Research report

Effectiveness of community facilitator training in improving knowledge, attitudes, and confidence in relation to depression and suicidal behavior: Results of the OSPI-Europe intervention in four European countries

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ABSTRACT

Background: Community facilitators (CFs), such as teachers, nurses and social workers, are well placed as gatekeepers for depression and suicidal behavior, but not properly prepared to provide preventive and supportive services. The current study aimed: (1) to improve CFs' attitudes toward depression, knowledge on suicide, and confidence to detect suicidal behavior in four European countries and (2) to identify specific training needs across regions and CF groups.

Methods: A standardized training program was provided to 1276 CFs in Germany, Hungary, Ireland, and Portugal. Attitudes toward depression, knowledge about suicide, and confidence in identifying suicidal persons were assessed before training, after training, and at three to six months follow-up. Additionally, several participants' characteristics were registered.

Results: At baseline, CFs showed relatively favorable attitudes toward depression, but limited knowledge on suicide, and little confidence to identify suicidal behavior. Basic skills strongly differed across CF groups and countries. For example, in Germany, carers for the elderly, nurses, teachers, and managers were most in need of training, while in Portugal pharmacists and the clergy appeared to be important target groups. Most importantly, the training program improved the competencies of CF groups across countries and these improvements were sustained after three to six months. CFs with low basic skills benefited most of the training.

Limitations: The observed training effects could be influenced by other external factors as our results are based upon a pre–post comparison with no control group.

Conclusions: Gatekeeper trainings in community settings are successful in improving knowledge, reshaping attitudes, and boosting the confidence of gatekeepers. The most effective strategy to achieve the preferred objectives is to target those CF groups that are most in need of training and to tailor the content of the training program to the individual needs of the target group.

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1. Background

According to the World Health Organization, worldwide approximately one million people die from suicide every year (World Health Organization, 2003). About 90% of all suicides occur in the context of psychiatric disorders, with depression being the

most prominent risk factor (Hegerl et al., 2009; Mann et al., 2005; Yoshimasu et al., 2008). Given the close relationship between depression and suicidal behavior, community-based action programs targeting simultaneously the improvement of care for depressed patients and the prevention of suicidal behavior have been started in many regions in Europe and have provided evidence for effectiveness (Hegerl et al., 2010, 2013; Miret et al., 2013).

In these interventions, community facilitators (CFs), such as teachers, the clergy, pharmacists, nurses and social workers are considered to have an important role. As they interact with a broad range of people, provide public services, are easily accessible and often maintain a trusting relationship, CFs hold a frontline community position (Scheerder et al., 2008; Walter et al., 2006). In this position, they also have frequent contact with people with mental health problems such as depression or suicidal ideation. Therefore, they often serve as gatekeepers for such problems in the community (Ayalon et al., 2008; Kerfoot et al., 2004; Leavey et al., 2007; Scheerder et al., 2008; Walter et al., 2006). Hence, CFs are well placed to provide general preventive and supportive services, such as recognizing symptoms, providing support or crisis intervention, referring or facilitating access to adequate mental health treatment, and decreasing stigmatization (Mann et al., 2005).

However, the available studies on CFs and mental health indicate that they are not well prepared for such a role (Leavey et al., 2007; McCrae et al., 2005; Scheerder et al., 2009; Walter et al., 2006). As non-specialists, mental health issues are seldom part of their regular curricula, and many CFs consequently lack basic knowledge and adequate skills to deal with mental health problems. For several groups of CFs, it has been reported that they poorly recognize depression, have low confidence in dealing with it, and have limited skills in responding to suicidal people (Ayalon et al., 2008; Scheerder et al., 2010; Walter et al., 2006). Of particular interest are CFs' attitudes toward depression as several studies demonstrate that in certain professions stigmatizing attitudes affect the treatment of depressive patients in a negative manner (Haddad et al., 2007). Although previous research has indicated that CFs' attitudes toward depression are relatively favorable, some stigmatizing attitudes toward patients remain prevalent (Scheerder et al., 2009, 2011).

In order to improve CFs' knowledge and attitudes concerning depression and suicide, and to support them in their role as gatekeeper for mental health in the community, training programs seem necessary. Accordingly, a few studies evaluating such trainings for CFs demonstrated promising results (Eisses et al., 2005; Isaac et al., 2009; McCabe et al., 2008; Ziervogel et al., 2005). Also, this type of intervention has generally been recognized as a useful strategy for suicide prevention (Mann et al., 2005; van der Feltz-Cornelis et al., 2011). However, studies demonstrating the effectiveness and long-term effects of such training programs are scarce.

The current study draws upon data of the Optimizing Suicide Prevention Programs and their Implementation in Europe (OSPI-Europe), a large scale European research project (7th Framework Program of the EU). The overall aim of the project is to evaluate the effectiveness of a multilevel suicide prevention program in four different regions in Europe, using a prospective case-control design (Hegerl et al., 2009). One of the levels of the program concerns the training of CFs on depression and suicide, which is the main focus of the current paper. The goal of this study is:

– To examine whether attitudes toward depression, knowledge about suicide and confidence to identify suicidal behavior are improved after following a gatekeeper training program
– To examine whether gains in competencies are maintained after three to six months follow-up

– To identify specific training needs in different regions and groups of community facilitators by analyzing associations between attitudes, knowledge, and confidence at baseline and certain personal characteristics, such as country, occupation, age, gender, and previous training in and experience with suicide.

