

# Chapter 3

## **Suicide Prevention E-learning Modules Designed for Gatekeepers: A Descriptive Review**



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## Abstract

**Background:** E-learning modules can be a useful method to educate gatekeepers in suicide prevention and awareness.

**Aims:** To review and provide an overview of e-learning modules on suicide prevention designed for gatekeepers, and their effectiveness.

**Methods:** Two strategies were used. First, articles were systematically searched in databases of PubMed, Web of Science and PsycINFO. Second, *Google* search was used to find e-learning modules on the web.

**Results:** The literature search resulted in 448 papers of which none met the inclusion criteria of this study. The *Google* search resulted in 130 hits, of which 23 met the inclusion criteria of this review. Organizations that owned the modules were contacted of which 13 responded and nine were included in this study. The effectiveness of two e-learning modules is currently being tested in a randomized controlled trial (RCT), one organization is planning to test the effectiveness of their module and one organization has compared their in-person training with their online training. Furthermore, the included modules have different characteristics.

**Conclusions:** There is a need for RCTs to study the effectiveness of online modules in this area and to understand which characteristics are essential to create effective e-learning modules to educate gatekeepers in suicide prevention.

## Background

In the last decades experts believe that much has been achieved in the field of suicidology. Identification of the risk factors associated with suicidality, worldwide acknowledgment that this topic is an important public health problem, and the development of crisis helplines are just a few of the accomplishments to name (O'Connor, Platt, & Gordon, 2011). Nevertheless, despite these remarkable achievements, there are still many challenges that need the attention of suicidologists. Recently, the World Health Organization (WHO) published a framework addressing the needed strategies in suicide prevention (WHO, 2012). One of the proposed strategies was to train gatekeepers in suicide prevention. Gatekeepers, in this case, are defined as professionals who, due to their profession, come in contact with people who might be at-risk for suicide. For instance, primary health care providers, school staff and police are all gatekeepers (Gould & Kramer, 2001; WHO, 2012). In order to detect and prevent suicidality, defined as suicidal behavior, i.e. thoughts and actions, it is important that gatekeepers have sufficient knowledge about the prevalence and appearance of suicidality. Furthermore, it is essential that professionals interacting with individuals at-risk are familiar with the required steps in the process of recognition, guidance and referral of suicidal persons. When warning signs associated with suicidality occur, if trained, gatekeepers can be among the first people to recognize them and refer the person in need for further assistance (Quinnett, 2007).

Although research regarding its effectiveness is limited, gatekeeper training is a promising tool in suicide prevention (Isaac, Elias, Katz, Belik, & Deane, 2009; Mann et al., 2005; Rihmer, Rutz, & Pihlgren, 1995; Van der Feltz-Cornelis et al., 2011). The principle behind gatekeeper training is to provide gatekeepers information about suicidality so that their knowledge increases, and they develop the attitudes and skills required to recognize, guide and refer persons at-risk for suicide (Gould et al., 2001; Gould, Greenberg, Velting, & Shaffer, 2003; Mann et al., 2005; Van der Feltz-Cornelis et al., 2011). Nevertheless, even when educational training and courses are offered, several obstacles may inhibit gatekeepers from attending them. First, the subject of suicidality is surrounded with social stigmas and taboos (WHO, 2012). Second, gatekeepers have limited time to attend in-person courses and trainings due to their often busy schedule (Walsh, Hooven, & Kronick, 2013; Yu, Chen, Yang, Wang, & Yen, 2007). Third, in-person training and courses cannot take into account the needs of every participant separately. Gatekeepers have no other choice than to take part in training and courses that often take many hours, sometimes even days to attend, while they may only be interested in a small segment of the training (Yu et al., 2006). A good answer to these obstacles might be to offer suicide prevention training and courses online (Quinnett, 2013).

