Routine outcome monitoring & learning organizations in substance abuse treatment
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Citation for published version (APA):

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Download date: 07 Mar 2019
CHAPTER 6

EFFECT OF TREATMENT OUTCOME FEEDBACK ON LEARNING CAPACITY IN SUBSTANCE ABUSE TREATMENT CENTERS

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Abstract

**Aims:** To assess the effect of treatment outcome feedback to treatment professionals on learning capacity.

**Design:** Quasi-experimental pre-post study.

**Setting:** Substance abuse treatment centers (SATCs) in the Netherlands.

**Participants:** 30 treatment professionals from Dutch SATCs.

**Measurements:** The Questionnaire for Learning Organizations (QLO).

**Findings:** Learning capacity did not change after the feedback intervention. There was a small decrease for the total score with a moderate effect size. No differences in effect were found for professionals who did and did not attend feedback sessions.

**Conclusions:** These are unexpected and disappointing findings. In future research more attention should be paid to improvement of the learning organizations questionnaire. In addition, efforts have to be made to increase the intensity and appreciation of feedback sessions.
Introduction

In the last decades, the health care sector has gone through important changes, and this is also true for the substance abuse treatment sector. In the Netherlands, substance abuse treatment centers (SATCs) participate in a nationwide, quality-enhancing reform program, aiming to build a more evidence-based, transparent, and accountable treatment system (Schippers et al., 2002). Most centers redesigned their existing treatment programs into evidence-based treatment systems and are measuring performance indicators and implementing routine outcome monitoring as demanded by the National Health Inspectorate (GGZ Nederland, 2006). Moreover, efficient organizational and team processes are stressed by the general public, financers and the government with regard to effectiveness, transparency, competitiveness, and performance.

An important precondition to improve quality of treatment is the capacity to learn from feedback, and this is recognized in health care management. In Scotland and England, the National Health Services are encouraged to become “learning organizations” to meet the demands of reform and change in health care (Rushmer et al., 2007). Elsewhere, learning capacity has been associated with organizational effectiveness, where the learning principles of shared vision and team learning from Senge’s learning organization model (Senge, 1992) were predictors for organizational effectiveness (Jeong et al., 2007; Kelly et al., 2007). Feedback to teams about treatment outcomes can be a powerful tool in a learning organization and may improve quality and treatment effectiveness (S. D. Miller, Duncan, Sorrell, & Brown, 2005). In health care, outcome measurement in combination with feedback of results is often referred to as routine outcome monitoring (ROM). In this process, treatment outcomes are usually defined in terms of treatment retention, patient satisfaction and clinical outcomes, i.e. symptom reduction after treatment (Sperry et al., 1996; Walburg, 2001). ROM can be employed in two strategies. The first strategy is individual feedback, i.e. feedback on outcomes in the ongoing treatment process, also referred to as concurrent outcomes (Sperry et al., 1996), with the aim of adjusting the ongoing treatment if necessary. In this strategy, treatment professionals receive information about their individual patients, preferably related to norms. This type of feedback is to support professionals in actual decision making (Lambert et al., 2005). The second strategy is aggregated feedback, i.e. feedback on aggregated results over groups of patients afterwards. The aim of this strategy is to formulate improvement projects for treatment modalities or programs at team level. In addition, aggregated figures can serve as accountability figures to internal or external stakeholders (McLellan et al., 2007; Nabitz & Walburg, 2002).
However, evidence for the effect of feedback on the quality of professional practice is scarce. In two reviews, most study methods were qualified as inadequate and these low-quality studies showed little effect (Jamtvedt, Young et al., 2006; O’Brien et al., 2002). Therefore, an appropriate question is whether delivering feedback has an effect on the prerequisite for quality improvement, i.e. the learning capacity of individuals, teams, and organizations. Since the theory of Senge strongly advocates the role of feedback (Senge, 1992), this theory seems suitable for the study of the effects of feedback on quality improvement through ROM.

**Learning organization**

Peter Senge popularized the term “learning organization” with his book *The Fifth Discipline* (Senge, 1992). He defined a learning organization as one that possesses five core-learning disciplines: Personal Mastery, Mental Models, Shared Vision, Team Learning, and Systems Thinking (see Chapter 1, p.16-17 for a more detailed description of the theory and the five disciplines). *The Fifth Discipline* is mainly focused on business organizations, but there are examples of applications in organizations in the public sector (Jeong et al., 2007; Kelly et al., 2007; Pang, 2004; Rushmer et al., 2007).

**Aim of the study**

In this study, we investigate whether the learning capacity of professionals increases after aggregated feedback is given about outcomes of the provided treatment. It is hypothesized that aggregated feedback of outcomes to (one or more) team members will increase the learning capacity of the professionals, and that this increase will be most prominent in Team Learning, since feedback related elements such as collective thinking and dialogue based on results are stressed in this discipline. In addition, we investigate the association between learning capacity and attending feedback sessions. It is hypothesized that professionals who attend feedback sessions start off with a higher initial learning capacity and that these professionals will gain more learning capacity than professionals who do not attend feedback sessions.

