 50 - 59 years old ($M = 15.87, SD = 3.35$) ($P < 0.05$), suggesting that the younger group had the less social distance concerning PMHC. No significant differences in ASD scores were found by sex, employment position, employment status, attendance at mental illness stigma training, and prior contact experience.

Relationship of the independent variables on MIDUS and ASD

For the multiple linear regression analysis, the MIDUS and

ASD scores were entered into the multiple regression model along with possible confounders, including sex (male, female), age group (< 30, 30 - 39, 40 - 49, 50 - 59, and ≥ 60 years), employment position (manager, non-manager), employment status (regular employee, non-regular employee), attendance at mental illness stigma training (yes, no), and prior contact experience with PMHC (prior contact experience, no prior contact experience). Employment status (partial $r = -0.07, P < 0.05$) and prior contact experience (partial $r = -0.15, P < 0.01$) significantly affected the MIDUS score, whereas no variable had a significant effect on the ASD score.

Comparisons with previous studies

Although the current sample size is different from the prior surveys [7, 17], the usage of the MIDUS and ASD scales which were employed in the prior surveys [7, 17] allow for an indirect comparison in the level of public stigma. The difference in mean MIDUS score between this study ($M = 17.40, SD = 7.12$) and the 2003 survey ($M = 19.5, SD = 7.80$) [17] was statistically significant ($t(1,833.74) = -6.07, P < 0.01, d = 0.28$). The difference in mean ASD score between this study ($M = 15.32, SD = 3.52$) and the 2007 survey ($M = 14.75, SD = 3.76$) [28] was statistically significant ($t(1,952.23) = 3.46, P < 0.01, d = 0.16$). Albeit an indirect comparison, these results suggest that the level of accurate knowledge of mental illness is higher in the current sample compared to the 2003 survey. Yet, the social distance level was similar to the 2007 survey.

Discussion

Accurate knowledge of mental illness was significantly higher among regular employees and those with prior contact experience while social distance was significantly lower among participants < 30 years old for the current sample.

Age and public stigma

In our study, although the MIDUS score did not differ significantly by age group, accurate knowledge of mental illness

tends to increase with age (Table 1), as reported previously [17]. The 2003 Japanese survey, which used the MIDUS score [17], showed that respondents < 30 years old have lower understanding and knowledge of stigma, implying a lower likelihood of interacting with patients or attending lectures.

Our results suggest that participants in the older age groups were less socially accepting of PMHC, especially those of 50 - 59 years old, compared to those of < 30 years old. This result agrees with a previous report that social distance towards such patients worsens throughout life [32]. Another study [33] also identified a significant effect of age on stigma: older participants tended to be less socially accepting of PMHC and unwilling to have them marry into the family. A study suggested that the increase in social distance with age may be a result of accumulated negative experiences or unpleasant contact experiences with patients throughout life [18]. This is not impossible because negative contact experience reportedly increases stigma [34].

Sex and public stigma

A prior study [19] found that the association between sex and mental illness stigma varies regionally. In Japan, males tend to have a lesser understanding of mental illness than females [17, 19]. Another study [35] found that female has stronger stigmatizing attitudes than male due to their beliefs, suggesting that it varies based on sociodemographic profile.

However, we found no significant differences between sex, knowledge, and social distance scores (Table 1), likely because the population examined may have been derived from a relatively homogeneous population.

Education and public stigma

A prior study found that individuals who attended mental health lectures tended to understand mental illness better than those who did not [17]. However, only 2% of the participants had training related to the stigma of mental illness. This result might be because such training and lectures are still uncommon in Japan. With the implementation of mental health education in high school, the younger generations will be exposed to an accurate knowledge of mental illness at an early age and can be reinforced with more training and lectures, as accurate knowledge of mental illness tends to increase with age.

Prior contact experience and public stigma

Prior contact experience influenced the MIDUS score (Table 1), indicating that previous contact experience enhances understanding of mental illness. This suggests that prior contact experience may decrease stigma [36], and the lack of contact opportunities may increase stigma, as reported elsewhere [5].

Lack of prior contact experience due to hospitalized PMHC increases stigma among the Japanese [5]. As part of the 2004 Reform Vision for Health, Medical Care, and Men-

tal Health Welfare, the Japanese government took measures to reduce long-term hospitalization, such as moving from institutionalized care toward community-based care and improving the quality of mental health care [10]. These ongoing reforms by the government in mental health welfare policy have resulted in a 50-day decrease in the average length of hospital stay [11]. Length of stay among newly admitted patients has also decreased, with 85.7% of patients discharged within 1 year in FY2014 and FY2015 [37]. A shorter average stay means more comprehensive care in the community, and the public may have more opportunities to interact with patients. Compared with the 2003 survey [17], these government initiatives aimed at increasing knowledge and contact opportunities may have worked as intended.

