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# Timing of emergency department presentation and psychiatric consultation after self-harm or suicide attempts: a registry-based study in Japan

Shunta Jinno<sup>1</sup>, Tetsuya Yumoto<sup>1\*</sup> , Takashi Hongo<sup>1</sup>, Hiromasa Yakushiji<sup>1,2</sup>, Takafumi Obara<sup>1</sup>, Tsuyoshi Nojima<sup>1</sup>, Hiromichi Naito<sup>3</sup>, Takashi Yorifuji<sup>4</sup> and Atsunori Nakao<sup>1</sup>

## Abstract

**Background** Self-harm and suicide attempts are frequent causes of emergency department (ED) visits and are strongly associated with an elevated suicide risk. Early psychiatric evaluation in the ED can help reduce repeated self-harm; however, the relationship between presentation timing and psychiatric consultations remains unclear. This study aimed to explore the association between ED visit timing and the likelihood of psychiatric referrals among patients presenting with self-harm or suicide attempts in Japan.

**Methods** This multicenter, registry-based cohort study analyzed data from the JAPAN Registry of Self-Harm and Suicide Attempt from December 1, 2022, to December 31, 2023. Patients presenting to EDs with intentional self-harm or suicide attempts were included. The primary outcome was psychiatric consultation within one day of presentation, analyzed by day and time of presentation using multiple logistic regression, adjusting for potential confounders.

**Results** Of the 1,721 patients analyzed, the median age was 33 years, and 1,127 (65.5%) were female. A total of 1,199 patients (69.7%) received psychiatric consultations, while 522 (30.3%) did not receive a consultation within the next day after presentation. Hospital presentations on Saturdays (adjusted OR, 0.39; 95% CI, 0.20–0.75) and during 4 p.m. to 8 p.m. (adjusted OR, 0.47; 95% CI, 0.24–0.91) were associated with lower likelihoods of psychiatric consultations, using Monday and the 8 a.m. to 12 p.m. period as the reference, respectively.

**Conclusions** Hospital presentations on Saturdays or evening hours were associated with reduced likelihoods of psychiatric consultations, highlighting disparities in access to care during off-hours. These findings may help inform efforts to improve resource allocation and flexible staffing to ensure timely and consistent psychiatric care in ED settings.

**Clinical trial number** Not applicable.

**Keywords** Drug overdose, Emergency department, Psychiatry, Referral and consultation, Suicide

\*Correspondence:  
Tetsuya Yumoto  
tyumoto@cc.okayama-u.ac.jp

Full list of author information is available at the end of the article



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## Background

Self-harm, injury, or suicide attempts are frequently encountered causes of emergency department (ED) visits in developed countries [1, 2]. These behaviors often recur and are strongly associated with an elevated risk of suicide, highlighting the importance of early evaluation and intervention by psychiatric specialists [3, 4]. Prior studies have demonstrated that psychiatric intervention in the ED setting can significantly reduce the incidence of repeated self-harm, suicide attempts, and completed suicides [5–7]. Managing patients with suicidal thoughts and behaviors in the ED poses unique challenges, including time constraints and limited resources [8]. Effective care requires comprehensive suicide risk assessments coupled with empathetic, patient-centered approaches to alleviate emotional pain and address immediate risks. Early psychiatric evaluation plays a vital role in identifying appropriate interventions, such as safety planning and timely referral to follow-up care. Despite its importance, a previous systematic review revealed that only one-fourth of patients presenting to the ED for self-harm or suicide attempts were referred for psychiatric evaluation [9].

Independent of specific diseases or conditions, presenting to the ED during weekends or nighttime hours is often linked to worse outcomes [10, 11]. Furthermore, ED overcrowding has been shown to negatively impact adherence to clinical guidelines [12]. Based on these considerations, we hypothesized that the likelihood of psychiatric referral or consultation may vary depending on the timing of the ED visit. However, no studies to date have investigated this association. To address this gap, we conducted a registry-based cohort study using a nationwide database of self-harm and suicide attempts in Japan. This study aimed to examine the association between the timing of ED visits, defined by day and time, and the likelihood of psychiatric referrals for patients presenting after self-harm or suicide attempts.

