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***Feasibility and preliminary results of a
Collaborative Care program for patients with
severe personality disorders:
A comparative multiple case study.***

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Submitted

ABSTRACT

Background

A substantial group of patients with severe personality disorders does not benefit from structured psychotherapy. For those patients we developed a Collaborative Care program (CCP), managed by (community) mental health nurses. We aimed to investigate the feasibility and preliminary outcomes of this CCP for patients with severe borderline personality disorder or personality disorders NOS.

Methods

Mixed methods were used in a comparative multiple case study, including 26 cases, to compare the CCP with Care as Usual. Data were collected among patients, informal carers and nurses at baseline, and at five and nine months follow up.

Results

A significant decrease in severity of borderline symptoms was found, despite incomplete implementation of the CCP and the small sample size. Some other outcomes, although not significant, showed medium effect sizes. In the experimental condition a significantly higher Mental Health Care utilization was found. Three core elements of the CCP were: 1) improved goal orientation in the treatment process; 2) a stronger appeal to self-management skills of patients; and 3) improved skills in establishing and maintaining effective therapeutic relationships.

Conclusions

This CCP may be beneficial for patients with severe personality disorders who did not benefit nor have access to structured psychotherapy. However, experimental research is needed to confirm the preliminary outcomes of this study.

Trial Registration Number: NTR2763

Background

Evidence based structured psychotherapy is the preferred treatment for severe personality disorders. Research has shown that psychotherapy contributes to improved quality of life, reduced psychopathology and destructive behaviour, as well as sustainable changes in personality (van den Bosch et al, 2005;Linehan et al, 2006;Verheul and Herbrink, 2007;Bateman and Fonagy, 2008;McMain et al, 2012). A number of patients, however, has no access or does not benefit from these psychotherapies and therefore habitually receive community mental health care (CMHC), mostly provided by (community) mental health nurses (van Luyn, 2007;Hermens et al, 2011;van Manen et al, 2012). Care delivered by CMHC teams is usually not standardized and generally unstructured (Koekkoek et al, 2009a;Koekkoek et al, 2010). Moreover, outcomes of this treatment are limited due to ineffective behaviours among both patients and professionals; patients show ambivalence towards their needs for treatment and commonly professionals perceive their patients as able but unwilling to change (Koekkoek et al, 2009b). In order to optimize treatment for this vulnerable patient group, we developed a Collaborative Care program (CCP). Generally, CCPs aim to increase shared decision making and enhancement of self management skills of chronically ill patients and to optimize continuity and coordination of care (von Korff, 1997). Nurses have a prominent position in CCPs as they function as collaborative care managers, being responsible for both a proper implementation and optimal organization of treatment.

To our best knowledge this is the first CCP for patients with borderline personality disorder or NOS personality disorder. In this stage of intervention development and testing, insight in both the feasibility and the preliminary effects of this type of intervention are needed. Therefore, we combined quantitative and qualitative methods in a comparative multiple case study, examining processes of application and outcomes in their mutual relation. The following research objectives were formulated:

1. To describe the feasibility of a CCP for patients with a severe borderline or NOS personality disorder in comparison with Care as Usual (CAU);
2. To describe the preliminary outcomes of the CCP in comparison with CAU;
3. To identify characteristics of the CCP determining positive or negative outcomes.

Methods

Design

A comparative multiple case study design is suitable when testing a new intervention among a small number of patients (Stake, 2006). We aimed to provide descriptive and explanatory data regarding both the feasibility and preliminary outcomes of the intervention program. By making use of a control group we were able to systematically compare the CCP with Care as Usual. In this design relatively few participants are needed for a thorough evaluation. A distinctive feature of a comparative multiple case study is the analysis of data on three different levels by means of data and method triangulation: firstly at individual case level (within case analysis), secondly at group level (cross case analysis), and thirdly at the level of the comparison of the two conditions (cross case synthesis). The within case analysis provides detailed insight in the actual application of CCP and Care as Usual, the individual outcomes, and explanatory factors for these outcomes in each case. Within the experimental and control condition cross case analyses are carried out to formulate statements about the observed processes and outcomes per condition. At an aggregated group level (cross case synthesis) the observed differences in outcomes and process indicators are examined between the experimental and the control condition in order to assess the value of the intervention and to explain differences in outcomes of CCP compared to Care as Usual. A detailed description of the study protocol has been published elsewhere (Stringer et al, 2011).

The research project has been approved by the Medical Ethics Committee of the VU Medical Centre in Amsterdam, the Netherlands. All participants signed for informed consent based on oral and written information about the research project.

Sample

Participants, patients, informal carers and nurses, were recruited from two comparable community mental health care (CMHC) teams of a large mental health organization in the Netherlands. In this study two treatment conditions were compared: an experimental condition in which one CMHC team provided the Collaborative Care Program, and a control condition in which the other CMHC team offered Care as Usual (CAU). Within both conditions caseloads of the participating nurses were screened for eligible patients. These patients were approached in random order for participation in the study. In the experimental condition a maximum of three patients was determined for each nurse to limit the required efforts regarding the implementation of CCP.

