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**Development of a mental health literacy program
for secondary school students and its effects:
In-school mental health literacy education**

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Abstract

Objective: Adolescence is the period when the onset of mental illnesses becomes frequent. Providing adolescents with education about mental illnesses and how they are treated may help adolescents recognize any mental difficulties they may be suffering and promote appropriate help. In Japan, however, few mental health education programs have been developed for adolescents and limited studies have investigated their effects. In the present study, we developed a concise, school-staff led mental health literacy (MHL) education program for secondary school students and examined its effect.

Method: The program was given by a full-time school teacher. The objective of the program was to provide students with an opportunity to learn the symptoms of mental illnesses, to understand common mental disorders in adolescents and to encourage them to seek appropriate help if they are suffering from mental difficulties. The evaluations were conducted before and immediately after the program, using a self-report questionnaire. The participants comprised 118 grade-9 and 120 grade-11 Japanese students.

Results: A significant effect was observed on knowledge of mental illnesses and their treatment. Attitudes to seeking help and assisting peers also improved after the program.

Conclusion: These findings suggest that concise, school teacher led program might help improve mental health literacy in adolescents.

Keywords: mental health, health education, school

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1. Introduction

1.1. Mental Health Literacy Education and Prevention of Mental Illnesses

Most cases of mental illnesses begin prior to the age of 25 years (Kessler et al., 2005, Jones, 2013). It is therefore crucial for adolescents to have appropriate knowledge and beliefs about mental health problems that will help their recognition of, coping with and prevention of the problems. Such knowledge and beliefs are referred to as mental health literacy (MHL) (Jorm, et al. 1997, Jorm. 2012). In particular, it is important that students develop the capacity to seek appropriate help for any mental health problems. Help-seeking requires a multistep decision that leads an affected individual to: a) identify the problem, b) acknowledge the necessity of help and/or treatment of the problem, c) understand that mental illnesses are treatable, and d) be motivated to seek help and/or treatment (Santor, et al., 2007, Gulliver, et al., 2010). To acquire the knowledge and beliefs necessary for these steps, MHL education is necessary for students during adolescence. Since most adolescents spend most of their time at school, schools may be the best place to provide such education (Hendren, et al., 1994, World Psychiatric Association 2005, Wei et al., 2011), and programs for use in schools have been developed in several countries (Wei, et al., 2013, Ojio, et al., 2013, Yamaguchi, et al., 2011).

1.2. Current Status of MHL Education in Japan

In Japan, however, mental health education is rarely provided in schools, including

elementary, junior and senior high schools. It is especially striking that current school health textbooks, which follow the curriculum guidelines of the Japanese government, contain nothing about mental illnesses (Ojio, et al., 2013). Before 1982, health textbooks for high-school students included detailed explanations of mental illnesses (the names of diseases were listed along with their major symptoms) and also noted the increasing rate of psychiatric hospitalization at the time. The Eugenic Protection Act of the Japanese Government at the time, which aimed to prevent the genetic reproduction of mental illnesses, was also explained in the textbook (Imamura, et al., 1963). This content was, however, totally removed in 1982, to reduce the volume of the curriculum in the elementary school and the high school (National Institute for Educational Policy Research) . This policy of curriculum volume reduction on mental health related topics was adopted to reduce the psychological stress of students who were facing stiff academic competition to enter the more socially respected high schools and universities, which was considered a tough goal for most Japanese students at the time. As a result, knowledge of mental illnesses is generally poor in Japanese adolescents, although a few studies have investigated the issue; and has been shown to be poor in adults, which may be related to lack of mental health education during their school years (reviewed by Ando, et al., 2013). Furthermore, most Japanese people have few opportunities to learn about mental illnesses even after leaving school. In general, Japanese people tend to consider that the major cause of mental illnesses is private psychosocial factors, including weakness of personality, and ignores biological and biosocial factors (Kurumatani, et al., 2004, Nakane, et al., 2005, Tanaka, et al., 2005). In addition, the majority of Japanese people tend to maintain a large social distance from individuals with mental illnesses (Mino, et al., 2001, Katsuki, et al., 2005). Previous study considered the effectiveness of the describing mental illnesses in health textbook before 1982 and after 1982. The author said

that the mental health education before 1982 might have several negative effects on the image of mental illnesses, while no describing and no education of mental illnesses at all might also connect to a feeling of dread or fear toward person with mental illnesses (Nakane and Mine., 2013).

