

## A review of suicidal ideation and behavior among university students : Prospective and risk factors associated with the prevention of suicide

Basri, Nadzirah A.

Department of Health and Behavioral Science, Graduate School of Human-Environment Studies, Kyushu University | Department of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia

Kumagai, Shuzo

Department of Health and Behavioral Science, Graduate School of Human-Environment Studies, Kyushu University | Faculty of Arts and Science, Kyushu University

<https://doi.org/10.15017/1800859>

---

出版情報 : 健康科学. 39, pp.49-56, 2017-03-24. 九州大学健康科学編集委員会  
バージョン :  
権利関係 :

—Review—

## A review of suicidal ideation and behavior among university students: Protective and risk factors associated with the prevention of suicide

Nadzirah A. BASRI<sup>1)2)</sup> and Shuzo KUMAGAI<sup>1)3)\*</sup>

### Abstract

This article presents a review of studies on protective and risk factors on suicidal ideation and behaviors. First, a recent theory related to suicidal behavior was introduced. Then studies reporting on prevalence of suicidal ideation and behaviors among university students were reviewed, followed by an introduction to the wide range of protective and risk factors to suicide. Next, studies on several protective and risk psychological factors were reviewed. Finally, Japanese cultural influence on suicide and initiatives made for suicide prevention in Japan were discussed.

**Key words:** suicide ideation, suicide behavior, university students, protective and risk factors of suicide

(Journal of Health Science, Kyushu University, 39, 49-56, 2017)

### Introduction

Suicidal behavior is a major health concern in many countries, developed and developing alike. According to the World Health Organization, worldwide approximately over 800,000 people die from suicide every year which led to millions of people affected and experience suicide bereavement every year. Among 15-29 year olds, suicide was the second leading cause of death globally<sup>1)</sup>.

In Japan, suicide was the leading cause of death among 15–24 year olds with a rate of 7.3 deaths by suicide per 100,000 for youth aged 15-19, and 19.7 per 100,000 for youth aged 20-24<sup>2)</sup>. Meanwhile in United States of America (USA), the rate of suicide

among adolescents and young adults aged between 15-24 years was 11.6 deaths per 100,000 US Americans in 2014<sup>3)</sup>. Suicide attempts and suicide ideation are much more prevalent than completed suicides. In the USA, it has been estimated that there are as many as 200-400 attempts for every suicide completion<sup>4)</sup>.

Suicide among young people is a major public health concern and an important psychiatric condition with significant implications for mental health service planning. Thus, prevention of suicide is one of the most important mental health issues in youth. In the past, prevention of suicide efforts have been focused on identifying and reducing risk factors, but in recent

---

1) Department of Health and Behavioral Sciences, Graduate School of Human-Environment Studies, Kyushu University, Japan.

2) Department of Psychiatry, Kulliyah of Medicine, International Islamic University Malaysia, Pahang, Malaysia.

3) Faculty of Arts and Science, Kyushu University, Japan.

\*Correspondence to: Faculty of Arts and Science, Kyushu University, 6-1 Kasuga-koen, Kasuga City, 816-8580, Japan.

Tel & Fax: +81-92-583-7853, E-mail: shuzo@ihs.kyushu-u.ac.jp

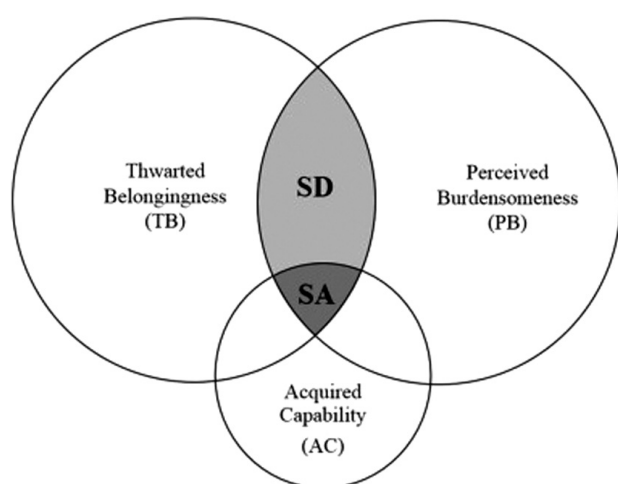
years, the focus has shifted towards identifying protective factors of suicide and promoting resilience and coping. A detailed review listed many resilience factors<sup>5)</sup>, suggesting that clinicians should screen and target them to prevent and reduce suicide risk.

