Recovery-Oriented Care in Long-Term Mental Health Settings: Relationship Between the Active Recovery Triad (ART) Model, Recovery-Oriented Care, and Recovery of Service Users

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Objective: The active recovery triad (ART) model provides guidelines for recovery-oriented care in long-term mental health care. The aim of this study is to evaluate whether compliance to the principles of the ART model is related to recovery-oriented care, service user recovery and satisfaction. ***Method:*** A prospective study was conducted including two measurements, in which we investigated compliance to the principles of the ART model (ART fidelity), recovery-oriented care as measured by the Recovery-Oriented Practices Index—Revised (ROPI-R) at team level ($n = 18$) and outcome measures on service user level ($n = 101$) related to personal recovery, social roles, level of functioning, clinical recovery, transition, and satisfaction. We used multilevel modeling to evaluate these relationships. ***Results:*** There was a significant association between active recovery triad (ART) fidelity and the ROPI-R. We did not find a significant association between overall ART fidelity and service user outcomes. Yet, we did find that higher ART fidelity in the domains "cooperation in the triad," "professionalization of staff," and "team structure" were related to improved clinical recovery, functioning, social roles, and performance of activities. However, higher ART fidelity in the domain "healing environment" was related to poorer functioning, and a higher score in the domain "safety and prevention of coercion" was related to poorer social roles and performance of activities. ***Conclusions and Implications for Practice:*** We can conclude that compliance to the principles of the ART model is related to recovery-oriented care, measured with the ROPI-R. In addition, the findings suggest that in particular elements in the ART model are related to meaningful recovery outcomes.

Impact and Implications
The active recovery triad (ART) model provides guidance to care workers, teams, and organizations how to implement recovery-oriented care in long-term mental health practice. The findings of this study indicate the relation between the extent to which teams apply the principles of the ART model and recovery-oriented care according to the Recovery-Oriented Practices Index—Revised. Furthermore, the results indicate the relation between elements of the ART model and service user outcomes.

Keywords: active recovery triad model, long-term mental health care, recovery, service user satisfaction, model fidelity

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Over the years, the insights, concepts and language used in mental health care have changed considerably. This includes a shift from the "medical model", a traditional approach characterized by paternalistic care and managing symptoms, toward recovery-oriented care, including support of personal recovery, community participation, and quality of life as important aspects of the daily care and support for people with a serious mental illness (Leamy et al., 2011; Le Boutillier et al., 2011). The medical model has been criticized as early as the 1970 (Anthony, 1977; Ullmann & Krasner, 1965) and in 1977 Paul & Lentz demonstrated that even severely neglected people with chronic psychiatric conditions can benefit from a systematic inpatient social leaning program (Paul & Lentz, 1977). Insights into the lived experiences of service users paved the way for an alternative way of thinking about recovery, including a personal process toward living a meaningful life, despite the limitations of an illness (Anthony, 1993; Deegan, 1988). Although there has been increasing attention for recovery-oriented care, both in mental health care in general, and increasingly within long-term mental health care (Kidd et al., 2014; Killaspy & Priebe, 2021; Waldemar et al., 2016), to date there is a large variation in the adoption of recovery-oriented care in long-term mental health practice (Killaspy et al., 2016; McKenna et al., 2014; Taylor et al., 2009). Teams who provide care to people with the most challenging and persisting needs struggle to deliver recovery-oriented care (Killaspy et al., 2016). Internationally, the settings in which long-term mental health care is provided vary greatly (see McPherson et al., 2018, for a taxonomy of sheltered living). In the Netherlands, 24-hr care and support are often offered in a residential setting, including sheltered housing facilities in the community or long-stay clinical facilities, often located at large institutional grounds (van der Meer & Wunderink, 2019). People in these types of facilities still have many unmet needs, among others related to health (mental and physical), personal identity, social relations, and community participation (Borge et al., 1999; De Heer-Wunderink et al., 2012; Killaspy et al., 2008; Slade et al., 2015). Teams in long-term mental health care find it difficult to transform the way they deliver their care from a medical approach to recovery-oriented care (Frost et al., 2017; Waldemar et al., 2016).

