Background

The effectiveness of an e-learning supported train-the-trainer program to disseminate a suicide practice guideline in mental health care was examined in a cluster randomized trial. Monitoring of an implementation process is an essential part of implementation procedures. We investigated the guideline dissemination in mental health care institutions and monitored process to gain insight in facilitators and barriers of the program and suggestions for improvement.

Method

Dissemination was quantitatively investigated by monitoring the number of training sessions that were provided during and after the trial. Ten interviews with 19 key professionals from eight mental health institutions were conducted and audio taped. Via an inductive procedure, the content was abstracted step by step. Outcomes are presented in the tables.

Results

During the trial, four masters trained 37 trainers in two single sessions. These trainers then trained 518 peers in 37 training sessions. After the trial, over two years 151 new trainers were trained who subsequently trained 5,000 professionals. The program was well received, especially with regard to the multidisciplinary approach. Changes were principally manifested on the level of individual professionals, such as being more on the alert of high risk patients. In some MHIs also institutional policies toward suicidal behavior were modified, such as removal of non-suicide contracts. E-learning was appreciated but insufficient ICT-facilities in institutions hindered its use.

Conclusions

We conclude that an e-learning supported train-the-trainer program is a useful way to implement recommendations of the guideline. The intervention has been found easy to spread, both during and after the trial and was well received by its users. Key professionals propose that adjustments of the program may strengthen the impact. Key recommendations are provided to enhance (further) dissemination of the suicide practice guideline with a e-learning supported train-the-trainer program: train professionals with special interest in suicide prevention to train their own multidisciplinary teams; use e-learning support material; make key professionals within institutions responsible for further implementation; develop a long term implementation strategy focusing on team and institutional performance; tailor the training when training different psychiatric teams; be prepared that financial investments are needed if all staff is to be trained.

Introduction

In 2012, the Dutch multidisciplinary practice guideline for the assessment and treatment of suicidal behavior (PGSB) has been issued to strengthen suicide prevention. To promote implementation of the guideline in Dutch mental health care, an e-learning supported Train-the-Trainer program (TtT-e) has been developed (see Table 1). The effectiveness of this TtT-e program was examined in a cluster randomized controlled trial (the PITSTOP suicide trial ). Forty-five psychiatric departments from nine Mental Health care Institutions (MHIs) throughout The Netherlands were matched pairwise; pair members were randomized to either TtT-e (intervention) or control (implementation as usual (IAU): dissemination via conferences, internet, books etc.). Effects were examined at the level of professionals and patients.

In the TtT-e program staff members of departments are trained in guideline application via a one-day face-to-face multidisciplinary training based on the PGSB, combined with a 60-minute e-learning module. Outcomes show that TtT-e results in better guideline adherence of nurses, and more confidence and knowledge regarding suicidal behavior among staff of all disciplines (nurses, psychiatrists, psychologists). At the patient level, we found that TtT-e trained professionals more likely discuss suicidal behavior with patients diagnosed with depression, and that patients reported that their suicidality was more often discussed by professionals.
Monitoring of implementation processes is an essential part of implementation procedures; knowledge and reflection on facilitators and barriers enhances future application of the strategy. It is helpful to understand quantitative findings and can be used to adjust and/or improve elements and procedures.

In the current study, we quantitatively investigated the dissemination of the TtT-e program during and after the PITSTOP suicide trial, made an inventory of facilitators and barriers of the TtT-e program application in mental health care institutions (MHIs) and identified changes in MHIs regarding management of suicidal behavior after the study, and facilitators and barriers that were likely relevant for (further) dissemination of the PGSB in MHIs. The outcomes of the study will finally be discussed in reference of factors that are relevant for the uptake of evidence in mental health care practice, such as the attributes of evidence, barriers and facilitators to changing practice. With the outcomes we aim at a more profound understanding of the trial outcomes, and provide a reference frame to MHIs who consider using the TtT-e program to disseminate the PGSB.

