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ORIGINAL ARTICLE

At-risk internet addiction and related factors among senior high school teachers in Japan based on a Nationwide survey

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Abstract

Background: Internet addiction (IA) has been drawing attention to mental health. However, few reports have been found on the related factors of at-risk IA among regular workers by a nationwide survey. The study aimed to evaluate the characteristics of at-risk IA and identify related factors among senior high school teachers in Japan.

Methods: This survey was a cross-sectional survey of high schools across Japan in 2017. There were 3189 teachers (2088 males and 1098 female) who participated in this survey. The questionnaire asked about their devices, both the time and the activities of using their internet, and sociodemographic factors. IA was measured by the internet addiction test (IAT) by which 40–79 points were classified as at-risk IA, and more as IA. We compared the related factors of at-risk IA and non-IA using descriptive analysis and multivariable regression analysis.

Results: The rates of IA and at-risk IA were 0.09% ($n=3$) and 6.91% ($n=220$), respectively. At-risk IA was positively associated with activities on the internet for gaming, entertainment, net-surfing, and younger ages. In addition, the at-risk IA group had a longer time spent on the internet than the non-IA group.

Conclusions: Around 7% of high school teachers are at-risk IA in this survey, though they have regular work. Our results suggest that at-risk IA may be reinforced not only by the active internet use such as gaming, but also by purposeless behaviors, such as net-surfing. Managing time on the internet may support preventing at-risk IA among senior high school teachers.

KEYWORDS
epidemiology of mental disorders, internet addiction, Nationwide survey, preventive medicine, teachers

1 | INTRODUCTION

With the rapid spread of the internet, internet addiction (IA) and internet-related diseases are becoming a health problem in recent years, especially in mental health. IA has been found uncontrollable and damaging with the excessive use of the internet[1] and has been reported as one of the impulse-control disorders.[2]

A growing number of professionals are using the internet in their work, even if they are not directly involved in information science and technology or Information and Communications Technology (ICT). For example, the Ministry of Education, Culture, Sports, Science, and Technology-Japan (MEXT) has promoted ICT in schools and improved the ICT environment at school.[3] This policy has a purpose not only to educate teachers about how to create more attractive lessons and give them more knowledge for ICT utilization among students, but also to reduce the work burden among teachers with effective ICT. Teaching is one of the professions where the internet is used excessively at work, so it will be important to investigate the prevalence of IA and internet usage.

Young[4] developed the internet addiction test (IAT) as a scale for measuring the severity of IA. Then it was argued that the higher the IAT score, the greater the degree of IA and the greater the damage caused by internet use. In the IAT, the severity of IA is assessed in some stages, and which who have low IAT scores are average online users and can self-control their internet use. On the other hand, those with middle and high IAT scores are already experiencing life problems (e.g., a lack of sleep, a decline in efficiency for work, anxiety for lack of internet access) caused by internet use and proposed to consider the negative impact on their lives. Compared to persons who measured the middle IAT scores, high IAT scores have shown a wide several varieties of deleterious effects as IA in their lives by internet use. Tsumura, et al. (2018) also indicated that many previous studies classified the severity of IA using preliminary cutoff points of the IA scale. Following Young's idea, they defined each IA level: non-IA as having complete control over internet use, at-risk IA as having frequent life problems because of excessive internet use, and IA as having significant life problems.[5] As a result, this survey showed that internet users with at-risk IA were approximately 5% of high school teachers in some parts of Japan, although there were almost no IA exists. In addition, previous studies dealing with IA and internet-related health issues have found that individuals with at-risk IA develop more severe health problems than those with non-IA and less severe health problems than those with IA.[6,7]

However, while large-scale surveys have been conducted with children and adolescents, few surveys on a national scale are among active workers. Furthermore, Tsumura's survey was also limited to rural areas in Japan. Since at-risk IA is also associated with mental health problems, epidemiological surveys with large-scale and national-wide samples for the worker have profound significance in preventing IA and internet-related mental diseases.

The aims of this survey were to identify the characteristics of the at-risk IA and related factors by comparing the at-risk IA group with the non-IA group among high school teachers in Japan through a nationwide survey.