In order to support teams in long-term mental health care in this transformation and enable them to put recovery-oriented care into practice, the active recovery triad (ART) model was developed in the Netherlands (van Mierlo et al., 2016; L. J. C. Zomer et al., 2020). The result of a collaborative and iterative process with stakeholders from various organizations and perspectives, including (ex) service users, significant others, and professionals, was a set of guiding principles for recovery-oriented care specifically for long-term mental health facilities. The ART model has been described in detail elsewhere (L. J. C. Zomer et al., 2020). Briefly the three main principles of the model can be summarized as follows. The first principle involves an active attitude of all people involved in the care process, namely service users themselves, their significant others

and care professionals. This includes a focus on empowerment and involvement of service users in their own recovery process, a guiding maximum length of stay (3 years), and a critical evaluation of the care after these 3 years, preferably performed by another care team. The second principle of the ART model, recovery, describes four dimensions of recovery, namely health (e.g., focus on symptoms of the mental illness but also on somatic needs), personal identity (e.g., exploring someone's life story), daily functioning (e.g., coaching in common daily activities such as groceries, cooking, or cleaning) and community functioning (e.g., stimulating participation in the community and retrieving social roles). The third principle aims to stimulate collaboration in the triad of service user, significant others and the care professionals involved. Peer workers and family peer workers play an important role to represent the different perspectives in the team, providing hope to service user and significant others and support when, for example, contact with significant others is disrupted or absent. The ART model is described in a workbook that provides hands on guiding tools for teams, organizations, and mental health care professionals, what they can do to work according to the ART model. Moreover, it provides tools and interventions for service users and their significant others that they can use to facilitate their own recovery process and that of their significant others.

The principles of the ART model have been developed on the basis of insights from service user, significant other, professional and scientific perspectives. While these integrated perspectives form the starting point for the ART model, the relationship between compliance to the principles of the ART model in long-term psychiatric care teams, working in a recovery-oriented manner (as described by the Recovery-Oriented Practices Index—Revised [ROPI-R], an established instrument for recovery-oriented care) and recovery outcomes on service user level are still unexplored. Therefore, two research questions are addressed in this study: (1) To what extent does applying the principles of the ART model in clinical practice relate to recovery-oriented care, measured with the ROPI-R? And (2) what is the relationship between the compliance to the ART model on the one hand, and recovery of service users and service user satisfaction on the other hand? We will investigate these relationships in a prospective study with two measurements with a 12-month interval, in which we observe teams and their service users over time.

Method

Design and Setting

This multicenter prospective study was conducted between 2020 and 2022 within 18 mental health care organizations in the Netherlands. The locations of these organizations were spread through different regions of the country. Each of these organizations selected one team to participate in this study. Data collection took place twice, at baseline (T0) and after 12 months (T1).

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Participants

For the selection of teams, we used a convenience sampling method, similar to our previous study (L. J. C. Zomer et al., 2022). The central contact person of each organization discussed with the management, team leaders, and teams which team would participate in this study. Teams were eligible for inclusion when they offered long-term care and support for people with serious mental illnesses at long-stay wards or housing facilities and were in the process of implementing the ART model. Each team pursued their own unique implementation process, enabling them to prioritize specific aspects of the ART model according to their own situation. The implementation process was supported by guidance from the ART handbook, the ART monitor, national conferences, platform meetings, and smaller symposia in which the ART model was discussed. These platforms facilitated knowledge sharing and the exchange of experiences among teams and organizations, encouraging effective implementation. More details can be found in L. J. C. Zomer et al. (2022).

For the conduction of audits (see procedures), two service users and two family members or significant others of each participating team were approached for an interview. For the questionnaires regarding recovery outcomes, all service users of the participating teams were approached by their key worker (a central contact person for a service user within the team) or case manager. They received information about the study and what participation entailed. The participants provided written consent to participate.