Patients, aged between 18 and 65 years, had a main diagnosis of borderline or NOS personality disorder (DSM-IV-TR), had a score of 15 or higher on the Borderline Personality Disorder Severity Index (BPDSI, range 0-90) (Arntz et al,

2003; Giesen-Bloo et al, 2010) and had received psychiatric care for at least two years. Participants were required to speak and read Dutch sufficiently well to fill in questionnaires. We aimed to include 32 (2x16) patients. We screened 85 patients for eligibility, of whom 32 were excluded for various reasons. Fifty-three were eligible for inclusion. The final sample consisted of 26 patients: sixteen in the experimental condition and ten in the control condition (see Figure 1). The planned 32 patients were not attainable due to limited participation of control patients: patients gave no informed consent and nurses were reluctant to allow their patients to participate in research, because they expected no benefits when participating in the control condition .

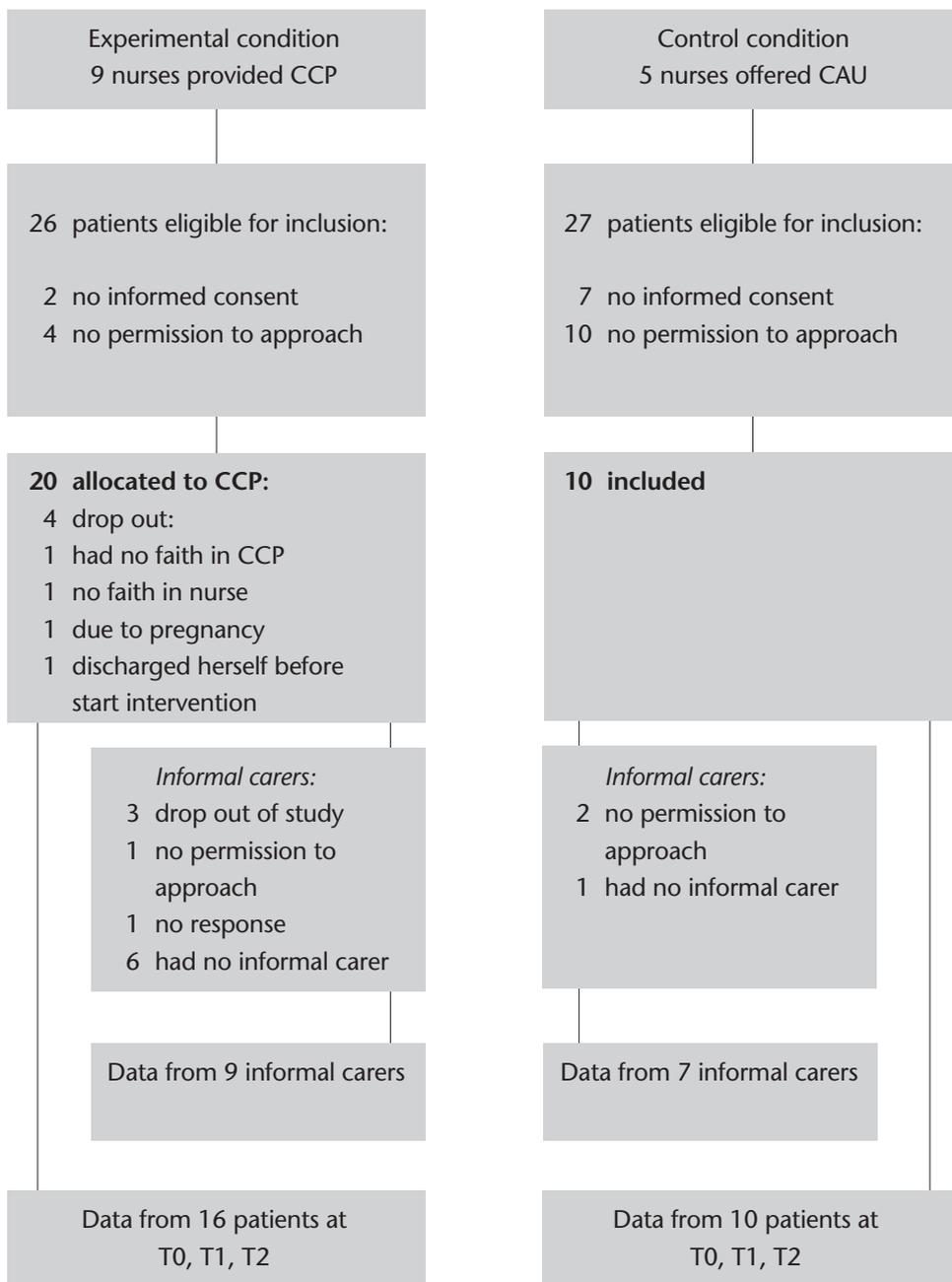
The included patients were asked for permission to approach one of their informal carers to participate in the study. In the experimental condition nine informal carers participated (56%), as opposed to seven in the control condition (70%). Not all patients had an informal carer. Some other patients did not give permission to approach an informal carer, because of their fragile or damaged relationships with family members or close-by friends.

