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Opening doors to life: A suicidal behavior prevention program involving Gatekeeper teachers

Abriendo puertas para la vida: Programa de prevención de conductas suicidas a través de docentes *Gatekeepers*

Abrindo portas para a vida: Programa de prevenção ao comportamento suicida por meio de professores *Gatekeepers*

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Abstract

Introduction: Suicide is the third cause of death in young people aged between 15 to 19 years. Thus, school environments can promote mental health of adolescents through early identification of risk factors and prevention of suicidal behaviors. One prevention strategy is the training of "gatekeepers". **Objective:** To determine the impact of the "Opening Doors to Life" program on the knowledge, attitudes, and practices regarding prevention of suicidal behavior in a set of high school teachers from an educational institution in San Juan de Pasto, Colombia. **Materials and methods:** A pre-experimental study with an intervention group and pre- and post-follow-up measurements. Nine volunteer teachers participated during two training sessions. **Results:** Positive changes regarding knowledge, attitudes, and practices of the participants during pretest and posttest were observed for the majority of evaluated sub-dimensions. However, after three years, the positive measures prevailed only for knowledge about suicidal behavior and attitudes toward prevention. **Conclusion:** The "Opening Doors to Life" program showed effectiveness and relevance. However, maintaining its impact requires follow-up actions and support of trained teachers.

Keywords: Suicide; program; teachers; students; mental health; referral and consultation. (Source: DeCS, Bireme).

Resumen

Introducción: El suicidio es la tercera causa de muerte de jóvenes entre 15 y 19 años. Ante esto, los ambientes escolares pueden favorecer el fomento de la salud mental de los adolescentes, permitir la identificación temprana de factores de riesgo y aportar en la prevención de conductas suicidas. Una de las estrategias de prevención es el entrenamiento de "gatekeepers". **Objetivo:** Determinar el efecto del programa "Abriendo Puertas para la Vida" sobre conocimientos, actitudes y prácticas en prevención de conductas suicidas en un grupo de profesores de secundaria de una institución educativa de San Juan de Pasto, Colombia. **Materiales y métodos:** Estudio preexperimental, con un grupo de intervención y medidas pre y pos-seguimiento. Participaron nueve docentes voluntarios durante dos jornadas de formación. **Resultados:** Se identificaron cambios positivos en conocimientos, actitudes y prácticas de los participantes entre pretest y postest, en la mayoría de las subdimensiones evaluadas; sin embargo, tres años después, estos cambios se mantuvieron tan solo en conocimientos sobre las conductas suicidas y en actitudes hacia la prevención. **Conclusión:** El programa "Abriendo Puertas para la Vida" evidenció efectividad y pertinencia, sin embargo, el mantenimiento de sus efectos requiere de acciones de seguimiento y acompañamiento a los docentes formados.

Palabras clave: Suicidio; programa; docentes; estudiantes; salud mental; derivación y consulta. (Fuente: DeCS, Bireme).

Resumo

Introdução: O suicídio é a terceira causa de morte de jovens entre 15 e 19 anos. Diante disso, os ambientes escolares podem promover a promoção da saúde mental em adolescentes, permitir a identificação precoce de fatores de risco e contribuir para a prevenção do comportamento suicida. Uma das estratégias de prevenção é a formação de "gatekeepers". **Objetivo:** Determinar o efeito do programa "Abrindo Portas para a Vida" nos conhecimentos, atitudes e práticas na prevenção do comportamento suicida em um grupo de professores do ensino médio de uma instituição educacional em San Juan de Pasto, Colômbia. **Materiais e métodos:** Estudo pré-experimental, com grupo de intervenção e medidas pré e pós-acompanhamento. Nove professores voluntários participaram durante dois dias de treinamento. **Resultados:** Foram identificadas mudanças positivas nos conhecimentos, atitudes e práticas dos participantes entre o pré-teste e o pós-teste, na maioria das subdimensões avaliadas; porém, três anos depois, essas mudanças se mantiveram apenas no conhecimento sobre comportamentos suicidas e atitudes frente à prevenção. **Conclusão:** O programa "Abrindo Portas para a Vida" mostrou efetividade e relevância, porém, a manutenção de seus efeitos requer ações de acompanhamento e apoio a professores capacitados.

Palavras chave: Suicídio; programa; docentes; estudantes; saúde mental; encaminhamento e consulta. (Fonte: DeCS, Bireme).

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Introduction

Suicide is a global public health problem. Worldwide, it is considered as the third cause of death in the young population aged between 15 to 19 years old[1]. Colombia has followed a similar pattern, showing a gradual increase in suicidal behavior in boys, girls, and adolescents between 5 and 17 years of age, who represented 7.52% of the total cases of suicide in 2021[2]. In the department of Nariño, Colombia, suicidal rates have been registered (6 per 100,000 inhabitants), which exceeded the national average (4 per 100,000 inhabitants). 55% of these deaths involved people between 15 and 24 years of age, which is significantly higher than figures observed in other regions of the world, where suicide is more frequent in older adults[3,4].

