



Evaluating the Longitudinal Efficacy of Suicide CARE (a Korean Standard Gatekeeper Training Program) in a General Community Sample: A Randomized Controlled Trial

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Objective Suicide poses a significant public health concern with increasing prevalence in the general population, emphasizing the need for effective gatekeeper suicide prevention education. This study assesses the longitudinal effectiveness of the “Suicide CARE” gatekeeper training program within a general community sample. Suicide CARE is representative gatekeeper program in Korea. A total of 5 million individuals completed the training program of Suicide CARE in Korea to date.

Methods Participants were recruited through the Korea Suicide Prevention Association website, randomly assigned to the experimental (n=49) or control group (n=53). Pre- and post-training surveys, along with a 3-month follow-up, measured perceived knowledge, gatekeeper efficacy, preparedness, and attitudes toward suicide. Longitudinal effects were analyzed using repeated measures analysis of variance.

Results The experimental group showed significant improvement in perceived knowledge, gatekeeper efficacy, perceived preparedness, and some aspects of attitude towards suicide compared to the control group, with effects declining over time but remaining statistically significant at the 3-month follow-up test.

Conclusion This study is the first to evaluate the longitudinal effectiveness of Suicide CARE in a community population. Strategic integration of evidence-based gatekeeper training programs like Suicide CARE can contribute to community suicide prevention initiatives.

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Keywords Suicide prevention; Gatekeeper training; Program effectiveness.

INTRODUCTION

Suicide is a significant public health issue worldwide, result-

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ing in approximately 800,000 deaths annually.¹ The general community is particularly at high risk of suicide, and in the United States, about 5% of adults over the age of 18 years are known to have experienced serious suicidal thoughts in the past year.² Suicide prevention programs targeting them are being treated as important. These programs aim to reduce suicide risk and strengthen protection through various interventions, one of which is gatekeeper education.³ Gatekeeper training program primarily aims to help the general public recognize and respond to individuals at risk of suicide and is one of the most well-known programs for suicide prevention.⁴ Suicide CARE, a Korean standard gatekeeper training program, was first developed in 2012 by Koreans Association for Suicide Prevention and was revised to version 2.0 in

2019.^{5,6} Suicide CARE was distributed by the Korea Suicide Prevention Foundation to local communities, Schools and workplaces. By the year 2023, the Suicide CARE gatekeeper training program in Korea achieved completion by 5 million individuals, marking a significant milestone in suicide prevention efforts.⁷

Following the COVID-19 pandemic, considering the increased incidence of suicide and the need for effective suicide prevention programs, it is crucial to verify the effectiveness of such interventions.⁸ Previous studies have demonstrated the gatekeeper training is an effective intervention in suicide prevention. A study conducted by Luxton et al.⁹ found that gatekeeper training significantly improved participants' knowledge and attitudes related to suicide prevention. Additionally, Drum et al.¹⁰ found that gatekeeper-educated individuals became proficient in recognizing people at risk of suicide, engaging in conversation, and connecting them with experts.^{11,12} These findings highlight the effectiveness of gatekeeper education in reducing suicide rates.¹³

Despite the positive outcomes observed in previous studies, most relied on pre/post comparisons without a comparison group. This method is challenging to control for confounding variables and does not evaluate the long-term impact of gatekeeper education. Due to these limitations, further studies are required to verify the effectiveness of the program through randomized controlled trials (RCTs).¹⁴ RCTs are used to verify the effectiveness of suicide prevention programs, including gatekeeper education. A meta-analysis of ten RCTs has shown that gatekeeper training has a significant impact on suicidal thoughts and suicide attempts.¹⁵

A recent systematic review by Holmes et al.¹⁶ examined the long-term efficacy (1 month to 2 years) of gatekeeper training. It found that while knowledge and self-efficacy related to suicide showed slight declines over time, they demonstrated the strongest endurance. Attitudes, on the other hand, returned to baseline in 57% (4 out of 7) of studies surveyed at a follow-up of 3–6 months. Most notably, intentions for suicide prevention intervention and gatekeeper behavior showed weak effects, raising questions about the effectiveness of gatekeepers. Furthermore, in the only RCT conducted to date, Wyman et al.¹⁵ randomly assigned 342 secondary school staff members to receive a 1-hour gatekeeper training or no training. While gatekeeper training led to an increase in self-reported knowledge about suicide risk, it had little impact on gatekeeper behaviors during the follow-up period.

