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Original article

## Preference for Solitude, Social Isolation, Suicidal Ideation, and Self-Harm in Adolescents

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#### ABSTRACT

**Purpose:** Social isolation is associated with suicidal ideation (SI) and self-harm (SH) among adolescents. However, the association between preference for solitude (PfS), SI, and SH is unknown. The prevalence of adolescents who have both of PfS and social isolation and the risks for SI and SH among them are also unknown.

**Methods:** Information on PfS, social isolation, SI, and SH was collected in a large-scale school-based survey on adolescents, using a self-report questionnaire. Associations between PfS, SI, and SH were examined by logistic regression analysis. The interactions between PfS and social isolation on SI and SH were also investigated. The odds of SI and SH were examined for groups defined by presence of PfS and social isolation.

**Results:** Responses from 17,437 students (89.3% of relevant classes) were available. After adjusting for demographic characteristics and social isolation, PfS was associated with increased odds of SI (odds ratio [OR] = 3.1) and SH (OR = 1.9). There was no interaction between PfS and social isolation on SI and SH. After adjusting for demographic characteristics, the odds for SI (OR = 8.6) and SH (OR = 3.8) were highest among adolescents with both PfS and social isolation (8.4% of all respondents).

# IMPLICATIONS AND CONTRIBUTION

Adolescents with a preference for solitude, particularly those who are socially isolated, are at increased risk of suicidal ideation and self-harm. These results suggest focusing suicide prevention efforts on those who say they prefer solitude and have no one to consult with about worries or troubles.

Conflicts of Interest: The authors have no conflicts of interest to disclose.

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**Conclusions:** PfS was associated with increased odds of SI and SH in adolescents. No interaction effect between PfS and social isolation on SI and SH was found, but adolescents with PfS and social isolation had the highest risk for SI and SH. Parents and professionals should pay attention to suicide risk in adolescents with PfS.

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Suicide is the second leading cause of death in young people, accounting for 8.5% of total deaths in young people [1]. In Japan, the leading cause of death among 15- to 39-year-olds is suicide, while road traffic accidents is the leading cause in many other developed countries [2]. Also, self-inflicted injury is one of the leading causes of disability-adjusted life years in young people [3]. Social isolation has been identified as a risk factor for suicidal problems [1,4]. Since a rapidly changing social world increases the likelihood of social isolation during adolescence [5], more attention should be paid for adolescents who experience social isolation.

Preference for solitude (PfS) in adolescence can be regarded as a developmental process. PfS has been said as a broad construct of unsociability and avoidance [6] and motivated by low approach and low-to-high avoidance [7]. The desire for solitude increases during adolescence, and time spent alone in adolescence can sometimes be beneficial for adjustment. perhaps because solitude facilitates individuation or identity formation [8]. As children grow older, solitude becomes more acceptable and they report solitude as more positive and important [8–10]. It has also been suggested that spending time alone in a volitional and autonomous manner is associated with higher levels of well-being [11]. On the other hand, negative aspects of PfS have also been reported. Several studies showed that PfS in early adolescence is associated with peer difficulties and maltreatment [12–14] and, in adolescence more generally, with low self-esteem, anxiety/depression, and emotional dysregulation [6,7]. Therefore, it is possible that risk for suicidal ideation (SI) and self-harm (SH) is increased in adolescents with PfS.

However, to the best of our knowledge, this has not been investigated. Furthermore, no studies have examined the prevalence of adolescents who had both PfS and social isolation and the risk of SI and SH among them. The objective of this study therefore was to examine these possible associations.

#### Methods

#### Study design

The present study was a cross-sectional survey of students in public junior and senior high schools (7th–12th graders, age range 12–18 years). The survey was conducted between 2008 and 2009 using a self-report questionnaire. The principal investigator of the study asked all heads and administrators of public junior high schools in the city of Tsu, (the second biggest city in a rural prefecture, having about 290,000 people), and public junior and senior high schools in Kochi Prefecture, (a rural prefecture, having approximately 780,000 people), to participate into the survey. Of the 138 junior and 36 senior high schools invited, 47 junior and 30 senior high schools participated.

Parents were informed of the research project by letter and asked to notify the school if they did not want their children to participate. On the day of the survey, students were told that participation was voluntary and there was no disadvantage in nonparticipation; they were then given the choice of opting out. Each teacher reported the total number of students present and absent on the day of the survey. The study was approved by the ethics committees of Tokyo Metropolitan Institute of Medical Science, Mie University School of Medicine, and Kochi Medical School.

Among 19,436 students in the relevant classes, 18,250 (93.8%) agreed to participate. Of the remainder, 798 (4.1%) were absent on the day of the survey and 388 (2.0%) declined to participate. Among the participants, 903 (4.9%) were excluded from the analysis because of incomplete answers to questions (numbers of missing data for PfS was 155, for social isolation was 267, for SI was 95, and for SH was 433). Thus, responses from 17,347 (95.1%) students were analyzed (89.3% of all students in the relevant classes). Of these students, 50.2% were female, and their ages ranged from 12 to 18 years, with a mean age of 15.2 years (standard deviation = 1.7 years).

#### Measurements

The participants were asked to fill in an anonymous selfreport questionnaire including questions about PfS, social isolation, SI, SH, and demographic characteristics including age, sex, and living status.

#### Preference for solitude

The question, "Do you prefer to be alone rather than to be with someone?" was used to evaluate PfS. This question had the highest loading among the four items for measuring PfS in the previous study [6]. The four possible responses were "no," "probably no," "probably yes," and "yes." Students who replied "yes" or "probably yes" were defined as those who had PfS.

#### Social isolation

In this article, considering the previous studies [15], we defined social isolation as the lack of quantity of social contacts for emotional support. The question "With how many people can you consult about your worries or troubles?" was used. The five possible responses were "no one," "one," "two," "three," and "more than four." Individuals who answered "no one" were defined as those who were socially isolated.

#### Suicidal ideation

Current SI was assessed by the question "Do you currently have thoughts that your life is no longer worth living?" The four

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