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Title	Effectiveness of suicide prevention gatekeeper training for university teachers in Japan
Author(s)	Hashimoto, Naoki; Takeda, Hiroko; Fujii, Yutaka et al.
Citation	Asian Journal of Psychiatry, 60, 102661 https://doi.org/10.1016/j.ajp.2021.102661
Issue Date	2021-06
Doc URL	https://hdl.handle.net/2115/85671
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Rights(URL)	https://creativecommons.org/licenses/by-nc-nd/4.0/
Type	journal article
File Information	Naoki_Hashimoto_et_al_GKT_manuscript.pdf

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Effectiveness of suicide prevention gatekeeper training for university teachers in Japan

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Abstract

Suicide is a leading cause of death among Japanese college and university students. Our previous study showed that the gatekeeper training (GKT) program significantly improved competence and confidence in the management of suicidal students in university administrative staff. However, we could not determine which component of the program was effective, nor if this program was effective for university teachers as well. In the current study, 81 university teachers were recruited; 63 of them received a general mental health lecture (MHL) and 18 of them received a 2.5-hour GKT program based on the Mental Health First Aid program. Competence and confidence in managing suicide intervention and behavioral intention as a gatekeeper were assessed by a self-report questionnaire before and immediately after the intervention. As a result, we found a significant improvement in competence in the management of suicidal students in the GKT group compared to the MHL group. We also found significant improvements in confidence in the management of suicidal students and behavioral intention as gatekeepers in the GKT group, although the questionnaires for these outcomes were not validated. The program satisfaction score was significantly higher in the GKT group than in the MHL group. To our knowledge, this is the first study to evaluate a GKT program for university teachers in Japan. By comparing the two

groups, we explicitly confirmed that active involvement of the participants is crucial for effective suicide prevention training.

Keywords: college student, suicide, gatekeeper, mental health first aid, intervention

1. Introduction

The high suicide rate in Japan has been a nationwide concern since it exceeded 30,000 per year in 1998(Shiho et al., 2005). With nationwide suicide prevention efforts, including the Basic Act for Suicide Prevention of 2006, the General Principles of Suicide Prevention Policy (GPSP) of 2007, and the revised GPSP of 2012, and with experience of the Tohoku earthquake and tsunami in 2011, the suicide rate per 100,000 people decreased from 27.0 in 2003 to 18.0 in 2016; however, it was still the 14th highest number of suicides worldwide (Cabinet Office, 2020; World Health Oganization, 2018). Despite this decline in the overall suicide rate, the teenage suicide rate is on the rise and is now recognized as the target of selective and intensive suicide prevention programs (Cabinet Office, 2020). Suicide has been reported as the leading cause for the deaths of college and university students in Japan (Uchida, 2010). One major reason for the high suicide rate among university students is that they do not seek help when they have mental health problems. In fact, 85% of students with moderate to severe depression do not receive treatment (Garlow et al., 2008), and nearly 80% of college students who died by suicide were unknown to campus mental health professionals (Uchida, 2010). Based on these circumstances, both the GPSP and the guidelines of the Japanese Association of College Mental Health recommended the training of persons who have

daily contact with students to improve suicide risk identification, crisis intervention, and referral to mental health specialists (Cabinet Office, 2014; The Japanese Associatiion of College Mental Health, 2010). The gatekeeper training (GKT) programs completely fit this object. The objective of these programs is to improve detection and referral of at-risk individuals by training non-mental health professionals around them (Tompkins and Witt, 2009). The GKT program is a widely recommended suicide prevention intervention in Japan, and the Japanese government as well as all local governments in Japan are currently implementing the GKT in some form or the other (Yonemoto et al., 2019). The effectiveness of GKT in universities was shown by a recent meta-analysis in the United States (Wolitzky-Taylor et al., 2020). In Japan, in our previous study, GKT brought about a significant improvement in competence and confidence in the management of suicidal students in administrative staff of a university (Hashimoto et al., 2016).