Suicide CARE has been studied to be effective,¹⁷ and this study aims to evaluate the effectiveness of Suicide CARE 2.0 version in a general community sample using longitudinal data from a RCT. We aim to measure the effect of gatekeeper education before, immediately after, and 3 months post-inter-

vention, dividing participants into experimental and control groups from the general community.

METHODS

Participants

To investigate the feasibility of face-to-face suicide prevention education for adults aged 20 to 65 years living in the Seoul/Gyeonggi area, we recruited 110 participants by posting a promotional message on the website of the Korea Association for Suicide Prevention. The sample size was determined for each group based on the Repeated Measures analysis of variance (ANOVA) analysis using the G power program, taking into consideration the attrition rates reported in previous RCT studies, including an estimated dropout rate of approximately 20%.¹⁵ We confirmed that all participants had no difficulty in reading and writing. Participants were then randomly assigned to either the experimental group or the control group using a random sampling program (www.randomizer.org), with 55 participants in each group.

The experimental group completed a 2-hour training session on July 13, 2022 and completed a survey before and after the training. The control group underwent a pre-inspection by phone within a 14-day period from July 13, 2022. After 3 months, both the experimental and control groups underwent a follow-up test, which was conducted online between September 28th and October 12th.

All respondents provided informed consent before participating in the study. Ethics approval was obtained by the Institutional Review Board at International St. Mary's Hospital of Catholic Kwandong University (IS22QIMI0030).

Procedure

Pre/post-test

The experimental group consisted of 55 participants, of whom 5 participants were eliminated due to contact issues, resulting in a final sample of 50 participants. Upon arrival at the training site, participants were provided with a research consent form and a copy of the survey. A pre-test survey was conducted for those who agreed, lasting 30 minutes, with the main survey being completed 10 minutes prior to the start of the gatekeeper training, which lasted for 120 minutes. Following the training, the experimental group completed a post-test for 30 minutes before leaving the training site.

The control group consisted of 53 participants, with 2 participants eliminated due to contact issues. Prior notice of the pre-test was given to the control group, who then performed the pre-test via a 30-minute phone call.

Three-month follow-up

Three months following the completion of the training, participants were provided with a link via mobile or email to complete a follow-up investigation. The follow-up survey was administered through an online link that could be accessed on either a computer or mobile platform and required approximately 30 minutes to complete. Among the 50 participants in the experimental group, one participant did not complete the follow-up test, resulting in a final sample of 49 participants individuals who were included in the final analysis. In the control group, a total of 53 participants were included in the final analysis (Figure 1).

Materials

Instruments

Suicide CARE version 2.0, a standardized suicide prevention program designed for gatekeepers in Korea,^{5,6} was selected as the intervention for this study. The program provides a 2-hour training session that focuses on the early detection of warning signs for completed suicide. Suicide CARE version 2.0 was produced based on the psychological autopsy results of the Korea Psychological Autopsy Center. In a recent review, Park et al.⁶ provides an evidence-based rationale for the use of Suicide CARE version 2.0 as a gatekeeper intervention program.

Measures

The survey presented to participants in this study gathered demographics (gender, age, education, religion, employment status, subjective economic status items) and assessed a total of four scales, comprising 58 items in total. At each time point, the survey took approximately 30 minutes to complete. The four scales assessed: 1) perceived suicide prevention knowledge scale (perceived knowledge); 2) self-efficacy to intervene scale

(gatekeeper efficacy); 3) suicide prevention related behaviors scale (perceived preparedness); 4) attitude towards suicide scale, each of which is discussed in detail below.