Measures

The ART Monitor

Fidelity to the ART model was assessed using the ART monitor. In a previous study, the validity and reliability of this instrument were evaluated (L. J. C. Zomer et al., 2022). The ART monitor consists of 47 items and a 5-point scale to assess these items, ranging from 1 (*not compliant*) to 5 (*fully compliant*). The items are divided into eight domains. Table 1 provides an overview of the eight domains of the instrument. A link to the translated version of the ART monitor is published in the supplementary files of L. J. C. Zomer et al. (2022).

ROPI-R

To investigate recovery-oriented care, the Recovery-Oriented Practices Index (ROPI-R) was used. This instrument assesses the extent to which teams offer recovery-oriented care, which was translated in Dutch and revised in 2020 (Mancini & Finnerty, 2005; Trimbos Institute, 2020). The instrument includes 12 themes related to recovery-oriented care and for each theme five statements to score (0 = no, 1 = partly, 2 = yes).

Primary Outcome Measures

I.ROC

To investigate personal recovery of service users, the Individual Recovery Outcomes Counter (I.ROC) was used (Beckers et al., 2022; Monger et al., 2013). This self-reported instrument includes 12 items divided into four domains: home, opportunity, people, and empowerment, using a 5-point Likert scale to answer the questions (1 = *never* to 6 = *all the time*). Questions relate, for example, to meaningful life, personal network, and involvement in life decisions. This questionnaire was developed in Scotland and translated into Dutch. Research on the psychometric properties of the Dutch version of the I.ROC indicated that test–retest reliability was satisfactory (intraclass correlation coefficient = 0.856), as well as the internal consistency (Cronbach's α = .92) and the convergent

Table 1
Description of ART Monitor Domains

Domain	Description
Domain 1. Recovery	The items in this domain capture working toward the four dimensions of recovery (i.e., recovery of health, identity, daily living, and community participation), working with recovery-oriented interventions, and cooperate with the regional network in order to create opportunities for service users.
Domain 2. The triad	The items in this domain cover questions regarding the cooperation between service users, significant others and care workers. In addition, involving service users and significant others in team processes and organizational changes is addressed in this domain.
Domain 3. Care process	This domain captures important preconditions for the care and support of service users, starting with the intake, a personal recovery plan, care coordination meetings, and criteria for admission and discharge.
Domain 4. Team culture and vision	Items in this domain focus on having or reaching a shared vision in the team, reflection, attitude of staff, how care workers collaborate with each other, and with external parties.
Domain 5. Professionalization	The items in this domain focus on training and education of care workers in the team related to recovery-oriented care and specific expertise on cognitive disabilities and addiction care.
Domain 6. Healing environment	The items in the domain healing environment address important preconditions regarding the housing of service users.
Domain 7. Safety and prevention of coercion	This domain captures how safety on the ward or location is safeguarded, the tools to use that contribute to safety and safety management and items related to evaluation of coercive measures.
Domain 8. Team structure	This domain addresses items regarding team composition and the multidisciplinarity of professionals

Note. ART = active recovery triad.

validity, but the sensitivity to change was small (Beckers et al., 2022).

Brief INSPIRE

The brief version of the INSPIRE was used to create insight into service users' satisfaction regarding the care and support they receive for their recovery (Williams et al., 2015). This self-reported questionnaire comprises five questions using a 5-point Likert scale (0 = *strongly disagree* to 4 = *strongly agree*). Questions relate, for example, to the perceived support provided by the involved professional in order to have hope for the future or to perform meaningful activities. Research on the English version of the INSPIRE demonstrated adequate psychometric properties (internal consistency was 0.86, test–retest reliability was 0.72 and sensitivity to change was sufficient; Williams et al., 2015). The questionnaire was translated into Dutch, performed by a Dutch researcher following specific translation conditions, and is freely available on the website of the research team (Institute of Mental Health University of Nottingham, 2020).