### The suicidal continuum

Suicide should be regarded as the end result of a long process. The term suicide encompasses a broad spectrum of suicidality, ranging from wish to die, suicidal ideation, suicidal plans, suicide attempts, and suicide death<sup>6)</sup>.

Identification of modifiable psychological factors associated with the early stages of suicidality among youth, will benefit intervention to prevent those at risk from progressing along the continuum of suicidality. The objectives of this review was to explore protective and risk psychological factors of suicidal ideation and behaviors. It also aimed to explore the influence of culture on perception of suicide among Japanese, and the current initiatives for suicide prevention in Japan.

### The Interpersonal Psychological Theory of Suicide



**Figure 1. The Interpersonal Psychological Theory of Suicide.**

**Note:** SD = suicide desire, SA = suicide attempt<sup>7)</sup>

Interpersonal Psychological Theory of Suicide (IPTS) is developed recently to provide a theoretical model of suicidal behavior<sup>8)9)</sup>. The IPTS consolidates a broad range of suicide risk factors, and from these,

predicts who will develop desire for suicide (i.e., suicide ideation), and who will go on to attempt. The theory provides a better understanding on how certain suicide risk factors interact, and where prevention and intervention efforts may be best focused<sup>7)</sup>.

According to the IPTS, suicidal desire is caused by the simultaneous presence of two causal risk factors: (1) thwarted belongingness and (2) perceived burdensomeness, and hopelessness (i.e., “this will never change”)<sup>8)9)</sup>. It has been hypothesized that experiencing either perceived burdensomeness or thwarted belongingness alone will elicit passive suicidal ideation; however it is their interaction, coupled with the view that they are stable and unchanging (i.e., hopelessness) that will cause active suicidal desire<sup>7)</sup>.

Thwarted belongingness is defined as the experience that one is alienated from friends, family, or other valued social circles. It comprises of two components, loneliness (i.e., “I feel disconnected from others”) and the absence of reciprocal care (i.e., “I have no one to turn to and I don't support others”). It is a dynamic cognitive-affective state that is influenced by inter and intrapersonal factors such as experiencing family conflict, living alone, possessing few social supports, and being prone to interpret others' behavior as rejection<sup>9)</sup>.

Perceived burdensomeness is defined as the view that one's existence is a burden on friends, family members, and/or society, and comprises of two components, self-hate (i.e., “I hate myself”) and feelings of liability (i.e., “my death is worth more than my life to others”). Similarly like thwarted belongingness, perceived burdensomeness is viewed as a dynamic cognitive affect state, where risk factors such as homelessness, unemployment, physical illness, and feelings of low-self-esteem and being unwanted are said to contribute to its development<sup>9)</sup>.

The IPTS predicted that the development from active suicidal desire to suicidal intent could only result through the presence of an additional third construct: (3) acquired capability. Acquired capability is defined as one's ability to overcome the inherent drive for self-preservation and engage in lethal self-

injury<sup>8)</sup>. This is possible due to a lowered fear of death resulting from repeated exposure and habituation to physically painful and/or fear-inducing experiences, and an elevated tolerance of physical pain. It is seen as a continuous construct that accumulates over time, with risk factors such as family history of suicide and previous suicide attempt contributing to its development<sup>9)</sup>.

Thus, according to the IPTS; individuals who have high levels of all three constructs, thwarted belongingness, perceived burdensomeness, and acquired capability, are predicted to be at most risk for suicidal behavior, as they possess both the desire for and capability to attempt suicide. IPTS model is illustrated in Figure 1<sup>7)</sup>.

### **Suicidal ideation and behavior among university students**

Among young adults, most studies on suicidality were conducted on university students. In a study among students in three universities in United States (US), it was reported that suicidal ideation was found to be just under 10%, and that college students with greater depression severity, higher levels of hopelessness, and poorer quality of life were more likely to endorse suicidal ideation<sup>10)</sup>. In another study among undergraduate students in the US, 11.1% (n=81) were found to endorse current (past 4 weeks) suicidal ideation and 16.5% had a lifetime suicide attempt or self-injurious episode<sup>11)</sup>.