Ten nurses from the experimental condition and five nurses from the control condition were included in the study. Participation was on a voluntary basis. Two nurses of the control condition could not participate in the study because they did not have eligible patients. Nurses who participated in the experimental condition received a three-day training in providing the CCP. From the ten nurses who were trained, four changed jobs during the research period. Three new nurses were included in this study and were trained individually by the first author. They continued the implementation of CCP where their predecessors had stopped.

The Collaborative Care Program

The Collaborative Care Program (CCP) was developed to improve the quality of care for patients with severe borderline or NOS personality disorders within a CMHC setting. The expectation was that the CCP would (1) improve quality of life, (2) reduce destructive behaviour (suicidal, self harm, aggressive or addictive behaviour) and other manifestations of the personality disorder, (3) improve mastery of the patient, and (4) enhance satisfaction with care by both patients and informal carers. Finally, we expected a positive effect on attitudes, knowledge and skills of nurses.

Figure 1: Flow chart of included patients and informal carers



The CCP consisted of five integrated components:

1. Adequate organization and coordination of care, with optimal collaboration between the main partners: patients, their informal carers, psychiatrists and nurses. This first component consisted of several consecutive activities:
 - a. *Introduction* of the principles of Collaborative Care to the patient and informal carers;
 - b. Forming of a Collaborative Care team, consisting of the above-mentioned partners;
 - c. Evaluation of treatment history and coping skills with life-events, by means of a *time-line*;
 - d. Explication of *collaboration agreements*. To emphasize the collaboration and mutual expectations and responsibilities, a metaphor was used that describes the collaboration *as a therapeutic road trip* in which the patient is the driver and the care provider the navigator (Jobes, 2006);
 - e. *Crisis management* by drafting a crisis response card;
 - f. *Systematic assessment of needs* by means of the Camberwell Assessment of Needs;
 - g. Formulation of a *treatment plan*.
2. *Early recognition of destructive behaviours* (i.e. suicidal, self-harm, aggressive or addictive behaviours) *followed by early interventions*, to promote self-management using a relapse prevention plan;
3. Application of *Problem Solving Treatment* (PST) to promote problem solving skills;
4. Application of elements of Solution Focused Treatment to gain a more *positive life orientation*;
5. Provision of *psychoeducation*.

The first component refers to the preparation stage of the program, while the components 2 to 4 comprise the treatment per se. The preparatory activities provide a treatment frame, which is recommended in (inter)national treatment guidelines for personality disorders. Psychoeducation is integrated through all stages of the program. The goals, as described in the treatment plan, were evaluated every three months within the Collaborative Care team.

The CCP was elaborated in a workbook for patients and a separate manual for nurses. During the research period the nurses received monthly supervision, supervised by the first author (BS).

Data collection

Data were collected at three time points: at baseline (T0) and at five (T1) and at nine (T2) months. Mixed research methods were used to reach the study objectives:

1. Quantitative data were collected among patients, their informal carers and nurses. A detailed overview can be found in the study protocol.
 - a. Self-report questionnaires were completed, representing outcome and process indicators. The main outcomes were quality of life, measured with the Manchester Short Appraisal (MANSA) (Priebe et al, 1999), and current severity and frequency of the borderline manifestations, measured with the Borderline Personality Disorder Severity Index (BPDSI) (Arntz et al, 2003; Giesen-Bloo et al, 2010). The MANSA is a 16-item self-report scale, which measures quality of life with 7-point Likert scales, with higher scores indicating higher quality of life. The BPDSI is a semi-structured interview conducted among patients and consists of 70 items, with a total score ranging from 0-90. A cut-off score of 15 was found to distinguish patients with BPD from healthy controls (Giesen-Bloo et al, 2006). The BPDSI interviews were conducted and audio taped by three psychologists and the first author, who were all trained to administer this interview. For the interviews conducted by the first author, the inter-rater reliability was assessed based on two interviews. The audiotapes of these interviews were rated by a second rater, resulting in an intra-class coefficient of 1.00 ($p = .006$), indicating a very high inter-rater reliability.
 - b. Nurses from both conditions filled out process forms in which the number and content of contacts were registered. In the experimental group items were added to these forms, which provided additional insight in the treatment integrity of the CCP. In both conditions available treatment plans, crisis response cards and/or relapse prevention plans, derived from the electronic patient records, provided additional information about the content of treatment.
 - c. Mental health care utilization during the 9-month research period was derived from the administration of contacts registered in the electronic patient record. This utilization includes the number of face-to-face and telephonic contacts with the CMHC team and (24/7) crisis facilities.
2. Qualitative data were gathered by individual semi-structured interviews with nurses and patients. The interviews with the nurses were conducted by a research assistant (PK); the interviews with the patients by the first author (BS). This distribution of interviews was motivated by the fact that the first author was too closely involved with the nurses. Interviews took place after the last measurement (T2) with all participating nurses ($n=14$). They were interviewed about one

of their patients who participated in the study. These patients were interviewed as well at T2, except one (lost to follow-up). For these interviews a topic list was used, referring to the underlying, neutrally formulated, principles of the CCP, e.g. quality of the therapeutic relationship, problem solving, coping with destructive behaviour, and self-management. For both conditions the same topic lists were used, however the questions were adapted in line with the different treatment contexts in the experimental and control condition. Initially, in the interviews participants were asked to reflect on their individual quantitative outcomes. Subsequently, the underlying principles of the CCP were discussed. Finally, the participants were asked to identify characteristics of respectively the CCP or CAU which were indicative for positive or negative outcomes.