## Methods

### Study design and ethics

This was a multicenter, registry-based cohort study, utilizing data from the JAPAN Registry of Self-Harm and Suicide Attempt (JA-RSA) database. As of December 31, 2023, 57 institutions across Japan were participating in this registry. The registry includes patients of all ages, regardless of suicidal ideation or completed suicide, who received a clinical diagnosis of intentional self-harm coded as X60–X84 according to the World Health Organization's ICD-10 Codes [13]. In this study, self-harm was defined as intentional self-inflicted injury or poisoning regardless of suicidal intent, whereas suicide attempt was defined as self-injurious behavior with at least some intent to die. These determinations were based on the

overall clinical evaluation by an attending physician, including patient interviews, collateral information, situational context, and physical findings.

Ethical approval was obtained from the Ethics Committee of Okayama University Hospital (Approval Number: K2405-043). This study was conducted in accordance with the principles of the Declaration of Helsinki. Given the retrospective nature of the study and the use of anonymized data, the requirement for written informed consent was waived by the Ethics Committee.

### Study population and outcomes

This study included all patients registered in the JA-RSA database who presented to participating hospitals between December 1, 2022, and December 31, 2023. Patients were excluded if they experienced out-of-hospital cardiac arrest, death in the ED, or if data were missing regarding the hospital arrival day, hospital arrival time, or consultation with a psychiatrist. Therefore, only patients with non-fatal self-harm or suicide attempts were included in the present analysis.

The primary outcome was a psychiatric consultation, classified as being provided by a liaison psychiatry team, a psychiatrist (either a full-time or part-time physician), or a psychosomatic physician, within the next day after hospital presentation. The secondary outcome was the hospital disposition from the ED.

### Data collection

We obtained data from the JA-RSA database, including age, sex, day and time of hospital presentation, history of psychiatric visits within the past month or more than a month prior, history of self-injury or suicide attempts, whether the patient was living with a cohabitant, presence or absence of suicidal ideation at admission, methods of self-harm or suicide attempts, vital signs at presentation, and hospital disposition in the ED.

### Statistical analysis

Patients who received or did not receive a psychiatric consultation within the next day after hospital presentation were compared between the groups. Continuous data are presented as medians with interquartile ranges, while categorical data are shown as counts and percentages. Comparisons between the two groups were performed using the Mann-Whitney U test for continuous variables and the Chi-square test for categorical variables.

A multiple logistic regression analysis was conducted to calculate the adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for the likelihood of psychiatric consultation within the next day following hospital presentation. The analysis included presentation day and time, as well as the following variables: age, sex, history of psychiatric visits within the past month, history of

psychiatric visits more than a month prior, history of self-injury or suicide attempts, cohabitation status, presence of suicidal ideation at admission, method of self-harm or suicide attempts, and Glasgow Coma Scale score at admission. We chose these variables based upon insights from previous studies and our clinical interests [14, 15]. Cases with missing or unknown values in variables included in the multivariable analyses were excluded from the corresponding models using a complete-case approach.

A subgroup analysis was performed for patients whose self-harm or suicide attempt method was overdose, excluding other methods of self-harm or suicide attempts [16]. A multiple logistic regression analysis was similarly conducted for this subgroup, adjusting for the same confounders except for the method of self-harm or suicide attempts. As a sensitivity analysis, the presentation day and time were analyzed separately: in model 2, the presentation day and other covariates mentioned above were included, while in model 3, the presentation time and other covariates were included. Both models were analyzed using multiple logistic regression. An additional sensitivity analysis was conducted by redefining psychiatric consultation as a consultation occurring on the same day as the patient's hospital presentation. Furthermore, because several variables, particularly history of psychiatric visits within the past month and history of self-injury or suicide attempts, contained relatively large proportions of unknown values, we additionally performed a sensitivity analysis in which unknown values for these

variables were treated as separate categories and included in the multivariable model.

All tests were two-tailed, and a P value of  $<0.05$  was considered statistically significant. Analyses were conducted using Prism 10.4.1 (GraphPad, San Diego, CA) and IBM SPSS Statistics 26 (IBM SPSS, Chicago, IL).

## Results

Over a 13-month period, 1,987 patients were registered in the JA-RSA database. After applying the exclusion criteria, 1,721 patients were included in the analysis (Fig. 1).