Perceived suicide prevention knowledge scale (perceived knowledge)

The perceived knowledge utilized by Wyman et al.¹⁵ in a randomized trial study on gatekeeper suicide prevention was evaluated using a nine items scale. Participants were asked to rate their current level of knowledge (e.g., “What questions should be asked to identify suicidal thoughts and behaviors”) on a 7-point Likert scale ranging from 1 (nothing) to 7 (very much). The scale showed excellent reliability, as demonstrated by Cronbach’s alpha coefficient, which was 0.920 in the pre-test, 0.962 in the post-test, and 0.954 in the follow-up.

Self-efficacy to intervene scale (gatekeeper-efficacy)

The evaluation of gatekeepers’ effectiveness in suicide prevention involved the utilization of a scale, which was translated into Korean by Kim¹⁸ from the original ‘Preparation to HelpScale’ developed by Baber and Bean.¹⁹ The scale included four items, such as “I believe I have adequate knowledge and training to help a person who might be thinking about, threatening, or who had attempted suicide,” with participants asked to rate their level of agreement on a 5-point Likert scale ranging from “not at all agree (1)” to “very agree (5).” The reliability of the scale was tested using Cronbach’s alpha coefficient, which was 0.840 in the pretest, 0.833 in the post-test, and 0.897 in the follow-up.

Suicide prevention behaviors scale (perceived preparedness)

Suicide prevention behavior was developed by Wyman et al.¹⁵ and used a scale converted into a Korean version by Kim and Kim.²⁰ It consists of a total of eight items that assess the

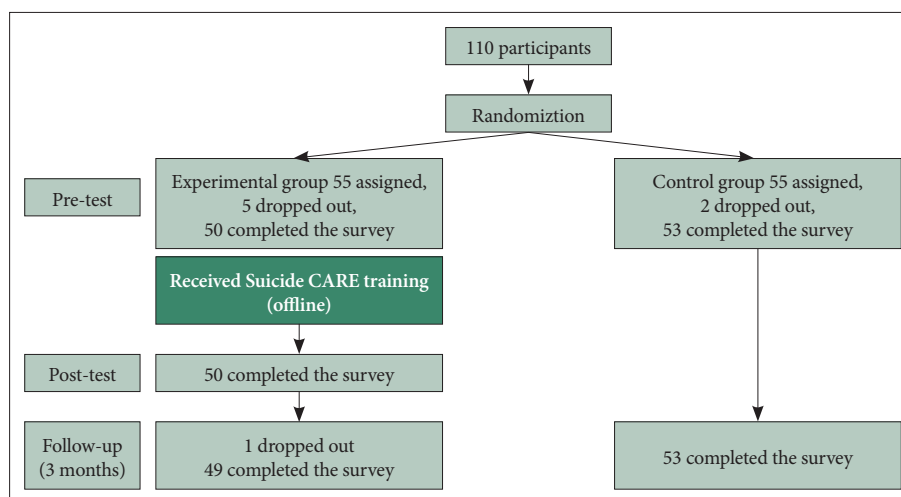


Figure 1. Flowchart of participants through study.

readiness to engage in suicide prevention activities for individuals displaying suicidal behaviors, such as “I can refer to an appropriate institution that can help the subject or ask for help from an expert.” Each item was rated on a 5-point Likert scale, ranging from “not prepared at all (1 point)” to “very well prepared (5 points).” In this study, the reliability was 0.931 in the pretest, 0.962 in the post-test, and 0.954 in the follow-up.

Attitude towards suicide scale

The attitude towards suicide (ATTS) scale developed by Lenberg and Jacobson²¹ is one of the most effective tools for the general population. ATTS was initially developed as a 20-question version, but has recently been widely used as a 37 items.²² ATTS is a proven tool used in a national survey of suicide. In this study, ATTS translated into Korean was used in the 2013 Korean Suicide Survey. In the 2018 Korean Suicide Survey, 10 factor structures classified by Renberg and Jacobsson²¹ were classified into 32 items with the advice of Eleanor Salander Renberg, the original author of ATTS. Accordingly, 32 items were used in this study, and each item is scored on a 5-point Likert scale (1=totally disagree, 5=totally agree).

