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Research report

Training mental health professionals in suicide practice guideline adherence: Cost-effectiveness analysis alongside a randomized controlled trial

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ABSTRACT

Background: There is a lack of information on the cost-effectiveness of suicide prevention interventions. The current study examines the cost-effectiveness of a multifaceted structured intervention aiming to improve adherence to the national suicide practice guideline in comparison with usual implementation.
Methods: In the intervention condition, professionals of psychiatric departments were trained using an e-learning supported Train-the-Trainer program. Newly admitted suicidal patients were assessed as soon as their department was trained and at 3 months follow-up. The primary outcome was improvement in suicide ideation. Missing cost and effect data were imputed using multiple imputation. Cost-effectiveness planes were plotted, and cost-effectiveness acceptability curves were estimated.
Results: For the total group of suicidal patients ($n=566$), no effect of the intervention on suicide ideation or costs was found. For a subgroup of depressed suicidal patients ($n=154$, intervention=75, control=79), mean level of suicide ideation decreased with 2.7 extra points in the intervention condition, but this was not statistically significant. For this subgroup, the intervention may be considered cost-effective in comparison with usual implementation if society is willing to pay ≥ € 6100 per unit of effect on the suicide ideation scale extra.
Limitations: Considering the cost outcomes, we had almost no cases that were complete, and heavily relied on statistical techniques to impute the missing data. Also, diagnoses were not derived from structured clinical interviews.
Conclusions: We presented the first randomized trial (trial registration: The Netherlands Trial Register (NTR3092 www.trialregister.nl)) on cost-effectiveness of a suicide practice guideline implementation in mental health care. The intervention might be considered cost-effective for depressed suicidal patients if society is willing to make substantial investments.

1. Introduction

In The Netherlands, about 1700 persons a year die by suicide, and it is estimated that 99,600 suicide attempts take place annually (Hoeymans et al., 2010). Each year, 15,000 patients with non-fatal suicidal behavior are treated at hospital emergency departments, of whom 9000 are hospitalized (Kerkhof et al., 2007). About 40% of all suicides are done by patients who are treated in mental health care (Huisman et al., 2009). The disability burden caused by suicide and suicide attempts is 11th on the list of most

Abbreviations: IAU, Implementation as usual; MHI, Mental Health Institution; PGSB, Multidisciplinary practice guideline for the assessment and treatment of suicidal behavior; PITSTOP, Professionals In Training to STOP suicide; TtT-e, E-learning supported Train-the-Trainer program; CEA, cost effectiveness analysis; EMGO, Dutch Institute for Health and Care institute; ROM, Routine Outcome Monitoring; TiC-P, Trimbos questionnaire for costs associated with psychiatric illness; ICER, Incremental Cost Effectiveness Ratio; QALY, Quality-adjusted life years; BSS, Beck Scale for Suicide Ideation

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burdensome diseases in The Netherlands (van Spijker et al., 2011). The economic impact of both completed and attempted suicides is substantial (McDaid and Kennelly, 2009). To calculate the total costs associated with suicide, three types of costs should be taken into account; direct costs (e.g. demand on emergency services, funerals), indirect costs (loss of contribution to economy via paid work, family responsibilities) and intangible costs (pain and grief of family, loss of chance to experience all that life holds). In Scotland, total costs per completed suicide were estimated to be around 1.6 million euro (Platt et al., 2006). No comparable economic studies have been done to estimate the costs of suicide ideation, but given the estimated costs of depression (e.g. (Kleine-Budde et al., 2013)), which is prevalent in 90% of people with suicide ideation (O'Connor et al., 2011), the costs are likely to be large. A recent cost-effectiveness analysis of a web-based self-help program to reduce suicide ideation (van Spijker et al., 2012) reported that for each significantly improved individual, €34,727 of societal costs were saved.

In May 2012, the evidence-based multidisciplinary practice guideline for assessment and treatment of suicidal behavior (PGSB) (van Hemert et al., 2012) was issued. It was argued that introduction of a national evidence-based guideline may result in better and therefore more cost-effective treatment of suicidal behavior (Bool and Doeven, 2007). Suicide prevention training has been shown to improve knowledge, skills, and attitudes towards suicidal behavior of both gatekeepers (Capp et al., 2001; Chagnon et al., 2007; Gullestrup et al., 2011; Isaac et al., 2009; Joffe, 2008; King and Smith, 2000; Matthieu et al., 2008; Stuart et al., 2003; Wyman et al., 2008) and mental health professionals (Appleby et al., 2000; Oordt et al., 2009). Additionally, professional and gatekeeper training in diagnosis and treatment of depressive disorders, which are associated with suicidal behavior (Hawton and van Heeringen, 2009) has been shown to result in a reduction of suicides (Hegerl et al., 2010; Knox et al., 2003; Matthieu et al., 2008; Rutz et al., 1989; Szanto et al., 2007). However, adherence to evidence based guidelines has been shown to be unsatisfactory (Grol and Grimshaw, 2003; Shafran et al., 2009; Weinmann et al., 2007; Wobrock et al., 2009), resulting in less effective patient care, and thus extra costs for society. A structured implementation program may improve adherence to the guideline, which may result in better assessment and treatment of suicidal behavior, which might lead to less suicide attempts and suicide ideation.