To improve this situation, we have developed a school-based education program on mental health and illnesses. In the present paper, we explain the content and effects of the first version of the program, which is currently being improved for the next version. In developing the program, we tried to make it concise and able to be taught by school teacher. The reason for this was to make the program feasible and sustainable in most fields of school education (Han & Weiss, 2005, Santor & Bagnell, 2012). The schedule in Japanese schools is very tight due to the heavy demands of regular curriculum and events such as sports and cultural activities, and preparation for entrance examinations to higher level schools. If the program was long and required several hours to teach, many schools would not be able to employ it. Further, if the program needed to be taught by health professionals outside the school, that would also likely hinder its application, given that schools may not be able to find an appropriate person to teach the program. We therefore tried to develop a program that could be taught in two 50-minute sessions, by school nurses in the Japanese school health system.

1.3. The School Nurse (*Yōgo Kyōyu*) System in Japan

Under the Japanese government act on school health (Ministry of Education, Culture, Sports, Science and Technology), all Japanese schools from elementary to junior-high school (from grade 1 to grade 9), both public and private, must have a full-time school nurse (*yōgo kyōyu*) assigned as a member of the school staff. “Yogo” means nursing and “Kyoyu” means teacher in Japanese. Senior-high schools are also

recommended to have full-time school nurses (*yōgo kyōyu*) under the act but it is not mandatory. “Full-time” means that one or two school nurses are assigned to each school to stay and take care of the students’ health every day. The number of school nurses in each school is usually one, but can be two according to the number of students in the school. *Yōgo kyōyu* are usually stationed in the health-care room of schools and give first aid to students who visit the health-care room for physical or mental health problems and injuries. They conduct annual health check-ups of students, with the cooperation of physicians and dentists (of usually private practices) in the school area, which provides good opportunities for *yōgo kyōyu* to understand the health condition of each student. They are also licensed to give classes or courses of health education to the students, although this is not mandatory.

In recent years, demands to take care of the mental health needs of students have rapidly increased in Japanese schools, and accordingly, the role of *yōgo kyōyu* in mental health care has also become more important. A substantial portion of students who are not able to stay in their classrooms due to mental problems, victimization by bullying and other reasons, spend substantial amount of time in the health-care room during their time at school. In the health-care room, they not only receive mental health support but also carry out their regular academic school tasks. This is referred to as “health-care room schooling (*hoken-shitsu tōkō*)”. The number of such students has increased in recent decades. *Yōgo kyōyu* take care of these students, often very intensively, with cooperation from other teachers, school counselors (usually part-time), families and sometimes medical staff outside the school. Against this background, we considered that, in Japan, *yōgo kyōyu* were the best candidates for delivering our mental health education program to students.

1.4. Principles and Content of The Program

The mental health literacy (MHL) education program we developed for secondary school students is designed to address the current status of mental health education in Japanese schools. The program was developed by a collaborative team consisting of psychiatrists, public health nurses and *yōgo kyōyu*, to be delivered by *yōgo kyōyu* in secondary schools. The *yōgo kyōyus* were trained for delivery of the program in their schools by one or two of the authors (YO and TS). The objective of the program was to provide an opportunity for students to learn about the symptoms of mental illnesses that are frequent in adolescents, to understand that mental difficulties are not rare in adolescents, and to encourage them to seek help when they are in difficulty.