Of the 1,721 patients, the median age was 33 years, and 1,127 (65.5%) were female. A total of 1,199 (69.7%) received psychiatric consultations, while 522 (30.3%) did not receive a consultation within the day following hospital presentation. Psychiatric consultations were primarily conducted by full-time psychiatrists ( $n=867$ , 72.3%), followed by the liaison psychiatry team ( $n=293$ , 24.4%), part-time psychiatrists ( $n=21$ , 1.8%), and others ( $n=18$ , 1.5%). No consultations were performed by psychosomatic physicians. Table 1 presents the demographic and clinical characteristics of both groups. Although age, sex, and most vital signs were similar between the groups, several clinical characteristics differed significantly. Patients who received psychiatric consultations were more likely to have a history of psychiatric visits at least a month prior, a history of self-injury or suicide attempts, and suicidal ideation at admission. Presentation day of the week differed significantly between groups, whereas presentation time did not. Supplemental Table 1 shows

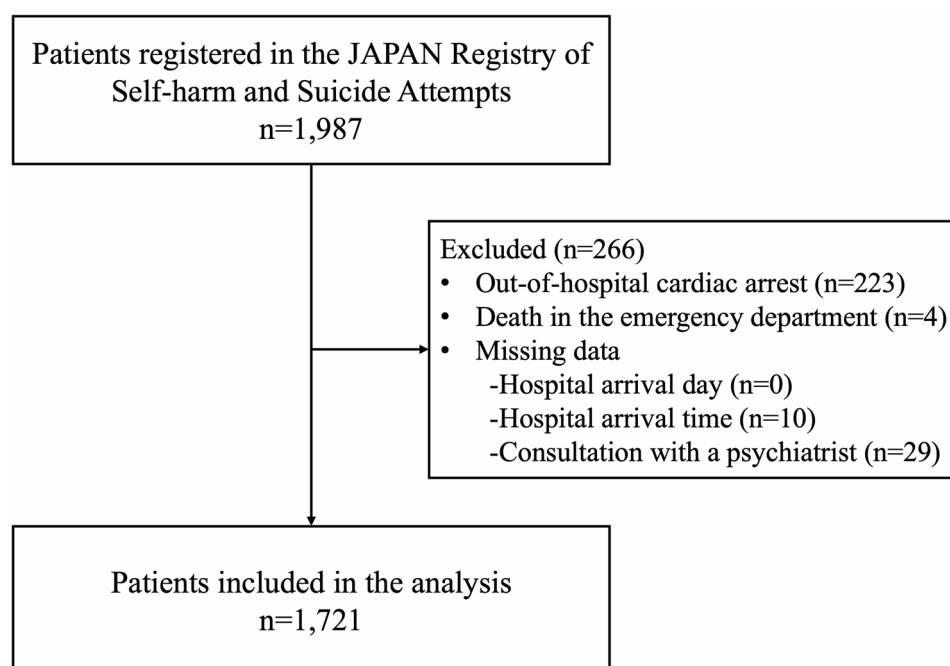


**Fig. 1** Flowchart of study patients

**Table 1** Basic characteristics of study population

| Variables                                                    | Overall<br>n = 1,721 | (+) Psychiatric consultation<br>n = 1,199 | (-) Psychiatric consultation<br>n = 522 | P value |
|--------------------------------------------------------------|----------------------|-------------------------------------------|-----------------------------------------|---------|
| Age, median (IQR), y                                         | 33 (23, 51)          | 33 (23, 51)                               | 34 (23, 53)                             | 0.375   |
| Age category, n (%)                                          |                      |                                           |                                         | 0.958   |
| Under 18 years                                               | 140 (8.1)            | 103 (8.6)                                 | 37 (7.1)                                |         |
| 19 to 39 years                                               | 897 (52.1)           | 627 (52.3)                                | 270 (51.7)                              |         |
| 40 to 64 years                                               | 486 (28.2)           | 335 (27.9)                                | 151 (28.9)                              |         |
| 65 years or older                                            | 198 (11.5)           | 134 (11.2)                                | 64 (12.3)                               |         |
| Female, n (%)                                                | 1,127 (65.5)         | 789 (65.8)                                | 338 (64.8)                              | 0.915   |
| History of a psychiatric visit within the past month, n (%)  | 688 (40.0)           | 502 (41.9)                                | 186 (35.6)                              | 0.053   |
| Unknown, n (%)                                               | 454 (26.4)           | 289 (24.1)                                | 165 (31.6)                              |         |
| History of a psychiatric visit at least a month prior, n (%) | 1,163 (67.6)         | 839 (70.0)                                | 324 (62.1)                              | 0.006   |
| Unknown, n (%)                                               | 152 (8.8)            | 66 (5.5)                                  | 86 (16.5)                               |         |
| History of any self-injury or suicide attempt, n (%)         | 794 (46.1)           | 583 (48.6)                                | 211 (40.4)                              | 0.007   |
| Unknown, n (%)                                               | 375 (21.8)           | 217 (18.1)                                | 158 (30.3)                              |         |
| Living with a cohabitant, n (%)                              | 1,208 (70.2)         | 843 (70.3)                                | 365 (70.0)                              | 0.987   |
| Unknown, n (%)                                               | 102 (5.9)            | 50 (4.2)                                  | 52 (10.0)                               |         |
| Suicidal ideation at admission, n (%)                        | 678 (54.4)           | 513 (42.8)                                | 165 (31.6)                              | < 0.001 |
| Not assessable due to altered level of consciousness, n (%)  | 477 (27.7)           | 317 (26.4)                                | 160 (30.7)                              |         |
| Unknown, n (%)                                               | 6 (0.4)              | 5 (0.4)                                   | 1 (0.2)                                 |         |
| Self-harm or suicide attempt method, n (%) <sup>a</sup>      |                      |                                           |                                         | 0.520   |
| Overdose                                                     | 1,125 (65.5)         | 812 (67.7)                                | 313 (60.0)                              |         |
| Knife                                                        | 208 (12.1)           | 134 (11.2)                                | 74 (14.2)                               |         |
| Jumping <sup>b</sup>                                         | 195 (11.3)           | 131 (10.9)                                | 64 (12.3)                               |         |