**Methods**

Quantitative and qualitative methods were combined. To investigate dissemination of the TtT-e program within and outside the framework of the study, we monitored the number of professionals that were trained to be a trainer, and how many trainees were subsequently trained via the TtT-e program. Monitoring was done in MHIs that participated in the PITSTOP trial during and after the trial course (from October 12, 2011 to October 1, 2013) and in MHIs not participating in the PITSTOP trial from October 12, 2011 to January 2015. Information on numbers of trained professionals was gathered by contacting local PITSTOP-trial contact persons and/or staff of institutional training departments. Whether trained trainers used e-learning module 1 was assessed by looking at the log files of the e-learning server. Whether study participants used e-learning module 2 and for how many minutes was assessed within the PITSTOP study. For details on the recruitment of MHIs for the PITSTOP trial, see.

Qualitative methods were used to gain insight in facilitators and barriers regarding the TtT-e program. We conducted a multiple case study; MHIs (n=9) that participated in the PITSTOP study were considered cases. With a letter, sent to local contact persons in MHIs, key professionals in the institution who had also been closely engaged in the TtT-e program application (e.g. as a trainer, manager, planner) were invited to be in-depth open-interviewed by a team of two researchers. It was left at the discretion of the MHIs who were considered key professionals. Key professionals from the separate MHI were face-to-face interviewed in groups. The open themes were:

1. What are your experiences within your institution with the application of the TtT-e model?
2. In what way affected the application of the TtT-e program institutional policies toward management of suicidal behaviors? The interview took approximately two hours and was audio-taped after oral consent in situ. Confidentiality and anonymity were guaranteed.
Dissemination of the TtT-e program after the trial course

As soon as the trial period ended (October 2013), new trainers were trained. From different departments not included in the PITSTOP study, we found that 151 new trainers were trained who subsequently trained at least approximately 5000 professionals.

Qualitative findings

Between December 2013 and March 2014, 19 key professionals (nurses, psychiatrists, psychologists, managers) from eight MHIs were interviewed in ten sessions. Due to agenda difficulties, we were unable to meet key professionals from one MHI.

Rationale for TtT-e program application

MHIs reported various reasons to apply the TtT-e program; all were related to the availability of the PGSB and the supervision of the health inspectorate. These reasons were changes in institutional or local policies towards formal responsibility for treatment of suicidal persons and the national trend to reduce clinical mental health care by substitution of in-patient care by out-patient care. MHIs were all convinced that these challenges require good and up-to-date professional skills. Institution-specific reasons for using the TdT-e model were related to a (sudden/unexplained) increase of suicide rates within the institutions and strengthened supervision of the health care inspectorate. MHIs with staff that had expertise on the subject acknowledged that this had encouraged participation in the PITSTOP trial.

Feedback on the TtT-e program and achieved or suggested adjustments (Table 2)

MHIs reported that the TdT-e program was helpful to increase knowledge on suicide prevention and skills in dealing with suicidal behavior. The CASE-interview and multidisciplinary approach were regularly noted as principal strengths. According to key professionals, the program resulted in increased awareness of suicidal conditions of patients and diminished reluctance to discuss this with a patient. In addition, key professionals reported that TtT-e training likely resulted in an increased notion that a working relationship with a suicidal patient is needed to affect the behavior, and in reducing ‘demoralization’ in the relationship with chronically suicidal patients. It sometimes turned out to be challenging to translate the assumptions of the stress-vulnerability-entrapment model, which is the basic assumption of both the PGSB and the TtT-e (see Table 1), into systematic assessment of suicidal behavior. Three MHI’s felt the need for more knowledge and skills