Analyses

To describe and compare the participant characteristics of the experimental and control condition, a comparison was made of socio-demographic and psychopathological characteristics (t-test for continuous variables, and χ^2 -test for categorical variables).

To achieve the first research objective, i.e. describing the feasibility of CCP in detail, we examined the actual application of the program compared to CAU. Therefore, a content analysis was performed of all qualitative interviews, which were audio taped and transcribed verbatim. Factors were identified which referred to the process of application, feasibility of the intervention, and explaining factors for the effectiveness of (parts of) the program, resulting in single case descriptions. The data were analysed using ATLAS-TI qualitative text analysis software. The credibility and dependability of the data were ensured by peer debriefing and member checking (Polit and Beck, 2003).

For determining the actual application of the various components of the CCP, the degree of application was assessed. The classification of the actual application of these components was derived from the single case descriptions. This classification consisted of four levels:

- ++ : Component was optimally applied and concrete proof was available; worksheets, documents from the electronic health record and/or process forms. The actual application was confirmed by statements in the interviews with patient and nurse;
- + : Component was appropriately applied and proof was available; process forms or statements in interviews with patient and nurse;
- +/- : Component was moderately applied and little proof was available; statements in interviews with patient or nurse;
- : Component was not or only barely applied and proof was barely available or absent; statements in interviews with patient or nurse.

The sum of optimally or appropriately (++) or (+) applied components (range 0-12) was used as a measure of treatment integrity in which three levels were distinguished: 0-5 poor application; 6-8 moderate application; 9-12 good application. In the control condition an assessment was made to which extent the underlying principles and the components of the CCP had been applied recognizably in Care as Usual. This assessment was only possible for the cases with interview data (n=5). The scoring was repeated by a second rater (PK) to assess inter-rater reliability. The intra-class correlation was .96 ($p < .000$), indicating a very high inter rater reliability.

For the second research objective, describing the preliminary results of the CCP, we first examined the differences between the experimental and the control condition at group level. Longitudinal analysis by means of random intercept models were performed for all variables, since most outcome and process indicators were measured at three time points (baseline, 5 and 9 months) (Twisk, 2003). Because the BPDSI was measured only at two measurement points, a paired t-test was performed to examine the differences between baseline and the nine-month follow-up. Effect sizes were calculated for all variables, based on the difference scores T2-T0. At individual case level, difference scores (T2 - T0) were computed for the main outcome indicators quality of life (MANSA) and severity of BPD manifestations (BPDSI). All quantitative data were analysed using SPSS 20.

For the third research objective, identifying explanatory factors for positive or negative outcomes, we used the single case descriptions and aggregated data of the cross case analyses to explain which characteristics of the CCP were indicative for these outcomes, compared to CAU.

Results

Sample characteristics

Sample characteristics are summarized in Table 1. The data suggest that the CCP and CAU groups were comparable on most variables.

The application of the CCP compared to the treatment applied in CAU

Table 2 shows that in 4 cases (25%) the CCP was applied well (≥ 9 components optimally or appropriately applied), while in another 31.5% of the cases the CCP was applied moderately (6 or 7 components optimally or appropriately applied). In the experimental condition the mean of optimally or appropriately applied components was 6.0, compared to 3.0 in the control condition (d.f. = 19; $t = 2.46$, $p = .024$). In general, in the experimental condition the preparatory activities were more frequently executed than the treatment activities.

Table 1: Sample characteristics

	Experimental condition	Control condition	p-value
<i>Patients n=26</i>			
Age (mean, SD)	43.9 (11.7)	44.5 (8.7)	.897
Sexe (n, % female)	15 (94%)	8 (80%)	.286
Marital status (n, % unmarried)	12 (80%)	8 (89%)	.572
Diagnosis			.780
Main diagnosis BPD (n, %)	12 (75%)	7 (70%)	
Main diagnosis PD NOS (n, %)	4 (25%)	3 (30%)	
Co-morbid axis I-disorder(s) (n, %)	16 (100%)	10 (100%)	
Co-morbid somatic disorder(s) (n, %)	15 (94%)	10 (100%)	
GAF (mean, SD)	49.8 (11.0)	55.5 (6.9)	.153
Years of MHC treatment (mean, SD)	16.6 (10.7)	16.1 (9.5)	.923
Years in CMHC team (mean, SD)	1.9 (2.1)	3.8 (5.1)	.323
<i>Informal carers n=17</i>			
Age	52.4 (15.5)	53.3 (21.0)	.922
Sexe (n, % female)	8 (80%)	2 (25%)	.020
Relation to patient (n, %):			.064
Partner	6 (60%)	2 (25%)	
Family	3 (30%)	1 (13%)	
Other	1 (10%)	5 (63%)	
<i>Nurses n= 14</i>			
Age (mean, SD)	43.5 (5.5)	46.2 (11.1)	.567
Experience MHC (mean, SD)	17.3 (10.9)	25.2 (13.9)	.302
Experience CMHC team (mean, SD)	1.6 (1.2)	6.2 (4.7)	.093