Non-lethal suicidal behaviors can be classified as risk factors for suicidal death. High prevalence of ideas, plans, and attempts in the adolescent and young population makes this group especially vulnerable to suicide[5,6]. Therefore, different suicide prevention programs have been devised worldwide, whose success have depended on whether they take into account the characteristics and needs of the target population[7].

Even though risk factors (RF) for suicidal behavior have been studied and identified, many individuals that have committed suicide have been treated by health professionals (even during the month prior to the event), and have not been identified as potential cases of suicidal risk[8]. This is a worrying situation as some of these deaths could have been prevented with effective identification strategies. Some key factors that may explain this problem are the lack of education and training of health professionals to detect potential risk factors, as well as the possible discomfort or lack of confidence in asking about suicidal ideation[9].

School are critical environments to promote mental health and prevent suicidal behavior in adolescents and young individuals since they are key scenarios to early identification of some RFs. Indeed, teachers are preventive agents due to their closeness to students, their role as models, and their educational function[10]. This is why an educational community, trained in both identifying adolescents at suicidal risk and establishing contact with them, can contribute to creating an environment of closeness and support, this way promoting the prevention of suicidal behaviors[11].

One suicide prevention program targeted towards school populations is based on the "gatekeepers" strategy. They are individuals who have direct contact with people at risk of suicide, have the skills to recognize warning signs, and refer such cases to timely mental care[12-13]. This strategy is aimed at training these gatekeepers in knowledge/skills that are useful in the prevention and management of crisis situations and potential suicidal risk. Thus, gatekeeper training programs (GTP), with teachers, students and administrative personnel, increase levels of knowledge, attitudes, and prevention behaviors regarding suicide as well as self-efficacy and strategies for searching help. Consequently, the identification and prevention of suicide risk is possible, which makes it possible to overcome some existing obstacles to having access to mental health services[14].

Some of the GTPs include SAFE TALK[15], Question, Persuade and Refer (QPR)[16], and CARE[17], among others. These programs address topics such as: RF and protective factors (PF), myths and data about suicidal behavior, warning signs, mental care pathways, coping and stress management skills, seeking help, and specific actions in order to respond to risk situations. Due to their nature, these aspects have a positive impact on knowledge, attitudes, and practices regarding self-harm behaviors[18,19]. Furthermore, given the possibilities of articulation and the use of available human talent, GTPs have shown to be a relevant and effective prevention option in educational environments[20].

Information on suicidal behavior prevention programs that have been designed and applied to educational institutions in Colombia is scarce[6]. This is the reason why a suicidal behavior prevention strategy called "Opening Doors for Life" (ODL) was formulated and implemented, which was based on training of gatekeeper teachers. Thus, this study was aimed at assessing the effect of this strategy on the knowledge, attitudes, and practices of a group of highschool teachers in reference to preventing suicidal behavior in school adolescents from a municipal educational institution in San Juan de Pasto, Colombia.

Materials and methods

An explanatory pre-experimental study was conducted on an intervention group, which had a pretest, post-test and follow-up design[21]. The participants group included nine teachers who were assigned to afternoon classes at an educational institution from San Juan de Pasto, Colombia. Since they decided to voluntarily participate in the study, a probabilistic sampling was not applied. The study was designed according to the structure suggested by the Trend methodology for non-randomized assessments in behavioral and health research[22].

Participants

62 teachers were contacted and invited to participate in the research, of which 9 (2 men and 7 women) completed the pretest, post-test, and follow-up evaluations. Their ages ranged from 37 to 61 years (mean = 43 years; standard deviation = 8.9 years). The work experience of the teachers fluctuated between 3 and 37 years (mean = 12 years), and the time they had been working for their current institutions was between 3 and 28 years (mean = 4.5 years). The areas of expertise and knowledge were: Spanish language (2); natural sciences (3); social sciences (2); mathematics (1); and school counseling (1).

Instrument

An *ad hoc* instrument was designed to assess knowledge, attitudes, and practices in suicide prevention. It was created based on the literature review carried out for this research and was evaluated by three expert judges, who validated that the items of the instrument were clear, relevant, and appropriate to evaluate the study attributes. This evaluation was useful to eliminate seven items that did not have the characteristics required for their

suitability. Thus, the instruments included 109 items, grouped into three main components: (i) knowledge (32 multiple-choice questions with single answer); (ii) attitudes (55 Likert-type questions); and (iii) practices (22 items categorized through a frequency scale). In turn, these three components assessed three dimensions of the attribute: (i) risk and protection factors; (ii) suicidal behaviors; (iii) actions to prevent suicidal behavior. The instrument was applied as a pretest, post-test, and follow-up measurement of the intervention program.

Procedure and intervention strategy

The intervention was led by the research team and consisted of two work days of six hours each. Each session had a structure that specified the different activities to be carried out with their estimated times (Table 1). Pretest and post-test measurements were carried out at the beginning and end of the training, respectively, with a follow-up assessment conducted three years after the implementation of the program. Paper-and-pencil was the format used to complete the instrument, and the program was executed in September 2019.