Considering that in 2011, an estimated 33% of all people used internet worldwide (ITU, 2013), the shift from in-person to an online learning environment may be a good addition to existing prevention programs. Especially since the majority of public institutions, where gatekeepers can be found, have access to internet. One way to do this is to present the content of the training through e-learning modules. 'E-learning' is a web-based structure that transfers information and knowledge to the learner (Sun, Tsai, Finger, Chen, & Yeh, 2008). E-learning 'modules', in this case, stand for packed pieces of information. Online learning modules have several advantages over in-person training and courses. First, online e-learning modules can be available 24/7 from any given location. This flexibility and accessibility allows unrestricted access to the material, thus, updating and maintaining the gained knowledge becomes easier. Second, gatekeepers have the liberty to choose which modules they want to attend depending on their needs. In addition users are allowed to determine their own pace. Third, e-learning modules can be offered to a large audience at the same time. Fourth, e-learning modules can be composed with minimal effort and resources. In some cases, for instance when further maintenance is not required, only their development requires financial resources, meaning that the modules can be offered at a low-price or even free of charge. Lastly, tracking usage of the modules and collecting data online becomes feasible.

Nevertheless, despite these advantages there are several potential barriers that could affect effective education through e-learning methods. In 2003 and 2004, the Information Management Research Institute from Northumbria University carried out a systematic review on the barriers in effective e-learning for health professionals and students (Childs, Blenkinsopp, Hall, & Walton, 2005). The found barriers and their solutions were categorized in eight different 'issue' categories: organizational, economics, hardware, software, support, pedagogical, psychological and skills. Organizational barriers included the time consuming development process and lack of skills. Economic issues involved the developmental and maintenance costs of e-learning courses. Three categories (hardware, software and support) integrated technology issues, mostly concerning lack of availability and assistance. Finally, pedagogical, psychological and skills barriers involved change resistance from trainers such as lack of acceptance, motivation and appropriate skills. Although this study did not cover e-learning modules targeting gatekeepers explicitly, the discussed barriers could be generally applicable to all e-learning methods. In addition, developing e-learning for gatekeepers might be more challenging than developing e-learning for students since the level of prior knowledge and skills varies considerably among gatekeepers. While in-person interaction allows more flexibility in altering the course content, this will be lacking with e-learning strategies. Also, gatekeepers attending suicide prevention trainings might appreciate and benefit more from in-person components due to the stigma and taboos associated with this subject.

The purpose of this study is to review the currently available suicide prevention e-learning modules designed for gatekeepers, and their effectiveness to provide an overview of existing programs, their target and audience, the form of delivery, and findings on their efficiency. To the best of our knowledge this is the first review conducted in this area.

## Method

Two different search strategies were applied. First, a systematic search of the published literature was carried out using three databases. Second, as it was expected that the amount of published papers on this topic would be limited, *Google* search was used to find e-learning modules that couldn't be found using the first search strategy. In the review modules were included that met the following criteria: (1) the training included a packed e-learning module, (2) aiming to prevent suicide or suicidality, and (3) targeting gatekeepers potentially involved in suicide prevention. Only e-learning modules meeting these three criteria were included in this study.

### Literature search

The search strategy consisted of four steps. First, in collaboration with a group of experts on suicide prevention, synonyms or related words were collected that captured the terms 'gatekeepers', 'suicide' and 'e-learning modules'. This was done to expand the reach of the search and resulted in three search categories (see Table 1). Second, a matrix multiplication was made in a way that the search terms of each category were combined in a three-term-combination. Thus, each word from category 1 was combined with each word from category 2 and category 3, and vice versa resulting in 45 three-term-combinations. Third, articles were systematically searched in PubMed, Web of Science and PsycINFO using these three-term-combinations. The database research was first carried out in February 2012 and updated in February 2013. The search period was not limited.

Finally, the abstracts of all articles found were reviewed independently by two reviewers. Duplicates were removed and only articles that met the three inclusion criteria were included. After agreement on the abstracts for inclusion, full papers with potentially eligible abstracts were retrieved and examined in detail.