Based on these findings the content of the training program can be tailored to the specific needs in different regions and for different CF groups. Additionally, CF groups that should primarily be targeted in future gatekeeper training interventions can be easily identified. Finally, in order to identify specific retraining needs, we examined whether the sustainability of the training effects differed according to personal characteristics and outcome.

2. Methods

2.1. Design

As part of the OSPI-Europe multilevel intervention, standardized training programs on depression and suicide were provided to CFs in the following four OSPI-Europe intervention regions: Amadora (Portugal), Leipzig (Germany), Limerick (Ireland), and Miskolc (Hungary). The research design was a prospective single group pre–post test evaluation. In order to determine pre–post training effects among participants of the OSPI-Europe training program, semi-structured self-report questionnaires assessing core training outcomes were administered among participants before (pre) and immediately after (post) training. Additionally, a three to six month follow-up was conducted to examine the sustainability of the training effects.

2.2. Participants

Across the four intervention countries, data were originally collected on 2126 CFs, including teachers, pharmacists, nurses, the clergy, social workers, counselors, managers, carers for the elderly, and police officers. However, the data of the police officers ($n=850$) has been covered in a separate article. The current report includes the remaining 1276 CFs who attended training.

2.3. Training program

The content of the OSPI-Europe training program was designed to provide participants with knowledge on depression and suicidal behavior (i.e., prevalence of depression and suicidal behavior, symptoms and treatment of depression, warning signs and risk factors associated with suicidal behavior, and skills to motivate help-seeking behavior), to distinguish between mental health and mental health suffering, to perform crisis intervention, and to inform bereaved relatives. The program concludes with role-plays to practice the learned skills.

Although the content of the training was the same in each country, the procedure used to train the CFs slightly differed. Every country implemented the intervention via the training procedure that was most commonly used in the context of their local health care system. In Germany, a train-the-trainer (TTT) procedure was used. Experienced mental health professionals received an 8-h training in order to acquire the right competences to provide the gatekeeper training program to CFs. A TTT seminar provided the mental health professionals with presentation slides, extensive background information, suggested formats for the training, and guidance and advice on delivery. Subsequently, the trained mental health professionals provided 2 to 4 h training to groups of CFs (with an average group size of 20 participants). In Hungary,

Portugal and Ireland, all trainings were provided by three expert trainers to groups of respectively 18, 15, and 20 CFs on average. In Hungary, the trainings lasted 8 h, in Portugal 4 to 8 h, and in Ireland 3 h.

2.4. Questionnaires

Effects of the training were measured using questionnaires assessing the following three core training outcomes: the CFs' (1) attitude toward depression, (2) knowledge about suicide, and (3) confidence in identifying suicidal behavior. First, the Personal Stigma subscale of the Depression Stigma Scale (DSS) (Griffiths et al., 2004) was used to assess the CFs' attitude toward depression. The subscale consists of 9 items assessed on a five-point Likert scale ranging from "strongly agree" (score 1) to "strongly disagree" (score 5) (e.g. "Depression is a sign of personal weakness"). Scale scores were calculated by summing scale items, with higher scores indicating more favorable attitudes toward depression. The Personal Stigma subscale of the DSS has demonstrated acceptable test–retest reliability and internal consistency, with a Cronbach's alpha score of 0.76. Second, the Intervention Knowledge Test (IKT) (Tierney, 1994) was included to assess knowledge about suicide. The IKT contains 9 multiple-choice items querying knowledge on risk factors and intervention strategies with regard to suicide. For all items, one answering options is correct. The IKT total score is the number of correct answers. Third, confidence to detect suicidal persons was assessed via the Morriss Confidence Scale (MCS) (Capp et al., 2001). The MCS contains only one item ("I feel confident that I could identify a person at-risk for suicide"), which is measured on a ten-point Likert scale ranging from "not at all confident" to "very confident". All questionnaires were administered prior to training, immediately after training, and at three to six months follow-up. To ensure that the survey instrument was adequately translated in German, Hungarian, and Portuguese, the original English version of the questionnaires was translated in each language via a translation and back translation procedure.

In addition, several participants' characteristics were registered, including country, gender, age, years of schooling, occupation and years in profession. To assess earlier experience with this issue, participants were asked about previous training attendance and professional experience with suicidal individuals.

2.5. Procedure

Prior to the training, each participating CF received an introductory letter including additional information on the study, an informed consent form, and the three questionnaires. Immediately after the training program questionnaires were distributed for a second time. After three to six months an explanatory letter and the questionnaires were either send by post or email. When the questionnaires were not returned within three to six weeks, a reminder was sent.

2.6. Ethics statement

The OSPI-Europe research project is executed in accordance with the principles laid down in the Helsinki declaration (2000). The research protocol was approved by the regional ethics committees in all participating countries.