Table 1. Session structure

Session N° 1 structure
Central theme: suicide - concept, myths and realities
Competencies to develop a) The participant defined suicide, identifying the different types of suicidal behaviors that exist and applying the coping model for their understanding b) The participant discriminated between myths or beliefs about suicide and scientifically validates statements about suicidal behavior
Activities 1. Presentation of the study and research team; sharing the schedule of activities; informed consent signing; pretest completion 2. Awareness activity 3. Topic presentation: myths and realities of suicidal behavior 4. Topic presentation: what is suicide and how is it understood from the coping model context? 5. Activation activity 6. Topic presentation: risk factors for suicidal behavior 7. Workshop: Analysis and presentation of a problem case based on guiding questions 8. Topic presentation: what are the global, national, regional, and local statistics on suicide? 9. Activation activity 10. Topic presentation: what is a crisis? 11. Awareness activity 12. Topic presentation: what are the warning signs of suicidal behavior? 13. Problem case analysis 14. Closing activity (final and evaluative reflections) and homework
Session N° 2 structure
Central theme: crisis intervention and activation of mental care routes
Competencies to develop a) The participant demonstrated crisis intervention skills b) The participant recognized and knew how to activate the mental care routes against suicidal risk
Activities 1. Activation activity 2. Presentation of homework 3. Topic presentation: crisis intervention and activation of mental care routes 4. Awareness activity 5. Reflections and general feedback on how to conduct a crisis intervention 6. Topic presentation: personal, family, community, and institutional protective factors 7. Topic presentation: what are the basic elements to devise a community strategy? 8. Workshop: formulation and presentation of a proposal to promote protective factors in the classroom 9. Closing activity (final and evaluative reflections) and post-test. Acknowledgments and farewell

Data analysis

Statistical analyzes were conducted through JASP V.0.17.1 software[23]. The Shapiro-Wilk and Mauchly tests were applied to confirm normal distribution of the scores and sphericity (homogeneity of the variances of the differences), respectively. Also, these assessments were useful to choose the appropriate hypothesis tests. In order to identify differences between pairs of measurements, Anova type tests, repeated measures, and *post hoc* Bonferroni correction tests were used for both the general knowledge component as well as for the attitudes sub-dimensions. Friedman hypothesis tests, with their respective Conover post hoc tests, were carried out for the knowledge sub-dimensions, attitude general component, and general practices component. Significance values, medians, means as well as effect size statistics (Omega squared - ω^2 – in Anova tests, and Kendall's W in Friedman tests) were identified to assess the magnitude of the differences

between measurements. In addition, the scale scores were coded into three performance levels in order to graphically represent the migration scores, as follows: low (less than 60%), medium (between 61% and 80%) and high (between 81% and 100%).

Ethical considerations

This research was evaluated and approved by the Research Ethics Committee of the University of Nariño, through Administrative Act 036 on September 19, 2017. In addition, the ethical principles followed the Deontological and Bioethical Code for Psychology practice in Colombia[24]. Since this study had minimal risk for human beings[25], the program was run by psychologists, who were attentive to any possible reaction that the participants could have. The intervention was mainly aimed at developing skills so that teachers could identify students´ suicidal behavior and activate mental care routes. Finally, informed consent was obtained from all participants, the objective of the study was explained, and the anonymous and voluntary nature of their participation was highlighted.

Results

The results for each component (knowledge, attitudes, and practices) were analyzed in order to identify the attributes that changed in pretest, post-test, and follow-up measurements due to the applied strategy.

Knowledge component

The application of the program triggered a positive change in the general component of knowledge. As seen in Figure 1, while the pretest data distributed among the three levels (low, medium, high), the scores obtained during the post-test and follow up were grouped only in the medium and high levels.