In Japan, Supartini et al.<sup>12)</sup> reported that the prevalence of university freshmen who endorsed suicidal ideation was 5.8% (n=115). In yet another study in a Japanese university, 55.2% (n=106) were reported to have experienced suicidal ideation at least once in their lifetime whilst 44.8% (n=86) had never experienced suicidal ideation<sup>13)</sup>. It was reported that the high suicidal rate among young people in Japan were contributed by the highly stressful university entrance examination that high school students had to go through before entering a university of their choice<sup>14)</sup>.

Although a prospective study in Japan indicated that high educational levels were associated with a

reduced risk of suicide, especially in men (male university graduates or those with higher education had lower risk of suicide than male junior high school graduates)<sup>15)</sup>, the relatively high prevalence of suicide ideation in university students demonstrated in previous studies signifies the need for early interventions of suicide to be conducted in universities to prevent students who endorsed suicidal ideation from progressing along the suicidal continuum.

### **Protective and risk factors of suicidality**

A wide range of factors have been associated with suicide ideation and behavior in the literature. These include poor self-rated health<sup>16)17)</sup>, decreased positive thoughts about the future among undergraduates<sup>18)</sup>, and low sleep quality among freshmen<sup>12)</sup>. Depression has also been associated with a high percentage of suicides<sup>19)</sup>. Also in Japan, depression was found to be the leading cause of suicide, after financial problems in 2007-2009<sup>2)</sup>. Suicidal depression of caregivers were also associated with suicidal ideation in their adolescent children signifying that prevention of suicide should also consider the mental status of caregivers involved<sup>20)</sup>.

This review focuses on several modifiable psychological factors that have been evidenced to contribute towards both the precipitation and protection from suicidal ideation among the youth, especially among university students.

### **Meaningful relationship with parents and friends**

Referring to the Interpersonal Psychological Theory of Suicide, it was hypothesized that thwarted belongingness (the experience that one is alienated from friends, family, or other valued social circles) alone could elicit passive suicidal ideation<sup>7)</sup>. Studies among adolescents and university students were reviewed to explore this hypothesis.

In a study on 26,742 undergraduate and graduate university students in the US, it was demonstrated that social connectedness is a protective factor for suicide ideation and behaviors among the student sample<sup>21)</sup>. The study defined connectedness as the degree to

which an individual feels he or she is meaningfully connected to others and belongs with other individuals, groups or institutions such as schools. It is highly likely that for students, the persons they mostly connect with are their parents and friends, therefore to some extent having good connections with parents and friends are very important.

On the other hand, studies have shown that dissociated relationship with parents was an early risk factor for suicide with significantly more adolescents who characterized their parental relationship as dissociated stated that they 'wanted to die', compared with both the entire study group and the subgroup with close parental relationships<sup>22)</sup>, whilst suicidal adolescents showed less close relationships to their parents<sup>23)</sup>. Another study suggested that poor communication with parents is a risk factor for future suicide attempts<sup>24)</sup>.

Studies have also demonstrated the significance of having good relationships with friends with lowered risk of suicide. Among Japanese adults, it was found that by having four or more friends, there was a lower risk of suicide<sup>25)</sup>. Loneliness was found to moderate the relationship between peer relationship and suicide ideation and attempt<sup>26)</sup>, signifying meaningful relationships with friends is important to lower the risk of suicide ideation and attempt.

Indeed, interpersonal skills are significant for university students, as interpersonal difficulties have been found to play a pivotal role in the development of suicidal behavior in late adolescence and early adulthood<sup>27)</sup>. Social connectedness has been suggested to be included in future suicide prevention resilience models for it has been found to be a protective factor for suicidal thoughts and behaviors of university students<sup>21)</sup>. The current review on previous findings therefore supported the hypothesis of the IPTS that thwarted belongingness could elicit passive suicidal ideation.