However, since our previous study lacked a control group, we could not confirm which elements of the GKT program were important to bring about a change in the attitude of the participants. We were especially interested in the importance of the role-play session of our program. Although we incorporated role-play in the GKT program according to the active and participatory learning theory of adult learning principles (Bryan et al.,

2009), we did not explicitly examine the importance of this session in our study. In addition, the aforementioned study included only administrative staff, and this limited generalizability of the results. It has been considered that teachers are an important target for GKT programs in universities because they interact with students on a daily basis and are expected to easily notice changes in students' behaviors (Cabinet Office, 2020). Based on these points of view, in the current study, we compared the effect of our GKT program to a general mental health lecture that lacked role-play, and selected teachers as participants to further examine the generalizability of our GKT program.

2. Materials and Methods

All procedures in this study complied with the 1975 Declaration of Helsinki, as revised in 2008. We provided detailed explanations regarding the study procedure to the participants, and all the participants voluntarily provided their written informed consent. Eighty-one teachers from the Hokkaido University Sapporo Campus participated in the current study. They were recruited through emails and in-person invitations from the Student Support Division of Hokkaido University. Sixty-three participants received a 1-hour mental health lecture (MHL), which included factual information on depression and suicide in Japanese college students, with specific topics on suicide prevention programs

in Hokkaido University and the role of gatekeeper. Whereas, 18 participants received the GKT program developed by us in 2012 (Hashimoto et al., 2016). Briefly, our GKT program consists of two parts, including a 30-minute mental health lecture and a 2-hour role-play session. In the role-play session, we provided a didactic lecture on basic gatekeeper skills based on the Mental Health First Aid program, and then presented a video that demonstrated good and bad gatekeeper behavior, and had small groups perform roles along with the scenario of the video. We dedicated most of the program time to practicing actual gatekeeper skills because a previous study showed that active skill training was essential to increase the actual use of gatekeeper skills (Brown et al., 2018). Clinical psychologists at the Health Care Center of Hokkaido Universityfacilitated role-play and discussion in each group.

The Suicide Intervention Response Inventory (SIRI) (Neimeyer and Bonnelle, 1997), specifically the short version of the Japanese version of the SIRI (SIRIS-JS) (Kawashima and Kenji, 2012) was chosen to measure competence in the management of suicidal students. The SIRI-JS is a simple, well-validated assessment tool composed of 13 items. There are two subcategories (change and affirmation) that consist of 5 items each, and the remaining 3 (active involvement, emergency evasion, and dealing with overdose) are independent items.

In addition, participants were asked to rate their level of adherence to recommended gatekeeper behaviors while handling a suicidal student (10 items) as well as their confidence in the management of suicidal students and students with mental health problems (2 items). Both questionnaires were rated on a 5-point Likert scale from 1 (not do at all) to 5 (always). Regarding adherence to gatekeeper behaviors, we assumed that this questionnaire measured behavioral intention rather than actual behaviors, as most participantsdo not have many opportunities to directly handle suicidal students. The questionnaire items were adopted from the first-aid guidelines for suicide in Japan (Fujisawa et al., 2013). Participants were also asked to evaluate the effectiveness of the programs (GKT and MHL) on a 5-point Likert scale from 1 (not effective at all) to 5 (very effective). This data was used as the satisfaction score for the programs.

2.1 Statistical analysis

The background and baseline data were compared between the participants with and without follow-up data, using the χ^2-test for categorical variables and the Wilcoxon rank sum test for continuous and ordered variables. The changes between pre- and post-training in the continuous and ordered variables were compared between the MHL and GKT groups using the rank analysis of covariance (RANCOVA) with the group as a

between-subject variable and time as a within-subject variable (Feys, 2016). At the same time, changes in each item between pre- and post-training within each group were assessed using the Wilcoxon signed-rank test. A p-value of <0.05 (two-tailed) was considered statistically significant. Bonferroni correction was applied for multiple items in each questionnaire: SIRI-JS (2 subcategories and 3 independent items; $p < 0.05/5$), gatekeeper behavior (10 items; $p<0.05/10$), and confidence (2 items; $p<0.05/2$). All of these analyses were performed with R 3.6.1. (https://www.r-project.org)

3. Results

There were no significant differences in age and years of experience between the MHL and GKT groups (Table 1). In the within group comparisons, the two subcategories, but not the independent items, in the SIRIS-JS significantly improved in the GKT group, but not in the MHL group. In the between group comparisons, the scores improved significantly in the GKT group compared to the MHL group, for both subcategories and one independent item (dealing with overdose).