2.7. Data analysis

Statistical analyses were carried out using SPSS 19 and SAS. First, the participants' characteristics were examined by exploring descriptive statistics. Second, specific training needs were identified by exploring whether baseline scores on the three outcome scales correlated (1) with each other, (2) with age, (3) with years of schooling, (4) with years of experience, (5) with training effects immediately after training (i.e., scale scores after training minus baseline scale scores), and (6) with training effects after three to six months follow-up (i.e., scale scores at follow-up minus baseline scale scores). Third, to further identify specific training needs three separate ANOVAs were performed examining whether baseline scores on the DSS, the IKT, and the MCS varied according to gender, country, occupation, previous training in suicide, and previous experience with suicide. Finally, a linear mixed-effects model was used to test whether attitudes, knowledge, and confidence in identifying a suicidal person changed after training and to evaluate the sustainability of the training effects.

3. Results

3.1. Response rate

The analyses reported in the current article were performed on 1276 CFs who attended training. Immediately after training the response rate reached 73% ($n = 928$), while at three to six months follow-up 35% of the CFs completed the questionnaires ($n = 451$).

3.2. Participants' characteristics

Table 1 provides an overview of the distribution of participants according to gender, age, years of schooling, professional experience, country, occupational group, previous training in suicide, and experience with suicide. Most of the participating CFs were female (77%), older than 31 years (81%), and had more than ten years of work experience (47%). The number of participating CFs was not equally distributed across countries. More than half of the participants were German (60%), 22% were Hungarian, 12% were Portuguese and 6% were Irish. In Ireland a relatively high number of police officers received a gatekeeper training, the outcomes of which are included in another report. While half of the CFs (54%) had experience with individuals at-risk of suicide in their professional practice in the year prior to training, only 18% of the CFs had received training on suicide behavior in the past.

Importantly, the group of participants who dropped out at follow-up (i.e., drop-out group) differed significantly from the group of participants who completed all measurements (i.e., follow-up group) concerning the socio-demographic variables country, $X^2(3) = 258.76$, $p < .001$, occupation, $X^2(8) = 58.25$, $p < .001$, years of schooling, $F(1, 951) = 5.03$, $p < .05$, and years of experience, $F(1, 951) = 5.36$, $p < .05$. Further analyses (Table 1) showed that drop-out was most pronounced in Ireland (98%), followed then by Hungary (86%), Germany (63%), and Portugal (15%). Furthermore, participants in the follow-up group went more years to school (16.3 years), but had less years of experience (11.4 years) compared to the drop-out group (15.7 years of school and 12.3 years of experience). Finally, drop-out was most pronounced in teachers (80%), followed then by the clergy (70%), managers (67%) and carers for the elderly (67%), counselors (65%), social workers (60%), pharmacists (55%), and nurses (40%).

3.3. Correlations

Pearson correlations were calculated to explore whether DSS, IKT, and MCS scores at baseline were inter-correlated and correlated with age, years of schooling, and years of experience. Table 2 provides an overview of the observed correlation coefficients. Consistent with the recommendations prescribed by Taylor (1990) coefficients of .68 or higher were considered as meaningful, and coefficients between .36 to .67 as moderate. At baseline, no

Table 1
Participants' characteristics.

Characteristic	Level	Overall	Follow-up group	Drop-out group
Gender	Male	291 (23%)	101	190
	Female	974 (77%)	350	624
Age	Mean age	42 years	41.4 years	42.4 years
	< 31 years	184 (19%)	73	111
	31–45 years	380 (40%)	179	201
	> 45 years	388 (41%)	155	233
Years of schooling	Mean years	15.9 years	16.3 years	15.7 years
	< 13 years	206 (16%)	58	148
	13–16 years	418 (34%)	149	269
	> 16 years	621 (50%)	238	383
Professional experience	Mean years	12.4 years	11.4 years	12.3 years
	< 4 years	300 (27%)	113	187
	4–10 years	305 (27%)	115	190
	> 10 years	525 (46%)	180	345
Country	Germany	764 (60%)	283	481
	Hungary	280 (22%)	38	242
	Ireland	81 (6%)	2	79
	Portugal	151 (12%)	128	23
Occupation	Carer for the elderly	105 (8%)	35	70
	Clergy	120 (10%)	36	84
	Counsellor	202 (16%)	71	131
	Manager	143 (11%)	47	96
	Nurse	94 (7%)	56	38
	Pharmacist	128 (10%)	58	70
	Social worker	81 (6%)	32	49
	Teacher	227 (18%)	45	182
	Other/not known	173 (14%)	71	105
	Previous training in suicide	213 (17%)	79	134
	Previous experience with suicide	992 (53%)	321	671

Table 2
The first three rows present the correlation coefficients between the DSS, the IKT, and the MCS baseline score. The rows below present the correlation coefficients between the DSS, the IKT, and the MCS baseline scores and age, years of schooling, years of experience, and scale scores at follow-up.