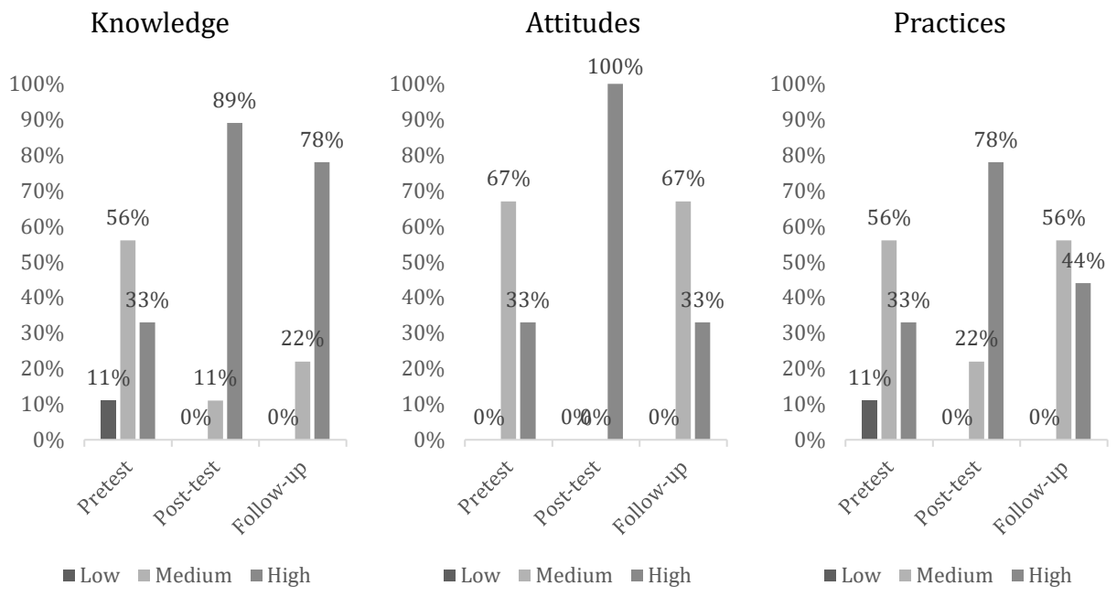

Figure 1. Case distribution in pretest, post-test and follow up measurements

As shown in Table 2, the changes mentioned before were statistically significant. The ω^2 value, used as a size effect statistic, shows important differences, which could be caused by the applied strategy. The two-to-two differences analysis carried out through the Bonferroni *post hoc* test indicates that the larger differences were between pretest and post-test measurements (p=0.001) as well as between pretest and post-test measurements (p= 0.026). These values demonstrate significant differences between the pretest and posterior measurements.

The knowledge component included three subdimensions. The first dimension, which included RF and PF, showed an increment in the levels of knowledge in the post-test measurement, and this increment was also observed in the follow-up measurements (Table 3). However, this difference was not significant and the size effect was low. In the two-to-two comparisons, the Conover's *post hoc* test indicated a significant difference between the pretest and post-test measurements (p=0.05), whereas the other comparisons had p values greater than 0.05.

The second subdimension (knowledge about suicidal behaviors) showed a statistically significant increment in the scores recorded after the implementation of the program, which was maintained until the follow-up measurement. The obtained data showed a transition from a medium level in the pretest assessment to a high level in post-test and follow-up measurements, with a moderate size effect (Table 3). Lastly, only the comparison between pretest and post-test scores showed significant differences (p=0.01) in the *post hoc* test.

Finally, in reference to knowledge about suicide prevention, significant differences were observed in the three measurements. There was a transition from a medium level in the pretest assessment to a high level in the post-test measurement. Nevertheless, the attribute scores decreased to low levels in the follow-up assessment (Table 3). The two-to-two comparisons that showed significant differences were pretest vs. follow-up (as well as post-test vs. follow-up (p=0.001). Although these results show increments from pretest to post-test, they also indicate an important reduction from post-test to follow-up.

Table 2. Pretest, post-test and follow-up measurements of variables with a normal distribution

Aspect	Descriptive statistics			Test statistics		
	Pre. Mean	Post. Mean	Foll. Mean	*p value*	F	ω^2
Knowledge global dimension	23.4	28	27	0.001*	10.5	0.425
Attitudes towards risk factors	57	59.8	49.1	0.001*	28.7	0.634
Attitudes towards suicidal behaviors	50.2	57.7	45.4	0.001*	12.3	0.448
Attitudes towards prevention of suicidal behavior	69.8	78.8	79.7	0.001*	12.1	0.469

Note. Pre: pretest; Post: post-test; Foll: follow up; *p*: p value of the hypothesis test; F: Anova F statistic value; ω^2: effect size

Table 3. Pretest, post-test and follow-up measurements of variables with a non-normal distribution

Dimension or component	Descriptive statistics			Test statistics			
	Pre. Mean	Post. Mean	Foll. Mean	X^2	df	*p value*	Kendall´s W
Knowledge about risk factors	10	13	12	5.88	2	0.053	0.327
Knowledge about suicidal behaviors	5	7	7	8.31	2	0.016*	0.462
Knowledge about prevention of suicidal behavior	8	10	4	15.6	2	0.01*	0.867
Attitudes global dimension	179	196	176	11.5	2	0.003*	0.638
Suicidal behavior prevention practices	65	76	70	9.56	2	0.008	0.531

Note. * Statistically significant results, at a level α = 0.05; Pre: pretest; Post: Post-test; Foll.: follow-up; X^2: chi square statistical value; df: degrees of freedom; *p*: p value of the hypothesis test; Kendall's W: effect size

Attitudes component

A significant increase was registered in the first two assessments of the attitudes related to suicidal behavior. While the pretest measurement of this component showed low scores, they moved to high levels after participants completed the program (Figure 1). During the follow-up assessment the trend was similar to that of the pretest. The *post hoc* analysis showed significant differences in the pretest vs. post-test (p=0.023) and post-test vs. follow-up comparisons (p=0.005). The scores registered during the follow-up assessment returned to the initial levels.

The attitudes component included three subdimensions. The first subdimension was related to attitudes towards RF as well as PF towards suicidal behavior. Here, the participants showed large and significant changes between assessments, with an increase in the scores from the pretest to the post-test measurements. The mean scores decreased in the follow-up measurements compared to the other two observations. The *post hoc* comparisons were useful to identifying that the differences between the pretest and the follow-up measurements were significant (p=<0,001). Similar significant differences were observed in the comparison between post-test and follow-up assessments (p=<0,001), showing levels even lower than those seen initially.