With regard to scores for behavioral intention as a gatekeeper while handling suicidal students, in the within group comparisons, five of ten items (items 2, 3, 6, 7, and 10) improved significantly in the GKT group; no significant changes were found in the MHL

group. In the between group comparisons, the scores changed significantly between pre- and post-training in the GKT group than in the MHL group for all items except item 9.

Regarding the scores for confidence in the management of suicidal students, in the within group comparisons, the scores of all items significantly improved in the GKT group, and the score of item 2 was improved significantly in the MHL group. In the between group comparisons, the scores changed significantly between pre- and post-training in the GKT group compared to the MHL group for all items.

The satisfaction score (effectiveness of the program) was significantly higher for the GKT than the MHL.

4. Discussion

To our knowledge, this is the first study to evaluate a GKT program among university teachers in Japan. We found that the GKT program is significantly better than MHL in enhancing competence in the management of suicidal students, behavioral intention as a gatekeeper while handling suicidal students, and confidence in the management of suicidal students. Participants' satisfaction for the program was also better in GKT.

Regarding competence in the management of suicidal students, we found significant improvement in both subcategories, change and affirmation, in the GKT program

compared to the MHL. The change subscale included items in which supporters asked suicidal persons to change their thoughts and feelings, and participants were expected to rate the supporters' responses negatively. Whereas, the affirmation subscale included items in which supporters accepted negative feelings and expressions of suicidal persons and participants were expected to rate the supporters' responses positively (Kawashima and Kenji, 2012). Our GKT program was shown to be effective in increasing competence in these two critical situations. These results are in line with those of our previous studies (Fujisawa et al., 2013; Hashimoto et al., 2016; Suzuki et al., 2014). In other studies, it was found that a program with active gatekeeper skills training (Pasco et al., 2012) could significantly change the SIRI score, but not without it (Cross et al., 2010; Tompkins and Witt, 2009). By comparing the GKT group with the MHL group, we explicitly confirmed that active involvement of the participants is crucial for effective suicide prevention training. We also found a significantly better effect in the GKT program in terms of behavioral intention as a gatekeeper and confidence in the management of suicidal students. However, these ratings were from a single scale which has not been validated. Therefore, it might be safer not to make further inferences about this finding (Hashimoto et al., 2016).

In the current study, by recruiting university teachers as participants, we confirmed the

generalizability of the GKT program in a university setting. A previous report showed that participants' alliances to trainees promoted the GKT program (Totura et al., 2019). From this point of view, people who have opportunities to interact with students on a daily basis, such as teachers, are good candidates for the GKT program in university settings. A previous meta-analysis showed the effectiveness of the GKT program for teachers in middle and high schools (Torok et al., 2019), and our study extended these findings to the university setting.

There are several limitations that should be noted in the current study. First, we did not implement follow-up assessment and we could not determine how long the effect of our GKT program would continue. Our previous study showed that the effect of the GKT program continued for at least one month (Hashimoto et al., 2016); however, we need to verify whether the effect can last for a longer period of time. Second, we did not assess actual behavioral changes after conducting the GKT program. Previous studies showed that longer, intensive training for 1−2 days was needed to elicit actual behavioral changes (Brown et al., 2018). We may need to implement a longer program to examine its impact on behavioral changes and persistence of the effects, in the near future. Considering the busy schedule of university teachers, the 2.5-hour GKT program may be a pragmatic option. In addition, it is important to note that the 1-hour mental health lecture was not

sufficient to bring about changes in competence, behavior, or confidence in the management of suicidal students. Third, because we did not randomize the two groups, there might have been a selection bias between the groups. Specifically, teachers who were more interested in the issue of suicide among students were more likely to attend the GKT program. Fourth, since this study was implemented in only one institution, the generalizability of the results to other institutions is uncertain.