Data analysis

Dissemination of TtT-e training within and outside the PITSTOP trail was analyzed with descriptive statistics. The audio tapes of the interviews were analyzed by two members of the research team (MdG and DPdB) using content analyses. First, the tapes were monitored and for each institution findings were summarized in a report. Second: the report was sent to key professionals to provide informant feedback (member check). Summaries were adjusted on the base of informant feedback. Subsequently, three themes were identified: feedback on I) TtT-e training program, II) e-learning support, III) multidisciplinary approach. Feedback was listed in a matrix and subheaded under the three themes. Then, feedback was first described in terms of effects, and subsequently in terms of desired or unwanted effects, and suggested or achieved adjustments. Causes of desired effects were defined as facilitators, of unwanted effects as barriers (see Table 2). During the data analyses, the researchers (MdG and DPdB) repeatedly discussed the outcomes and only after full consensus, the next step in data analyses was made. Via a similar inductive procedure, facilitators and barriers regarding dissemination of the PGSB in MHI were identified. We distinguished facilitators and barriers or PGSB dissemination during and after the study (Table 3). All suggestions, provided by key professionals during the interviews, either regarding to (possible) adjustments of the TtT-e program or to (further) guideline dissemination are displayed in Table 2 and 3 respectively. The study was funded by The Netherlands Organization for Health Research and Development (ZonMW 171103006) and ethical approval was obtained from the Medical Ethics Committee of VU University Amsterdam (registration number 2011/151).

Results

Quantitative findings

Training inside the frame of the PITSTOP study

In October 2011 and January 2012, four masters trained an overall number of 37 trainers in two single sessions. Trained professionals were mental health care nurses/nurse specialists (n=17), psychologists (n=11) and psychiatrists (n=9). These trainers subsequently trained teams of co-workers in 37 training sessions. A total of 518 professionals were trained. The e-learning module 1 (see Table 1) was completed by 122/518 (23%) professionals for m=40 (SD=16) minutes and was well received. E-learning module 2 was used 279 times by the trained trainers.

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on suicidal behavior of patients with borderline personality disorder, and knowledge on how to engage a patient’s relatives in diagnosis and treatment of suicidal behavior.

Multidisciplinary training was experienced as meaningful by all disciplines and had led to increased mutual respect and understanding between members of different disciplines. For an optimal effect, key professionals recommended to provide future training by a couple of trainers from different professional background. Participation of clinicians (psychiatrists, psychologists) however, was limited, either because they thought or established that the training program was too basic and lacked knowledge and skills on specific treatment strategies, or could not find time due to production pressures. To meet the various needs, it was suggested to remove parts of the training schedule and give these as homework to limit the duration. Clinicians also suggested to organize (mono disciplinary) training sessions with a focus on specific treatment components, but it was acknowledged that this may result in losing the benefits of multidisciplinary training. Although the e-learning module was highly appreciated, ICT facilities in MHI’s generally turned out to be insufficient to display the e-learning modules. Table 2 shows results in more detail as well as suggested and achieved adjustments.

Tabel 2: Facilitators and barriers regarding the TtT-e training program’s form and content

<table>
<thead>
<tr>
<th>FACILITATORS</th>
<th>SUGGESTIONS FOR ADJUSTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Training program</td>
<td>• comprehensive structure</td>
</tr>
<tr>
<td></td>
<td>• basic guideline assumptions recognizable</td>
</tr>
<tr>
<td></td>
<td>• practice-based</td>
</tr>
<tr>
<td></td>
<td>• sufficient time for discussion and skills practicing</td>
</tr>
<tr>
<td></td>
<td>• systematic assessment of suicidal behavior of patients using the CASE-interview</td>
</tr>
<tr>
<td></td>
<td>• readymade training material</td>
</tr>
</tbody>
</table>

BARRIERS

| I Training program | • learning effect is shrinking during the day | • merge exercises** |
| | • training schedule somewhat overloaded | • tailor the focus to specific needs of departments** |
| | • too much focus on fostering a working relationship with the suicidal patient | • add theory on how to deal with chronic suicidal behavior of patients with borderline personality disorder* |
| | • low attention to dealing with chronic suicidal patients | • design specific training on treatment options |
| | • skills on how to engage significant others is lacking | • enhance training skills of trainers* |
| | • content too limited for specialized clinicians | • training provided by institutional experts on the topic** |