Secondary Outcome Measures

LSP-16

The Life Skills Profile (LSP) was used to assess the level of functioning and skills of the participants (Rosen et al., 1989). We used the 16-item version of this questionnaire. It involves an observational measure, meaning that each item was scored by the key worker of a service user on a 4-point Likert scale. Higher scores indicate worse functioning. The LSP has good psychometric properties (internal consistency was 0.90, test–retest reliability was 0.93 and interrater reliability was 0.64; Parker et al., 1991; Rosen et al., 2001).

SRPQ

The Social Role Participation Questionnaire (SRPQ) was used to investigate community participation and social roles of participants (van Genderen et al., 2016). This self-reported instrument has its origin and is proven to be a valid and reliable instrument in the field of rheumatology (test–retest reliability was good [intraclass correlation coefficient > 0.90] and regarding the construct validity, the SRPQ was moderately correlated with other instruments; Davis et al., 2011), but has been used in mental health care as well (not yet validated for this setting; Kraiss et al., 2021). The instrument covers 11 social roles and activities (e.g., sport activities, cultural activities or contact with family) and one item regarding general participation. For each role, participants scored four subscales related to the importance of the role, experienced difficulties, satisfaction with role performance and satisfaction with time spent in the role. Scoring options range from 1 (*not important at all/not satisfied at all/unable to do*) to 5 (*extremely important/extremely satisfied/no difficulty*). In addition, participants indicated the hours they spent on (community) activities in a week (on average over the last month, e.g., activities on the ward, vocational activities, voluntary work, paid work).

HoNOS

Recovery of health (also referred to as clinical recovery) was measured with the Health of the Nation Outcome Scales (HoNOS; Mulder et al., 2004; Wing et al., 1998). The total scale of the HoNOS has good psychometric properties (internal consistency, Cronbach's α ranged from 0.59 to 0.76, interrater agreement between 68% and 94% and test–retest agreement between 73% and 97%; Pirkis et al., 2005; Shergill et al., 1999). However, in order to keep the total questionnaire battery concise, we selected five items of this originally 12-item questionnaire related to the occurrence of hallucinations and delusions, depressive symptoms, the use of alcohol and drugs, somatic problems or handicaps, and other psychiatric problems. This involves an observational measure and each item was scored on a 5-point Likert scale based on the severity of the symptoms. Higher scores indicate more symptoms.

Service User Transition

The extent to which service users transitioned to other forms of living and care where more independence is required could be regarded as a step in the recovery process of service users. Therefore, each team was requested to keep a record of the transition of all their service users to other forms of living and care between T0 and T1 and the reason for these transitions.

Procedure

Auditing Process to Measure ART Fidelity

ART fidelity was assessed on the basis of audits performed by trained auditors, using a peer-to-peer auditing approach. Auditors were care workers with various backgrounds, including nurses, (family) peer workers, managers, psychologists, social workers, from participating organizations. All auditors received a 1-day training and during the course of the study, every 6 months (online) meetings were organized to keep up the auditing skills and jointly reflect upon the process. Given that the previous study demonstrated that some auditors had limited experience in working with clinical records, we provided additional instructions on how to extract data from clinical records (L. J. C. Zomer et al., 2022). In the planning of the audits, we strived for two auditors with different perspectives, one (family) peer worker and one other professional, as this variety is considered very valuable during an audit. At least one of the auditors needed to have experience with performing audits in our previous study (L. J. C. Zomer et al., 2022). Auditors did not audit teams from their own organization.

The auditing process is described in detail elsewhere (L. J. C. Zomer et al., 2022). Briefly, two auditors obtained different sources of information including documentation regarding the team (e.g., disciplines, education, a vision document, and formats of clinical files), interviews with staff, service users and significant others, attending a team meeting and examining clinical records (after informed consent of the concerning service users). Based on this information, the auditors scored the ART monitor individually, followed by a discussion between the two auditors in which they compared scores to reach consensus on differentially scored items. Individual scores of the auditors were used to confirm interrater reliability, following the same procedure as reported in

L. J. C. Zomer et al. (2022). Based on the data retrieved in the present study, the interrater reliability appeared to be sufficient.