### Sense of Coherence

Threats to university students' sense of having a coherent self in relationship to the world have been postulated to play an important role in the

development of suicidal thoughts and behaviors<sup>21)</sup>. The Sense of Coherence (SOC) scale developed by Antonovsky<sup>28)</sup>, assesses the way individuals perceive life and its challenges that lead to increased coping and resiliency from stress. It is a global orientation that reflects a person's coherent understanding of the world which comprises of three components: the ability for people to understand what happens around them (comprehensibility), to what extent they were able to manage the situation on their own or through significant others in their social network (manageability), and the ability to find meaning in the situation (meaningfulness).

A significant number of students began their university experience with preexisting vulnerabilities that have the potential to intersect with stressful life events to trigger or accelerate pathogenic processes. Findings revealed that students with low SOC were at higher risks to enter into suicidality because SOC was a protective quality that could decrease the risk of students to enter the continuum of suicidality<sup>21)</sup>.

The Sense of Coherence (SOC) has also been demonstrated to buffer the associations among coping style, suicide ideation, self-reported suicide attempts, and self-reported likelihood of future suicidal behavior among university students. The findings were contended to be due to the high meaningfulness attributed to events and stressors viewed by students with high SOC<sup>29)</sup>.

Previous studies have also showed associations between low SOC with increased risk of suicidal ideation<sup>30)31)32)</sup> and SOC's ability to predict suicidal ideation and future attempts<sup>33)</sup>. SOC also has the potential to be a marker of risk for high suicidality in the aftermath of a suicide attempt<sup>34)</sup>.

Despite the accumulating studies on SOC and suicidality, most of the studies on SOC in Japanese youth have not been targeted at understanding the suicidal problem. Instead, many studies on SOC among university students in Japan have focused on health<sup>35)36)</sup>, and depression<sup>37)38)</sup>. Therefore currently, there is limited data on SOC and suicidality among Japanese students. Since SOC has been shown to have protective properties capable of moderating the

effects of vulnerability and distress on stimulating suicide, SOC was suggested to be included in future suicide prevention resilience models<sup>21)</sup>.

### **Perceived overweight and actual weight**

In recent years, obesity among youth has become a serious public health issue and studies have reported a significant association of body mass index (BMI) with suicidal ideation and suicide attempts<sup>39)40)</sup>. However, recent studies showed that perceived overweight has a larger role than actual body weight or BMI does in suicidal ideation and attempts<sup>4)40)41)</sup> in both cross-sectional studies<sup>4)40)</sup> as well as longitudinal studies<sup>41)</sup>.

This suggests that both actual as well as perceived overweight are risk factors of suicide ideation and attempts. This signifies that efforts at preventing youth suicides should focus on educating youths and fostering healthy attitudes regarding weight. Interventions that identify and assist these youths and educate them regarding a healthy body image will contribute towards lowering suicide attempts<sup>4)</sup>.

### **Cultural influence on suicide in Japan**

Understanding cultural factors is paramount in understanding the suicide epidemic in a certain country and culture. In Japanese society, the group takes precedent as the most important social unit over the individual. Therefore maintaining group harmony is considered more of a priority even at the expense of personal freedom, and restoring one's social standing is seen as a responsibility to family and friends as well as to oneself. Historically, the most extreme form of restoring social order has been suicide, the ultimate form of self-sacrifice, which is seen as a morally virtuous act because it is the logical outcome of a desire to fulfill one's duty to others<sup>42)</sup>.

In relation to this, the concept of *kakugo no jisatsu*, which conceived suicide as a rational act and a form of self-determination has been used by many Japanese and is even used by psychiatrists to understand some cases of suicide. The media and literature were contended to play a huge role in romanticizing suicide,

which contributed towards permissive attitudes towards suicide even among modern Japanese<sup>43)</sup>.

Indeed, a number of studies have reported the prevalence of such permissive attitudes towards suicide among young Japanese. For example, Japanese college students were found to have higher levels of accepting suicide as a natural way of to end one's life compared to their counterparts in the US, the reasons of which the authors attributed to the cultural ideal of *kakugo no jisatsu* and glamorization of suicide in the media<sup>44)</sup>.