Table 2: Actual application of treatment: the CCP compared to CAU

Components Cases	Experimental condition										Control condition																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
<i>Preparation</i>																											
1a. Introduction	++	+	+	+	+	+	+	+	+	+	+	+	++	+	+	+	-		+	+			-				+
1b. Forming a CCT	+	+	+	-	-	+	-	+/-	+	-	-	-	-	+	+	++	+		-	-			+				+
1c. Time-line	+	+	+	+	-	+	+	+	++	+	++	+	++	+	-	++	+		-	-			-				-
1d. Collaboration agreements	+	++	+	-	-	++	-	-	++	-	-	+	++	++	+	++	-		-	-			-				-
1e. Crisis management	+	-	+	-	-	-	-	-	++	-	+/-	-	-	-	-	++	-		-	-			-				+
1f. Assessment of Needs	++	+/-	+	+	-	+	+	+	++	-	+/-	+	++	+	+	++	-		-	-			-				-
1g. Treatment plan	-	++	++	+	+	++	+	+	++	+	+	+	++	+	+	++	+		+	+			+/-				+
<i>Treatment</i>																											
2. Early recognition and intervention of destructive behaviour	-	++	+/-	-	-	++	-	-	++	-	-	-	++	-	-	+/-	-		-	-			-				+
3. Problem Solving Treatment	+/-	+	-	-	-	+	-	-	+	-	-	-	++	-	-	-	-		-	-			+/-				-
4. Life orientation	+/-	++	+/-	+/-	-	+/-	-	-	+/-	-	-	-	+	-	-	-	+/-		+	+/-			+/-			+/-	
5. Psychoeducation	-	+	-	-	-	-	-	-	+/-	-	-	-	-	+	-	+	-		-	+/-			-				-
<i>Evaluation</i>																											
Treatment plan	-	+	-	-	-	+	-	-	-	-	-	-	+	-	+	-	-		-	+			-				?
Total 'treatment adherence'	6	10	7	4	2	9	4	4	10	3	3	5	9	7	6	7	3		3	3			1				5

++ : Component was optimally applied and concrete proof was available;
 + : Component was appropriately applied and proof was available;
 +/- : Component was moderately applied and little proof was available;
 - : Component was not or barely applied and proof was barely available or absent.

Outcomes of the CCP versus CAU

Table 3 summarizes the outcomes of treatment in the experimental and control condition. At group level the BPDSI decreased significantly more in the experimental group compared to the control group ($p .03$, effect size 0.9 ; Table 3). Considering the individual case-level data in the experimental condition, in 50% of the cases the BPDSI score dropped to a score below the cut off point of 15 points (Table 4). This compares favourably with patients in the control condition, where no BPDSI scores dropped below the cut-off point.

Concerning the other outcome variables no significant improvement could be detected in the experimental condition, partly because of the small number of participants in our study. However, despite non-significance of the changes two variables showed medium effect sizes, i.e. treatment satisfaction with ES of 0.6 , and quality of the therapeutic relationship with ES 0.5 , respectively (Table 4). At individual case-level, 56% of the patients in the experimental condition reported an improved quality of life (+3 to +17; Table 5). However, in the control condition the quality of life improved to a rather similar extent (40% of the cases; +3 to +14). With regard to use of mental health care, a significant difference was found between the experimental and control condition in the mean number of contacts (78 versus 23, $p .024$; Table 3), which can largely be explained by two cases (case 5 and 16; Table 4).

Informal carers in the experimental condition reported improved satisfaction with care and decreased burden. When compared with CAU large effect sizes were found, but these were not statistically significant.