Employment status and position and public stigma

Regular employees had a significantly better understanding of mental illness than non-regular employees (Table 1). Regular employees are more knowledgeable than non-regular employees because most Japanese companies provide on-the-job training [24], which may include mental health and work stress management, affecting their knowledge and understanding of mental illness. The Ministry of Health, Labor, and Welfare reported that more regular than non-regular employees receive training [24]. As such, there is a need for mental health and stress management for non-regular employees.

There was no significant difference in accurate knowledge of mental illness and social distance between managerial and non-managerial employees. Therefore, being a managerial or non-managerial employee did not affect the individual's understanding of mental illness and social distance (Table 1) in this study. Being a workplace manager or a person responsible for personnel matters is reportedly associated with better knowledge of mental illness [20], but another study yielded disparate results [38]. A company's human and material resources may influence managers' understanding and behavior toward PMHC [39]. The results of this study differ from those of prior works, warranting further investigation.

Relationship to intervention policies

Over the past 20 years, the Japanese government has taken measures to improve knowledge of the mental illness. One of the most noticeable changes was the 2002 change of the Japanese term for schizophrenia [8] from *Seishin-Bunretsuyō* (mind-split-disease) to *Tōgo-Shitchō-Shō* (integration disorder). In a survey of psychiatrists after the renaming, 82% regarded the new term as more suitable for obtaining consent from patients and effective in reducing stigma [8]. The results suggest that citizens' impressions of schizophrenia changed after the name change, leading to greater understanding and more willingness to disclose their illness. In response to overwork-related disorders and mental disorders due to overwork, the government passed the Act on Promotion of Preventive Measures against Karoshi and Other Overwork-Related Health

Disorders in 2014 to improve mental health in the workplace and to promote a healthy work-life balance [12]. The Act promotes public awareness of overwork-related disorders by, for example, designating Labor Thanksgiving Day in Japan, which may have indirectly improved the public's knowledge of mental health [12]. Using the exact same MIDUS scale to the prior survey [17], we found that the level of accurate knowledge of mental illness in the current sample is significantly higher than the prior survey, mildly suggesting that the level of accurate knowledge of mental illness may have improved compared to the past due to the efforts by the Japanese government.

However, the level of social distance toward PMHC was similar to the past survey [7]. Compared to other countries, a study in the United States found that social distance towards depression improved compared to the past [33]. A study in England also found improvement in behavior towards PMHC compared to the past, attributing success to the effectiveness of Time to Change campaign which lasted from 2009 to 2017 [40]. On the other hand, a study in Germany [41] found that social distance has not improved despite having national anti-stigma initiatives at reducing stigma on mental health conditions. Although the MIDUS score has a weak positive correlation with the ASD score in this study ($r(953) = 0.18, P = 0.01$), our results confirmed the conclusions of stigma experts that behavior change in response to stigma is a complex process and that knowledge alone is unlikely to reduce social distance substantially [42, 43]. In addition, other than the Japanese government's renaming schizophrenia in 2002 [8], none of the mental health initiatives have directly targeted mental illness stigma. This lack of direct efforts to address stigma at the national level [44] may explain the absence of improvement in the social distance concerning mental illness. Therefore, governments should adopt direct initiatives and interventions targeting the stigma of mental illness beyond office workers and high-school students. Interventions using sophisticated techniques, such as perspective taking and empathy induction using modern technology, may also enhance public understanding of the suffering of PMHC and promote pro-social behavior toward them (e.g., social distance reduction).

Limitations

This study has a few limitations. The population differed from those in the prior surveys [7, 17, 28]; thus, a direct comparison was not possible and an indirect comparison using effect size estimation was conducted with Welch's *t*-test. Although respondents were informed that the survey was anonymous [45], the results were self-reported, and the possibility of social desirability bias cannot be excluded, such that the actual level of stigma might be more severe than the results of the survey. The participants were recruited from companies in the same city, resulting in a risk of homogeneous sampling. The proportion of respondents who attended mental illness stigma training (2%) was significantly skewed. The vignette used for ASD were based on depression and the level of social distance may not be a good representative of mental illness in general as different conditions may lead to different level of social distance [33]. Other possible factors which may have affected the stigma score such as per-

sonal belief or cultures [46, 47] were not surveyed in this study, which warrant for further investigation.

Conclusions

Accurate knowledge of mental illness was significantly higher among regular employees and those with prior contact experience. Social distance was significantly lower among participants < 30 years old.

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Conflict of Interest

The authors declare that they have no competing interest.

Informed Consent

Informed consent was obtained from all participants.

Author Contributions

Project leader: WL. Subproject leader: TK. Data analysis: WL, KHdSK. Writing of the manuscript: WL, KHdSK, TK, HO. Agreement with all aspects of work and approval of the final version for publication: WL, KHdSK, TK, HO.

Data Availability

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

Abbreviations

PMHCs: people with mental health conditions; MIDUS: Mental Illness and Disorder Understanding Scale; ASD: Attitudinal Social Distance; RIBS-J: Reported Intended Behavior Scale-

Japanese; ANOVA: analysis of variance; ANCOVA: analysis of covariance

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