| Poison ingestion <sup>c</sup>                                | 86 (5.0)             | 60 (5.0)                                  | 26 (5.0)                                |         |
| Hanging                                                      | 83 (4.8)             | 59 (4.9)                                  | 24 (4.6)                                |         |
| Gas inhalation <sup>d</sup>                                  | 58 (3.4)             | 41 (3.4)                                  | 17 (3.3)                                |         |
| Others <sup>e</sup>                                          | 44 (2.6)             | 40 (3.3)                                  | 23 (4.4)                                |         |
| Unknown, n (%)                                               | 3 (0.2)              | 1 (0.1)                                   | 2 (0.4)                                 |         |
| GCS score on hospital arrival                                | 14 (10, 15)          | 14 (10, 15)                               | 14 (10, 15)                             | 0.298   |
| Unknown, n (%)                                               | 30 (1.7)             | 14 (1.2)                                  | 16 (3.1)                                |         |
| GCS score category, n (%)                                    |                      |                                           |                                         | 0.097   |
| <9                                                           | 322 (19.0)           | 220 (18.3)                                | 102 (19.5)                              |         |
| 9 to 14                                                      | 652 (38.6)           | 484 (40.4)                                | 168 (32.2)                              |         |
| 15                                                           | 717 (42.4)           | 481 (40.1)                                | 236 (45.2)                              |         |
| Respiratory rate, median (IQR), /min                         | 19 (16, 23)          | 19 (16, 23)                               | 19 (16, 23)                             | 0.520   |
| Unknown, n (%)                                               | 113 (6.6)            | 62 (5.2)                                  | 51 (9.8)                                |         |
| Heart rate, median (IQR), /min                               | 90 (76, 107)         | 90 (76, 106)                              | 91 (76, 108)                            | 0.334   |
| Unknown, n (%)                                               | 35 (2.0)             | 13 (1.0)                                  | 22 (4.2)                                |         |
| Systolic blood pressure, median (IQR), mmHg                  | 122 (109, 138)       | 123 (110, 138)                            | 121 (107, 139)                          | 0.230   |
| Unknown, n (%)                                               | 48 (2.8)             | 18 (1.5)                                  | 30 (5.7)                                |         |
| Temperature, median (IQR), °C                                | 36.7 (36.3, 37.1)    | 36.7 (36.4, 37.1)                         | 36.7 (36.3, 37.0)                       | 0.045   |
| Unknown, n (%)                                               | 88 (5.1)             | 51 (4.3)                                  | 37 (7.1)                                |         |
| Day, n (%)                                                   |                      |                                           |                                         | 0.010   |
| Monday                                                       | 287 (16.7)           | 193 (16.1)                                | 94 (18.0)                               |         |
| Tuesday                                                      | 269 (15.6)           | 200 (16.7)                                | 69 (13.2)                               |         |
| Wednesday                                                    | 240 (14.0)           | 184 (15.4)                                | 56 (10.7)                               |         |
| Thursday                                                     | 232 (13.5)           | 164 (13.7)                                | 68 (13.0)                               |         |
| Friday                                                       | 241 (14.0)           | 164 (13.7)                                | 77 (14.8)                               |         |
| Saturday                                                     | 212 (12.3)           | 121 (10.1)                                | 91 (17.4)                               |         |
| Sunday                                                       | 240 (14.0)           | 173 (14.4)                                | 67 (12.8)                               |         |
| Weekend (Saturday and Sunday)                                | 452 (26.3)           | 294 (24.5)                                | 158 (30.3)                              | 0.045   |
| Time, n (%)                                                  |                      |                                           |                                         | 0.757   |
| 12 a.m. to 4 a.m.                                            | 281 (16.3)           | 205 (17.1)                                | 76 (14.6)                               |         |