**Table 1.** List of Search Terms Used in the Search Strategy Divided in Three Categories

<b>Learner</b>	<b>Prevention Target</b>	<b>Mode</b>
– Gatekeepers	– Sui* (suicide, suicidality)	– E-learning module
– Healthcare professionals	– Depression <sup>1</sup>	– Module
– Teachers	– Deliberate self-harm	– E-learning
– Nurses	– Self-injury	– Online
– Psychologists	– Self-poisoning	– Online learning
– Counselors		– Online training
– Family doctors		– Electronic learning
– General practitioners		– Electronic education
– Child practitioners		– Distance learning
		– Web-based learning
		– Web-based training
		– Webinar
		– Internet learning

*Note*

<sup>1</sup>In the literature the search term 'depression' is very often linked to 'suicide' and vice versa, this is why depression was used as a proxy for suicide.

## Google search

This search strategy was carried out in August 2012 and consisted of three steps. First, the terms 'suicide', 'e-learning' and 'module' were combined using the plus sign in *Google* search. Second, the results on each page were studied and if the page described, consisted of or redirected to an e-learning module on suicide prevention, this module was included. The examination of the pages was stopped once the page contained no relevant or only recurring modules.

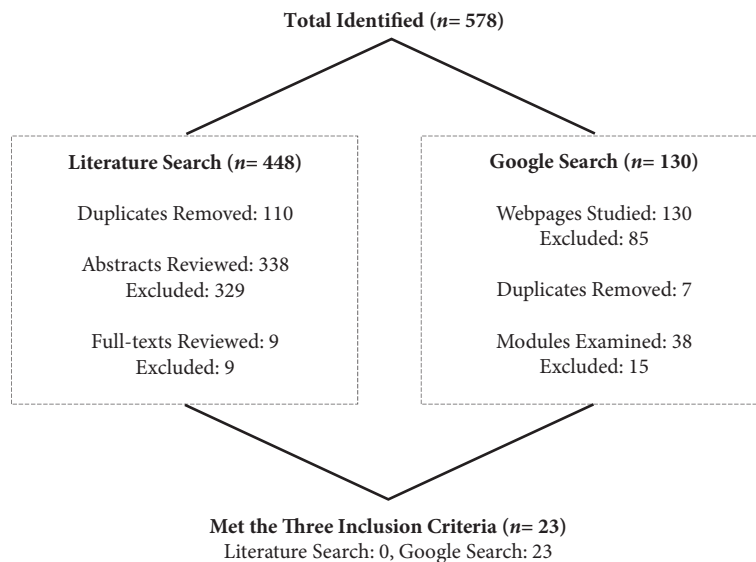
## Results

### Literature search

The literature search resulted in 448 papers of which 110 were papers that occurred more than once. The abstracts of all 338 papers were reviewed of which nine met all three, 16 met at least two, 72 met one, and 241 met none of the inclusion criteria for this study. The full text of the nine papers with potentially eligible abstracts were examined in detail and none of the papers met all three inclusion criteria: five included an in-person training, two had no e-learning module format, one included a blended learning program without suicide prevention in the distance learning component, and one included a systematic review in which no suicide e-learning module was described.

## Google search

The *Google* search resulted in 263,000 results ordered in decreasing relevance. Pages were examined and the examination was stopped once a result page did not contain a relevant or only e-learning modules that were included previously. Using these criteria the examination was stopped at page thirteen, resulting in a total of 130 potentially relevant webpages, of which 45 appeared eligible after a first screening of the available information regarding the content of the module on the webpage. After removal of duplicates ( $n=7$ ) the remaining 38 pages were examined in more detail. Finally, 15 pages were excluded from this pool, because they did not have an e-learning module format ( $n=7$ ), included in-person training ( $n=3$ ), were offline ( $n=2$ ), were not about suicidality ( $n=2$ ) or in progress ( $n=1$ ), resulting in 23 useable webpages describing e-learning modules. Figure 1 depicts a flow-chart of the two search strategies.



**Figure 1.** Flow of Literature Database and Google Search Strategies

The selected modules were owned by institutes across eight different countries: U.S.A. ( $n=6$ ), Australia ( $n=6$ ), the Netherlands ( $n=3$ ), U.K. ( $n=4$ ), Belgium ( $n=1$ ), Ireland ( $n=1$ ), Canada ( $n=1$ ) and India ( $n=1$ ). Information about the e-learning modules was collected from the internet, however, the available material was generally not sufficient to fully describe the characteristics of the modules. Therefore organizations that owned the modules were contacted

in January 2013 and February 2013 by e-mail, and were asked to answer several questions (see Table 2). After two weeks reminders were sent to organizations that did not respond.