Table 1 summarizes the content of the program. The program consists of two 50-minute sessions. The sessions, Lesson 1 and 2, are given one week apart. The program includes teaching instruction, animation and group discussion. The animation in Lesson 1 is developed for the program. The animation has two features. First, it is concise, being six minutes long. Second, the characters and background of the animation are friendly and use soft colors. The animation covers three topics. First, mental health problems are common. Second, mental health problems are closely associated with life style including sleep habits. Third, it is important for adolescents to seek help when they have the mental health problems. Another animation which is used in Lesson 2 lasted for approximately 4 minutes per unit, and was taken from the website of the Ministry of Health, Labor and Welfare of Japan (<http://www.mhlw.go.jp/kokoro/youth/movie/b/index.html>), which provides animations explaining the symptoms of a number of mental illnesses, including major depression, schizophrenia and panic disorder and others. In the present program, the animations for major depression and schizophrenia are used. The goal of Lesson 1 is for students to understand that mental health problems and mental illnesses are not rare

in adolescents and being closely associated with lifestyle including sleep habits. The goal of Lesson 2 is for the students to understand that the signs and symptoms of mental difficulties and illnesses and how they should behave when they themselves or their peers are suffering from mental difficulties. Recognition of the problem is the first step in seeking help from an appropriate professional, and essential to avoid delay in help-seeking (Gulliver, et al., 2010). The contents of Lesson 1 include general explanations of mental illnesses, including prevalence, onset age, risk factors, treatability and possibility of recovery, and frequent symptoms in adolescence in lecture style. Frequent misunderstandings about mental health problems are also explained. The closely association between mental health problems and sleep habits is shown using the animation. The contents of Lesson 2 include that typical adolescent cases of major depression and schizophrenia in their initial phases are shown using the animation. The mechanism of their symptoms including the function of neurotransmitter or hormone imbalance in the brain is also explained using the diagram. At the end of the lessons, the students engaged in group discussions for about 15 minutes, in which they are asked to think about appropriate solutions that would help them when if they were suffering from mental health problems.

Table 1. Teaching methods and main contents of the program

	Instruction	Animation	Group discussion
Lesson 1 (50min)	Explanation of mental illnesses (prevalence, onset age, risk factors, treatability and possibility of recovery, frequent symptoms in adolescence) and frequent misunderstandings about mental illnesses	Showing the association between mental health problems and sleep habits	
Lesson 2 (50min)	Showing the mechanism of their symptoms including the function of neurotransmitter or hormone imbalance in the brain.	Showing typical symptoms of depression and schizophrenia	Sharing their ideas of solutions that help adolescents who are suffering from problems with mental health.
Goal of lesson 1	Understanding that mental health problems and mental illnesses are not rare. Understanding mental health problems are closely associated with life style.		
Goal of lesson 2	Understanding the signs and symptoms of mental problems and illnesses. Understanding how they should behave when they themselves or their peers are suffering from mental problems.		

2. Method

2.1. The Pilot Study and Evaluation of The Program

The study of the program was conducted from November to December, 2014. The participants comprised 118 grade-9 students (59 males and 59 females, aged 14 to 15 years) and 120 grade-11 students (all females, aged 17 to 18 years) of each secondary school in Tokyo, Japan. The two lessons were given once a week over a 2-week period at the health education class by the full time *yōgo kyōyu* (school nurse). Students were allowed to stop participating in the program if they experienced any discomfort.

2.2. Evaluation of The Effects

The students were asked to answer the same questions one week before the first session of the program (pre-test) and at the end of the second session (post-test) to evaluate the effects of the program. The first part of the test comprised 10 questions on general knowledge about mental health and illnesses (Table 2). These questions were to