	DSS at baseline	IKT at baseline	MCS at baseline
Age	−.07[a]	−.15[c]	−.02
Years of schooling	.07[a]	.13[c]	.10[b]
Years of experience	−.10[b]	−.14[c]	−.05
DSS at baseline		.20[c]	.09[b]
IKT at baseline	.20[c]		.24[c]
MCS at baseline	.09[b]	.24[c]	
Learning effect on DSS	−.42[c]		
Learning effect on IKT		−.48[c]	
Learning effect on MCS			−.41[c]
Sustainability on DSS	−.50[c]		
Sustainability on IKT		−.47[c]	
Sustainability on MCS			−.49[c]

[a] $p < .05$.
[b] $p < .01$.
[c] $p < .001$.

meaningful association was observed between any of the three scale scores. Also, no meaningful association was found between the three baseline scores and age, years of schooling, and years of experience. Importantly, the three baseline scores each correlated negatively with the size of the training effect as registered by the corresponding post measure (Table 2), suggesting that those CFs who scored low at baseline benefited most of the training.

3.4. Baseline results

A separate ANOVA was executed on each of the three baseline outcome scores (DSS, IKT, and MCS) to examine whether the participants' basic skills varied according to gender, country, occupation, previous training in suicide, and previous experience with suicide. The factors age, years of schooling, and years of

experience were not entered in the ANOVA as they correlated only weakly with the three baseline scores. Subsequently, in order to construct a meaningful and testable model, the total number of variables of interest was reduced stepwise using the backward selection method. Only factors that either had a significant main effect or interacted significantly with a second fixed factor were retained. Eventually, the fixed factors country, gender, occupation, and previous training appeared meaningful for the three dependent variables.

3.4.1. DSS

On a scale ranging from 5 to 45 CFs had a mean score of 34.05 ($SD = 5.05$) at baseline, indicating relatively favorable attitudes toward depression. The ANOVA showed a significant main effect of previous training, $F(1, 1097) = 5.90$, $p < .05$, with more favorable attitudes for CFs who followed a training earlier ($EM = 34.98$ and $SE = 0.38$) than for CFs who did not follow a training ($EM = 34.05$ and $SE = 0.25$). Moreover, the main effects of country, $F(3, 1097) = 25.67$, $p < .001$, occupation, $F(8, 1097) = 7.24$, $p < .001$, and gender, $F(1, 1097) = 7.52$, $p < .01$, also reached significance. Attitudes toward depression were more favorable for female CFs ($EM = 34.94$ and $SE = 0.26$) than for male CFs ($EM = 34.10$ and $SE = 0.39$). With respect to country, Irish CFs ($EM = 37.47$ and $SE = 0.65$) obtained the most favorable attitudes, followed then by Portuguese ($EM = 35.19$ and $SE = 0.51$), German ($EM = 34.75$ and $SE = 0.27$), and Hungarian CFs ($EM = 31.91$ and $SE = 0.42$). Finally, counselors ($EM = 37.17$ and $SE = 0.65$) gained the highest DSS scores, whereas carers for the elderly ($EM = 31.54$ and $SE = 0.59$) obtained the least favorable scores. Furthermore, teachers ($EM = 32.42$ and $SE = 0.52$), managers ($EM = 32.69$ and $SE = 0.47$) and the clergy ($EM = 33.88$ and $SE = 0.53$) also scored below average (i.e., $M = 34.05$).

Importantly, a significant interaction was found between country and occupation, $F(16, 1097) = 4.39$, $p < .001$, suggesting that the variation across occupation groups differed in the four countries.

Table 3
Estimated means and standard errors on the DSS, the IKT, and the MCS at baseline by country and occupation.

Questionnaire	Occupation	Germany	Hungary	Ireland	Portugal
DSS	Carer for the elderly	31.53 (0.58)			
	Clergy	37.97 (0.81)	30.29 (0.76)	36.62 (0.96)	30.64 (1.31)
	Counsellor	36.49 (0.50)	36.88 (0.96)	37.87 (2.02)*	37.43 (0.92)
	Manager	34.16 (0.58)	31.21 (0.64)		
	Nurse	32.75 (0.98)	33.42 (1.92)*		37.57 (1.09)
	Pharmacist	35.38 (0.82)	30.55 (1.02)	38.19 (1.33)*	35.07 (0.79)
	Social worker	36.60 (0.78)	31.04 (1.51)*	37.69 (1.20)*	35.90 (1.89)*
	Teacher	33.89 (0.54)	30.95 (0.69)		
	Other/not known	34.00 (0.67)	30.92 (0.85)	36.97 (1.59)*	34.56 (1.11)*
IKT	Carer for the elderly	3.34 (0.15)			
	Clergy	4.15 (0.22)	3.86 (0.20)	3.57 (0.26)	3.28 (0.32)
	Counsellor	4.18 (0.13)	5.10 (0.26)	6.37 (0.47)*	4.70 (0.24)
	Manager	3.70 (0.16)	3.91 (0.17)		
	Nurse	3.14 (0.26)	2.93 (0.50)*		3.56 (0.30)
	Pharmacist	3.74 (0.22)	3.67 (0.27)	4.01 (0.35)*	3.42 (0.21)
	Social worker	4.13 (0.21)	4.78 (0.40)*	4.51 (0.32)*	3.04 (0.52)*
	Teacher	3.56 (0.14)	4.09 (0.18)		
	Other/not known	3.44 (0.18)	4.29 (0.23)	4.13 (0.44)*	3.71 (0.30)*
MCS	Carer for the elderly	3.89 (0.24)			
	Clergy	4.37 (0.32)	5.35 (0.31)	3.09 (0.50)	4.70 (0.49)
	Counsellor	4.20 (0.19)	7.68 (0.41)	7.15 (0.74)*	5.46 (0.39)
	Manager	3.83 (0.24)	5.56 (0.27)		
	Nurse	4.15 (0.39)	7.08 (0.83)*		5.21 (0.46)
	Pharmacist	3.23 (0.34)	5.27 (0.46)	3.86 (0.60)*	4.01 (0.33)
	Social worker	3.94 (0.31)	5.68 (0.66)*	5.84 (0.48)*	5.67 (0.76)*
	Teacher	2.96 (0.21)	5.42 (0.29)		
	Other/not known	3.63 (0.28)	6.16 (0.37)	3.21 (0.68)*	4.61 (0.46)*