2 | METHODS

2.1 | Participants and procedures

A nationwide, cross-sectional survey was conducted using an anonymous questionnaire. We randomly chose 124 high schools from the Japanese National School Directory and 9202 school personnel, who all belonged to the school in this survey. We sent the study information and questionnaires to the selected high schools and asked all teachers to participate in the study in the schools whose administrators consented to participation in August 2017. They were informed that the survey was voluntary, and confidentiality was ensured. Each schoolteacher sealed their completed, anonymous questionnaire in the envelope, and administrators collected and returned them to us unopened. A completed questionnaire was considered evidence of consent to the study. Of 9202 school personnel, 4181 responses at 77 high schools consented to participate in this survey (individual response rate: 45.4%). Some data were excluded from analysis due to responses made by 614 non-teachers such as school officers, and due to missing 381 responses in major questionnaires such as socio-demographic information and the IAT. Finally, 3186 eligible teachers were included in the analysis (eligible response rate: 34.6%; 2088 males, 1098 females). All the procedures of this study were reviewed and approved by the Institutional Review Board of the Faculty of Medicine, Shimane University (No. 1863, approved on 8th July, 2015).

2.2 | Measures

The questionnaires consisted of three parts. First, participants were asked about sociodemographic, such as gender, age, position at their school, and duration of service. Next, they were required to answer questions about their internet usage, for example, average time spent on the internet per day both weekdays and weekends for the last month, their activities on the internet, and the devices used for internet access. Finally, their at-risk IA was assessed using the IAT.[4] The IAT was the most used measure in previous studies on IA. The IAT has been already translated into Japanese,[8,9] and adequate reliability and validity have been demonstrated for the scale.[10–12] The IAT is composed of 20 items. Each item was rated on a 5-point Likert scale from "Rarely (1)" to "Always (5)." The total score on the IAT ranges from 20 to 100. The total score of the IAT classified IA as follows: non-IA (total score <40), at-risk IA (total score 40–79), and IA (total score ≥ 80).[13,14] Since some surveys of Japanese populations have used these criteria to categorize the degree of IA,[5,15,16] this study also adopted the same criteria for analysis. Acceptable internal consistency was obtained in the sample (Cronbach's $\alpha = 0.77$). Only three teachers had an IAT score of more than 80 in this survey and

were categorized as IA. However, as the purpose of this study is to determine the related factors of at-risk IA, those who were labeled IA were excluded from the analysis.

2.3 | Statistical analysis

We performed a descriptive analysis of all the study variables. We also compared sociodemographic variables, including lengths of teaching careers and internet usage between the at-risk IA and non-IA groups using the $\chi 2$ test, and Welch's *t*-test or Wilcoxon–Mann–Whitney test. Furthermore, multivariate logistic regression analysis was used to identify the related factors that are associated with at-risk IA. The explanatory variables theoretically relevant to IA were entered simultaneously into the model. The variables on time spent using the internet were excluded from this model because they were among the confounding factors. The data file was exported into Stata 13 (Stata Corp LLC, College Station, TX) for analysis. All probability values were two-tailed and at a 5% level of significance.

3 | RESULTS

A total of 3189 high school teachers completed the questionnaire. The rates of IA, at-risk IA, and non-IA among high school teachers were 0.09% ($n=3$), 6.90% ($n=220$), and 93.0% ($n=2296$), respectively. We excluded IA data from the analysis and compared the at-risk IA group with the non-IA group. We showed sociodemographic characteristics between the at-risk IA group and non-IA group in Table 1. The mean IAT score was 47.25 (standard deviation [SD] = 6.41) in the at-risk IA group and 25.54 (SD = 4.85) in the non-IA group. The mean IAT score was 47.25 (standard deviation [SD] = 6.41) in the at-risk IA group and 25.54 (SD = 4.85) in the non-IA group. Furthermore, teachers in the at-risk IA group were younger and had shorter lengths of teaching careers than those in the other groups. Responses in the at-risk IA group have more part-time teachers and belonged more to private schools, both with statistical significance. The at-risk IA group had significantly more internet-connected devices (t (247.87) = −4.19, $p<0.001$), with especially higher rates of owning smartphones and tablets compared to the non-IA group. Internet usages for gaming, entertainment, and net-surfing were more by the at-risk IA group than the non-IA group. In addition, the at-risk IA group spent a long time on the internet, regardless of the purpose of use on any day of the week than the non-IA group (weekday use for work: $Z=-7.229$, $p<0.001$, weekday use for personal use: $Z=-14.878$, $p<0.001$, weekends use for work: $Z=-6.262$, $p<0.001$, weekends use for personal use: $Z=-16.021$, $p<0.001$, Table 2).