Nurses in the experimental condition reported improved quality of the therapeutic relationship (medium effect size) and improved attitudes towards deliberate self-harm. Attitude scores concerning suicidal behaviour did barely change over time. None of these differences were significant compared to CAU

Table 3: Preliminary results of outcome and process indicators part 1

		Experimental condition ²	Control condition ²	Test statistic ³	p-value	Effect size ⁴
<i>Patients n=26</i>						
BPD severity (BPDSI)	T0	27.4 (8.1)	22.5 (5.3)	$t(23) = -2.31$	0.30	-0.9
	T2	19.6 (11.7)	22.4 (4.2)			
Quality of life (MANSA)	T0	40.1 (9.9)	46.1 (6.7)	$t(44.4) = 1.01$.316	0.2
	T1	45.1 (10.6)	48.1 (7.0)			
	T2	44.9 (13.0)	48.0 (7.3)			
Suicidal behaviour (BSS)	T0	21.8 (7.9)	16.6 (6.5)	$t(26.1) = -0.81$.428	-0.2
	T1	21.0 (8.2)	18.8 (7.5)			
	T2		14.9 (9.0)			
Psychosocial symptoms (BSI)	T0	111.3 (29.6)	124.0 (34.5)	$t(44.3) = -0.85$.402	-0.4
	T1	92.6 (52.0)	117.3 (31.1)			
	T2	89.3 (46.7)	113.6 (39.1)			
Satisfaction (CQ-index)	T0	7.2 (1.5)	7.9 (1.1)	$t(40.6) = 1.22$.229	0.6
	T1	6.8 (1.7)	7.6 (1.0)			
	T2	7.4 (1.2)	7.4 (1.7)			
Mastery (PMS)	T0	10.5 (4.0)	9.9 (3.4)	$t(44.7) = -0.23$.816	-0.1
	T1	11.5 (4.1)	12.0 (2.6)			
	T2	11.8 (3.6)	11.4 (3.4)			
Quality of therapeutic relation (STAR)	T0	39.2 (6.5)	40.0 (4.5)	$t(40.7) = 1.00$.326	0.5
	T1	38.5 (6.8)	38.9 (4.3)			
	T2	38.8 (6.5)	37.4 (4.7)			
Number of MHC contacts ¹		78.1 (70.4)	22.5 (20.0)	$t(23) = 2.42$.024	

Table 3: Preliminary results of outcome and process indicators part 2

		Experimental condition ²	Control condition ²	Test statistic ³	p-value	Effect size ⁴
<i>Informal carers n=17</i>						
Satisfaction (CQ-index)	T0	5.9 (2.0)	7.2 (0.8)	$t(37.0) = 1.06$.294	0.8
	T1	6.8 (1.0)	6.8 (0.8)			
	T2	6.3 (1.0)	6.7 (0.5)			
Involvement/ social support (IEQ)	T0	21.2 (13.0)	8.4 (4.0)	$t(26.4) = -1.09$.286	-1.2
	T1	18.6 (8.3)	15.3 (7.1)			
	T2	17.8 (12.7)	12.3 (7.7)			
<i>Nurses n= 14</i>						
Quality of therapeutic relation (STAR)	T0	35.8 (3.1)	36.8 (4.1)	$t(46.8) = 0.85$.398	0.5
	T1	34.9 (3.3)	37.3 (4.4)			
	T2	37.7 (4.7)	37.1 (4.3)			
Attitudes towards suicidal behavior (SBAQ)	T0	41.8 (5.0)	42.8 (7.4)	$t(24.1) = -0.45$.658	-0.3
	T1	40.6 (5.1)	40.8 (3.1)			
	T2	40.7 (6.5)	43.0 (6.8)			
Attitudes towards self harm behaviour (ADSHQ)	T0	91.5 (7.2)	96.7 (5.4)	$t(21.7) = -0.73$.476	-0.2
	T1	100.5 (7.6)	95.6 (4.5)			
	T2	97.0 (6.1)	101.7 (6.2)			

1 Number of Mental Health Care contacts during the research period at individual case level, including face-to-face and telephonic contacts with CMHC team and (24 hours) crisis facilities.

2 Mean, SD

3 For BPD severity and Number of MHC contacts (where only T0 and T2 measurements are available) the test statistics concern paired samples t-tests on the change scores. For other variables the test statistics concern the fixed effects regression parameters of the 'condition by T2' interaction in a mixed effects regression model.

4 Effect sizes based on difference scores T2-T0.

Explanatory factors

To explain which characteristics of the CCP were indicative for positive or negative outcomes compared to CAU, the single case descriptions and data from the cross case analyses at group level were used. The three stages of the CCP will be discussed successively.

Preparatory stage

The preparatory stage of the CCP consists of seven components, of which several activities were uniquely applied in the experimental condition (Table 2; 1a-1g).

The first important step was to inform patients about the CCP and to introduce the workbook. Patients stated that they were attracted by the principles of autonomy and self-management, although several patients mentioned that they were anxious for or unfamiliar with increased autonomy. All nurses reported that the 'therapeutic road trip' metaphor had a strong positive impact, because it helped them to hold position, become more goal-oriented, panic less in case of suicidal threats and encourage patient autonomy.

Secondly, the CCP aimed to optimize continuity and coordination of care with all stakeholders. In only 50% of the cases the forming of a Collaborative Care team (CCT) had succeeded; nurses mentioned that in these cases continuity and coordination of care improved. Collaboration with other stakeholders increased, including health care providers from addiction services, home care and supervised independent living facilities. Patients' experiences with the intensified collaboration were predominantly positive: bringing all stakeholders together increased mutual understanding and diminished the burden among informal carers, because they were better understood, informed and involved. Nurses also reported positive effects of the CCT: new information or views upon the patients' problems came up from informal carers, and collaboration agreements were more easily fulfilled because everybody was involved in making these agreements and thus commitment regarding the treatment plan improved.