**Table 2.** Questions Sent to Organizations Regarding Their E-learning Module(s)

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1	What is the name of the organization that has developed the e-learning module?
2	What is the name of the organization that owns the e-learning module?
3	What is the topic of the e-learning module? <i>(For example: suicide prevention, suicide awareness)</i>
4	Is the e-learning module addressing suicidality in a specific group or suicidal persons in general? <i>If a specific group, please describe which group is being addressed.</i>
5	For which group of gatekeepers has the e-learning module been developed? <i>(For example: nurses, mental health caregivers, teachers)</i>
6	Is the e-learning module currently online and accessible? <i>If yes, please explain how users can access the e-learning module.</i>
7	How has the e-learning module been designed? <i>(For example: voice-over, text, movies, PowerPoint lecture)</i>
8	Has the effectiveness of the e-learning module been tested or is your company planning on testing it? <i>If yes, please let us know when and how you tested the effectiveness and what the outcome was.</i>
9	In which language(s) is the e-learning module available?
10	Is a fee required to attend the e-learning module or is the e-learning module free of charge?

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Additional information (optional):

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Of the 23 institutes addressed for the survey, 14 responded of which one refused to provide further information. Moreover, modules produced by two organizations were excluded from this study after their response. One organization from the Netherlands had withdrawn their plans to develop the proposed module. An institute from the U.K. was initially included due to a reference on the website regarding the relationship between depression and suicide, thus, it seemed possible that the modules covered suicide as a component of depression. However, this was not the case and this is the reason why this organization was excluded. After reviewing the answers of the 13 organizations that responded to the survey, four modules were excluded from further use since these focused on suicide intervention or bereavement after a suicide, rather than prevention. An overview of the excluded e-learning modules can be seen in Table 3.

Based on the answers Table 4 was composed, which gives an overview of the characteristics of the nine e-learning modules that fully met the three selection criteria.

The included modules in this study are from Australia (1), the Netherlands (2), the U.K. (2) and the U.S.A. (4). These modules show not only similarities, but also distinguishing characteristics. The topic of seven of the modules is suicide prevention and awareness, while



the remaining two, *Cafcass* and *HHYP*, address self-harm alongside suicide. Except from *APS* and *QPR Institute Inc.*, which focus on persons at-risk for suicide in general, the remaining organizations have chosen a specific at-risk group such as adolescents or patients. Another remarkable detail is that *In the Line of Duty* and *ePhysicianHealth.com* focus on gatekeepers themselves as at-risk group. Although only modules targeting gatekeepers were selected for this study, it is interesting that the included modules target a wide range of professionals, such as clinicians, members of health care teams at schools and officers. Furthermore, all modules are offered as a stand-alone course, except the ones offered by *PITStopSuicide* and *State Hospital Carstairs* which are part of a blended learning training.

**Table 3.** Overview of the Excluded Modules

Country	Name Organization	Topic
<b>Australia</b>	Indigenous Psychological services	Suicide Intervention
	Lifeline Australia	(Covers LivingWorksASIST)
	Men at Risk (On the Line, MensLine)	Suicide Assessment and Intervention
<b>+ New Zealand</b>	Living Hope Bereavement Support Training Course and The Salvation Army	Suicide Bereavement
<b>+ New Zealand</b>	QPR and The Salvation Army	Suicide Prevention
<b>Belgium</b>	KHLim Quadri	Depression and Suicide Prevention
<b>Canada</b>	For Interior Health Mental Health and Addictions Services	Suicide Prevention
<b>India</b>	Banjara Academy	Depression and Suicide
<b>Ireland</b>	Lost for Words; words for loss (Irish Hospice Foundation)	Someone Who is Bereaved
<b>U.K</b>	Renful Premier Technologies	Methods of Countering Suicide Terrorism
<b>U.S.A.</b>	The Online Geriatrics University	Depression <i>Including Identification of Suicide Ideation</i>
	ASPIRA Continuing Education	Suicide Prevention

*Note*

The modules could either be part of a blended learning program or be offered as a stand-alone course.