The unadjusted and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) of the risk factors of IA are shown in Table 3. At-risk IA was positively associated with activities on the internet for gaming, entertainment, and net-surfing (gaming: adjusted OR = 1.84, 95%CI, 1.33–2.54; entertainment: adjusted OR = 1.76, 95%CI, 1.13–2.75; net-surfing: adjusted OR = 2.76, 95%CI, 2.03–3.76), as well as younger ages (age: 30–39: adjusted OR = 1.89, 95%CI, 1.09–3.30; under 29: adjusted OR = 2.36, 95%CI, 1.20–4.64). Activities for the use of specific content, such as gaming and entertainment, were related to at-risk IA. On the other hand, purposeless behavior, such as net-surfing, was also strongly related to at-risk IA. Other factors such as sex, devices for internet access, and school types did not show significant relationships with at-risk IA.

4 | DISCUSSION

Our study clarified the characteristics of at-risk IA among senior high school teachers, who were representative of regular workers, in Japan based on a nationwide survey. The results showed that around 7% of senior high school teachers all over Japan are at-risk of IA. In addition, teachers with at-risk IA were younger and spent a long time on the internet for both work and personal use. At-risk IA was positively associated with activities on the internet for gaming, entertainment, and net-surfing. It suggests that managing time on the internet may help prevent at-risk IA among teachers.

The present results indicated that time spent on the internet is strongly related to at-risk IA among workers. This trend was observed on both weekdays and weekends. Furthermore, there showed a significant difference in time spent on the internet between the at-risk IA and non-IA in terms of whether they used the internet for work or personal use. Teachers with at-risk IA tended to actively use the internet in their daily work, and around 10% of them used the internet for more than 5 h per day for personal use on weekends. A survey of internet users has reported neuroticism, life impairment, and internet usage time as the three major predictors for IA.[17] Although the participants in this study were active workers who did not have mental illnesses that interfered with their work or life, their internet use time was closely related to their at-risk IA. This result agreed with the results of a survey conducted in Japan among workers.[5,16] At-risk IA had a positive association with the time of internet use, whereas our findings indicated at-risk IA has not shown an association with some activities on the internet for work. Compared to the non-IA group, a higher percentage of the at-risk IA group used the internet for some activities on the internet as communication for work and information gathering for work, but these activities have little relation to at-risk IA in the logistic regression analysis. Previous studies have reported that activities for work using the internet are not necessarily associated with IA compared to that activity for personal use.[16]

We also found that at-risk IA was positively associated with activities on the internet, such as gaming, entertainment, and net-surfing. Many previous studies have reported that playing a game on the internet constituted one of the related factors for problematic internet use.[16,18] The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) has proposed the diagnostic criteria for "Internet gaming disorder (IGD)." According to the DSM-5-TR, "the essential feature of IGD is a pattern of excessive

TABLE 1 Sociodemographic characteristics of groups.