The 10 factors were as follows: permissiveness (e.g., “Give help to commit suicide if severe, incurable disease-people”), incomprehensibility of suicide (e.g., “Not understandable that people can take their lives”), non-communication (e.g., “People who make threats seldom complete suicides”), preventability of suicide (e.g., “Suicide can be prevented”), tabooing (e.g., “Should or would rather not talk about suicide”), suicide as normal/common (e.g., “Everyone has considered suicide”), suicide as a process (e.g., “Suicides considered for a long time”), relation-caused (e.g., “Attempts due to interpersonal conflicts”), preparedness to prevent suicide (e.g., “Prepared to help a suicidal person-myself”), and suicide as a solution or resignation (e.g., “Situations where suicide is the only solution”).²³

Data analysis

The data collected in this study were analyzed using the SPSS/WIN Statistics 21.0 program (IBM Corp., Armonk, NY, USA). The statistical significance level was set at $\alpha=0.05$. The reliability of the measurement tool was assessed using Cronbach's α coefficient. Descriptive statistics were employed to examine the participants' general characteristics, perceived knowledge, gatekeeper efficacy, perceived preparedness and attitude towards suicide. Difference between the two groups was tested through an independent t-test analysis, examining general characteristics, perceived knowledge, gatekeeper efficacy, perceived preparedness and attitude towards suicide. The effectiveness of gatekeeper training was assessed using paired t-tests to analyze the pre- and post-differences in per-

ceived knowledge, gatekeeper efficacy, perceived preparedness and attitude towards suicide within the experimental group. Repeated measures ANOVA was used to analyze changes in perceived knowledge, gatekeeper efficacy, perceived preparedness and attitude towards suicide.

RESULTS

Homogeneity verification of general characteristics and dependent variables between groups

The homogeneity test results revealed no significant differences in the demographic characteristics such as gender, age, education level, religion, employment status, and subjective economic situations between the experimental and control groups, indicating homogeneity. Additionally, the homogeneity test of dependent variables, including perceived knowledge ($t=-0.19$, $p=0.843$), gatekeeper efficacy ($t=1.23$, $p=0.219$), perceived preparedness ($t=0.81$, $p=0.415$), and attitude toward suicide confirmed homogeneity between the two groups as there were no statistically significant differences in each category: permissiveness ($t=-0.12$, $p=0.902$), incomprehensibility ($t=-0.39$, $p=0.696$), non-communication ($t=0.40$, $p=0.683$), preventability ($t=-1.00$, $p=0.317$), tabooing ($t=0.79$, $p=0.430$), normal-common ($t=1.03$, $p=0.303$), suicidal process ($t=0.48$, $p=0.626$), relation-caused ($t=-1.22$, $p=0.223$), preparedness to prevent ($t=0.07$, $p=0.942$), resignation ($t=0.78$, $p=0.590$) (Table 1).

Validation of the effectiveness of Suicide CARE gatekeeper training program within the experimental group

The paired t-test was conducted to examine the pre- and post-differences in perceived knowledge, gatekeeper efficacy, perceived preparedness and attitude towards suicide within the experimental group. The results, shown in Table 2.

In the experimental group, statistically significant differences were observed in the average scores for perceived knowledge ($t=-14.45$, $p<0.001$), gatekeeper efficiency ($t=-14.39$, $p<0.001$), and perceived preparedness ($t=-13.29$, $p<0.001$). In terms of attitudes toward suicide, the experimental group exhibited statistically significant differences in the average scores for non-communication ($t=-3.67$, $p<0.01$), preventability ($t=-5.31$, $p<0.001$), tabooing ($t=5.08$, $p<0.001$), suicidal process ($t=-2.08$, $p<0.05$), preparedness to prevent ($t=-5.13$, $p<0.001$), and resignation ($t=2.03$, $p<0.001$), while no significant differences were found in the average scores for permissiveness ($t=1.62$, $p=0.112$), incomprehensibility ($t=-0.18$, $p=0.852$), normal-common ($t=-0.17$, $p=0.862$), and relationship-caused ($t=-1.66$, $p=0.103$).