To implement the PGSB in Dutch mental health care, we developed an e-learning supported Train-the-Trainer program (TtT-e) to be delivered to the full staff of psychiatric departments (de Beurs et al., 2013b; de Groot et al., 2015). The Train-the-Trainer model is based on the Adult Learning Theory (Knowles, 1970) stating that the best resource for learning comes from peers, and on the Diffusion of Innovation Theory (Rogers, 2010) stating that people adopt new information better through their trusted social networks. TtT-e combines a one day face-to-face training with an additional e-learning module. This form of blended learning is used extensively in medical education and has been found to be more effective when compared with traditional instructor-based trainings (Means et al., 2013; Pearce et al., 2012).

Little is known about the cost-effectiveness of suicide prevention programs consisting of training professionals in comparison with usual practice. By retrospectively considering the costs due to a reduction in suicides, an educational program for Swedish general practitioners in the Island of Gotland was argued to be cost-effective (McDaid and Kennelly, 2009) when compared to not training professionals. It was estimated that the costs per life year gained of a training intervention in England (Appleby et al., 2000) were €4049 in comparison with no additional training, which is considered to be highly cost effective.

Evidence on clinical effectiveness is not sufficient for policy making. Before policy makers and managers can decide to disseminate our intervention, information on the cost-effectiveness of the guideline implementation strategy evaluated in this study in comparison with implementation as usual (IAU) is needed.

This paper presents a cost-effectiveness analysis alongside a cluster randomized trial in which an e-learning supported Train-the-Trainer program (TtT-e) is compared with IAU with regard to change in suicide ideation and change in quality of life. We hypothesized that patients in the intervention condition will feel better treated by their professionals, resulting in less direct and indirect health costs, making the intervention cost-effective when compared to the control condition.

2. Methods

2.1. Study design, setting and participants

Our economic evaluation was performed alongside the PITSTOP suicide trial (de Beurs et al., 2013a). As soon as the professional staff in the intervention departments was trained in suicide guideline adherence, all newly admitted patients were assessed at admission (T0) and at three months after admission (T1). If a patient was discharged within three months, T1 was arranged just before discharge. In the control departments, T0 measurements started when the department was informed of the allocation outcome. Data was collected via Routine Outcome Monitoring (ROM), an online assessment method by which data on the effectiveness of treatment in everyday clinical practice are systematically collected (De Beurs et al., 2011). In MHIs not using ROM, graduate students and/or research assistants used paper and pencil questionnaires to collect similar data.

All eligible patients were informed about the study and participants provided written informed consent. For each included patient, the main DSM-IV diagnosis as entered in their Electronic Health Record during enrollment was collected. We used the DSM-IV diagnosis for subgroup analysis for separate disorders.

2.2. Inclusion and exclusion criteria

Within the PITSTOP suicide trial, departments were considered eligible for participation if they treated patients ≥ 18 years of age, professionals felt a need for training in suicide prevention skills, and their management was willing to provide support, including financial support for covering loss of production while attending the training. For our economic evaluation, patients were eligible if they had suicide ideation at baseline (i.e. if they scored > 0 on the Beck Scale of Suicide Ideation (Beck et al., 1997)). As admitted patients were often affected by emotional and/or cognitive problems, patients who were emotionally and/or cognitively unable to complete questionnaires were excluded. Whether a patient was able to enter the study was left to the discretion of the staff.

2.3. Matching and randomization

Eligible departments were matched in pairs on basis of the main diagnostic DSM-IV category of patients treated in the department, and on comparable average length of treatment. Members of matched pairs were randomly allocated to either implementation as usual (IAU) with TtT-e (intervention), or IAU (control condition). Binary randomization was performed by an independent researcher of the Dutch Institute for Health and Care institute (EMGO) research institute who was not involved in the study. Patients were blind to the allocation, but due to the nature of the intervention professionals were not.