Variable	At-risk IA (IAT score 40–79) ($n=220$)	Non-IA (IAT score <40) ($n=2966$)	Test statistic	p value
IAT score, Mean (SD)	47.25 (6.41)	25.54 (4.85)	t (237.99) = −49.24	<0.001
Sex, n (%)			χ^2 (1) = 1.01	0.316
Male	151 (68.64)	1937 (65.31)		
Female	69 (31.36)	1029 (34.69)		
Age, years, n (%)			Wilcoxon-Mann–Whitney Test, $Z=9.83$	<0.001
≤29	79 (35.91)	404 (13.62)		
30–39	66 (30.00)	563 (18.98)		
40–49	34 (15.45)	723 (24.38)		
50–59	33 (15.00)	963 (32.47)		
≥60	8 (3.64)	313 (10.55)		
Type of school, n (%)			χ^2 (1) = 9.06	0.003
National and Public School	121 (55.00)	1930 (65.07)		
Private School	99 (45.00)	1036 (34.93)		
Number of students, n (%)			Wilcoxon-Mann–Whitney Test, $Z=-0.07$	0.943
0–299	7 (3.18)	80 (2.70)		
300–599	45 (20.45)	619 (20.87)		
600–899	82 (37.27)	1101 (37.12)		
900–1199	62 (28.18)	886 (29.87)		
≥1200	24 (10.91)	280 (9.44)		
Position at school, n (%)			χ^2 (4) = 10.10	0.039
Administrator	5 (2.27)	98 (3.30)		
Senior teacher	7 (3.18)	85 (2.87)		
Teacher	159 (72.27)	2277 (76.77)		
Full-time lecturer	27 (12.27)	200 (6.74)		
Part-time lecturer	22 (10.00)	306 (10.32)		
Duration of service, years, n (%)			Wilcoxon-Mann–Whitney Test, $Z=9.44$	<0.001
≤4	78 (35.45)	409 (13.79)		
5–9	44 (20.00)	383 (12.91)		
10–19	44 (20.00)	618 (20.84)		
20–29	31 (14.09)	744 (25.08)		
≥30	23 (10.45)	812 (27.38)		
Activity on internet, n (%)				
No internet use	1 (0.45)	31 (1.05)	χ^2 (1) = 0.72	0.397
Communication for work	184 (83.64)	2234 (75.32)	χ^2 (1) = 7.74	0.005
Communication for private	191 (86.82)	2088 (70.40)	χ^2 (1) = 27.12	<0.001
Gaming	82 (37.27)	448 (15.10)	χ^2 (1) = 72.58	<0.001
Entertainments	190 (86.36)	1898 (63.99)	χ^2 (1) = 45.38	<0.001
Information gathering for work	203 (92.27)	2579 (86.95)	χ^2 (1) = 5.24	0.022
Information gathering for private	192 (87.27)	2355 (79.40)	χ^2 (1) = 7.92	0.005
Shopping	148 (67.27)	1517 (51.15)	χ^2 (1) = 21.35	<0.001
Gambling	13 (5.91)	122 (4.11)	χ^2 (1) = 1.63	0.202
Net-surfing	132 (60.00)	791 (26.67)	χ^2 (1) = 110.57	<0.001
Other	4 (1.82)	32 (1.08)	χ^2 (1) = 1.00	0.317
Device for internet access, n (%)				
Mobile phone	25 (11.36)	329 (11.09)	χ^2 (1) = 0.02	0.902
Smart phone	190 (86.36)	2249 (75.83)	χ^2 (1) = 12.67	<0.001
Tablet	100 (45.45)	1072 (36.14)	χ^2 (1) = 7.64	0.006

TABLE 1 (Continued)

Variable	At-risk IA (IAT score 40–79) ($n=220$)	Non-IA (IAT score <40) ($n=2966$)	Test statistic	p value
Laptop	184 (83.64)	2385 (80.41)	$\chi^2(1)=1.36$	0.243
Desktop computer	106 (48.18)	1324 (44.64)	$\chi^2(1)=1.04$	0.308
Other	6 (2.73)	36 (1.21)	$\chi^2(1)=3.61$	0.058
Number of devices, Mean (SD)	2.78 (0.95)	2.5 (0.88)	$t(247.87)=-4.19$	<0.001

Note: Excluded 3 subjects with IA (IAT ≥ 80) from this analysis.
Abbreviations: IA, internet addiction; IAT, internet addiction test.

TABLE 2 Internet usage between the at-risk internet addiction (IA) and non-IA groups.

Time spent on internet per a day	At-risk IA (IAT score 40–79) ($n=220$)	Non-IA (IAT score < 40) ($n=2966$)	p value
Weekdays: for work, hours, n (%)			<0.001
None	3 (1.36)	60 (2.02)	
<0.5	43 (19.55)	1046 (35.27)	
0.5–1	55 (25.00)	925 (31.19)	
1–2	59 (26.82)	594 (20.03)	
2–3	34 (15.45)	227 (7.65)	
3–4	13 (5.91)	61 (2.06)	
4–5	5 (2.27)	21 (0.71)	
>5	8 (3.64)	32 (1.08)	
Weekdays: for personal use, hours, n (%)			<0.001
None	0	67 (2.26)	
<0.5	9 (4.09)	982 (33.11)	
0.5–1	35 (15.91)	923 (31.12)	
1–2	84 (38.18)	716 (24.14)	
2–3	59 (26.82)	204 (6.88)	
3–4	24 (10.91)	46 (1.55)	
4–5	4 (1.82)	14 (0.47)	
>5	5 (2.27)	14 (0.47)	
Weekends: for work use, hours, n (%)			<0.001
None	30 (13.64)	569 (19.18)	
<0.5	68 (30.91)	1320 (44.50)	
0.5–1	41 (18.64)	570 (19.22)	
1–2	43 (19.55)	349 (11.77)	
2–3	26 (11.82)	126 (4.25)	
3–4	7 (3.18)	22 (0.74)	
4–5	4 (1.82)	4 (0.13)	
>5	1 (0.45)	6 (0.20)	
Weekends: for personal use, hours, n (%)			<0.001
None	2 (0.91)	102 (3.44)	
<0.5	7 (3.18)	798 (26.90)	
0.5–1	19 (8.64)	806 (27.17)	
1–2	41 (18.64)	738 (24.88)	
2–3	65 (29.55)	353 (11.90)	
3–4	44 (20.00)	95 (3.20)	
4–5	18 (8.18)	26 (0.88)	
>5	24 (10.91)	48 (1.62)	