Table 4. Overview of Documented Google Search Suicide Prevention E-learning Modules for Gatekeepers

Country	Name Organization	Topic	At-risk group	Target group	Form	Effectiveness Modules	Language	Accessibility
Australia	The Australian Psychological Society (APS)	Two training packages on suicide prevention	1. Individuals and communities within the Kimberley region 2. Not directed at a specific group	1. Health professionals working in the Kimberley region 2. Health clinicians	Stand-alone 1. Online video presentations, demonstrations, interactive activities, readings 2. Printable learning guide, online video presentations, demonstrations, interactive activities, readings, online discussion forum	Effectiveness has not been tested Participants are required to complete an evaluation as part of the course and this is monitored	English	Free for healthcare practitioners registered to the ATAPS scheme. All others pay a fee
The Netherlands	Mental Health Online (MHO), VU University Amsterdam	Suicide prevention	Adolescents (12 – 20 years)	Professionals that work with adolescents Mainly: members health-care teams schools, youth health care nurses and mental health caregivers	Stand-alone Eight short modules, each capturing an important aspect of the process of early recognition, guidance and referral. Note: separate module addressing ethnicity	RCT Status: ongoing	Dutch	Free During the RCT only available for the participants
	PITStopSuicide, VU University Amsterdam	Suicide prevention	Patients (18 + years)	Mental health caregivers	PowerPoint lectures, voice-over, graphs, quizzes, cases, links, documentaries, papers, online discussion board Part of blended learning PowerPoint lecture, voice-over, movies	RCT Status: ongoing	Dutch	Free During the RCT only available for the participants
U.K.	State Hospital, Carstairs	Suicide awareness and prevention	Mentally disordered offenders detained and receiving treatment in a high security hospital	Front line clinical staff (all disciplines)	Part of blended learning Text, graphics, photographs and web links – using LECTORA software	Not tested. Participants are invited to complete an online evaluation	English	Restricted Only available to employees of The State Hospital – intranet based

**Table 4.** Overview of Documented Google Search Suicide Prevention E-learning Modules for Gatekeepers (*Continued*)

Country	Name Organization	Topic	At-risk group	Target group	Form	Effectiveness Modules	Language	Accessibility
U.K.	Children and Family Court Advisory and Support Service (Cafcass)	Self-harm and suicide	Adolescents	Cafcass staff	Stand-alone In an Authoring Toll from Learning Pool.com who host the e-learning	Expected	English	Restricted Only available to Cafcass employees as part of Cafcass internal training
U.S.A.	QPR Online Gatekeeper Training, QPR Institute, Inc.	Suicide prevention	Persons at-risk for suicidal behaviors	QPR training has been adapted and expanded for a wide variety of gatekeepers, including by ethnic minorities, and by nationality	Stand-alone Text, video, voice-over PowerPoint lectures, interactive practice sessions, role-play downloads, mini-exams, reviews and nationally standardized knowledge competency exams	A paper comparing in-person training with online gatekeeper training has been submitted Evaluated	English	Fee required Discounts are available for volume, non-profit, military or government
	Hollywood Homeless Youth Partnership (HHYP)	Self-Injurious Behaviors and Suicide	Adolescents	Care staff working with homeless youth and staff of all types working with vulnerable youth	Stand-alone PowerPoint, voice-over narration	Not tested Individuals are required to take a post test at the end of each module to measure their proficiency in the subject area	English	Free
	In the Line of Duty	Suicide prevention	Cops	Everyone, safety and compliance officers	Stand-alone Audio narration, video	Not tested The material's effectiveness on its viewers is being tested	English	Fee required
	ePhysician Health.com	Suicide prevention	Physicians	Physicians	Stand-alone Video, text, resources (papers, links, books)	Not tested	English / French	Free

The base of almost all the modules is a PowerPoint lecture with voice-over narration. However, *MHO*, *QPR Institute Inc.* and *ASP* in particular support their modules with additional features such as an online discussion board, role-play downloads and practice sessions. In addition, the first two organizations pay special attention to the role of *ethnicity* in suicide prevention. Furthermore, the effectiveness of the majority of the modules has not been tested nor is scheduled to be tested. The *QPR Institute Inc.* has done a study comparing in-person training with distance learning, the results have not yet been published. Both *MHO* and *PITStopSuicide* from VU University Amsterdam are conducting an RCT to test the effectiveness of the programs, and *Cafcass* is planning to test the effectiveness of their module. Lastly, the modules from seven organizations are accessible for free or are only available to employees of the organization while the remaining two from *QPR Institute Inc.* and *In the Line of Duty* require a fee.