### **Suicide prevention efforts in Japan**

Following the number of suicidal death which exceeded thirty thousand for many years in Japan, the Japanese Cabinet Office released in 2006 the 'General Principles of Suicide Prevention Policy'. A national fund was launched to help local authorities to implement suicide-prevention programs. A study reported on improved suicide-prevention systems in April 2013 among many local authorities which adopted the systems and initiatives<sup>45)</sup>. In the year 2009, government policies implemented suicide prevention policies which included expansion of unemployment insurance, tighter regulations of temporal employment, and improving safety nets for economically disadvantaged families<sup>43)</sup>. Additionally, a suicide prevention center at the National Institute of Mental Health was established in October 2006 to support the comprehensive suicide prevention policy of the Japanese government<sup>46)</sup>.

Based on the most recent statistics, the suicide rate in Japan dropped below 30,000 people per year in 2012 for the first time in over a decade and has been decreasing since. Although there is limited data to determine the role of the suicide prevention efforts of the government and society as a whole in decreasing the suicide rate, it seems likely that continuing efforts on this prevention work and expanding them, especially in regards to high-risk groups is likely to have a beneficial effect<sup>43)</sup>.

### **Conclusion**

The current review's main aim was to review the

protective and risk factors of suicidal ideation and behaviors. Findings suggested that meaningful connection with parents and friends and SOC have been found to be protective against suicidal ideation and behaviors whereas actual and perceived overweight were found to increase the risk of suicidal ideation. Findings on studies reporting meaningful connection with parents and friends supported the IPTS theory that thwarted belongingness could elicit passive suicidal ideation.

Results also suggested the Japanese culture views suicide as a rational act, a form of self-determination and responsibility which were glamorized by the media and the literature. Therefore, cultural influence such as these have to be taken into consideration when trying to understand the causes and contributions of suicide in different cultures. Various efforts have been made by the Japanese government and related agencies to combat suicide in Japan, however there were limited data available on suicide preventive interventions in universities, despite evidence that school-based awareness programs have shown to be effective in reducing suicide ideation and attempts<sup>47)</sup>. It has been reported that school counselling and health services are generally available at universities in Japan for students in need of mental health support, but the preventive mental health approaches are few and not built into the university curriculum<sup>48)</sup>. It is thus recommended that future reviews be made to report on suicide intervention efforts for university students worldwide which could inform future suicide prevention initiatives in Japan.

## References

- 1) World Health Organization (2017): Suicide Data. [http://www.who.int/mental\\_health/prevention/suicide/suicideprevent/en/](http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/).
- 2) Vital, Health and Social Statistics Office, Japanese Ministry of Health, Labor and Welfare (2016): Vital Statistics of Japan. <http://www.e-stat.go.jp/SG1/estat/ListE.do?lid=000001137965>
- 3) American Foundation for Suicide Prevention (2016): Suicide Rates by Age: American Foundation for Suicide Prevention, Suicide Statistics. <https://afsp.org/about-suicide/suicide-statistics/>
- 4) Dave D, Rashad I (2009): Overweight status, self-perception, and suicidal behaviors among adolescents. *Social Science & Medicine*, 68: 1685–1691.
- 5) Johnson J, Wood AM, Gooding P, Taylor PJ, Tarrrier N (2011): Resilience to suicidality: the buffering hypothesis. *Clinical Psychology Review*, 31(4): 563-591.
- 6) Bakhiyi CL, Calati R, Guillaume S, Courtet P (2016): Do reasons for living protect against suicidal thoughts and behaviors? A systematic review of the literature. *Journal of Psychiatric Research*, 77: 92-108.
- 7) Ma J, Batterham PJ, Calear AL, Han J (2016): A systematic review of the predictions of the Interpersonal-Psychological Theory of Suicidal Behavior. 46:34-45.
- 8) Joiner TE (2005): Why people die by suicide. Cambridge: Harvard University Press.
- 9) Van Orden KA, Witte TK, Cukrowicz KC, Braithwaite SR, Selby EA, Joiner TE (2010): The interpersonal theory of suicide. *Psychological Review*, 117 (2): 575–600.
- 10) Farabaugh A, Bitran S, Nyer M, Holt D J, Pedrelli P, Shyu I, ...Fava M. (2012): Depression and Suicidal Ideation in College Students. *Psychopathology*, 45: 228-234.
- 11) Garlow SJ, Rosenberg J, Moore JD, Haas AP, Koestner B, Hendin H, ...Nemeroff CB (2008): Depression, desperation, and suicidal ideation in college students: results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depression and Anxiety*, 25:482-488.
- 12) Supartini A, Honda T, Basri NA, Haeuchi Y, Chen S, Ichimiya A, ...Kumagai S (2016): The impact of sleep timing, sleep duration, and sleep quality on depressive symptoms and suicidal ideation amongst Japanese freshmen: The EQU SITE Study. *Sleep Disorders*, 2016:10 pages.