Table 1. Homogeneity of general characteristics and dependent variables between groups (N=102)

Characteristics	Exp. (N=49)	Cont. (N=53)	χ^2/t	p
Gender			0.64	0.422
Male	8 (16.3)	12 (22.6)		
Female	41 (83.7)	41 (77.4)		
Age (yr)*	34.9±15.6	31.8±12.5	1.14	0.259
Level of education			0.14	0.932
High school graduate	24 (49.0)	24 (45.3)		
Bachelor's degree	19 (38.8)	22 (41.5)		
Master's degree	6 (12.2)	7 (13.2)		
Religion			1.47	0.832
No religion	26 (53.1)	28 (52.8)		
Christians	11 (22.4)	14 (26.4)		
Catholics	7 (14.3)	6 (11.3)		
Buddhists	4 (8.2)	5 (9.4)		
Other	1 (2.0)	0 (0)		
Employment status			0.59	0.954
Full-time	7 (14.3)	9 (17.0)		
Part-time	13 (26.5)	12 (22.6)		
Self-employed	5 (10.2)	4 (7.5)		
Unpaid family worker	3 (6.1)	3 (5.7)		
Unemployed	21 (42.9)	25 (47.2)		
Subjective economic status			6.22	0.101
High	4 (8.2)	8 (15.1)		
Middle-high	30 (61.2)	21 (39.6)		
Middle-low	10 (20.4)	20 (37.7)		
Low	5 (10.2)	4 (7.5)		
Perceived knowledge*	26.26±10.95	26.4±9.13	-0.19	0.843
Gatekeeper efficacy*	9.63±2.97	8.83±3.48	1.23	0.219
Perceived preparedness*	18.61±6.77	17.53±6.58	0.81	0.415
Attitude towards suicide*				
Permissiveness	2.08±0.54	2.10±0.57	-0.12	0.902
Incomprehensibility	2.04±0.78	2.10±0.83	-0.39	0.696
Non-communication	2.32±0.34	2.29±0.40	0.40	0.683
Preventability	2.89±0.52	3.00±0.56	-1.00	0.317
Tabooing	1.21±0.55	1.12±0.52	0.79	0.430
Normal-common	2.35±0.68	2.21±0.67	1.03	0.303
Suicidal process	2.06±0.66	2.00±0.63	0.48	0.626
Relation-caused	1.45±0.65	1.61±0.61	-1.22	0.223
Preparedness to prevent	2.51±0.69	2.50±0.70	0.07	0.942
Resignation	1.42±0.87	1.33±0.78	0.78	0.590

Data are presented as mean±standard deviation or number (%).

*t-test. Exp., experimental group; Cont., control group

Table 2. Effects of suicide prevention programs (N=49)

Outcome variables	Pre-test	Post-test	t	p
Perceived knowledge	25.98±11.05	47.21±9.59	-14.45	<0.001
Gatekeeper efficacy	9.65±2.94	15.49±2.19	-14.39	<0.001
Perceived preparedness	18.56±6.71	30.52±5.75	-13.29	<0.001
Attitude towards suicide				
Permissiveness	2.08±0.54	1.98±0.51	1.62	0.112
Incomprehensibility	2.04±0.78	2.02±0.64	-0.18	0.852
Non-communication	2.32±0.34	2.05±0.48	-3.67	<0.01
Preventability	2.89±0.52	3.28±0.47	-5.31	<0.001
Tabooing	1.21±0.55	0.70±0.69	5.08	<0.001
Normal-common	2.35±0.68	2.36±0.62	-0.17	0.862
Suicidal process	2.06±0.66	2.23±0.57	-2.08	<0.05
Relation-caused	1.45±0.65	1.62±0.80	-1.66	0.103
Preparedness to prevent	2.51±0.69	3.11±0.49	-5.13	<0.001
Resignation	1.42±0.87	1.17±0.83	2.03	<0.001

Data are presented as mean±standard deviation.

Verification of continuous effects of Suicide CARE gatekeeper training program

A repeated measures ANOVA was conducted to evaluate the sustained effectiveness of the gatekeeper training program, comparing the experimental and control groups on the pre-test, post-test, and follow-up measures (Table 3). Violations of sphericity assumption were observed for all dependent variables, requiring the use of Greenhouse-Geisser corrected degrees of freedom.