To illustrate the method behind these e-learning modules, the program *MHO* from VU University Amsterdam will be discussed briefly. This program has been chosen since the authors have developed the modules in this program and can provide accurate information regarding this program.

#### **Example: MHO (VU University Amsterdam)**

This online suicide prevention training program addresses the process of recognition, guidance and referral in the case of adolescent suicidality through eight modules: suicidality among adolescents (module 1), risk factors (module 2), ethnicity (module 3), recognition of suicidality (module 4), conversation with the suicidal adolescent (module 5), conversation with the parents (module 6), suicide first-aid (module 7) and care and aftercare when an adolescent commits or attempts suicide (module 8) (Ghoncheh, Vos, Koot, & Kerkhof, 2013). The modules have been developed by the researchers in this study using Adobe Presenter 7 software to convert PowerPoint slides into e-learning modules. Moreover, apart from text the modules include a voice-over, graphs, quizzes and cases. Each module takes approximately 10 minutes to complete and it is up to the participants, based on their needs and experiences, to decide which modules are relevant for them to follow. Furthermore, participants also have access to additional information on the website such as articles, films, interesting links on the subject of adolescent suicidality, and an online discussion board. This board gives participants the opportunity to exchange thoughts on adolescent suicidality with other gatekeepers, and ask a group of experts questions regarding this subject (Ghoncheh et al., 2013). The effectiveness of this program is currently being tested in an RCT with a pre-, post and follow-up design. In addition, the e-learning modules are being evaluated by gatekeepers participating in the study. A protocol paper on this study has been published in which detailed information regarding the

program and study, such as background, developmental process, design and outcome measures is provided (Ghoncheh, Kerkhof, & Koot, 2014).

## Discussion

This review aimed to give an overview of the existing e-learning modules on suicide prevention designed for gatekeepers, and in addition aimed to review the effectiveness of these modules. Although no published papers meeting the inclusion criteria were found in the literature search on this topic, the *Google* search resulted in 23 existing e-learning modules. Thirteen organizations responded to questions regarding their institute's module of which nine were included in this study. The effectiveness of the majority of the modules has not yet been tested. As a consequence, even though the included modules show distinguish features no recommendations can be made regarding which characteristics enhance learning outcomes. The *QPR Institute Inc.*, which is specialized in suicide prevention and has been listed as an evidence-based practice in the National Register of Evidence-based Practices and Policies (NREPP), has done an – as yet unpublished – study comparing in-person training with distance learning. Both *MHO* and *PITStopSuicide* from the VU University Amsterdam are conducting an RCT. *MHO* has an ongoing user evaluation and effectiveness study, while *PITStopSuicide* has incorporated the e-learning module as an optional component of an in-person training. *Cafcass* is planning to test the effectiveness of their module. This shows that the number of ongoing or planned studies in this area remains limited.

The discrepancy between the literature search and the *Google* search is a remarkable result since it shows that while across the world internet and new technologies are being used to develop innovative strategies to enhance suicide prevention, research regarding the effectiveness of these modules is still lacking. According to suicidology experts knowledge improvement and sustainability of suicide prevention programs still remain among important challenges that need to be addressed in the future (O'Connor et al., 2011). The findings from this study are in line with this. Three explanations could account for the found discrepancy. First, often when innovative prevention and intervention strategy programs are funded, the resources are not sufficient for research, maintenance and broad implementation. Second, organizations and developers, especially those distanced from academic settings, might not have the required experience, instruments and assistance to carry out the needed scientific studies. Lastly, since this line of research is fairly new, lack of standardization and guidelines regarding best practices could make the research process quite challenging. Nevertheless, it should be noted that effectiveness studies on the use of e-learning modules as a strategy to

educate gatekeepers in mental health related topics seems to be lacking in general and is not restricted to the field of suicidology.