In the current study, we showed that the GKT program was effective for teachers in the university setting. Future studies should target other potential participants, such as administrative staff, teachers, and peers in other universities to evaluate the general effectiveness of the program. Suicide is the foremost reason for the deaths of college and university students in Japan (Uchida, 2010) and suicide rates of university students have not decreased despite nationwide efforts for the past 15 years. Although the gatekeeper program is only one piece of the suicide-prevention puzzle, we believe that our program contributes a great deal to suicide prevention among college and university students.

Highlights:

- The effectiveness of gatekeeper training (GKT) program for university teachers was examined

- GKT program improved competence and confidence in the management of suicidal students
- The GKT program proved more effective as a suicide prevention measure than a mental health lecture
- Active involvement of the participants was crucial for effective suicide prevention training

Acknowledgments

The authors thank Professor Anthony Jorm and Ms. Betty Kitchener of the University of Melbourne for their mentorship in the Mental Health First Aid program in Japan.

Conflict of Interest:

The authors have no conflicts of interest in relation to the subject of this study.

Financial Disclosure:

NH received personal fees from Janssen Pharmaceutical, Yoshitomiyakuhin, Otsuka Pharmaceutical, Dainippon Sumitomo Pharma, Novartis Pharma, and Meiji Seika Pharma. YF received personal fees from Yoshitomiyakuhin, Otsuka Pharmaceutical, Dainippon Sumitomo Pharma, Eisai and Meiji Seika

Pharma. TAK received honoraria from Dainippon Sumitomo Pharma, Meiji Seika Pharma, MSD, Ono Pharmaceutical, Otsuka Pharmaceutical, Pfizer, Takeda Pharmaceutical, and Yoshitomiyakuhin, and received research/grant support from Otsuka Pharmaceutical, which is out of scope of the current study. DF received honoraria from Pfeizer, Terumo, MSD, Tanabe-Mitsubishi Pharma, Novo Nordisk Pharma, and Meiji Seika Pharma, and received research grant which is out of scope of the current study. KO received honoraria from Pfeizer, Dainippon Sumitomo Pharma, Mochida Pharmaceutical, Eisai, MSD, Eli Lilly, Takeda Pharmaceutical, Yoshitomiyakuhin and Kyowa Yakuhin. NM received lecture fees from Mochida Pharmaceutical. IK has received honoraria from Daiichi Sankyo, Dainippon Sumitomo Pharma, Eisai, Eli Lilly, Janssen Pharmaceutical, Lundbeck, Meiji Seika Pharma, Mochida Pharmaceutical, MSD, Mylan, Novartis Pharma, Ono Pharmaceutical, Otsuka Pharmaceutical, Pfizer, Shionogi, Shire, Taisho Toyama Pharmaceutical, Takeda Pharmaceutical, Tsumura, and Yoshitomiyakuhin, and has received research/grant support from Asahi Kasei Pharma, Astellas, Daiichi Sankyo, Dainippon Sumitomo Pharma, Eisai, Eli Lilly, Mochida Pharmaceutical, Novartis Pharma, Otsuka Pharmaceutical, Pfizer, Shionogi, Takeda Pharmaceutical and Tanabe Mitsubishi Pharma.

Author contributions :

NH wrote the initial draft. NH and HT analyzed the data. NH, HT and YF made the current GKT program in Hokkaido University and HT and YF implemented GKT and MHL programs. NH, YS, TAK, DF, KAU and KO made the Mental Health First Aid program in Japan. NM, SA and IK supervised whole study procedure. All authors reviewed and edited the article and approved the submission.

Role of the funding source The funding sources had no involvement.