After every audit, the scores, conclusions and recommendations of the auditors were summarized in a report for the team. In a feedback meeting, organized within 4 weeks after the audit, the team reflected with the main researcher (Lieke Zomer) upon the scores and recommendations of the auditors. In addition, team members discussed action points for the coming period, based on the audit scores. Due to the COVID-19 pandemic and the restrictions regarding traveling and visits, the audits and feedback meetings during the baseline measurement (T0) were performed online, using video conferencing and video recordings of the locations. During the follow-up measurement (T1), all audits and feedback meetings were performed on location.

Procedure of the Other Measures

In addition to ART fidelity assessment, other measures were used on team level as well as on service user level, within 2 months after the audit date. At team level, the ROPI-R was administered by the team leader or manager of the team, together with the main researcher (Lieke Zomer), on the same day as the feedback meetings. On service user level, the I.ROC, INSPIRE and SRPQ were administered by service users with the help of their key worker if necessary, after written consent was provided. The LSP and HoNOS were administered by the key worker. All service user questionnaires were conducted digitally using the software Survalyzer (Survalyzer, 2018). Demographic information of the participants was collected at baseline. In addition, at baseline the teams were requested to keep a record of the service user transition using an Excel file.

Statistical Analysis

Data were analyzed in Stata Version 14 (Survalyzer, 2018). Descriptive analyses were used for ART fidelity (overall and domain scores) and demographic characteristics. In addition and separate from baseline and follow-up measurements, we calculated the transition rate of service users per team. The transition rate is the percentage of service users that moved out to a facility or location with more independence. To this end, we divided the number of service users who moved to more independent living (numerator) by the total number of beds of the location (denominator). Furthermore, we used linear mixed modeling (maximum likelihood) for all analyses with a two level structure for variables on team level (repeated measures are clustered within teams) and a three level structure for variables measured on service user level (repeated measures are clustered within service users and service users are clustered within teams). As we included one team per participating organization, teams and organizations can be regarded as the same level.

We performed repeated measures over time because we expected an improvement in compliance to the ART model as well as an improvement in recovery-oriented care according to the ROPI-R between T0 and T1. A multilevel model was built to examine differences between T0 and T1, including time as independent variable and a random intercept on team level. However, our results did not demonstrate significant differences between T0 and T1 on ART fidelity and on the ROPI-R. Estimating an association between differences in ART fidelity scores over time and differences in outcome measures over time, is no longer expected to provide relevant information. Therefore, time was not included in the further analysis, which indicates that the results of further analyses should be interpreted as on average over time.

For the analyses of the relation between ART fidelity and outcome measures, we built two multilevel models. In the first model (Research Question 1), the association between ART fidelity and the ROPI-R was analyzed, including a random intercept on team level. A second model was built to analyze the associations between ART fidelity and outcome measures at service user level (Research Question 2), for which we included a random intercept on both team level and service user level. We checked normal distribution of residuals for the outcome variables. In both models, we used the average score of ART fidelity as well as average domain scores as independent continuous variables. We used z-scores for the domain scores, since not every domain holds the same number of items. To explore possible interaction with service user characteristics (i.e., gender, age, education, country of birth, having a partner, duration of admission, first contact with mental health care), we included these factors as covariates and preserved these in the model when they were significant. Effect sizes for the multilevel outcomes were calculated by multiplying the regression coefficient by the standard deviation of the predictor variable and dividing it by the standard deviation of the outcome variable.

Ethical Approval

This study was approved by the Medical Ethical Committee and the Scientific Quality Committee of Amsterdam UMC, location VUmc.

Results

Participating Teams and Service User Characteristics

Eighteen teams participated in this study. They were located at open ($n = 12$) or closed ($n = 3$) wards on institutional grounds or in supported housing facilities in the community ($n = 3$). The teams varied in time of ART implementation between 1 and 5 years. Three teams only participated at baseline (T0) and dropped out during the follow-up (T1), because of severe shortage of staff ($n = 2$) or closure of the location ($n = 1$). In total, 515 service users (i.e., all service users of the participating teams) were approached, of whom 141 (27,4%) participated in the baseline measurement (T0). Reasons not to participate were suspicion regarding the purpose of the questionnaire, crisis at the time of approaching, command of the Dutch language, or lack of interest. In addition, some service users started the questionnaires, but were not able to finish due to their level of cognitive functioning. Of the 141 participants, 101 service users (71,6%) completed the follow-up measurement (T1). Reasons for dropout were refusal, moving out to another facility or own house, lack of time of key workers or crisis at the time of approaching.