* Less than 20 observed cell counts.

Table 3 provides an overview of the estimated means and standard errors of the DSS scores at baseline as a function of country and occupation. For some conditions, the number of cell counts was less than 20 or even zero. For these conditions DSS scores at baseline are not further discussed. In Germany, carers for the elderly, nurses, and teachers scored below average (i.e., $M = 34.05$), whereas the other professions obtained relatively favorable DSS scores. In Hungary, except for the counselors all professions scored below average. By contrast, in Ireland all CF groups scored high on the DSS. Finally, in Portugal the clergy scored low on the DSS, whereas all other professions had a fairly positive attitude toward depression (Table 3).

3.4.2. IKT

Prior to training, CFs had a mean score of 3.72 ($SD = 1.30$) on a scale ranging from 0 to 9, suggesting that overall CFs had limited knowledge about suicide. The ANOVA demonstrated that outcome scores on the IKT varied according to country, $F(3, 1184) = 7.02$, $p < .001$, occupation, $F(8, 1184) = 8.86$, $p < .001$, and whether CFs followed a training on suicide previously, $F(1, 1184) = 11.20$, $p < .01$. Estimated means further revealed that CFs who previously received training ($EM = 4.11$ and $SE = 0.10$) scored higher on the IKT than CFs who did not follow any training ($EM = 3.77$ and $SE = 0.07$). Furthermore, CFs in Ireland ($EM = 4.52$ and $SE = 0.17$) and Hungary ($EM = 4.08$ and $SE = 0.11$) acquired the highest scores on the IKT, while CFs in Germany ($EM = 3.71$ and $SE = 0.07$) and Portugal ($EM = 3.62$ and $SE = 0.14$) had the lowest scores. With respect to occupation, counselors ($EM = 5.09$ and $SE = 0.16$) and social workers ($EM = 4.11$ and $SE = 0.22$) scored high on the IKT, whereas nurses ($EM = 3.21$ and $SE = 0.28$), carers for the elderly ($EM = 3.34$ and $SE = 0.15$), the clergy ($EM = 3.71$ and $SE = 0.14$), and pharmacists ($EM = 3.71$ and $SE = 0.17$) all scored below average (i.e., $M = 3.72$).

Importantly, a significant interaction was obtained between country and occupation, $F(16, 1184) = 2.94$, $p < .001$, suggesting that variation between occupation was not equal in the four

countries. Table 3 provides an overview of the IKT scores in function of country and occupation. In all countries, counselors obtained the highest IKT scores. Moreover, in Germany, the clergy and social workers scored far above average (i.e., $M = 3.72$) whereas carers for the elderly, managers, nurses, and teachers scored below average. In Hungary, pharmacists scored low on the IKT, while all other CFs scored above average. In Ireland and Portugal, particularly the clergy scored low. Furthermore, in Portugal, nurses as well as pharmacists had limited knowledge on suicide.

3.4.3. MCS

Initially, CFs acquired a mean score of 3.98 ($SD = 2.03$) on a scale ranging from 0 to 10, suggesting they had relatively little confidence in identifying suicidal behavior in their professional life. The ANOVA yielded significant main effects of country, $F(3, 1127) = 38.86$, $p < .001$, gender, $F(1, 1127) = 6.28$, $p < .05$, previous training, $F(1, 1127) = 13.52$, $p < .001$, and occupation, $F(8, 1127) = 7.26$, $p < .001$. Estimated means further revealed that Hungarian CFs ($EM = 6.02$ and $SE = 0.21$) were most confident to identify suicidal behavior, followed then by Portuguese ($EM = 4.94$ and $SE = 0.22$), Irish ($EM = 4.63$ and $SE = 0.26$), and German CFs ($EM = 3.80$ and $SE = 0.11$). Moreover, male CFs ($EM = 5.07$ and $SE = 0.18$) felt more confident in identifying suicidal behavior than female CFs ($EM = 4.59$ and $SE = 0.11$). Also, CFs who followed a training earlier ($EM = 5.15$ and $SE = 0.16$) were more confident compared to CFs who did not follow any training ($EM = 4.51$ and $SE = 0.11$). With respect to occupation, carers for the elderly ($EM = 3.89$ and $SE = 0.24$) scored low on the MCS (i.e., below average), whereas counselors ($EM = 6.12$ and $SE = 0.25$), nurses ($EM = 5.48$ and $SE = 0.42$), and social workers ($EM = 5.28$ and $SE = 0.32$) gained relatively favorable scores.