A repeated measures ANOVA evaluated the sustained effectiveness of the gatekeeper training program on perceived knowledge, gatekeeper efficacy, and perceived preparedness, comparing experimental and control groups across pre-test, post-test, and follow-up measures. The analysis revealed significant main effects for group, time, and group×time interaction for perceived knowledge ($F=40.91$, $p<0.001$; $F=94.57$, $p<0.001$; $F=83.85$, $p<0.001$, respectively), gatekeeper efficacy ($F=49.59$, $p<0.001$; $F=94.11$, $p<0.001$; $F=44.92$, $p<0.001$), and perceived preparedness ($F=50.10$, $p<0.001$; $F=75.68$, $p<0.001$; $F=66.39$, $p<0.001$). The experimental group showed significant increases from pre-test to post-test, with slight declines at follow-up, yet maintained higher levels than the control group.

In attitudes towards suicide, significant group, time, and group×time interaction effects were found for non-communication ($F=4.09$, $p<0.05$; $F=9.04$, $p<0.001$; $F=5.65$, $p<0.01$), preventability ($F=4.16$, $p<0.05$; $F=8.13$, $p<0.01$; $F=12.52$, $p<0.001$), tabooing ($F=4.22$, $p<0.05$; $F=8.82$, $p<0.001$; $F=8.95$, $p<0.001$), and preparedness to prevent ($F=12.09$, $p<0.01$; $F=13.52$, $p<0.001$; $F=13.25$, $p<0.001$). However, permissiveness,

Table 3. Continuous effects of suicide prevention programs (N=102)

Variables	Time	Exp. (N=49)	Cont. (N=53)	Source	F	p
Perceived knowledge	Pre-test	25.70±11.00	26.40±9.13	Group	40.91	<0.001
	Post-test	46.98±9.56	-	Time	94.57	<0.001
	Follow up	42.11±11.65	28.36±9.47	G×T	83.85	<0.001
Gatekeeper efficacy	Pre-test	9.63±2.97	8.83±3.48	Group	49.59	<0.001
	Post-test	15.50±2.24	-	Time	94.11	<0.001
	Follow up	14.06±2.82	9.64±3.44	G×T	44.92	<0.001
Perceived preparedness	Pre-test	18.61±6.77	17.53±6.58	Group	50.10	<0.001
	Post-test	30.51±5.81	-	Time	75.68	<0.001
	Follow up	27.94±5.88	18.68±6.28	G×T	66.39	<0.001
Attitude towards suicide						
Permissiveness	Pre-test	2.08±0.54	2.10±0.57	Group	0.65	0.420
	Post-test	1.98±0.51	-	Time	2.78	0.072
	Follow up	2.11±0.59	2.18±0.62	G×T	0.93	0.384
Incomprehensibility	Pre-test	2.04±0.78	2.10±0.83	Group	0.05	0.819
	Post-test	2.02±0.64	-	Time	0.91	0.383
	Follow up	2.15±0.70	2.11±0.84	G×T	0.67	0.476
Non-communication	Pre-test	2.32±0.34	2.29±0.40	Group	4.09	<0.05
	Post-test	2.05±0.48	-	Time	9.04	<0.001
	Follow up	2.05±0.40	2.23±0.40	G×T	5.65	<0.01
Preventability	Pre-test	2.89±0.52	3.00±0.56	Group	4.16	<0.05
	Post-test	3.28±0.47	-	Time	8.13	<0.01
	Follow up	3.23±0.41	2.89±0.53	G×T	12.52	<0.001
Tabooing	Pre-test	1.21±0.55	1.12±0.52	Group	4.22	<0.05
	Post-test	0.70±0.69	-	Time	8.82	<0.001
	Follow up	0.93±0.59	1.16±0.60	G×T	8.95	<0.001
Normal-common	Pre-test	2.35±0.68	2.21±0.67	Group	1.41	0.237
	Post-test	2.36±0.62	-	Time	0.52	0.536
	Follow up	2.29±0.61	2.17±0.75	G×T	0.04	0.907
Suicidal process	Pre-test	2.06±0.66	2.00±0.63	Group	1.04	0.309
	Post-test	2.23±0.57	-	Time	3.36	<0.05
	Follow up	1.95±0.63	1.96±0.65	G×T	2.09	0.139
Relation-caused	Pre-test	1.45±0.65	1.61±0.61	Group	0.05	0.817
	Post-test	1.62±0.80	-	Time	0.83	0.420
	Follow up	1.69±0.65	1.47±0.68	G×T	4.41	<0.05
Preparedness to prevent	Pre-test	2.51±0.69	2.50±0.70	Group	12.09	<0.01
	Post-test	3.11±0.49	-	Time	13.52	<0.001
	Follow up	2.96±0.49	2.50±0.63	G×T	13.25	<0.001
Resignation	Pre-test	1.42±0.87	1.33±0.78	Group	0.79	0.376
	Post-test	1.17±0.83	-	Time	4.10	<0.05
	Follow up	1.33±0.84	1.63±0.93	G×T	3.01	0.057