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Table 1. Background information and pre- and post-training data for all participants

	GKT pre	GKT post	p value[*1]	MHL pre	MHL post	p value[*2]	p value
Age (observed cases)	(n=14)			(n=50)			
Age	47.2 (7.1)			47.1 (9.9)			0.88[*]3
Years in work (observed cases)	(n=14)			(n=49)			
Years in work	13.6 (9.0)			13.1 (8.8)			0.88[*]3
SIRIS-JS (observed cases)	(n=18)			(n=63)			
Change subscale	8.4 (3.6)	4.5 (3.3)	0.001[†]	5 (3.3)	4.8 (4.6)	0.143	<0.001[*]4,[†]
Affirmation subscale	9.6 (4.5)	6 (5.4)	0.002[†]	10.6 (4.3)	9.9 (5.2)	0.07	<0.001[*]4,[†]
Active involvement	1.9 (1.2)	1.9 (1.4)	0.763	1.8 (1.3)	1.7 (1.3)	0.333	0.637[*]4

Emergency evasion	1.5 (1)	1.8 (1.3)	0.539	1.2 (0.9)	1.4 (1.1)	0.322	0.488*4
Dealing with overdose	3.5 (1.3)	2.7 (2)	0.061	3.4 (1.7)	3.4 (1.6)	0.88	0.008*4,†
Gate keeper behavior (Observed cases)	(n=16)			(n=53)			
I ask about suicidal thought voluntarily	3.6 (0.8)	4.5 (0.6)	0.007	3.4 (1.2)	3.3 (1.2)	0.627	<0.001*4,†
I ask about a concrete plan and preparation of suicide	2.4 (0.9)	4.3 (1)	<0.001†	2.7 (1.2)	2.8 (1.2)	0.601	<0.001*4,†
I ask about past history of suicidal behavior	3.1 (0.9)	4.4 (0.8)	<0.001†	3.4 (1.2)	3.5 (1.3)	0.382	<0.001*4,†
I take wrist-cutting and overdosing as serious signs of suicide	4.4 (0.5)	4.8 (0.4)	0.031	4.4 (0.7)	4.3 (0.7)	0.75	0.001*4,†

I do not keep the person's suicidal thoughts a secret	4.1 (1.1)	4.9 (0.3)	0.031	4.3 (0.8)	4.3 (0.7)	1	<0.001*4,†
I express empathy for the person and tell them that I want to help	4 (0.8)	4.9 (0.3)	0.001†	4.2 (0.8)	4.3 (0.7)	0.341	<0.001*4,†
I allow the person to talk about their feelings and accept it	3.8 (0.8)	4.9 (0.3)	<0.001†	4.2 (0.7)	4.2 (0.7)	1	<0.001*4,†
I do not leave a suicidal person on his/her own	4 (0.8)	4.7 (0.5)	0.01	3.7 (0.9)	3.7 (0.9)	0.586	<0.001*4,†
I tell them about the place that they can contact any time that they need to	4.4 (0.5)	4.8 (0.4)	0.109	4.4 (0.7)	4.4 (0.8)	0.995	0.013*4
I try to make a "no-suicide contract"	3.2 (1.1)	4.2 (0.8)	0.004†	3 (1.3)	3 (1.3)	0.629	<0.001*4,†

Confidence in management of suicidal students (Observed cases)	(n=16)			(n=53)			
Management of suicidal students	1.4 (0.7)	2.2 (0.6)	0.005†	1.7 (0.9)	1.8 (0.9)	0.033	0.004*4,†
Assess the suicidal risk and refer to the professionals	1.8 (0.8)	2.8 (0.8)	<0.001†	2.1 (1.2)	2.4 (1.2)	0.021†	0.004*4,†
Satisfaction (observed cases)		(n=16)			(n=53)		
		4.8 (0.4)			3.0 (1.2)		<0.001*5,†

Mean (S.D)

GKT: gatekeeper training, MHL: mental health lecture, pre: pre-training, post: post-training

*1: p value for comparison of pre-and post-training in the GKT group using Wilcoxon signed-rank test

*2: p value for comparison of pre-and post-training in the MHL group using Wilcoxon signed-rank test

*3: p value for comparison between GKT and MHL at pre-training using Wilcoxon rank sum test

*4: p value for comparison of change from pre- to post-training between GKT and MHL using the rank analysis of covariance

*5: p value for comparison between GKT and MHL at post-training using Wilcoxon rank sum test

† Significant after Bonferroni correction