**Table 1** (continued)

| Variables         | Overall<br><i>n</i> = 1,721 | (+) Psychiatric consultation<br><i>n</i> = 1,199 | (-) Psychiatric consultation<br><i>n</i> = 522 | <i>P</i> value |
|-------------------|-----------------------------|--------------------------------------------------|------------------------------------------------|----------------|
| 4 a.m. to 8 a.m.  | 195 (11.3)                  | 143 (11.9)                                       | 52 (10.0)                                      |                |
| 8 a.m. to 12 p.m. | 268 (15.6)                  | 189 (15.8)                                       | 79 (15.1)                                      |                |
| 12 p.m. to 4 p.m. | 276 (16.0)                  | 178 (14.8)                                       | 98 (18.8)                                      |                |
| 4 p.m. to 8 p.m.  | 346 (20.1)                  | 242 (20.2)                                       | 104 (19.9)                                     |                |
| 8 p.m. to 12 a.m. | 355 (20.6)                  | 242 (20.2)                                       | 113 (21.6)                                     |                |

<sup>a</sup> Total number of suicide attempt methods exceeds the total number of patients due to multiple methods per patient

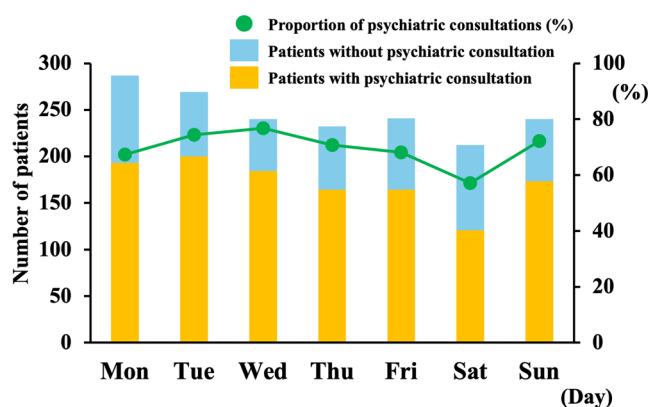
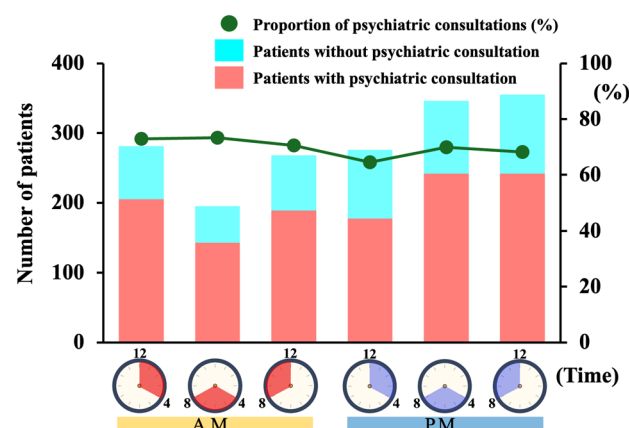
<sup>b</sup> Includes jumping from heights, onto vehicles, or into water

<sup>c</sup> Includes inhalation of organic solvents

<sup>d</sup> Includes charcoal burning or exhaust gas

<sup>e</sup> Includes electrocution, self-immolation, explosives, firearms, or others