Data are presented as mean±standard deviation. Exp., experimental group; Cont., control group; G×T, group×time

Incomprehensibility, and normal-common were not significant, and suicidal process and resignation showed significant time effects only ($F=3.36$, $p<0.05$). The relation-caused factor exhibited a significant interaction effect ($F=4.41$, $p<0.05$).

DISCUSSION

This study verifies the longitudinal effect of the Suicide CARE gatekeeper training program in the general population using the RCT method. The results from a 3-month follow-up assessment demonstrated improved efficiency in performing the gatekeeper role compared to the control group, as evidenced by increased perceived knowledge, gatekeeper efficacy, perceived preparedness, and positive attitude towards suicide. Specifically, immediate enhancements were observed in perceived knowledge, gatekeeper efficacy, and perceived preparedness, as measured right after the gatekeeper training program (pre-post test), along with a partial positive shift in attitude towards suicide. These improvements in perceived knowledge, gatekeeper efficacy, perceived preparedness, and attitude towards suicide were maintained at the 3-month post-test. Unlike previous cross-sectional studies, the RCT design in this study helped eliminate confounding variables, providing evidence for the long-term effects of the gatekeeper training program.

Firstly, in this study, perceived knowledge showed a significant increase in scores after gatekeeper training in the experimental group receiving the Suicide CARE gatekeeper training program and showed a long-term effect that was maintained at the time of investigation 3 months later. Previous studies have also shown that perceived knowledge related to suicide prevention is consistently increased immediately after gatekeeper training.^{12,24} In addition, just as the recent systematic review maintained the improvement of suicide prevention knowledge for a long time,²⁵ this study found that it was maintained in the 3-month follow-up results. These results show that knowledge such as risk/protection factors for suicide, which are important factors in gatekeeper training, has been acquired. This allows community-trained gatekeepers to identify suicide risk factors and help those who have difficulty seeking help. In addition, it also contributes to reducing the risk of suicide in the community by linking people at high risk of suicide to experts and connecting social resources.

Secondly, gatekeeper efficacy improved following the Suicide CARE gatekeeper training. Consistent with previous research, gatekeeper training has been shown to effectively increase confidence in engaging in suicide-related interventions.^{4,24} Furthermore, it has been found that this increased self-efficacy is maintained even beyond the baseline up to 1 month to 2 years,²⁵ and the results of this study support this finding

as well. Gatekeeper efficacy facilitates a sense of comfort and confidence in individuals who encounter suicidal incidents, thereby increasing the likelihood of engaging in suicide intervention actions.¹¹

Third, Perceived preparedness was significantly improved in the experimental group compared to the control group after the Suicide CARE gatekeeper training, and this improvement was maintained even after 3 months. This finding is consistent with previous studies that have positively evaluated the ability of gatekeeper training to enhance coping behaviors, communication skills, and suicide prevention actions among high-risk individuals immediately following the training.^{25,26} Although these effects have been shown to diminish significantly over time,²⁵ our study demonstrated that they remained stable even after 3 months. Such results are encouraging as they suggest an increased likelihood of trainees engaging in suicide prevention actions. Furthermore, they contribute to promoting active engagement in suicide prevention-related behaviors and fostering a willingness to openly discuss suicide, thereby reducing biases surrounding suicide.^{11,26-28}