The second analyzed subdimension was attitudes towards suicidal behaviors. A large and statistically significant change in the participants' scores, which transitioned from a medium level to a higher one in the pretest and post-test assessments, respectively. However, the follow-up mean decreased with respect to the other two observations (Table 2). The comparison between pre and post-test assessments showed significant differences (p=0.026), and a similar pattern was observed when comparing post-test vs. follow-up measurements (p=<0,001), demonstrating an increase from pretest to post-test, but also an important decrease in the follow-up analysis.

The third studied subdimension was attitudes towards suicide prevention, in which large and statistically significant changes were identified. On average, the scores moved from medium level in the pretest to high level in the post-test assessment. Similarly, the average scores increased in the follow-up measurement (Table 2). The *post hoc* comparisons of the attribute showed significant differences between pre and post (p=0.003) and between pre and follow-up (p=0.001) measurements. Consequently, the effect of the program was maintained over time.

Suicide prevention practices

Regarding this aspect, the obtained scores revealed a large and significant increase that was recorded after the development of the program (Figure 1 and Table 3). While the data were distributed between all levels in the pretest assessment, the scores were mainly located in the high level in the post-test measurement. Finally, the follow-up assessment showed scores that were distributed in the medium and high levels. Even though the follow-up median values remained higher than the pretest measurement, they were lower than the post-test assessment.

In reference to the practice component, the Conover's *post hoc* test confirmed that the differences between pre and post-test assessments were significant (p=0.007). In contrast, the p values for the other comparisons exceeded the significant value established for the study (Table 3).

Discussion

This research study was aimed at determining the effect of the ODL program on the dimensions of knowledge, attitudes, and practices in suicidal behavior prevention. The study participants were teachers from a municipal educational institution in San Juan de Pasto, Colombia. The results demonstrated an increase in these dimensions in relation to the prevention of the suicidal behavior. Nevertheless, some of these changes did not persist through follow-up assessments.

First of all, their knowledge about RF significantly increased from pretest to post-test assessments, where the scores transitioned from medium to high level, respectively. Similar results were previously reported for programs such as QPR and More Than Sad[16,26], which are also categorized as GTPs. Overall, these observations demonstrate the contribution of GTPs to the knowledge that participants develop with respect to RF and PF of suicidal behavior[7].

On the contrary, regarding knowledge about suicide prevention, no significant differences were found between pretest and post-test assessments. However, it is important to highlight that the initial levels were already high. This could be explained by the fact that teachers usually participate in training activities related to care schemes for critical events that may occur in schools, which offer information about prevention of risk behaviors and management of risk events in academic institutions[27]. In this regard, Torok *et al.*[20] state that GTPs elicit significant changes in knowledge levels, which are more noticeable if baseline levels are low.

Despite the positive results registered between pretest and post-test assessments in the two aspects mentioned above, a significant decrease was also identified in the follow-up measurements. This reduction demonstrates that the effect of the treatment weakens over time if there is no monitoring and follow-up. Similarly, Matthieu *et al.*[7] found that after 12 months, knowledge tends to return to levels prior to the intervention, which highlights the need for periodic actions to reinforce such learning. However, regarding knowledge about suicidal behavior, the results showed an increase between pretest and post-test assessments, a trend that remained significant until follow-up measurements. These findings are similar to those obtained by Arias *et al.*[27], who trained adolescents and young adults to correct erroneous knowledge related to suicidal behavior. Consequently, it is important to strengthen knowledge about suicidal behavior in order to improve the understanding of the problem, and to maintain this effect over time.

In reference to the attitudes related to risk and protective factors, the change between pre and post measures was not significant. However, the simple analysis of the significance of the differences may obscure the fact that more than 50% of the participants showed a fairly favorable attitude at the beginning of the intervention. Consequently, the statistical result was affected by a ceiling effect of the measures[7]. In this regard, it is clear that teachers were able to identify how different situations affect the mental health of their students[28,29]. This is the reason why teachers had developed a proper attitude conducive to knowing and detecting these types of situations.

In addition, an inclusion criterion for teachers to be part of the program was having the willingness and intention to participate in it. Therefore, it is likely that those teachers with favorable attitudes towards RF and PF would be more interested in the mental health of their students. This fact may have increased the probability of carrying favorable actions such as the identification of RF, activation of relevant care routes, and the generation of a trustworthy environment[11].

Significant changes were identified in reference to the attitudes towards suicidal behavior, which seemed to suggest that the contents had a positive impact on cognition, beliefs, and affection towards prevention. These results are similar to those found in other similar programs[16,18], in which both the increase in knowledge and the development of favorable attitudes toward suicide prevention were identified, which can facilitate processes related to the identification, seeking help, and prevention of suicide[18]. Nevertheless, it is important to highlight that the levels of the attitudinal components towards RF and PF as well as towards suicidal behaviors registered during the follow-up assessment were lower than those observed at the beginning of the program. To this respect, Holmes *et al.*[7] reported that in 57% of the studies that analyzed the effect of GTPs on attitudes, the scores returned to initial levels, which emphasizes the need of constant actions to reinforce and maintain the changes accomplished after the implementation of the program.

Contrastingly, the attitudes towards suicide prevention increased from the pretest to post-test, and this change was maintained until the follow-up assessment. This aspect may represent a change in beliefs and cognitions that teachers have in relation to the early and timely detection of cases of suicidal behavior as well as the activation of care networks and routes. King *et al.*[7] also obtained favorable results through the development and execution of the Surviving Teens program, which was aimed at promoting positive attitudes and help searching strategies through proper training of parents, students, and teachers.