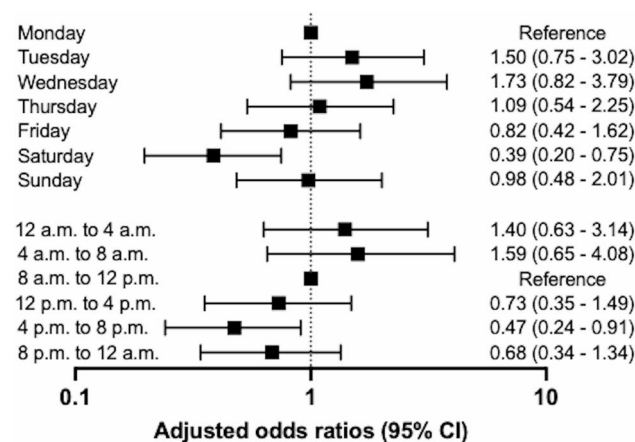
IQR: interquartile range, GCS: Glasgow Coma Scale

**A****B****Fig. 2** Number and proportion of psychiatric consultations by day (A) and time (B)

the distribution of self-harm or suicide attempt methods according to sex.

Figure 2 shows the number and proportion of psychiatric consultations by day (A) and time (B). Mondays accounted for the highest number of presentations (287/1,721, 16.7%), while Saturdays accounted for the lowest (212/1,721, 12.3%). Psychiatric consultations were most frequent on Wednesdays (184/240, 76.7%) and least frequent on Saturdays (121/212, 57.1%). Regarding time, when dividing the 24-hour period into 4-hour intervals, the 8 p.m. to 12 a.m. period accounted for the highest number of presentations (355/1,721, 20.6%). The proportion of psychiatric consultations was relatively consistent across all time periods. The number and proportion of psychiatric consultations, categorized by 4-hour intervals throughout the day, are presented in Supplemental Fig. 1. The most frequent psychiatric consultations occurred from 12 a.m. to 4 a.m. on Friday (28/33, 84.8%), while the least frequent occurred from 4 p.m. to 8 p.m. on Saturday (26/52, 50.0%).

A multiple logistic regression analysis revealed that hospital presentation on Saturday (adjusted OR, 0.39; 95% CI, 0.20–0.75) and during the time periods 4 p.m. to

**Fig. 3** Multiple logistic regression analysis showing the adjusted odds ratios for receiving a psychiatric consultation based on the day and time of hospital presentation

8 p.m. (adjusted OR, 0.47; 95% CI, 0.24–0.91) were significantly associated with a lower likelihood of receiving a psychiatric consultation by the next day after hospital presentation, with Monday and the 8 a.m. to 12 p.m. time period as the reference, respectively (Fig. 3).

**Table 2** Patient dispositions by psychiatric consultation status by the next day of hospital admission

| Variables                    | Overall<br>n = 1,721 | (+) Psychiatric consultation<br>n = 1,199 | (-) Psychiatric consultation<br>n = 522 | P value |
|------------------------------|----------------------|-------------------------------------------|-----------------------------------------|---------|
| Patient dispositions, n (%)  |                      |                                           |                                         | < 0.001 |
| ICU admission                | 1,285 (74.7)         | 989 (82.5)                                | 296 (56.7)                              |         |
| Discharge home               | 223 (13.0)           | 66 (5.5)                                  | 157 (30.1)                              |         |
| General ward                 | 95 (5.5)             | 72 (6.0)                                  | 23 (4.4)                                |         |
| Transfer to another hospital | 57 (3.3)             | 17 (1.4)                                  | 40 (7.7)                                |         |
| Psychiatric ward             | 53 (3.1)             | 52 (4.3)                                  | 1 (0.2)                                 |         |
| Others                       | 4 (0.2)              | 1 (0.0)                                   | 3 (0.6)                                 |         |
| Unknown                      | 4 (0.2)              | 2 (0.1)                                   | 2 (0.4)                                 |         |

ICU: intensive care unit

In a subgroup analysis of patients whose self-harm or suicide attempt involved overdose, a multiple logistic regression analysis showed that hospital presentation on Saturday (adjusted OR: 0.42, 95% CI: 0.18–0.94) was significantly associated with a lower likelihood of receiving a psychiatric consultation by the next day, with Monday as the reference (Supplemental Fig. 2).