be answered “true”, “false”, or “Don’t know”. The second part of the test was about two case vignettes of major depression and schizophrenia (according to the DSM-IV criteria). Having read the vignettes, the students were asked the following: 1) to indicate whether the person in the vignette was suffering from no or any mental illness, including major depression, schizophrenia, eating disorder and social phobia (Table 3), 2) to select from the four-point scale ranging from “extremely unlikely” to seek help to “extremely likely” to seek help in Tables 3 and 4 the most accurately option for major depression and schizophrenia, respectively, if the students had this problem, and 3) to select from the four point response scale from “strongly agree” to “strongly disagree” for each 6 options including (1. I would not know what to do., 2. I would advise him or her to change their behavior., 3. I would avoid conversation with him or her, 4. I would recommend professional care, 5. I would talk to someone who can be trusted., and 6. I would listen for details of his or her condition.) in response to major depression and schizophrenia, respectively, if their peers had this problem. The vignettes were similar to those in Jorm et al. (1997),⁴ but were made more concise to make them easier to read. The effects of the program were evaluated by comparing rates of the correct or appropriate answers to the questions in the post-test with the rates in the pre-test.

2.3. Ethical Aspect

This study was approved by the University of Tokyo Human Research Ethics Committee.

2.4. Data Analysis

Non-parametric paired-samples tests (Wilcoxon signed rank test and McNemar’s test) was used to compare the knowledge and the student’s attitude (or selection of

appropriate behaviors) for each question between pre vs. post tests, considering the distribution of the data. The level of significance was set at $p < .05$. SPSS version 22.0 for Mac (2012) was used in the statistical analysis.

3. Results of The Pilot Study

3.1. Participants

Of the 118 grade-9 students, 108 students (91.5%; 53 males and 55 females) and of the 120 grade-11 students, 120 students (100%; all females) participated in the lessons and completed the pre- and post-tests for the evaluation. None of the students withdrew during the lessons.

3.2. Effects on Knowledge and Beliefs

The rates of correct answers to the 10 questions on general mental health literacy were significantly elevated after the program had been given, with a mean / median number of correct answers of 7.4 / 8.0 out of 10 in the post-test, compared with 4.0 / 4.0 in the pre-test ($p < .001$). Similar results were found for the total score (the number of correct answers) in Grade 11 students; 5.3 / 6.0 in the pre-test vs. 8.1 / 8.0 in the post-test ($p < .001$).

Table 2. Rates of correct answers to the questions on knowledge of/beliefs about mental illnesses and their treatment (n=94; 47 males and 47 females)

Statement		Rates % (n) of correct responses			
		Grade 9 (n=108)		Grade 11 (n=120)	
		Pre-test	Post-test	Pre-test	Post-test
Around 20% of the population experience mental illnesses in their lives.	T	26.9 (29)	94.4 (102)***	42.9 (48)	78.1 (89)***
Most people with mental illnesses meet the criteria for their illnesses, with first onset usually in their teens.	F	34.3 (37)	59.3 (64)***	25.9 (29)	57.9 (66)***
Incidences of most mental illnesses sharply increase in adolescence.	T	25 (27)	59.3 (64)***	27.7 (31)	53.5 (61)***
Mental illnesses are caused by weakness or a bad personality	F	40.7 (44)	83.3 (90)***	56.3 (63)	90.4 (103)***
People with mental illnesses can't go to school because of being unable to take a train by their symptoms.	F	49.1 (53)	89.8 (97)***	68.8 (77)	98.2 (112)***
Lifestyle, including sleep habits, has an effect on prevention and recovery of mental illnesses.	T	57.4 (62)	92.6 (100)***	75.9 (85)	98.2 (112)***
Personal relationship, including bullying, has an effect on prevention and recovery of mental illnesses.	T	80.6 (87)	82.4 (89)	92 (103)	89.5 (102)
Somatic symptoms including fatigue, abdominal pains and nausea may occur as early symptoms of mental illnesses.	T	31.5 (34)	50 (54)**	49.1 (55)	72.8 (83)***
Most people with mental illnesses are unpredictable and dangerous.	F	38.9 (42)	71 (76)***	67 (75)	86.8 (99)**
Medication improves many mental illnesses.	T	14.8 (16)	55.6 (60)***	29.7 (33)	87.7 (100)***