Finally, in relation to the factors associated with suicide prevention practices, participants showed an increase in behaviors that they usually apply in order to either prevent the appearance of a self-harming behavior or reduce its severity. Nevertheless, the significance of this change decreased at the time of the follow-up analysis. There are previous studies showing that behavioral changes do not occur so easily, which becomes a challenge for GTPs[7,20]. Thus, the generation of changes in a time-limited intervention and the fact that the levels had not decreased so significantly is considered a success.

Several elements could explain the effects mentioned above. First of all, the components included in the ODL program (information and myths about suicide, crisis situations and how to face them, and channeling routes for risk situations (Table 1) must be taken into account, as they were focused on their possible application in an educational context. It is likely that teachers felt a greater level of self-efficacy and confidence in their knowledge and skills after the participation in this program[31]. Furthermore, it has been shown that gatekeepers training induces a significant increase in knowledge about suicidal behaviors, a reduction in reluctance to intervene, and an increase in perceived self-efficacy for future interventions[7,31].

Secondly, it is necessary to consider the fact that teachers participated voluntarily in the program. Previous studies on prevention of suicidal behaviors suggest that there is a relationship between the personal involvement of teachers in this type of activities and their willingness to learn, acquire, strengthen their skills, as well as to apply them to prevent suicide in their students[32,33].

Finally, the characteristics of the provided information is a third aspect to take into account. Indeed, for a process focused on eliciting novel behaviors to have a demonstrable effect, the information provided must be concise, specific, and clear[34]. Given that the participants of the program were not health experts, the addressed contents, the information given in each thematic core, and the provided instructions were concrete, specific and they described the expected behavior in the proposed hypothetical situations[35]. Even though these programs are considered low-threshold strategies and carried out with actors from the educational community, all the elements described above are important since the GTP is an efficient and cost-effective option for mobilizing, addressing, and preventing self-harmful behaviors[36].

Conclusions

The ODL program focused on teachers led to a significant and positive increment in their knowledge, attitudes, and practices on aspects such as risk factors, prevention factors, and actions to prevent suicidal behaviors. Although there was a favorable change between pretest and post-test measurements in the general components of attitudes and practices, as well as in some subdimensions of knowledge and attitudes, the achieved levels were not maintained until the follow-up assessment period. This observation highlights the need for monitoring and reinforcing actions targeted towards trained gatekeepers.

The design of future multicenter studies is recommended, which could facilitate access to this type of intervention programs. The inclusion of a "waiting list" strategy could expand the number of participants and strengthen the corresponding statistical analysis. Likewise, it is necessary not only to carry out more frequent assessments (3, 6, and 12 months) but also to continue with multimodal interventions that improve the maintenance of the achieved changes. Finally, a time-stable institutional strategy is key for teachers to continue with prevention processes and feel that they are essential actors for these processes.

The results achieved in this study may not be generalized as the number of participants was limited. Nonetheless, this work offers important information about observations that could be replicated in studies with a larger number of participants. Also, this is a relevant work because the generation and implementation of these types of programs is highly required in educational communities.

Conflicts of interest: None declared by the authors.

References

1. World Health Organization (OMS). Suicide [Internet]. 2019 [cited 2022 Dec 4]. Available from: https://www.who.int/es/news-room/fact-sheets/detail/suicide
2. Instituto Nacional de Medicina Legal y Ciencias Forenses, Grupo Centro de Referencia Nacional sobre Violencia. Forensis: Datos para la vida. Bogotá D.C (COL); 2021 [cited 2023 Oct 15]. Available from: https://www.medicinalegal.gov.co/documents/20143/878249/Forensis_2021.pdf
3. Villalobos-Galvis FH, Ojeda-Rosero DE, Luna-Tascón EG. Characterization of suicidal behaviors in adolescents from the area of influence of the Galeras volcano, Nariño, Colombia. Informes Psicol [Internet]. 2019 [cited 2022 Oct 4]; 19(2):163-180. Available from: https://dialnet.unirioja.es/servlet/articulo?codigo=7044259
4. Dávila-Cervantes CA, Luna-Contreras M. Suicide attempt in teenagers: Associated factors. Rev Chil Pediatr [Internet]. 2019 [cited 2022 Oct 4]; 90(6):606-616. Available from: https://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0370-41062019000600606
5. Moreno-Carmona ND, Andrade-Palos P, Betancourt-Ocampo D. Strengths in Colombian and Mexican teens that have never attempted suicide. Rev Latinoam Cienc Soc Niñez Juv [Internet]. 2018 [cited 2021 Oct 4]; 16(2):797-807. DOI: 10.11600/1692715x.16210
6. Benavides-Mora VK, Villota-Melo NG, Villalobos-Galvis FH. Conducta suicida en Colombia: Una revisión sistemática. Rev Psicopatol Psicol Clin [Internet]. 2019 [cited 2021 Oct 4]; 24(3):181-195. DOI: 10.5944/rppc.24251
7. Holmes G, Clacy A, Hermens DF, Lagopoulus J. The long term efficacy of suicide prevention gatekeeper training: a sistematic review. Arch Suicide Res [Internet]. 2019 [cited 2021 Oct 4]; 25(2):117-207. DOI: 10.1080/13811118.2019.1690608
8. Institute of Medicine, Board on Neuroscience and Behavioral Health, Committee on Pathophysiology and Prevention of Adolescent and Adult Suicide, Goldsmith SK, Pellmar TC, Kleinman AM, Bunney WE. Reducing suicide: A national imperative. Washington D.C (USA): The National Academies Press; 2002 [cited 2023 Mar 16]. DOI: 10.17226/10398
9. Chehil S, Kutcher SP. Suicide Risk Management: A Manual for Health Professionals. 2nd ed. Hoboken (USA): Wiley-Blackwell; 2012 [cited 2021 May 13]. Available from: https://www.wiley.com/en-ca/Suicide+Risk+Management%3A+A+Manual+for+Health+Professionals%2C+2nd+Edition-p-9780470978566
10. Alonzo D, Popescu M, Zubaroglu-Ioannides P. Training non-mental healt professionals to assess and manage suicide risk: community level intervention for suicide prevention in Guatemala. Int J Soc Psychiatry [Internet]. 2021 [cited 2021 Oct 4]; 67(6):705-712. DOI: 10.1177/0020764020970237
11. Barrueto C, Gaete J, Bustamante F, Pizarro M. Self-perceived knowledge and skills of teachers for prevention of suicidal behavior in adolescents pre and post-intervention. Rev Chil