- 13) Sugioka M, Wakabayashi S (2012): A basic study on the psycho-education of suicide prevention in university. *Bulletin of the Hiroshima Bunka Gakuen University, Faculty of Arts and Sciences*, (2): 9-16.
- 14) Iga M (1981): Suicide of Japanese youth. *Suicide and Life-Threatening Behavior*, 11:17-30.
- 15) Kimura T, Iso H, Honjo K, Ikehara S, Sawada N, Iwasaki M,...Tsugane S (2016): Educational levels and risk of suicide in Japan: the Japan Public Health Center Study (JPHC) Cohort 1. *Journal of Epidemiology*, 26(6):315-321.
- 16) Cheung T, Lee PH, Yip PSF (2016): Suicidality among Hong Kong nurses: prevalence and correlates. *Journal of Advanced Nursing*, 72: 836-848.
- 17) Ladwig KH, Klupsch D, Meisinger C, Baumert J, Erazo N, Schneider A,...KORA Investigators (2010): Gender differences in risk assessment of death wishes and suicidal ideation in the community: results from the KORA Augsburg F3 study with 3079 men and women, 35 to 84 years of age. *Journal of Nervous and Mental Disease*, 198:52-58.
- 18) Ballard ED, Patel AB, Ward M, Lamis DA (2015): Future disposition and suicidal ideation: mediation by depressive symptom clusters. *Journal of Affective Disorders*, 170: 1-6.
- 19) John MJ, Apter A, Bertolote J (2005): Suicide Prevention Strategies: A Systematic Review, *The Journal of the American Medical Association*, 294:2064-2074.
- 20) Kawabe K, Horiuchi F, Ochi M, Oka Y, Ueno S (2016): Suicidal ideation in adolescents and their caregivers: a cross sectional survey in Japan. *BMC Psychiatry*, 16:231.
- 21) Drum DJ, Brownson C, Hess EA, Denmark AB, Talley AE (2016): College students' sense of coherence and connectedness as predictors of suicidal thoughts and behaviors. *Archives of Suicide Research*, 0:1-16.
- 22) Hedeland RL, Teilmann G, Jørgensen MH, Thiesen LR, Andersen J (2016): Study-Associated Pediatric Departments. Risk factors and characteristics of suicide attempts among 381 suicidal adolescents. *Acta Paediatrica*, 105: 1231-1238.
- 23) Kandel DB, Raveis VH, Davies M (1991): Suicidal Ideation in Adolescence: Depression, Substance Use, and Other Risk Factors. *Journal of Youth and Adolescence*, 20: 289- 307.
- 24) Gould MS, Fisher P, Parides M, Flory M, Shaffer D (1996): Psychosocial risk factors of child and adolescent completed suicide. *Archives of General Psychiatry*, 53:1155-1162.
- 25) Poudel-Tandukar K, Nanri A, Mizoue T, Matsushita Y, Takahashi Y, Noda M,...Tsugane S (2011): Social support and suicide in Japanese men and women- The Japan Public Health Center (JPHC)- based prospective study. *Journal of Psychiatric Research*, 45: 1545-1550.
- 26) Cui S, Cheng Y, Xu Z, Chen D, Wang Y (2010): Peer relationships and suicide ideation and attempts among Chinese adolescents. *Child Care Health and Development Journal*, 37: 692-702.
- 27) Johnson JG, Cohen P, Gould MS, Kasen S, Brown J, Brook JS (2002): Childhood adversities, interpersonal difficulties, and risk for suicide attempts during late adolescents and early adulthood. *Archives of General Psychiatry*, 59: 741-749.
- 28) Antonovsky A (1987): *Unraveling the Mystery of Health, How People Manage Stress and Stay Well*. San Francisco: Jossey Bass.
- 29) Edwards MJ, Holden RR (2001): Coping, Meaning in Life, and Suicidal Manifestations: Examining Gender Differences. *Journal of Clinical Psychology*, 57: 1517-1534.
- 30) Mehlum L (1998): Suicidal ideation and sense of coherence in male conscripts. *Acta Psychiatrica Scandinavica*, 98: 487-492.
- 31) Giotakos O (2003): Suicidal ideation, substance use, and sense of coherence in Greek male conscripts. *Military Medicine*, 168: 447-450.
- 32) Sjöström N (2009): Sleep, sense of coherence and suicidality in suicide attempters