| II E-learning | • information on the guideline was available 24/7 |
| | • add footage of how to deal with suicidal behavior of patients with borderline personality disorder* |
| | • add interactive elements** |

| III Multidisciplinary approach | • more profound understanding and feedback in between disciplines |
| | • training in multidisciplinary groups with respect to professional discipline and treatment setting |
| | • couples of trainers from different professional background |
| | • teambuilding and fun (‘better than a day of paintball’) |
| | • enhances emancipation of the nursing discipline |
| | • useful in reference of the policy of increasing outpatient care |
| | • protective against complaints of patients and relatives |

| IV Trainings program | • limited effectiveness |
| | • good quality of training sessions not guaranteed |
| | • content too limited for specialized clinicians |
| | • low participation rate of psychiatrists / psychologists |
| | • training schedule somewhat overloaded |
| | • too much focus on fostering a working relationship with the suicidal patient |
| | • low attention to dealing with chronic suicidal patients |
| | • skills on how to engage significant others is lacking |
| | • systematic assessment of suicidal behavior of patients |
| | • readymade training material |

**Referring to training session provided through e-learning platform.
Facilitators and barriers for dissemination of the PGSB during and after the trial course

All MHIs suggested that comprehensive institutional policy and/or at least a project-based approach for PGSB implementation is needed to fully incorporate PGSB-recommendations in care processes. Closely tuning on external partners in care (GP’s, general hospitals, emergency services) is needed. It was suggested that interventions aiming at adjustment at the institutional level might be integrated in the TtT-e program, such as designing a format for reporting the outcomes of the systematic assessment of suicidal behavior in the electronic patient records, or a systematic method to evaluate professional performance after a patient suicide. The production losses due to large-scale training of professionals was mentioned as barrier of great significance. It was suggested that in times of scarcity, priority should be given to departments most often involved with suicidal behavior.

Staff members with specific affinity with the subject had promoted early adoption of the TtT-e program, but it deemed to depend on the strategic position of these staff members and to the extent to which they were able to put suicide prevention on the institutional policy agenda to establish ongoing efforts to disseminate the PGSB after the study. In large MHIs with locations scattered in a wide region, strong institution-specific incentives and a top-down approach were deemed critical to further disseminate the PGSB.
After the trial

- no internal or external incentives
- no sense of urgency
- attention for suicide prevention fades over time
- make suicide prevention a policy priority
- slightly add other implementation strategies (‘blended learning’)
- make (at least) one professional responsible to keep suicide prevention on the agenda
- TtT-e just improves individual skills
- no effects on team or institutional level
- develop and examine interventions on team and institutional level e.g.
  - systematic recording of suicidal behaviors
  - systematic examination of guideline application in reference of suicide cases

*in progress; ** achieved

Changes at the institutional level regarding suicidal behavior

Mixed results were found regarding modifications of work processes or policy regarding management of suicidal behavior. Three key professionals mentioned no change after the trial was ended. In four MHIs, it was noted by the key professionals that the effect was principally manifested at the level of the individual professionals. Others reported changes in for example the registration of suicidal behavior, and the removal of non-suicide contracts. Some key-professionals stated that more attention was paid to suicidality during transition moments. They felt that because of TtT-e, there was less taboo associated with asking about suicidality, and noticed an increased common understanding of suicidal behavior between professionals. Differentiating between chronic suicidal behavior and acute suicidal behavior on top of chronic suicidal behavior had improved. The training also resulted in diminished reluctance to engage significant others in diagnosis, treatment and safety procedures. TtT-e training (or parts thereof) were included in training curricula for clinicians. In two institutions adjustments in the electronic patients record (EPR) were made to report outcomes of systematic assessment of suicidal behavior. In one institution, non-suicide contracts were removed.