**Methods**

**Setting**

A quasi-experimental, pre-post study was conducted between February 2006 and December 2007. During this period, three feedback sessions with a 6-month
interval were offered to treatment professionals in outpatient treatment teams in four Dutch SATCs primarily providing cognitive behavioral therapy (CBT) for substance use disorders. The number of teams per SATC that participated in feedback sessions varied from 1 (large urban teams) to 9 (small regional teams). The size of the teams varied between 3 and 25 members. Each SATC performs around 2,500 new intake assessments yearly, and patients allocated to CBT comprise about 50% of the total treatment population.

Study sample

The study population consisted of 93 treatment professionals from four SATCs: 30 in SATC A, 20 in SATC B, 39 in SATC C and 4 in SATC D. Of these, 30 (32%) returned a questionnaire both before any feedback session had taken place (T0) and after the third feedback session had taken place (T1). Analyses were performed on these 30 treatment professionals. SATCs were equally represented in the analyses, i.e. no differences in response rate for the different SATCs were found.

Feedback sessions

The feedback sessions were prepared by the Amsterdam Institute for Addiction Research (AIAR) in collaboration with the SATCs. Data on treatment outcomes was collected and analyzed by the AIAR; chairing and presentation of the feedback sessions was in collaboration with the SATCs and the AIAR. The feedback sessions were held at a central location – all the treatment professionals from participating teams of the SATCs were invited. The sessions took place during office hours, and attending the sessions was completely voluntary.

During both of the feedback sessions, aggregated treatment outcomes of a 6-month cohort of patients who received CBT were presented. Feedback consisted of aggregated patient characteristics, symptoms before treatment, the number of consumed treatment sessions, treatment retention, and treatment outcome in terms of patient satisfaction and symptom reduction after treatment. Treatment outcome was assessed 9 months after intake through a telephone based follow-up interview. Data on consumed treatment sessions was collected during the 12 months after intake. After that, data and presentation preparation took between 3 to 5 months. As a result, presented data from the first patient entering the 6-month cohort was a maximum of 11 months old and data from the last patient was a maximum 5 months old.

The aim of the feedback sessions was to inform professionals about the results
of their work and to offer learning opportunities by means of benchmarking and trend analysis. Benchmarking refers to the establishment of reference points that can be used to interpret data (Mulder & de Loor, 2005; Sperry et al., 1996). Reference points for each SATC were outcomes of the other SATCs, and outcomes from Project MATCH (Project Match Research Group, 1997), a study after which the SATCs modeled their CBTs. In the second feedback session, trend analyses were performed between both 6-month cohorts and within SATCs.

After each session a written report with outcomes and recommendations for practice improvement was sent to the SATCs.

**Measurements**

The Questionnaire for Learning Organizations (QLO) was used to assess changes in the learning capacity. The QLO consists of 22 items with a 6-point Likert-type answering format with ratings ranging from 1 to 6, denoting “not applicable at all” for 1 and “very applicable” for six. The scales were Personal Mastery (PM; 5 items), Mental Models (MM; 4 items), Shared Vision (SV; 4 items), Team Learning (TL; 5 items), and Systems Thinking (ST; 4 items), where higher scale scores represent a bigger capacity on the represented discipline. Participants were asked to rate the description of all the items according to their personal work situation. The QLO is a recently developed instrument that was tested in a population of treatment professionals (Oudejans, Schippers, Schramade, Koeter, & van den Brink, 2008). The assumed five-factor structure was confirmed in CFA and internal consistency of most of the scales was satisfactory. To assess experience with the feedback system, respondents were asked whether they had attended one or more feedback sessions during the intervention period in a yes/no format. Finally, socio-demographic data on the treatment professionals was collected, including age, sex and educational level.

Treatment professionals completed the QLO before any feedback session had taken place (T0) and after the second feedback session had taken place (T1).

**Data analysis**

In order to assess the differences in QLO scores between T0 and T1 and the effect of attending feedback sessions on the QLO scores, the repeated measures GLM was used, including a time by attendance interaction effect in the model.
Results

Characteristics of the sample

Table 1 shows the characteristics of the sample of treatment professionals. In accordance with the national (Schramade & Nabitz, 2005) and international situation (Ogborne, Braun, & Schmidt, 2001), employees in substance abuse treatment are well educated and show an over-representation of females. Response rates were similar over the SATCs, meaning the SATC with the most treatment professionals has the biggest representation in the sample (SATC A), and the SATC with the least professionals has the smallest representation (SATC D).

Presence at feedback sessions

Of 30 participants, 13 (43.3%) reported to have attended one or more feedback sessions. No differences in feedback attendance were found between SATCs.