- [dissertation]. Gothenburg: University of Gothenburg.
- 33) Petrie K, Brook R (1992): Sense of coherence, self-esteem, depression and hopelessness as correlates of reattempting suicide. *British Journal of Clinical Psychology*, 31 (Pt 3): 293-300.
- 34) Sjöström N, Hetta J, Waern M (2012): Sense of coherence and suicidality in suicide attempters: a prospective study. *Journal of Psychiatric and Mental Health Nursing*, 19: 62-69.
- 35) Togari T, Yamazaki Y, Takayama TS, Yamaki CK, Nakayama K (2008): Follow-up study on the effects of sense of coherence on well-being after two years in Japanese university undergraduate students. *Personality and Individual Differences*, 44: 1335-1347.
- 36) Mikami A, Matsushita M, Adachi H, Suganuma N, Koyama A, Ichimi N,...Sugita Y (2013): Sense of coherence, health problems and presenteeism in Japanese university students. *Asian Journal of Psychiatry*, 6: 369-372.
- 37) Sakano J, Yajima Y (2005): Factor structure of the SOC scale 13-item version in Japanese university students. *Nihon Koshu Eisei Zasshi*, 52: 34-45 (In Japanese).
- 38) Koyama A, Matsushita M, Ushijima H, Jono T, Ikeda M (2014): Association between depression, examination-related stressors and sense of coherence: the ronin-sei study. *Psychiatry and Clinical Neurosciences*, 68: 441-447.
- 39) Kinoshita, K., Kinoshita, Y., Shimodera, S., Nishida, A., Inoue, K., Watanabe, N,...Okazaki, Y (2012). Not only body weight perception but also body mass index is relevant to suicidal ideation and self-harming behavior in Japanese adolescents. *Journal of Nervous and Mental Disease*, 200(4), 305-309.
- 40) Swahn MH, Reynolds MR, Tice M, Miranda-Pierangeli MC, Jones CR, Jones IR (2009): Perceived overweight, BMI, and risk for suicide attempts: findings from the 2007 Youth Risk Behavior Survey. *Journal of Adolescent Health*, 4: 292-295.
- 41) Lee CG, Seo DC (2013): Trajectory of suicidal ideation in relation to perceived overweight from adolescence to young adulthood in a representative United States sample. *Journal of Adolescent Health*, 53:712-716.
- 42) Young J (2002): Morals, suicide, and psychiatry: a view from Japan. *Bioethics*, 16(5): 412-424.
- 43) Russell R, Metraux D, Tohen M (2016): Cultural influences on suicide in Japan. *Psychiatry and Clinical Neurosciences*, 71(1): 1-5.
- 44) Saito M, Klibert J, Langhinrichsen-Rohling J (2013): Suicide proneness in American and Japanese college students: associations with suicide acceptability and emotional expressivity. *Death Studies*, 37:848-865.
- 45) Nakanishi M, Yamauchi T, Takeshima T (2015): National strategy for suicide prevention in Japan: impact of a national fund on progress of developing systems for suicide prevention and implementing initiatives among local authorities. *Psychiatry and Clinical Neurosciences*, 69(1): 55-64.
- 46) Kaga M, Takeshima T, Matsumoto T (2009): Suicide and its prevention in Japan. *Legal Medicine*, 11 (1): S18-S21.
- 47) Zalsman G, Hawton K, Wasserman D, van Heeringen K, Arensman E, Sarchiapone M,...Zohar J (2016): Suicide prevention strategies revisited: 10 year systematic review. *Lancet Psychiatry*, 3(7): 646-659.
- 48) Ando M (2011): An intervention program focused on self-understanding and interpersonal interactions to prevent psychosocial distress among Japanese university students. *Journal of Adolescence*, 34(5):929-940.