Neuro-Psiquiatr [Internet]. 2017 [cited 2021 Oct 4]; 55(3):170-178. DOI: 10.4067/s0717-92272017000300170

12. Gask L, Coupe N, McElvenny D, Green G. Pilot study evaluation of suicide prevention gatekeeper training utilising STORM in a British university setting. Br J Guid Couns [Internet]. 2017 [cited 2021 Oct 4]; 45(5):593–605. Available from: https://www.tandfonline.com/doi/abs/10.1080/03069885.2017.1335391
13. Katz C, Bolton SL, Katz LY, Issak C, Tilson-Jones T, Sarren J. A systematic review of school-based suicide prevention programs. Depress Anxiety [Internet]. 2013 [cited 2021 Oct 4]; 30(10):1030-1045. DOI: 10.1002/da.22114
14. Wolitzky-Taylor K, LeBeau RT, Perez M, Gong-Guy E, Fong T. Suicide prevention on college campuses: What works and what are the existing gaps? A systematic review and meta-analysis. J Am Coll Health [Internet]. 2019 [cited 2021 Oct 4]; 68(4):419-429. DOI: 10.1080/07448481.2019.1577861
15. Bailey E, Spittal MJ, Pirkis J, Gould M, Robinson J. Universal suicide prevention in young people. Crisis [Internet]. 2017 [cited 2021 Oct 4]; 38(5):300-308. DOI: 10.1027/0227-5910/a000465
16. Litteken C, Sale E. Long-Term Effectiveness of the Question, Persuade, Refer (QPR) suicide prevention gatekeeper training program: Lessons from Missouri. Community Ment Health J [Internet]. 2018 [cited 2021 Oct 4]; 54(3):282–292. DOI: 10.1007/s10597-017-0158-z
17. Reiff M, Kumar M, Bvunzawabaya B, Madabhushi S, Spiegel A, Bolnick B. I CARE: Development and Evaluation of a Campus Gatekeeper Training Program for Mental Health Promotion and Suicide Prevention. J Coll Stud Psychother [Internet]. 2019 [cited 2021 Oct 4]; 33(2):107–130. DOI: 10.1080/87568225.2018.1433570
18. Breux P, Boccio DE. Improving Schools' Readiness for Involvement in Suicide Prevention: An Evaluation of the Creating Suicide Safety in Schools (CSSS) Workshop. Int J Environ Res Public Health [Internet]. 2019 [cited 2021 Oct 4]; 16(12):2165. DOI: 10.3390/ijerph16122165
19. Villalobos-Galvis FH, Ceballos-Mora AK, Luna-Tascón EG, Araujo-Rosero L, Muñoz-Muñoz DF, Solarte-Tobar MC. Prevención de la conducta suicida en contextos escolares. Una revisión de los tipos de intervención. Rev Asoc Esp Neuropsiq [Internet]. 2023 [cited 2023 Oct 14]; 43(143):217-236. Available from: https://scielo.isciii.es/pdf/neuropsiq/v43n143/2340-2733-raen-43-143-0217.pdf
20. Torok M, Calear AL, Smart A, Nicolopoulos A, Wong Q. Preventing adolescent suicide: A systematic review of the effectiveness and change mechanisms of suicide prevention gatekeeping training programs for teachers and parents. J Adolesc [Internet]. 2019 [cited 2023 Oct 14]; 73(1):100-112. DOI: 10.1016/j.adolescence.2019.04.005
21. Hernández-Sampieri R, Fernández-Collado C, Baptista-Lucio MP. Metodología de la investigación. 6th ed. México D.F (MEX): McGraw Hill; 2014 [cited 2021 Oct 4]. Available from: https://dialnet.unirioja.es/servlet/libro?codigo=775008
22. Des-Jarlais DC, Lyles C, Crepaz N, the TREND Group. Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. Am J Public Health [Internet]. 2004 [cited 2021 Oct 4]; 94:361-366. DOI: 10.2105/AJPH.94.3.361
23. Goss-Sampson MA. Análisis estadístico en JASP: Una guía para estudiantes. Barcelona (ESP): FUOC; 2019 [cited 2023 jun 20]. Available from: https://static.jasp-stats.org/JASPGuideEspanol.pdf
24. Ley 1090 de 2006: Por la cual se reglamenta el ejercicio de la profesión de Psicología, se dicta el Código Deontológico y Bioético y otras disposiciones. Bogotá D.C (COL): Congreso de la República de Colombia; 2006 [cited 2019 Oct 3]. Available from: https://www.colpsic.org.co/wp-content/uploads/2021/03/Ley-1090-de-2006-anotaciones-jurisprudencia.pdf