* p < .05, ** p < .01, *** p < .001 (Comparison of post-test with pre-test)

T: True, F: False

3.3. Recognition of Mental Health Problems and Selection of Appropriate Solutions

Tables 3 and 4 show the rates of students who selected the appropriate diagnosis of in the two vignette cases and the appropriate solutions for those problems, respectively. At the pre-test 41.7% / 47.5% and 7.4% / 10.0% of Grade 9 / Grade 11 students selected the correct diagnosis for the vignette cases of major depression and schizophrenia,

respectively. The rate of the correct answers significantly increased at the post-test (94.7% / 94.2 % and 95.4% / 91.7% at the post-test ($p < .001$ and $p < .001$) for major depression and schizophrenia, respectively). The rates of indicating the intention to seek help also increased significantly ($p < .001$) in the post tests, compared with the pre-test (Tables 3 and 4). The rates in Grade 9 / Grade 11 students were 64.8% / 62.5% and 63.0% / 57.5% in the pre-test and 77.8% / 83.3% and 77.8% / 80.0% in the post-test for major depression and schizophrenia, respectively.

Table 3. Answers to the questions about vignette of a major depression case

	Rate % (n) of the correct responses			
	Grade 9 (n=108)		Grade 11 (n=120)	
	Pre	Post	Pre	Post
a. Rate of students who indicated the correct name of the illness	41.7 (45)	94.7 (89)***	47.5 (57)	94.2 (113)***
b. Rate of students who indicated help-seeking intention in the problem described.	64.8 (70)	77.8 (84)*	62.5 (75)	83.3 (100)***

* $p < .05$, ** $p < .01$, *** $p < .001$ (Comparison of post-test with pre-test)

Table 4. Answers to the questions about vignette of a schizophrenia case

	Rate % (n) of the correct responses			
	Grade 9 (n=108)		Grade 11 (n=120)	
	Pre	Post	Pre	Post
a. Rate of students who indicated the correct name of the illness	7.4 (8)	95.4 (103)***	10.0 (12)	91.7 (110)***
b. Rate of students who indicated help-seeking intention in the problem described.	63.0 (68)	77.8 (84)**	57.5 (69)	80.0 (96)***

* $p < .05$, ** $p < .01$, *** $p < .001$ (Comparison of post-test with pre-test)

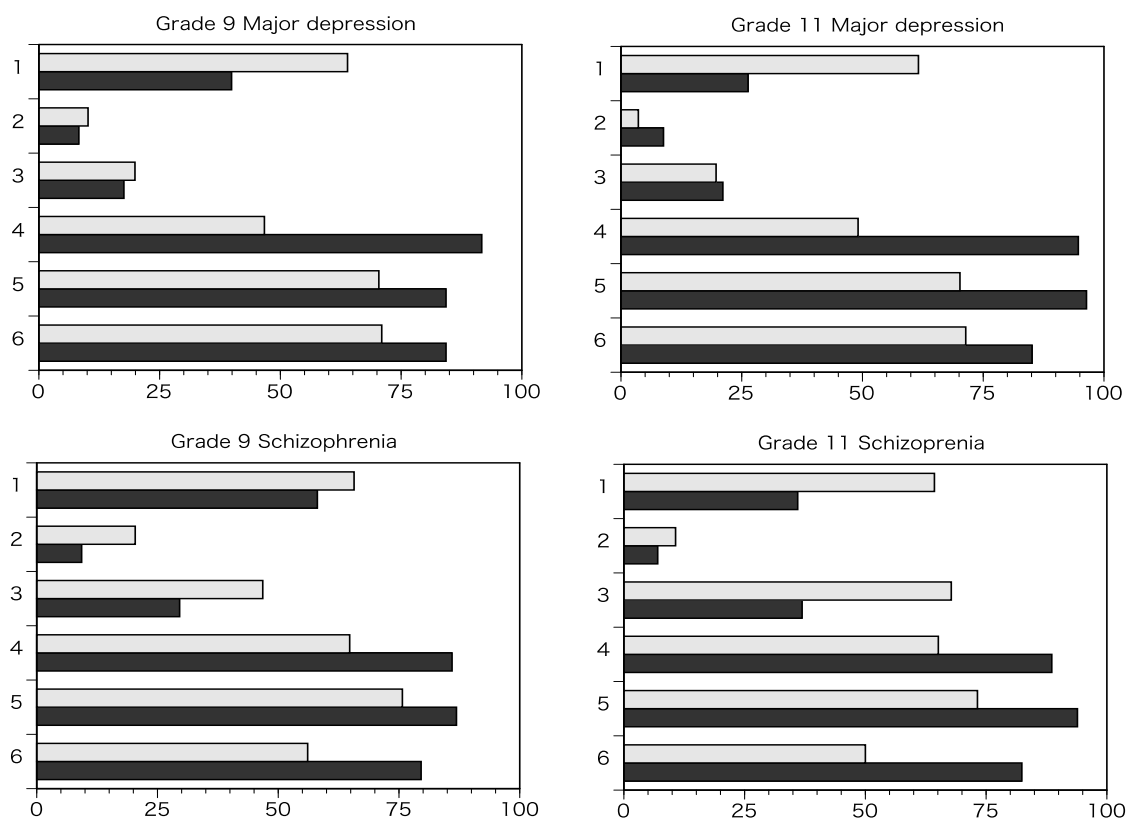
Intention of helping peers with mental health problems