Discussion

This study shows that the TtT-e model has been found easy to dissemnte, both during and after the trial and was well received by its users. From 2012 until December 2014, over 5,500 mental health professionals have been trained according to TtT-e, indicating a well perceived need to improve suicide prevention skills within Dutch mental health care. MHIs reported that the program sufficiently meets the need for knowledge and skills on suicide prevention. The effects of TtT-e application are manifested in individual professionals, which is in line with the qualitative findings from this study\(^4\),\(^5\). In a few MHIs modification of work processes were observed.

The likeliness of evidence-based acting of professional depends on the perceived effectiveness and complexity of interventions, and whether interventions match with existing or desired values\(^1\). Although prevention of suicide is complex, we observed that MHIs inside and outside the PITSTOP study were prepared to establish an evidence-based approach towards suicide prevention. Qualitative and quantitative outcomes of this study suggest that TtT-e application is helpful to deal with the complexity of suicidal behavior. We argue that this may further enhance application of the PGSB due to increased access to the evidence. In addition, more time is needed to further integrate the PGSB recommendations in care processes; institutional policy is needed to establish this.

One of the main barriers to train teams is the obvious loss of production. To reduce costs, e-learning might be used to shorten face-to-face training. Professionals might prepare the face-to-face training by first completing the module either at work or at home, which could shorten the time needed for face-to-face training. Besides, professionals have to make clear to insurance companies, governments and civilians that suicide prevention costs money. To minimize reluctance to complete e-learning, ICT facilities should be sufficient and participation should be compensated by the institution.

Strengths and limitations

Qualitative methods result in a broad description of phenomena aiming at transferability of the findings in a different context. The findings from MHIs included in this study may be biased by MHIs’ strong motivation to target the problem of suicide (early adapting). One MHI could not be interviewed whereas in this MHI enduring efforts to strengthen suicide prevention were applied even before the PITSTOP study. Although we observed that experiences in this MHI do not differ from others, we don’t know if this introduced bias. Bias may have been introduced as both the interviews and analyses were executed by the same researchers who possibly had a pre-existing notion of the study outcomes. To address this, the interviewers encouraged key professionals to be critical. A strength of the study is its large size and almost full participation of all included MHIs. We are certain that in the interviews, saturation of information was achieved. This underlines the findings’ credibility.
Final remarks and implications

The focus of the intervention was mainly on the improvement of individual performance and indeed resulted in change principally at the level of the individual professional. It was expected that due to individual change, both teams and institutions would also change their policy and work process. However, successful adaptation of changes at the institutional level was scarce, in particular in large institutions. Since Dutch mental health care is a complex system with a large number of stakeholders, local governments, insurance companies, patients and professional standards that display competing demands, change is difficult. Also, within our study, improvement on the institutional level was not clearly defined, making the assessment and comparison of change across several institutions difficult.

In a health care system overloaded with competing demands, guidelines cannot be well implemented without explicit guidance. We argue that future efforts to disseminate guidelines, in particular the PGSB, should explicitly target the implementation at the institutional level and should let the institutions formulate themselves what they consider to be relevant changes, and how they will operationalize successful implementation. Helping mental health care to define their own ambitious change and holding them accountable for the results, may result in enduring improvements after guideline implementation. We argue that successful implementation of guidelines within (mental) health departments start with enthusiastic, energetic and charismatic key professionals who are responsible for the process of implementation. Panel 1 shows a summary of key recommendations for future implementers to keep in mind.

Panel 1: Key recommendations for future implementation of suicide guidelines in mental health care

- Make key professionals within MHIs responsible for suicide guideline implementation
- Develop a long term implementation strategy that focuses not only on individual performance, but also on team and institutional performance
- Train professionals to train their own team
- Train multidisciplinary teams by a multidisciplinary couple
- E-learning is highly appreciated, can reduce the length of the face-to-face training, and make the intervention more scalable. Use e-learning modules to support face-to-face training
- Tailor the training to specific patient groups
- Training is more effective if it is provided by professionals with special interest on the subject
- Investments are needed if all staff is to be trained

Acknowledgement

MdG and DPdB executed the interviews and analyzed the data and wrote the draft. All other authors commented upon subsequent versions of the manuscript and approved the final draft.
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