Table 2 presents the demographic characteristics of the participants. We used the data of the baseline measurement, but only included the participants who completed participation (T0 and T1). More than half of the participants were male (62.4%). The vast majority (72.3%) had schizophrenia or other psychosis as main clinical classification and had their first contact with mental

Table 2
Demographic Characteristics of Participants at Baseline (n = 101)

Characteristic	N (%)
Sex	
Male	63 (62.4)
Female	38 (37.6)
Age	
<25	9 (8.9)
25–35	14 (13.9)
35–45	24 (23.8)
45–55	20 (19.8)
55–65	23 (22.8)
>65	11 (10.9)
% born in the Netherlands	88.1
Education	
No or primary education	31 (30.7)
Secondary education	66 (65.3)
Higher education	4 (4.0)
Partnered	
Yes	10 (9.9)
No	91 (90.1)
Main clinical classification	
Schizophrenia or other psychosis	73 (72.3)
Personality disorder	5 (5.0)
Autism spectrum disorder	6 (5.9)
Depressive disorder	4 (4.0)
Bipolar affective disorder	5 (5.0)
Posttraumatic stress disorder	4 (4.0)
Other	2 (2.0)
Unknown	2 (2.0)
Age first contact with mental health care	
<25	73 (72.3)
25–35	18 (17.8)
35–45	5 (5.0)
45–55	3 (3.0)
55–65	2 (2.0)
>65	0 (0)
Unknown	0 (0)
Time receiving care and support of current organization (in years)	
<1	4 (4.0)
1–2	8 (7.9)
2–3	4 (4.0)
3–4	6 (5.9)
4–5	6 (5.9)
>5	73 (72.3)

health care before the age of 25 (72.3%). Also, most of the participants (72.3%) received care and support from the current organization for more than 5 years.

Table 3 shows the mean scores at baseline (T0) and follow-up (T1) of overall ART fidelity and the domains of the ART monitor. In addition, the mean scores of the outcome measures are presented. Table 4 provides an overview of the transition of service users for each participating team. The percentage of service users that transitioned to more independent living varies greatly between the participating teams.

Association Between ART Fidelity and Outcomes

Team Level Measures

Table 5 presents the association between ART fidelity and the ROPI-R. No effects were found for possible covariates (i.e., gender, age, education, country of birth, having a partner, duration of

admission, first contact with mental health care) so the results of the models without covariates are reported. The results indicate significant associations between ART fidelity and recovery-oriented care measured with the ROPI-R. These significant associations were found for overall ART fidelity as well as five out of eight domains of the ART monitor.

Service User Level Measures

Table 6 shows the outcomes of the multilevel analyses for the primary outcome measures at service user level. Higher ART fidelity on the domain safety and prevention of coercion is related to poorer personal recovery (I.ROC) and service user satisfaction (INSPIRE). In addition, a negative association was found between the domain team structure and service user satisfaction (INSPIRE), indicating that higher ART fidelity on this domain is associated with poorer service user satisfaction. No significant association was found between overall ART fidelity and personal recovery (I.ROC) or service user satisfaction (INSPIRE). The effect sizes of the significant associations we found were small.

Tables 7 and 8 provide the results of the multilevel analyses for the secondary outcome measures. Higher ART fidelity on the second domain (the triad) was significantly associated with less symptoms (HoNOS). Higher scores on the domain professionalization were associated with better functioning (LSP) and a greater satisfaction among service users regarding the time they have spent in social roles (SRPQ). Higher scores on the domain team structure were positively associated with the performance of activities of service users. Higher ART fidelity scores on the domain healing environment were associated with worse service user functioning (LSP). In addition, higher scores on the domain safety and prevention of coercion were associated with lower experienced difficulties with social roles, lower satisfaction regarding the time and lower performance of social roles (SRPQ) and lower amount of hours service users have spent on activities. No significant associations were found between overall ART fidelity and the secondary outcome measures.