Thirdly, explicit attention was paid to learning from previous experiences by identifying helpful coping strategies, effective treatment-elements, and supportive therapeutic relationships, all these aspects summarized in a time-line. Nurses mentioned that a good introduction and a clear objective of the time-line were required, because looking back at (sometimes traumatic) life events could bring up strong emotions.

Table 4: Results of the main outcome indicators and Mental Health Care utilization at individual case level

Cases Exp	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Diff MANSA ¹	-10	17	.	1	-4	4	0	3	0	8	16	0	4	12	7	10
Diff BPDSI ²	-6.15	-16.73 ⁴	-9.96 ⁴	5.64	-0.03	-16.6 ⁴	11.36	-9.52 ⁴	4.66	-18.24 ⁴	-7.8 ⁴	.	-9.52	-12.38 ⁴	-4.87	-18.11 ⁴
MHC contacts ³	58	12	107	79	289	35	40	42	95	92	74	32	21	35	.	161
Cases Control	17	18	19	20	21	22	23	24	25	26						
Diff MANSA	-4	-2	14	-1	-3	4	-2	3	.	8						
Diff BPDSI	-.71	-3.74	7.56	4.97	-1.8	-2.22	.86	-1.72	-1.12	-3.56						
MHC contacts ³	9	56	9	21	23	9	14	8	14	62						

- 1 Difference score T2-T0 for the Manchester Short Appraisal at individual case level.
- 2 Difference score T2-T0 for the Borderline Personality Severity Index at individual case level.
- 3 Number of Mental Health Care contacts during the research period at individual case level, including face-to-face and telephonic contacts with CMHC team and (24 hours) crisis facilities.
- 4 BPDSI score dropped below cut-off point of 15 points.

However, working with the timeline provided profound insight in the history and coping strategies of the patient, which enhanced understanding and empathy among the nurses. Nurses stated that this enhanced understanding enabled them to establish and maintain more effective therapeutic relationships.

Fourthly, based on the constructed time-line, collaboration agreements were made. For the cases in which this was successfully applied (63%), patients and nurses stated that it improved the quality of the therapeutic relationship and continuity of care. The clarification of mutual expectations and increased openness about the collaboration enhanced trust and diminished miscommunication, and based on statements from the interviews it prevented drop-out of treatment in 20% of the cases. Reasons for not making explicit collaboration agreements were that in some cases patients and nurses thought this was not necessary as their collaboration was fine as it was. In other cases the nurses perceived the collaboration as too complex and they avoided bringing up the quality of their collaboration.

The fifth component of the preparation stage was making a crisis response card. Similar reasons were put forward for not doing so: in some cases patients and nurses did not expect that a crisis would occur, while in other cases patients were too instable to discuss crisis management properly. In the 25% of the cases where a crisis response card was made, patients mentioned increased awareness of their own capacities to manage a crisis.

The sixth component was the structured assessment of needs by means of the Camberwell Assessment of Need (CAN) and the translation of unmet needs into treatment objectives. Nurses perceived the use of the CAN as helpful in 75% of the cases. Assessing all domains of potential needs increased insight in the difficulties patients faced, especially if informal carers were also able to establish a CAN. Perceived unmet needs were prioritized and based on these priorities treatment objectives were established. Most patients valued their increased involvement in establishing treatment objectives.

The last component was drafting a treatment plan, in which all information from previous activities was combined. This succeeded in all but one case (93%). By having a treatment plan, supported by all involved partners, nurses reported that the goal orientation of the treatment process was much improved.

Concerning the preparatory stage, the contrast with Care as Usual was obvious. In CAU, building a treatment frame was hardly recognizable resulting in unorganized treatment. This was confirmed by the statements made in the interviews with patients and nurses, in combination with a lack of demonstrable

information about collaboration agreements, crisis management and care needs within the electronic health records.

Treatment stage

The treatment stage of the CCP consisted of four components, which in general were applied moderately well (Table 2; 2-5). In the following section, we will describe the characteristics indicative for positive or negative outcomes and compare them to CAU.

Early recognition and intervention

In four cases (25%) a complete relapse prevention plan was drafted. In three more cases a start was made with discussing risk behaviours and investigating triggers and early signs of risky behaviour. Some nurses felt that discussing suicidal behaviours triggered (suicidal) crisis and therefore avoided further discussion. Further, nurses did not always feel competent to discuss and manage suicidal behaviour adequately. Several patients had difficulties to reflect on their risk behaviours and recognize early signs and triggers. But if they succeeded, it increased insight in the emergence of their risk behaviour, which led to diminished impulsive or ineffective reactions during crisis. In the control condition managing risky behaviours was unstructured and relapse prevention plans only were made incidentally.