25. Resolución 8430. Por la cual se establecen las normas científicas, técnicas y administrativas para la investigación en salud [Internet]. Bogotá D.C (COL): Ministerio de Salud; 1993 [cited 2019 Oct 3]. Available from: https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/DIJ/RESOLUCION-8430-DE-1993.PDF
26. Diamond G, Ogunkua L, Atte T, Rosen P, Wintersteen M, Gallop R. The Effectiveness of the More Than Sad School-based Gatekeeper Training Program. Sch Ment Health [Internet]. 2021 [cited 2022 Feb 16]; 13:655-666. DOI: 10.1007/s12310-021-09444-8
27. Arias M, Marcos S, Martín M, Arias J, Deronceré O. Modificación de conocimientos sobre conducta suicida en adolescentes y adultos jóvenes con riesgo. Medisan [Internet]. 2009 [cited 2022 Dic 13]; 13(1). Available from: http://scielo.sld.cu/pdf/san/v13n4/san05109.pdf
28. Westfeld JS, Jenks Kettmann JD, Lovmo C, Hey C. High School Suicide: Knowledge and Opinions of Teachers. J Loss Trauma [Internet]. 2007 [cited 2022 Dic 13]; 12(1):33–44. DOI: 10.1080/15325020600757839
29. Soto-Salcedo A, Villarroel-Gruner P, Véliz-Burgos A, Moreno-Leiva G, Estay-Sepúlveda JG. Intervenciones para la prevención del suicidio en adolescentes y jóvenes. Revisión sistemática. REE [Internet]. 2021 [cited 2022 Oct 24]; 15(3):145-161. Available from: http://eugenioespejo.unach.edu.ec/index.php/EE/article/view/332
30. King KA, Strunk CM, Sorter MT. Preliminary effectiveness of surviving the Teens® Suicide Prevention and Depression Awareness Program on adolescents' suicidality and self-efficacy in performing help-seeking behaviors. J Sch Health [Internet]. 2011 [cited 2022 Ago 17]; 81(9):581-590. DOI: 10.1111/j.1746-1561.2011.00630.x
31. Haugen J, Sutter CC, Tinstman-Jones JL, Campbell LO. Teachers as Youth Suicide Prevention Gatekeepers: An Examination of Suicide Prevention Training and Exposure to Students at Risk of Suicide. Child Youth Care Forum [Internet]. 2023 [cited 2023 Oct 14]; 52:583-601. DOI: 10.1007/s10566-022-09699-5
32. Pérez-Reyna E, Hernández-Trujillo A, Pérez-Reyna M, Cardero-Montoya D, Beatón-Lobaina YB. Modificación de conocimientos en profesores de la Escuela de Instructores de Arte "Pepito Tey" sobre la prevención del intento suicida en adolescentes. Medisan [Internet]. 2008 [cited 2022 Dic 12]; 12(4). Available from: https://www.redalyc.org/articulo.oa?id=368445249002
33. Serra-Taylor J, Jiménez-Chafey MI, Irizarry-Robles CY. Diseño y evaluación de un adiestramiento para profesionales de ayuda sobre identificación y manejo de riesgo suicida en estudiantes universitarios. Univ Psychol [Internet]. 2016 [cited 2022 Dic 12]; 15(1):271-280. DOI: 10.11144/Javeriana.upsy15-1.deap
34. Miltenberg RG. Modificación de la conducta: principios y procedimientos. 6ta ed. (ESP): ABA España; 2020 [cited 2022 Dic 14]. DOI: 10.26741/2020.Milt
35. Sánchez-Arbex C. Guía metodológica para la implementación de una intervención preventiva selectiva e indicada en drogodependencias. Madrid (ESP): ADES; 2013 [cited 2023 Ene 29]. Available from: https://www.observatoriodelainfancia.es/oia/esp/documentos_ficha.aspx?id=4855
36. World Health Organization (WHO). Vivir la Vida. Guía de aplicación para la prevención del suicidio en los países. Resumen ejecutivo [Internet]. 2021 [cited 2022 Dic 12]. Available from: https://apps.who.int/iris/bitstream/handle/10665/343054/9789240029668-spa.pdf