Figure1 showed the rates of selected “strongly agree” or “agree” toward each items about the actions they might take if their peers were suffering from mental health problems. The rates of students who selected “strongly agree” or “agree” to the appropriate behavior (4. I would recommend professional care, 5. I would talk to someone who can be trusted., and 6. I would listen for details of his or her condition.) increased after the lessons (Figure1) for major depression and schizophrenia, respectively.

Figure legends:

Figure1. Rate of the answer to the each question, “How likely it is that you would do each of the following 6 items if your peer had the problem described?”

(1. I would not know what to do., 2. I would advise him or her to change their behavior., 3. I would avoid conversation with him or her, 4. I would recommend professional care, 5. I would talk to someone who can



be trusted., and 6. I would listen for details of his or her condition.) The gray bar depict the result of pre-test, and the black bar also represent the result of post-test

4. Discussion

We developed a concise, school staff-led mental health literacy (MHL) program for secondary school students and found significant effects. The effects were evaluated by comparing rates of correct or appropriate answers to a questionnaire immediately after the delivery of the program with the answers before the program both Grade 9 and 11 students. Knowledge and beliefs about mental health/illnesses and their treatment and also the intention to seek appropriate help and to support their peers with mental health problems were significantly elevated following the program. There have been few studies of school-based mental health literacy (MHL) education programs in Japan. To our knowledge, a couple of investigators have been engaged in this area, however, with no publications and therefore with no detailed information available. As a result, we recently developed a school-based MHL program for Japanese secondary school students to bridge the gap in this important but under addressed area in Japanese secondary schools. Our goal for the development of the program is to make it concise and school staff-led, because these may lead to the program being employed in a greater number of schools in Japan.

To our knowledge, there have been a very limited number of school-based MHL education programs of this short length for adolescents. Pinfold et al. (2003) developed a concise school-based MHL program of two 60-minute sessions, and examined its effect. The program dealt with knowledge about mental illnesses and psychiatric care and the stigma toward mental illnesses. Their program employed a short video, lecture, and information leaflets. A short talk with people with mental illnesses was also included in the program. The program had a significant positive effect on knowledge about and attitude toward mental illnesses in the adolescents, which may be similar to the present study. What was different between their program and the present program however was

the person who taught the program. Their program was delivered by mental health professionals from outside the school.