By contrast, research on the effectiveness of e-learning programs appears to be more advanced in the field of medicine. Two systematic reviews addressing e-learning programs in health identified a large number of studies in this area (Ruggeri, Farrington, & Brayne, 2013). One study compared the effect of internet-based with no intervention and with non-internet interventions. Findings showed that internet-based learning had a large positive effect compared with no intervention. Mixed and generally small effects were found comparing internet-based with non-internet learning which according to the authors could indicate similar effectiveness to traditional method (Cook et al., 2008). Another study aiming to identify characteristics that could improve learning outcomes suggested that interactivity (use of questions), practice exercises, repetition of learning material and feedback could improve learning outcomes. In addition, health professional's satisfaction seemed to improve with interactivity, online discussion (discussion board, e-mail etc.) and audio in tutorial (Cook et al., 2010). It should be noted that conclusions and recommendations from both studies were tempered due to study limitations. Moreover, both studies highlighted that many reports lacked a description of important key elements, instructional design or outcomes (Cook et al., 2008; Cook et al., 2010). Studies on cost-effectiveness of e-learning in health are essentially unreported, and potential gains are still unknown (Ruggeri et al., 2013).

Even though research on effectiveness of suicide prevention e-learning modules targeting gatekeepers is lacking, research on effectiveness of e-learning (including modules) in health education seems promising. Especially with a subject as sensitive as suicide, deployment of e-learning modules can be beneficial in creating awareness of how individuals at-risk can be recognized, guided and referred for assistance by gatekeepers. Based on the findings of this study several recommendations can be made to improve future research in this area. First, there is a need for RCTs aiming to test the effectiveness of e-learning modules. The literature search showed that there is a lack of research in this area. Moreover, ongoing and planned research remains limited. Second, as highlighted by the two systematic review studies in the medical field, detailed description of essential information such as background, theories, developmental process and outcomes is highly necessary. The existing information on the web was generally not sufficient to get a complete overview of the most important characteristics of the currently available suicide prevention e-learning modules targeting gatekeepers. Third, organizations and funding agencies should not only invest in development of e-learning programs in this area, but should provide continued resources for research, maintenance and broad implementation. Finally, research and developers should work towards standardization of e-learning modules and assessments methods.

### **Limitations**

First, the discussed modules in this review derive from the *Google* search, lacking scientific research regarding important aspects of these modules such as effectiveness, the developmental process, or user satisfaction. As a result the modules included in this review could only be briefly described. Second, although it was attempted to expand the literature search by devising all the possible synonyms for ‘suicide’, ‘e-learning module’ and ‘gatekeepers’ it is possible that papers and studies that have used other terms than the ones used in this study, have not been included in this review. Third, of the 23 organizations approached, only thirteen answered the questions regarding the characteristics of their institute’s e-learning modules. If the remaining ten organizations had responded and were eligible for this study, a more complete overview could have been composed. Fourth, the *Google* search has probably missed existing e-learning modules on this topic that have chosen to use different terms than the combinations used in this study. Moreover, the collected information regarding the modules is limited and only based on the information provided by the organizations as access to the majority of the modules was restricted. Lastly, it is not surprising that the majority of the included modules are from English speaking countries since the terms used in both searches are English. Therefore, existing modules on this topic from countries that have used non-English languages to address the same, are not included in this study.

### **Conclusion**

Despite a lack of scientific evidence, the findings from this study provide a first overview of existing e-learning modules across the world aiming to educate gatekeeper in suicide prevention. The main conclusions that can be drawn from the findings of this review are that e-learning modules in this area are increasingly available, but that research regarding the effectiveness of these modules is lacking. Moreover, the ongoing and planned studies in this area remain limited. Future research should determine whether the use of e-learning modules is an effective strategy in gatekeeper’s education in suicide prevention, and which features enhance learning outcomes.

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