Discussion

This study provided insight into the relation between compliance to the principles of the ART model and recovery-oriented care in long-term mental health care settings on the one hand, and recovery of service users and service user satisfaction on the other hand. First, we found an association between compliance to the principles of the ART model (ART fidelity) and recovery-oriented care measured with the ROPI-R. Second, we found significant associations between some domains of the ART monitor and service user recovery outcomes, though we did not find a significant association between overall ART fidelity and service user outcomes.

The association between ART fidelity and the ROPI-R confirms the recovery-oriented content of the ART model, suggesting good content validity of the ART monitor. The domains of the ART monitor related to healing environment, safety, and prevention of coercion and team structure can be regarded as complementary to the content of the ROPI-R, as there was no association found with these specific domains of the ART monitor. An important added value of the ART monitor compared to the ROPI-R is that the ART

Table 3

Measures on Team Level, Difference Between Baseline and Follow-Up (n = 15)

Variable	M (SD) baseline T0	M (SD) follow-up T1	Coefficient (SE)	p
Overall ART fidelity[a]	3.13 (0.56)	3.22 (0.64)	.094 (.100)	.349
Domain 1. Recovery[a]	3.08 (0.94)	3.29 (0.73)	.210 (.177)	.236
Domain 2. The triad[a]	3.13 (0.72)	3.13 (0.92)	−.000 (.194)	1.00
Domain 3. Care process[a]	3.01 (0.63)	3.03 (0.80)	.020 (.175)	.910
Domain 4. Team culture and vision[a]	3.30 (0.85)	3.61 (0.84)	.307 (.141)	.051
Domain 5. Professionalization[a]	2.93 (1.10)	3.16 (0.89)	.223 (.146)	.128
Domain 6. Healing environment[a]	4.09 (0.68)	3.87 (0.81)	−.222 (.165)	.179
Domain 7. Safety and prevention of coercion[a]	3.48 (0.70)	3.52 (0.87)	.040 (.237)	.866
Domain 8. Team structure[a]	2.68 (0.60)	2.69 (0.57)	.006 (.177)	.971
ROPI-R[b]	7.10 (1.30)	7.41 (1.48)	.311 (.323)	.335
I.ROC[c]	3.93 (0.71)	4.00 (0.93)	.069 (.069)	.317
INSPIRE[d]	56.04 (22.45)	60.84 (23.01)	4.801 (2.467)	.052
SRPQ Role importance[e]	3.17 (0.68)	2.99 (0.73)	−.175 (.062)	.005*
SRPQ Difficulty[e]	3.69 (0.82)	3.63 (0.78)	−.063 (.089)	.483
SRPQ Satisfaction time[e]	3.01 (0.79)	3.16 (0.87)	.151 (.086)	.079
SRPQ Satisfaction performance[e]	2.99 (0.81)	3.17 (0.89)	.175 (.082)	.032*
LSP[f]	31.30 (6.56)	29.75 (6.22)	−1.544 (.651)	.018*
HoNOS[g]	5.91 (3.39)	5.57 (3.24)	−.337 (.409)	.411
Total hours of activities[h]	8.93 (8.94)	10.93 (10.21)	2.004 (.954)	.036*