Fourth, attitudes towards suicide did not improve across all sub-domains. Following the Suicide CARE gatekeeper training, the experimental group showed significant improvements in non-communication, preventability, tabooing, suicidal process, preparedness to prevention and resignation. However, after a 3-month period, only non-communication, preventability, tabooing and preparedness to prevention remained significantly improved compared to the control group. These findings indicate that gatekeeper education enhances understanding of suicide, improves taboo attitudes towards suicide, and, most importantly, fosters positive perceptions and attitudes towards suicide prevention, which are maintained over time.

A recent systematic review identified weak evidence for sustained long-term improvement in attitudes towards suicide following gatekeeper training.²⁵ However, this study supports previous studies that gatekeeper training has a positive and longitudinal effect on attitudes toward suicide prevention.^{26,29,30} Given that attitudes towards suicide are increasingly recognized as a critical factor in gatekeepers' ability to translate knowledge and skills into effective suicide prevention actions,^{11,25} future efforts should focus on a deeper understanding of the relationship between gatekeeper training and attitudes towards suicide.

Through this study, it was demonstrated that the Suicide CARE gatekeeper training program has a longitudinal effect of improving participants' perceived knowledge, gatekeeper efficacy, perceived preparedness, and some attitude towards suicide. Above all, research was conducted on general community samples using the RCT methodology to verify the use-

fulness of Suicide CARE gatekeeper training for the general public in a community environment.

Limitations

The limitations of this study are as follows. First, since sample recruitment was recruited by the Korea Association for Suicide Prevention, it could be biased toward community members who are usually interested in suicide prevention issues. Second, the longitudinal effect of Suicide CARE gatekeeper training program is short-term to be measured in a 3-month period, and there is room for a decrease in efficacy after that. Third, the efficacy of the Suicide CARE gatekeeper training program has not been proven as an actual suicide prevention act, which has a limitation that it is not easy to meet high-risk suicide groups in general communities within 3 months. The longitudinal effect on the Suicide CARE gatekeeper training program needs to be proven with more studies.

In conclusion, this study proved that it is an evidence-based suicide prevention program by investigating the longitudinal effectiveness of the Suicide CARE gatekeeper training program using the RCT method. These results show that the Suicide CARE gatekeeper program is effective in the long run in allowing the general public to acquire skills to identify and help those at risk of suicide. This gatekeeper's effort is very important in the early stages of preventing suicide in the community. In addition, it can contribute to more early intervention and reduce the suicide crisis in the community by increasing preparation and self-efficacy for suicide prevention so that it can continue to play a gatekeeper role in the community. Furthermore, the gatekeeper training program can promote understanding and publicizing suicide to alleviate negative attitudes and prejudices about mental health and suicide, and strengthen the network that connects people in need and social resources in the community to ultimately reduce suicide rates.

Availability of Data and Material

The datasets generated or analyzed during the study are not publicly available due to contractual agreements and institutional policies governing data sharing. However, they are available from the corresponding author on reasonable request.

Conflicts of Interest

Jong-Woo Paik, a contributing editor of the *Psychiatry Investigation*, was not involved in the editorial evaluation or decision to publish this article. All remaining authors have declared no conflicts of interest.

Author Contributions

Conceptualization: all authors. Data curation: Jong-Woo Paik, Hwa-Young Lee, Sang Min Lee, Seon Wan Ki, Sung Joon Cho, Jinmi Seol. Formal analysis: Jinmi Seol, Jong-Woo Paik, Hwa-Young Lee. Funding acquisition: Jong-Woo Paik. Investigation: Jinmi Seol, Jong-Woo Paik, Hwa-Young Lee. Methodology: Jinmi Seol, Jong-Woo Paik, Hwa-Young Lee. Project administration: Jong-Woo Paik, Seon Wan Ki, Kang Seob Oh. Supervision: Jong-Woo Paik, Hwa-Young Lee. Writing—original draft: Jinmi Seol. Writing—

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