Importantly, a significant interaction was observed between country and occupation, $F(16, 1127) = 2.68$, $p < .001$, suggesting that the observed variation in confidence between occupations was not equal in the four countries. Table 3 provides an overview

of the estimated means in function of country and occupation. In Germany, MCS scores were generally low. However, the lowest scores were found for teachers, pharmacists, managers, carers for the elderly, and social workers (i.e., below average). In Ireland low confidence was found only among the clergy. Finally, in Hungary and Portugal, all CFs scored above average.

3.5. Training effects

To assess whether attitudes, knowledge, and confidence in identifying a suicidal person had changed after training and to evaluate the sustainability of the training effects after three to six months, a linear mixed-effects model was used with the participants' scores on the three scales as dependent variables. Importantly, a linear mixed model corrects for possible confounds related to drop-out (Little, 2001). Moreover, a backward selection procedure was used to determine which fixed factors should be included in the model. As a result, the factors timing (i.e., pre, post, and follow-up), country, and occupation were retained.

3.5.1. DSS

The linear mixed model yielded a significant main effect of timing, $F(2, 544) = 43.99$, $p < .001$, suggesting that attitudes toward depression improved after training. However, the fixed factor timing interacted significantly with country, $F(6, 573) = 17.37$, $p < .001$, indicating that training effects differed across countries. Contrasts further revealed that for German, Hungarian, and Portuguese CFs attitudes were more positive immediately after training, whereas for Irish CFs no training effect was observed, with respectively $t(1225) = 6.88$, $p < .001$ for Germany, $t(1225) = 15.1$, $p < .001$ for Hungary, $t(1225) = 6.50$, $p < .001$ for Portugal, and $t < 1$ for Ireland. Moreover, estimated means showed that training effects were most pronounced in Hungary, followed then by Portugal, and Germany (Table 4). Also, in all three countries training effects were sustained after three to six months follow-up, with $t(1225) = 3.54$, $p < .001$ for Germany, $t(1225) = 7.35$, $p < .001$ for Hungary, $t(1225) = 5.66$, $p < .001$ for Portugal (Table 4).

Moreover, there was a significant interaction between timing and occupation, $F(16, 605) = 2.19$, $p < .01$, suggesting that training effects differed across CF groups (Table 4). Further analyses revealed a training effect in all CF groups, with $t(1225) = 3.10$,

$p < .01$ for carers for the elderly, $t(1225) = 3.70$, $p < .001$ for the clergy, $t(1225) = 4.63$, $p < .001$ for counselors, $t(2,83) = 8$, $p < .001$ for managers, $t(1225) = 2.82$, $p < .01$ for nurses, $t(1225) = 5.5$, $p < .001$ for pharmacists, $t(1225) = 2.87$, $p < .01$ for social workers, and $t(1225) = 7.19$, $p < .001$ for teachers. According to the estimated means (Table 4), training effects were most pronounced in managers, teachers, and pharmacists. After three to six months follow-up the improvement in attitudes was only maintained in the clergy and in pharmacists, with respectively $t(1225) = 2.72$, $p < .01$ and $t(1225) = 2.65$, $p < .01$.

3.5.2. IKT

Results showed a significant main effect of timing, $F(2, 616) = 55.40$, $p < .001$, suggesting that knowledge about suicide significantly improved after training. The size of the training effect, however, differed significantly across countries, $F(6, 632) = 5.73$, $p < .001$ (Table 4). Planned comparisons further demonstrated in each of the four countries a significant increase in knowledge about suicide immediately after training, with $t(1263) = 10.21$, $p < .001$ for Germany, $t(1263) = 3.65$, $p < .001$ for Hungary, $t(1263) = 4.60$, $p < .001$ for Ireland, and $t(1263) = 8.19$, $p < .001$ for Portugal. However, according to the estimated means (Table 4) learning effects were most pronounced in Ireland and Portugal, followed then by Germany and Hungary. At follow-up acquired knowledge was only preserved in German and Portuguese CFs, with respectively $t(1263) = 4.22$, $p < .001$ and $t(1263) = 6.41$, $p < .001$.

3.5.3. MCS

As for the DSS and the IKT scores, the linear mixed model yielded a main effect of timing on the MCS outcome scores, $F(2, 587) = 125.24$, $p < .001$, which interacted significantly with the fixed factor country, $F(6, 644) = 9.16$, $p < .001$, suggesting that the training effects differed significantly across countries. Paired comparisons further revealed in all four countries an increase in confidence immediately after training, with $t(1235) = 17.10$, $p < .001$ for Germany, $t(1235) = 5.15$, $p < .001$ for Hungary, $t(1235) = 7.24$, $p < .001$ for Ireland, and $t(1235) = 11.05$, $p < .001$ for Portugal. Estimated marginal means (Table 4) demonstrated that training effects were most pronounced in Ireland and Portugal, followed then by Germany and Hungary. In all four countries

Table 4
Estimated means and standard errors of the DSS, the IKT and the MCS scores at baseline, after training and after three to six months follow-up.