As a sensitivity analysis, the presentation day (model 2) and time (model 3) were analyzed separately, revealing similar results to those observed in the main analysis where day and time were combined (Supplemental Fig. 3). In a separate sensitivity analysis, of the 1,721 patients, 798 (46.4%) received psychiatric consultations on the day of hospital presentation. A multiple logistic regression analysis demonstrated that hospital presentation on Sunday (adjusted OR, 0.42; 95% CI, 0.23–0.77) was significantly associated with a lower likelihood of receiving a psychiatric consultation on the day of presentation compared to Monday. While hospital presentation on Saturday showed a trend toward a lower likelihood of receiving a psychiatric consultation, this finding was not statistically significant (adjusted OR, 0.55; 95% CI, 0.29–1.03). Regarding presentation time, the likelihood of receiving a psychiatric consultation decreased as the time of hospital presentation shifted later in the day (Supplemental Fig. 4). In an additional sensitivity analysis treating unknown values as separate categories, the association for Saturday presentation remained significant, whereas the association for presentation during 4 p.m. to 8 p.m. was attenuated and no longer statistically significant, although the direction of association remained similar (Supplemental Fig. 5).

Table 2 summarizes patient dispositions according to psychiatric consultation status by the next day of hospital presentation. ICU admission was more frequent among patients who received psychiatric consultations, whereas discharge home from the ED was more frequent among those who did not receive psychiatric consultations.

## Discussion

In this nationwide registry database study, we found that hospital presentation on Saturday or during the period from 4 p.m. to 8 p.m. was associated with a lower likelihood of receiving a psychiatric consultation by the next day among patients visiting the ED for self-harm or suicide attempts. These findings highlight potential gaps in the availability or prioritization of psychiatric care in ED settings during off-hours.

Prior research supports these observations, emphasizing challenges in delivering consistent psychiatric services in emergency settings. For example, a study conducted in rural Japan reported that only 53% (39/73) of suicidal patients presenting to EDs were referred to psychiatrists [17]. Similarly, a large study using data from the Japanese Diagnosis Procedure Combination inpatient database found that only 49% (6,060/12,368) of patients discharged home following self-harm or suicide attempts received psychiatric interventions during hospitalization [18]. However, neither study examined the timing of ED presentations, making our investigation the first, to our knowledge, to address this association. Importantly, our findings should be interpreted as associations rather than causal relationships, because the exact timing of psychiatric consultation relative to patient disposition was unavailable, and residual confounding related to illness severity, confounding by indication, and selection bias may have influenced these observations, particularly in the analysis of patient disposition. In addition, the primary outcome in this study was a process measure rather than a direct patient-centered outcome. Because the database did not include longitudinal outcomes such as repeated self-harm, follow-up adherence, or mortality after discharge, the clinical implications of the observed associations remain indirect.

The lower likelihood of psychiatric consultations on Saturdays may reflect reduced staffing or availability of psychiatric services during weekends, as highlighted in studies showing that psychiatric and general healthcare systems often operate with fewer resources during off-hours [19, 20]. Interestingly, sensitivity analyses revealed

that Sundays were significantly associated with a lower likelihood of same-day consultations, while Saturdays showed a similar trend. This discrepancy might stem from differences in how consultation timing was defined across analyses. Similarly, the decreased likelihood of consultations during evening hours could be attributable to increased ED workloads, competing priorities, or limited access to on-site psychiatric personnel [21–23]. Notably, studies have emphasized the importance of continuous mental health staffing in emergency settings to ensure adherence to safety planning and discharge practices, which are critical for patients presenting after intentional self-harm [24]. These findings underscore the need to optimize staffing models, potentially through telepsychiatry or enhanced liaison psychiatry coverage, to ensure equitable access to psychiatric evaluations, regardless of the day or time of presentation [25, 26]. In addition, multidisciplinary and post-discharge interventions, such as collaboration with social services, joint psychiatrist–social worker approaches, and brief contact interventions including text message support, may further improve continuity of care for patients presenting with self-harm or suicide attempts [27, 28]. Future studies are warranted to evaluate the feasibility and effectiveness of these approaches in Japan.