Pre- and post intervention QLO scores

Pre- and post-intervention scores are shown in Table 2 (n = 29; for one respondent scale scores were missing), together with indices for internal consistency (Cronbach’s α). All post-intervention QLO sub-scores were lower than the pre-intervention scores, but there was no significant multivariate time-effect (Wilks’ Lambda = 0.65; F_{5,23} = 2.51; p = 0.059). For the total QLO score, a significant time effect was found (F_{1,27} = 7.64; p = 0.010), with the total mean QLO score at T0 being almost 0.3 of a point lower than the total mean score.
at T1 (Cohens’ d = 0.59; a medium effect size) (Cohen, 1988). Internal consistency (Cronbach’s α) was unacceptably low for the pre-intervention Systems Thinking scale and less than optimal for Shared Vision, Mental Models and Systems Thinking scales both before and after the feedback sessions.

Table 2: Pre- and post-intervention scores on the QLO (n = 29)*

<table>
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<th>mean (sd); α</th>
<th>Pre</th>
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<tr>
<td></td>
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<tr>
<td>PM</td>
<td>5.4 (0.5); 0.78</td>
<td>5.2</td>
<td>(0.8); 0.86</td>
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<tr>
<td>MM</td>
<td>4.8 (0.5); 0.62</td>
<td>4.5</td>
<td>(0.7); 0.59</td>
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<tr>
<td>SV</td>
<td>4.2 (0.7); 0.59</td>
<td>3.9</td>
<td>(0.8); 0.63</td>
</tr>
<tr>
<td>TL</td>
<td>3.9 (0.7); 0.76</td>
<td>3.4</td>
<td>(0.7); 0.64</td>
</tr>
<tr>
<td>ST</td>
<td>4.7 (0.6); 0.39</td>
<td>4.6</td>
<td>(0.7); 0.59</td>
</tr>
<tr>
<td>Total</td>
<td>4.6 (0.4); 0.83</td>
<td>4.3</td>
<td>(0.5); 0.87</td>
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</table>

* number of respondents was 30; for one respondent scale scores were missing

Table 3 shows pre- and post-intervention QLO scores for the subgroups that did and did not visit feedback sessions. Respondents who attended the sessions had higher pre-intervention scores on Shared Vision and Team Learning than those who did not visit the sessions, but differences were very small and multivariate statistical tests revealed no statistical significance. Thus, no initial learning capacity differences existed between respondents who attended feedback sessions and those who didn’t. In addition, no multivariate interaction effect was found indicating that professionals that did visit feedback sessions did not gain more learning capacity than those who did not.

<table>
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<tr>
<td>PM</td>
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<td>ST</td>
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<td>4.7</td>
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<tr>
<td>Total</td>
<td>4.7</td>
<td>4.6</td>
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* n = 12; ** n = 17

Conclusions and discussion

The main finding is that there was no evidence of increased learning capacity of professionals as measured with the QLO after aggregated feedback of outcomes of substance abuse treatment. In contrast, there was a small (significant)
decrease for the total score. This decrease has a moderate effect size. No differences were found for respondents who did visit feedback sessions compared to those who did not.

None of the expected effects were found, and this requires some explanation. As it is said, SATCs are going through important changes and this could be one of the reasons why respondents have no opportunity to learn, they can only react to these changes. Another explanation is the presence of test-retest effects that also would explain the decrease of the total score: either the questionnaire or the feedback sessions themselves could have resulted in a more critical appraisal of the situation regarding team learning in their organization.

This would imply that visiting feedback sessions alone is not enough to create learning opportunities in changing environments, and that something else and something more intensive is needed. Only 30% of the treatment professionals returned the questionnaire at T0 and T1. This resulted in a rather small study sample in which outliers can influence mean scores. Moreover, the self-selection of participants is likely to have resulted in an over-estimation of the effect of feedback on learning capacity, and therefore self-selection is very unlikely to be an explanation for the absence of the effect. Another important issue is that the QLO is an instrument in development. Some of the scales showed low internal consistency suggesting substantial measurement error. Reformulating and revising some of the items should be the first step in future research (Oudejans et al., 2008). Next, we should focus on the nature and quality of the feedback sessions and get more insight into the needs of treatment professionals in order to profit from the sessions. Individual high-frequency concurrent feedback might be more effective than the low-frequency aggregated feedback in the current study. As a result, it would be interesting to know how treatment professionals appreciate the feedback sessions and include this as a covariate in the study, next to the assessment of the amount of feedback they received. Of course, this would require bigger study samples. The current study is a worthy pilot that sets the stage for future, more powerful, studies including high intensity feedback, improved measurement procedures and bigger samples.

Acknowledgements

We would like to express our gratitude to the management, and treatment professionals at the various centers for taking part in the study. The Jellinek (now the Jellinek division of Arkin), Brijder Substance Abuse Treatment Center (now the Brijder Substance Abuse Treatment Division at ParnassiaBavo Group), and Novadic-Kentron have made it possible for us to conduct the study. We also thank Masha Spits at the AIAR for her research assistance.