Scale	Factor	Level	Baseline	After training	At follow-up
DSS	Country	Germany	34.32 (.20)	35.46 (.21)	35.16 (.24)
		Hungary	31.43 (.31)	35.41 (.33)	35.44 (.56)
		Ireland	36.48 (.59)	37.00 (.77)	33.52 (2.28)
		Portugal	35.09 (.43)	37.36 (.46)	37.45 (.44)
	Occupation	Carer for the elderly	31.41 (.58)	33.06 (.65)	31.62 (.90)
		Clergy	34.11 (.45)	35.73 (.64)	36.14 (.76)
		Counsellor	36.43 (.39)	38.03 (.42)	37.57 (.74)
		Manager	33.62 (.46)	36.78 (.50)	35.13 (.81)
		Nurse	34.77 (.54)	36.04 (.58)	35.25 (.81)
		Pharmacist	34.40 (.45)	36.43 (.48)	36.43 (.78)
		Social worker	35.97 (.56)	37.49 (.66)	36.25 (.90)
		Teacher	34.00 (.39)	36.57 (.44)	35.03 (.80)
		Other/not known	34.25 (.42)	36.65 (.46)	35.09 (.74)
IKT	Country	Germany	3.55 (0.05)	4.19 (0.06)	3.89 (0.08)
		Hungary	4.02 (0.08)	4.38 (.10)	3.76 (0.19)
		Ireland	4.06 (0.15)	5.20 (0.24)	4.15 (0.80)
		Portugal	3.67 (0.11)	4.78 (0.12)	4.60 (0.14)
MCS	Country	Germany	3.45 (0.08)	4.58 (0.08)	4.53 (0.10)
		Hungary	5.33 (0.12)	5.88 (0.12)	6.12 (0.24)
		Ireland	4.17 (0.23)	6.11 (0.29)	6.52 (1.01)
		Portugal	4.30 (0.16)	5.89 (0.17)	6.20 (0.18)

the training effect was preserved at follow-up, with $t(1235)=$ 10.62, $p < .001$ for Germany, $t(1235)=3.22$, $p < .01$ for Hungary, $t(1235)=7.24$, $p < .001$ for Ireland, and $t(1235)=11.05$, $p < .001$ for Portugal. According to the estimated means training effects were more sustained in Portugal followed then by Germany, Ireland, and Hungary (Table 4).

4. Discussion

The current international study reports on the results of the OSPI-Europe training program, implemented in eight different CF groups in four European countries. To assess the effectiveness of the training program we focused on intermediate outcomes that are linked directly to the operational goals and the content of the intervention, such as change in attitude toward depression, improved knowledge about suicide, and increased confidence to identifying persons at-risk of suicide. The effects of the program were evaluated immediately after training as well as at three to six months follow-up. Although the response rate was acceptable, we found important differences between participants who dropped-out of the study versus participants who passed through the whole study. In particular, participants who dropped-out had less experience and fewer years of schooling than participants who accomplished all questionnaires. Also, there was a higher drop-out among Irish CFs and low drop-out among Portuguese CFs. To correct for possible confounds related to drop-out, a linear mixed model was used, allowing us to draw strong conclusions on the effectiveness of the training program and the sustainability of these effects after three to six months follow-up (Little, 2001).

Our results confirmed the necessity of training programs on suicidal behavior for CFs. Generally, CFs had low baseline skills on suicide. They showed relatively favorable attitudes toward depression, but had only limited knowledge about suicide and little confidence in identifying suicidal behavior. Importantly, half of the CFs had experience with suicide in their professional practice last year, with only a minority of them attending a training program on suicide in the past.

Overall, our results provide supporting evidence on the efficacy of the training program in educating CFs. Attitudes toward depression, knowledge about suicide, and confidence to identify suicidal persons all significantly improved after following the training, supporting our main hypothesis. Importantly, after three to six months, the improvement in these three areas of competence remained significant. Although numerous studies show an increase in competencies after following a gatekeeper training program (Isaac et al., 2009), thus far only one study confirmed that these skills are sustained over time (Chagnon et al., 2007). As such, the current results strengthen the evidence indicating that gatekeeper trainings in community settings are successful in improving the knowledge, reshaping the attitudes, and boosting the confidence of gatekeepers, and that these acquired traits are sustained over time.

Importantly, the training program appeared beneficial to improve the competencies of all CF groups. The impact of the training, however, slightly differed across countries. More specifically, German, Hungarian, and Portuguese CFs showed immediately after training more positive attitudes toward depression, improved knowledge about suicide, and enhanced confidence to detect suicidal behavior, while Irish CFs only showed an improvement on the latter two skills. We notice, however, that the CFs in Ireland showed more positive attitudes toward depression at baseline compared to CFs in other countries. Furthermore, improvements in knowledge on suicide and in confidence to identify people expressing suicidal thoughts and behavior were more pronounced in Ireland and Portugal, while changes in attitudes were more distinct in Hungary and Portugal. Differences in training procedures might explain for some of the observed variability in learning effects across countries. For example, training effects in CFs were somewhat less pronounced in Germany as compared to the other countries. At the same time, German CFs received a TTT training of 2 to 4 h, whereas in Hungary, Portugal and Ireland CFs received a more intense training provided by an expert and lasting 3 to 8 h. Possibly, longer training programs and trainings provided by experts instead of peer CFs produce greater changes in competencies. Although this seems a plausible hypothesis, further research is required to confirm this. Also, lower scores at baseline were associated with more improvement after training, an association that was observed for all three competences. This finding suggests that CFs with low basic skills benefited most of the training program.