This study has several limitations. First, we were unable to account for hospital-level characteristics, such as the availability of psychiatrists, liaison psychiatry services, staffing differences across time periods, and institutional consultation criteria. Because the database does not include institutional identifiers, we could not adjust for clustering or facility-level variability. Therefore, the observed associations may partly reflect institutional differences rather than true temporal effects and should be interpreted with caution. In addition, residual confounding, including confounding by indication and unmeasured operational factors such as ED crowding and staffing, may have influenced the observed associations. Furthermore, some variables contained missing or unknown values. Sensitivity analyses yielded generally similar findings, although the association for evening presentation was attenuated. Given the multiple variables and subgroup/sensitivity analyses, there is a possibility of type I error, particularly for findings that were not consistently observed across sensitivity analyses. Second, the detailed timing of consultations was not recorded, which means that some patients' dispositions may have been influenced by psychiatric consultations, while others may have received consultations only after hospital admission due to prioritization of physical care. Relatedly, the presence or absence of psychiatric consultations may not have directly influenced patient dispositions, and we did not evaluate outcomes based on whether consultations were performed. Third, the observational

nature of the study precludes causal inferences. Fourth, during the 13-month study period, we could not account for the influence of holidays on weekdays, which included two holidays on Monday and Thursday and one holiday each on Tuesday, Wednesday, and Friday. Lastly, we did not assess the quality or outcomes of psychiatric consultations, which could provide additional insights into their clinical impact.

Despite these limitations, this study is the first to examine the association between the timing of ED presentation and psychiatric consultations in patients presenting with self-harm or suicide attempts. Our findings contribute to a growing body of evidence emphasizing the importance of equitable access to psychiatric care in ED settings and highlight specific areas for improvement in service delivery.

## Conclusions

Hospital presentations on Saturdays or during evening hours were associated with a lower likelihood of receiving psychiatric consultations by the next day among patients presenting to the ED after self-harm or suicide attempts. These findings suggest potential disparities in access to psychiatric care during off-hours and may help inform future efforts to optimize resource allocation and staffing models in ED settings. Future studies should explore the impact of consultation quality and outcomes, as well as strategies to ensure fair and consistent access to psychiatric evaluations.

## Abbreviations

|    |                      |
|----|----------------------|
| CI | Confidence intervals |
| ED | Emergency department |
| OR | Odds ratios          |

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12888-026-08311-7>.

Supplementary Material 1: Supplemental Figure 1 Number and proportion of psychiatric consultations, categorized by 4-hour intervals throughout the day

Supplementary Material 2: Supplemental Figure 2 Multiple logistic regression analysis showing the adjusted odds ratios for receiving a psychiatric consultation based on the day and time of hospital presentation, limited to patients presenting with overdose

Supplementary Material 3: Supplemental Figure 3 Multiple logistic regression analysis examining presentation day and time separately. (A) Presentation day analyzed in model 2. (B) Presentation time analyzed in model 3

Supplementary Material 4: Supplemental Figure 4 Multiple logistic regression analysis showing the adjusted odds ratios for receiving a psychiatric consultation, redefined as a consultation occurring on the same day as the patient's hospital presentation, based on the day and time of presentation

Supplementary Material 5: Supplemental Figure 5 Multiple logistic regression analysis treating unknown values for history of psychiatric visits within the past month and history of self-injury or suicide attempts as separate categories

Supplementary Material 6

## Acknowledgements

Not applicable.

## Author contributions

SJ, TYu, TH, and HY contributed to the study concept and design. SJ, TYu, TH, and TYo were responsible for data acquisition, analysis, and interpretation. TYo provided statistical expertise. SJ and TYu drafted the manuscript, while TO, TN, HN, and AN critically revised it for important intellectual content. All authors have read and approved the final manuscript.

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No funding was received for this work.

## Data availability

The datasets generated during and/or analyzed during the current study are not available due to ethical restrictions.

## Declarations

### Ethics approval and consent to participate

Ethical approval was obtained from the Ethics Committee of Okayama University Hospital (Approval Number: K2405-043). Given the retrospective nature of the study and the use of anonymized data, the requirement for written informed consent was waived.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

### Author details

<sup>1</sup>Department of Emergency, Critical Care, and Disaster Medicine, Faculty of Medicine, Dentistry, and Pharmaceutical Sciences, Okayama University, 2-5-1, Shikata-cho, Kita-ku, Okayama 700-8558, Japan

<sup>2</sup>Yakushiji Jikei Hospital, 1-17-25, Soja, Okayama 719-1126, Japan

<sup>3</sup>Department of Emergency, Critical Care, and Disaster Medicine, Graduate School of Medical Sciences, Kumamoto University, 1-1-1 Honjo, Chuo-ku, Kumamoto 860-8556, Japan

<sup>4</sup>Department of Epidemiology, Faculty of Medicine, Dentistry, and Pharmaceutical Sciences, Okayama University, 2-5-1 Shikata-cho, Kita-ku, Okayama 700-8558, Japan

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