Most school-based MHL programs developed thus far have been professional-led (Wei, et al. 2013., Ojio, et al. 2013.). A small number of school staff-led programs have been developed (Petchers, et al. 1988, Rahman et al. 1998, Naylor, et al. 2009, Kutcher, et al. 2013). Naylor, et al. (2009) developed a school staff-led MHL program on knowledge and beliefs about mental illnesses and stigma toward them. The program was administrated by teachers responsible for pastoral care. The program consisted of six 50-minute sessions on mental health issues common to young people. The effect of the program was examined in a simple non-randomized pre-/post-test control group design, and a significant effect was observed on knowledge and attitudes. Naylor *et al.* (2009) and ours may both show that the programs given by school staff could be as effective as those given by mental health professionals, while for this, the school staff may need to be trained to become familiar with mental health issues through training sessions. A difference between the two studies was the length of the program. While the program in the present study consisted of two 50-minute sessions, the program in Naylor *et al.* (2009) comprised the six sessions. The MHL program in MindMatters from Australia is also school-staff led, but it is left up to each school and teacher to decide how many hours to spend teaching the program (Wyn, et al., 2000, MindMatters).

MHL programs which are delivered by school staff, especially by school nurses, may have several advantages compared with programs delivered by health professionals outside the school, such as physicians and public health nurses. Classes implemented by school nurses may encourage students to seek help from school nurses directly for mental difficulties. This may be especially true in the Japanese system where the school nurses (*yōgo kyōyu*) are full-time, being stationed every day at the same school. Another

advantage is that *yōgo kyōyu* are likely to be able to deliver the mental health program with careful consideration for needs of students who have mental health programs because *yōgo kyōyu* observe students' health regularly.

Several limitations may be noted in the present study and the program. The number of the participants (students) was small and they were all from one school in Tokyo. The effects of MHL programs may be associated with baseline characteristics of the students, such as intelligence, academic capacity, and socio-economic status. The effect was examined without a control group. We should conduct the evaluation of the program with more robust design including Cluster Randomized controlled trial. To test the effect, we used a brief self-report questionnaire, which was originally developed for this study and not tested in a large number of adolescents. The limitation of pen-and-paper assessments, which suffer from potential social desirability bias, may also be noted. The *yōgo kyōyu* who gave the lessons in the present program were interested in mental health and might have background mental health knowledge. Without training the school staff, the effect of the program may not be generalized. The effect on the help-seeking intention may however be interpreted with caution. Although the students better understood the importance of help-seeking than before the program, whether they actually seek help when they have mental health problems was not evaluated. The actual behavior may be related with stigma or feeling shy/embarrassed for seeking help for that kind of problems. Change of such feelings (or stigma) is an important focus of the MHL education program for adolescents. We are partly revising our program considering this issue. Videos of the patients who have experienced mental illnesses may be used as a potential approach to address stigma. Another caution may be regarding the effects for the mental health literacy education and its effects. Several studies showed the education of mental illness might have some negative impacts on the belief or attitudes. Romer and Bock (2008),

and Yamaguchi, et al. (2013) reported that direct contact without any quality control may sometimes strengthen negative beliefs and attitudes. Future studies are needed to consider whether qualified direct contact or Video lectures affect knowledge and attitude regarding both the positive and negative aspects for mental illnesses.

5. Conclusions

In summary, we have developed a concise, school-staff led MHL education program for secondary school students. The lessons were given by a full-time *yōgo kyōyu* in the Japanese school health system. The effect was significant on knowledge of mental illnesses and their treatment. Attitudes to seeking help and assist peers for help-seeking if needed also improved, and the effects maintained 3 months after the program was given. This suggests that this concise, school-staff led MHL education might be effective. The study is however small and preliminary. Further studies of the present program using a larger number of students, with a control group, may be required. Thus far, there have been a limited number of studies on the effect of concise, school-staff led MHL education. In Japan, an important issue may be to incorporate a MHL program like the present one into the normal school curriculum of health. Effective programs in other countries with different school health systems may be introduced to and adapted by Japanese secondary schools to nourish MHL programs in Japan.

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