Furthermore, although our findings demonstrated that overall training effects were sustained at three to six months follow-up, further analyses revealed that this was not the case for all CFs and in all countries. More specifically, only in Germany and Portugal improvements were sustained on the three dimensions—attitudes, knowledge, and confidence. In contrast, in Hungary only attitudes toward depression and confidence to identify suicidal behavior were maintained, whereas in Ireland only one of the basic skills was preserved, namely confidence to identify suicidal behavior. In addition, at follow-up only the clergy and pharmacists showed preserved attitudes. These findings suggest that retraining on a regular basis is useful to guarantee that the acquired characteristics remain fully active. Retraining programs should focus in particularly on refreshing knowledge about suicide and improving attitudes toward depression.

The content of a training program may cover many aspects of suicide. As stated by Chagnon et al. (2007) it is helpful to determine whether all aspects are of equal importance or whether a more intensive strategy focusing on a narrower spectrum of competencies is sufficient to reach the preferred objectives. Using a specific approach wherein the content of the training program is adapted to the basic skills of the target group will generate by any doubt the most effective results. However, it is necessary then to evaluate the basic competencies of the target group shortly before the training takes place, which is not always achievable due to limited resources and insufficient time. The basic skills of the CFs participating in the current study might be indicative of the training needs of similar target groups. Overall, our baseline results revealed that CFs' had relatively favorable attitudes toward depression, but limited knowledge about suicide, and little confidence to identify suicidal behavior. These findings suggest that training programs should in particular focus on training the latter two competencies. Moreover, attitudes toward depression were relatively favorable in the current study. CFs who attended the training were possibly self-selected and highly motivated to prevent suicide in their community (Capp et al., 2001). Therefore, when CFs voluntary participate in a training, programs should focus more on improving knowledge and confidence rather than on changing attitudes toward depression. In contrast, when CFs are obliged to participate, for example by their employer, initial attitudes toward depression are perhaps less favorable, hence it could be more valuable to focus during training more on generating positive attitudes. In addition, when providing a training program to CFs, it is important to target those groups of CFs that are most in need of training. Our baseline results reveal that basic skills strongly differed according to occupation and that the variation across CF groups differed in the four countries. Overall, in Germany, training programs should mainly target carers for the elderly, nurses, teachers, and managers as they gained to lowest scores on each of the three baseline tests. In Hungary, the clergy, managers, pharmacists, and teachers were important target

groups. In Ireland, except for the clergy CFs generally acquired high scores on the three baseline tests. In Portugal, less favorable basic skills were found among pharmacists and the clergy. In all four countries, counselors and social workers scored high on the three baseline scales, suggesting they are a less important target group for gatekeeper trainings.

In contrast with previous research (Angermeyer and Dietrich, 2006; Ayalon et al., 2008; Connery and Davidson, 2006), age and years of professional experience failed to correlate with any of the basic competencies. Older CFs and CFs with more years of experience demonstrated a similar amount of stigma toward depression, and a similar level of knowledge about suicide and confidence to detect suicidal behavior than younger CFs and CFs with less years of experience. These findings suggest that regardless of years of professional experience CFs of all ages are in need of training. In addition, we did observe that CFs who followed a training earlier gained higher scores on the DSS and the IKT, suggesting that trainings should primarily target CFs who never followed training on depression or suicide yet.

5. Limitations and future research

Although the current findings provide strong support for the hypothesis that gatekeeper training programs can improve competencies for intervening with depressive and suicidal persons, the study has two limitations. First, the results are based on pre–post comparisons with no control group. Therefore, we cannot rule out the possibility that apart from the training program other external factors contributed to the observed change in competencies in CFs. Possibly, the CFs participating in the study were self-selected and highly motivated to prevent suicide in the community. Second, the training procedure used to train the CFs differed across countries. Therefore, some of the observed variability in learning effects among countries might be caused by differences in training procedures.

6. Conclusions

The study outcomes provide evidence indicating that gatekeeper trainings in community settings are successful in improving knowledge, reshaping attitudes, and boosting the confidence of gatekeepers. Overall, our findings demonstrate that these acquired traits are sustained after three to six months. Moreover, we argue that targeting those CF groups that are most in need of training and tailoring the content of the training program to the individual needs of the target group is the most effective strategy to achieve the preferred objectives. Based on our findings we make the following recommendations:

- When CFs participate in the training on a voluntary basis, it is less important to focus on changing attitudes, but more important to focus on improving knowledge and confidence
- CFs of all ages irrespective of years of experience are important target groups
- Counselors and social workers are less important target groups
- In order to keep the learned competencies active it is useful to foresee a retraining program after a few months attending in particular to rehearsing knowledge and attitudes

Conflict of interest
The authors declare that they have no conflicts of interest.

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