Problem Solving

Problem solving treatment (PST) was executed according to the protocol in four cases (25%). In all other cases problem solving was discussed, but merely explaining the advantages of increased problem solving skills did not lead to enhanced self-management as intended with PST. Two of the three nurses had prior experience with the intervention and felt competent to carry it out properly. Their patients mentioned feeling more competent in coping with problems. The other nurses used a diluted version of PST and did not use the worksheets as a result of which the contrast with CAU was not clearly visible.

Life orientation

The application of life orientation was scarcely executed according to the workbook exercises. Both nurses and patients mentioned that attention was paid to strengths and creating and validating positive experiences, but no contrast was found with CAU.

Psychoeducation

Four nurses provided psychoeducation and two of them used the information from the workbook for this purpose. In the two other cases psychoeducation was specifically focused on alcohol addiction and morbid overweight in combination with depression. In six cases nurses reported not feeling competent enough to provide psychoeducation and therefore avoided the provision of it. Similar to CAU, they commonly assumed their patients knew sufficiently well, but did not check how well patients were informed.

Evaluation stage

Nurses within the CCP were asked to evaluate treatment progress and collaboration every three months. This was in contrast with CAU with its standard evaluation of once a year. The three-month evaluation in CCP was successfully executed in four cases. In three of these cases patients (nearly) terminated treatment, partially due to the increased goal-orientation in treatment and appeal to self-management dictated by the CCP. In the control condition treatment plans had to be evaluated yearly but this was not always done accordingly.

Discussion

With this comparative multiple case study we aimed to provide structured pilot data concerning the feasibility and outcomes of a Collaborative Care Program for patients with severe personality disorders. The program aims to improve treatment for patients who do not benefit or have no access to the existing evidence based structured psychotherapies.

Six nurses, responsible for nine patients, were able to perform the CCP (moderately) well. Successful implementation was most evident in the preparatory stage of CCP. Eight of these patients showed positive results on the main outcomes. The three other nurses, responsible for seven patients, did not perform the CCP according to the intervention protocol. Despite the incomplete implementation of the CCP and the small sample, we found a significant decrease of borderline symptoms in the experimental condition, when compared with the control condition. Other outcomes did not show significant differences, but several outcomes showed clinically relevant, medium to large effect sizes. Mental health care utilization was significantly higher among patients in the experimental condition. This could partially be explained by the required higher frequency of contacts to build the treatment frame within the CCP. It should be interesting to investigate if these efforts will be repaid over time by diminishing crisis interventions. In general, nurses held the opinion that the CCP helped them by providing necessary structure in taking care for this difficult-to-treat patient group. Informal carers reported to be more actively involved in treatment and also reported statisti-

cally non-significant, but clinically relevant benefits.

In explaining the effects of CCP using largely qualitative data we identified three core elements of CCP: 1) improved goal orientation in treatment, 2) a stronger appeal to self-management skills of patients and 3) improved skills in establishing and maintaining effective therapeutic relationships for all those involved. As a consequence, both nurses and patients were more critical about why and with which objectives patients received care in contrast with CAU. Even in cases where the implementation did not succeed, nurses identified these core elements.

Several other researchers investigated the contribution of nurses in providing care for patients with personality disorders within psychotherapies or as alternatives for psychotherapy (Woods and Richards, 2003; Kerr et al, 2007; Thompson et al, 2008; Amianto et al, 2011; McMMain et al, 2012; Koekkoek et al, 2012). Generally, our positive effects of a shared theoretical framework for treatment, improved attention to the therapeutic relationship, and supervision confirm their conclusions. In addition to the current knowledge, the CCP adds an easy-accessible elaborated intervention managed by (community) mental health nurses.

Given the severe patient group and the lack of previous data on feasibility of CCP we decided to conduct a comparative multiple case pilot study as a first step to assess whether CCP may be a fruitful addition to the treatments already available for patients with severe personality disorders. The most important strengths of the design are that it allows highly structured and systematic comparison of the implementation and outcomes of CCP, using both quantitative and qualitative data. The comparative multiple case design also has a number of limitations that should be recognised. The most important limitation is that patients were not randomly assigned to CAU or CCP, but that two existing CMHC teams were recruited, nurses of one of which were trained to conduct CCP. Characteristics of patients, nurses and teams were highly comparable on most characteristics measured, but bias due to unmeasured confounders cannot be ruled out.

A second limitation is that we (deliberately) included a small number of patients in the study, which reduces the power of statistical tests comparing the effects of CCP with CAU. It is striking that, even with a very small sample size, the CCP had a statistically significant effect on borderline symptomatology when compared with CAU.

In conclusion, patients who either have not been able to benefit or have no access to structured psychotherapy may benefit from a Collaborative Care Program, managed by (community) mental health nurses. Although far from 100% successfully implemented, our data suggest that not only patients, but also their informal carers and the nurses involved in the treatment benefited from CCP. A larger Randomised Controlled Trial is warranted to test our preliminary results and investigate cost effectiveness of Collaborative Care for severe personality disorders.

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