Note: p values are from Wilcoxon-Mann–Whitney Test.

and prolonged participation in internet gaming that results in a cluster of cognitive and behavioral symptoms, including progressive loss of control over gaming, tolerance, and withdrawal symptoms, analogous to the symptoms of substance use disorders (pp. 914)".[19] Furthermore, the "Gaming disorder" including internet gaming also is listed on the International Classification of Disease, Eleventh edition (ICD-11).[20] Given the setting of groups with phased IA levels in this study, this result has suggested that the preoccupation with certain content on the internet, such as games and entertainment, may increase the risk for at-risk IA.

At the same time, the purposeless use of the internet, such as net-surfing, also may reinforce the problematic behavior, becoming a risk factor for at-risk IA. Our result suggests that teachers may be reinforcing problematic internet use by choosing purposeless activities that can be done effortlessly, because of a positive relationship between time spent on the internet and the at-risk IA group. There are several reports to investigate the cause of overuse and the problematic behavior of internet users. Davis[21] developed the cognitive-behavior model of pathological internet use and distinguished between specific pathological internet use (SPIU) and generalized pathological internet use (GPIU). According to this model, SPIU includes heavy users that are dependent on a specific function of the internet. They are addicted to the specific content provided by media and internet providers, such as online gambling and online sexual services. On the other hand, GPIU involves a general, multidimensional overuse of the internet and includes heavy users without a clear objective. Net-surfing as indicated in this survey might be considered to be one of the GPIU. Among adults, it has been reported that the percentage of internet surfers is higher in use with at-risk IA than in users who are addicted internet.[22] The purposeless internet activities may easily cause at-risk IA for active workers.

The rates of IA and at-risk IA among senior high school teachers in Japan were 0.09% ($n=3$) and 6.90% ($n=220$), respectively. A meta-analysis that revealed the prevalence of IA has reported a global prevalence of 6.9%,[23] whereas this study showed a lower prevalence. This difference is attributed to differences in IA prevalence by country/nation and to the fact that studies of children and adolescents have a higher prevalence of IA. In a previous study among Norwegian adults, the prevalence of IA and at-risk IA was 1.0% and 5.2%,[22] and a survey among workers in a limited area in Japan also investigated the prevalence of at-risk IA was 5.0%.[5] These were similar to the rate of at-risk IA in our survey. It was notable that we found this prevalence among senior high school teachers

TABLE 3 Odds ratios and 95% confidence intervals to at-risk internet addiction (IA).

Variable	Unadjusted odds ratio (95% CI)	Adjusted odds ratio[a] (95% CI)
Sex		
Female	Reference	Reference
Male	1.16 (0.87–1.56)	1.14 (0.82–1.57)
Age, years		
≤29	4.16 (2.73–6.33)	2.36 (1.20–4.64)
30–39	2.49 (1.62–3.83)	1.89 (1.09–3.30)
40–49	Reference	Reference
50–59	0.73 (0.45–1.19)	0.89 (0.47–1.68)
≥60	0.54 (0.25–1.19)	0.9 (0.33–2.44)
Type of Schools		
National and Public schools	Reference	Reference
Private school	1.52 (1.16–2.01)	1.32 (0.94–1.87)
Activity on internet		
Communication for work	1.67 (1.16–2.42)	1.01 (0.67–1.54)
Communication for private	2.77 (1.86–4.13)	1.29 (0.80–2.08)
Gaming	3.34 (2.50–4.47)	1.84 (1.33–2.54)
Entertainments	3.56 (2.41–5.28)	1.76 (1.13–2.75)
Information gathering for work	1.79 (1.08–2.97)	1.15 (0.64–2.04)
Information gathering for private	1.78 (1.18–2.67)	0.81 (0.50–1.31)
Shopping	1.96 (1.47–2.63)	1.05 (0.75–1.47)
Gambling	1.46 (0.81–2.64)	1.22 (0.65–2.31)
Net-surfing	4.12 (3.11–5.47)	2.76 (2.03–3.76)
Device for internet access		
Mobile phone	1.03 (0.67–1.58)	1.33 (0.77–2.31)
Smart phone	2.02 (1.36–2.99)	0.91 (0.53–1.56)
Tablet	1.47 (1.12–1.94)	1.08 (0.80–1.47)
Laptop	1.25 (0.86–1.80)	0.94 (0.62–1.42)
Desktop computer	1.15 (0.88–1.52)	1.05 (0.77–1.43)

[a]Adjusted age, sex, type of schools, activity on internet, and device for internet access by logistic regression analysis.

based on a nationwide survey and not a specific group. In addition, younger age was strongly associated with at-risk IA. This characteristic is attributed to the fact that the younger have a higher affinity for the internet than the middle and older. It has often been noted in IA research in children and adolescents, and this phenomenon was observed among workers.

In our study, a few teachers were diagnosed with IA among participants. Compared to other IA studies, fewer patients had severe levels of IA in this study.[24,25] Because participants with IA may be on leave or retired from their workplace and may be excluded from participating in the survey among active workers. However, it can be assumed that other teachers who did not participate in the survey may have IA. It will need early intervention and counseling for people with at-risk IA.

The strengths of this study include results that appear to be representative of the studied population. The subject schools were selected randomly from among those nationwide, and the sample size was not small, with the number of analyzed responses exceeding 3000. To our knowledge, this is the first study in the literature to assess the association between at-risk IA and other related factors among nationwide senior high school teachers. Since the pandemic of COVID-19, many companies have encouraged workers to telecommute or telework. Nowadays, even industries that do not specialize in information science and technology are using ICT technology during their operations. It seems that the results of this study have value as one of the references to clarify the association between workers and at-risk IA. However, there are some limitations to this study. First, our study designed a cross-sectional survey using anonymous questionnaires. Our study includes respondent bias due to analyzing only eligible responses. In our study, the results showed that purposeless internet activity was related to at-risk IA; however, it does not prove a causal relationship. All data were self-reported, and they may include several biases. Second, since there is no consensus on the formal diagnostic criteria and gold-standard measures for IA among adults in

Japan, the diagnostic accuracy properties of the IAT cutoff scores are yet to be established. According to previous studies, at-risk IA also has life problems due to internet use. This study was unable to argue the specific clinical condition of at-risk IA and IA because the criteria for those were dependent on Young's IAT score. In our results, there were extremely less IA and we excluded IA from our analysis.

Recently, studies that explore the relationship between IA and workers have pointed out that IA has related to psychological stress,[16] job satisfaction,[26] and workaholism.[27] Further studies are needed to investigate the potential related factors of IA and at-risk or the conditions of internet usage among employees.

5 | CONCLUSION

In conclusion, our study found that there were around 7% of senior high school teachers with at-risk IA according to our nationwide survey. The at-risk IA group spent more time on the internet than the non-IA group. Furthermore, younger and activities using the internet were associated with at-risk IA. Management of internet usage and spending time may help prevent IA among regular workers.

AUTHOR CONTRIBUTIONS

MF, HK, and TC made substantial contributions to the conception of the work. MC developed the statistical analysis plan and conducted statistical analyses. HT and RT made significant contributions to the design of the work and the interpretation of data. MF, MC, and HK drafted the original manuscript. HT, MK, and other authors substantially contributed to the revision of the manuscript drafts. All authors have approved the submitted version of the manuscript and agreed to be accountable for any part of the work.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in the Appendix S1 of this article.

ETHICAL APPROVAL

Approval of the research protocol by an Institutional Reviewer Board: All the procedures of this study were reviewed and approved by the Institutional Review Board of the Faculty of Medicine, Shimane University (No. 1863, approved on 8th July, 2015).

Informed Consent: We sent the study information and questionnaires to selected senior high schools and asked all teachers to participate in the study in the schools whose administrators consented to participation. They were informed that the survey was voluntary and confidentiality was ensured. A completed questionnaire was considered evidence of consent to the study.

Registry and the Registration No. of the study/trial: n/a.

Animal Studies: n/a.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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