Note. SE = standard error; ART = active recovery triad; ROPI-R = Recovery-Oriented Practices Index—Revised; I.ROC = Individual Recovery Outcomes Counter; SRPQ = Social Role Participation Questionnaire; LSP = Life Skills Profile; HoNOS = Health of the Nation Outcome Scales. [a] Scores range from 1 to 5, with higher scores indicating more compliance to the ART model. [b] Scores range from 0 to 10, with higher scores indicating more recovery-oriented care. [c] Scores range from 1 to 6, with higher scores indicating better personal recovery. [d] Scores range from 0 to 100, with higher scores indicating better recovery support. [e] Scores range from 1 to 5, with higher scores indicating more importance, less difficulty and more satisfaction. [f] Scores range from 16 to 64, with higher scores indicating worse functioning. [g] Scores range from 0 to 20, with higher scores indicating more symptoms. [h] Indicating the average number of hours service users have been engaged in (community) activities in a week.
* p < .05.

monitor is based on a joint vision on recovery-oriented care, developed in close cooperation with mental health practice, which was captured in the ART model (L. J. C. Zomer et al., 2020). The ART monitor thereby provides a comprehensive framework based on the ART model, including team factors, building, and safety

aspects that are not included in the ROPI-R (Mancini & Finnerty, 2005; Trimbos Institute, 2020). Given the challenge to implement recovery-oriented care in long-term mental health practice (van der Meer & Wunderink, 2019), the ART model and its accompanying model-fidelity scale contribute to the literature and provide mental

Table 4

Transition of Service Users per Participating Team

Team	Type of setting	Total number of beds	Number of service users that transitioned to more independence between T0 and T1 (total number of service users transitioning to other types of housing)	Percentage of service users that transitioned to more independence
1	Open ward on institutional ground	41	9 (11)	22%
2	Open ward on institutional ground	48	4 (8)	8%
3	Closed ward on institutional ground	20	16 (19)	80%
4	Open ward on institutional ground	28	13 (24)	46%
5	Open ward on institutional ground	45	6 (6)	13%
6	Supported housing facility in the community	43	17 (27)	40%
7	Open ward on institutional ground	15	3 (5)	20%
8	Open ward on institutional ground	49	0 (4)	0%
9	Open ward on institutional ground	26	0 (0)	0%
10	Open ward on institutional ground	7	8 (9)	114%[a]
11	Supported housing facility in the community	22	1 (4)	5%
12	Supported housing facility in the community	24	15 (18)	63%
13	Open ward on institutional ground	23	23 (25)	100%
14	Closed ward on institutional ground	15	2 (4)	13%
15	Open ward on institutional ground	33	4 (7)	12%

[a] Meaning that more service users moved toward more independence during a year than the number of service users who can stay at the location at the same time. If one service user leaves, another service user can be admitted in the same year and then leave again in that year.

Table 5

Association With ART Fidelity, Variables at Team Level (n = 15)

	ROPI-R[a]			
Variable	Coefficient (*SE*)	95% CI	*p*	Effect size
Overall ART fidelity[b]	1.24 (0.39)	[0.48, 2.00]	<.001	.53
Domain 1. Recovery[b]	0.70 (0.22)	[0.27, 1.13]	<.05	.51
Domain 2. The triad[b]	0.62 (0.22)	[0.18, 1.06]	<.05	.45
Domain 3. Care process[b]	0.53 (0.23)	[0.08, 0.98]	.02	.38
Domain 4. Team culture and vision[b]	0.79 (0.22)	[0.36, 1.23]	<.001	.58
Domain 5. Professionalization[b]	0.61 (0.25)	[0.11, 1.10]	.02	.44
Domain 6. Healing environment[b]	0.24 (0.25)	[−0.25, 0.73]	.34	.17
Domain 7. Safety and prevention of coercion[b]	0.42 (0.22)	[−0.02, 0.85]	.06	.30
Domain 8. Team structure[b]	0.15 (0.22)	[−0.29, 0.59]	.52	.11

Note. See Supplemental Material for the extended table including all parameter estimates (fixed effects and variance components). ART = active recovery triad; ROPI-R = Recovery-Oriented Practices Index—Revised; *SE* = standard error; CI = confidence interval. [a] Scores range from 0 to 10, with higher scores indicating more recovery-oriented care. [b] Scores range from 1 to 5, with higher scores indicating more compliance to the ART model.

health practice with a guideline along which recovery-oriented care can be implemented in long-term mental health care.

We did not find a significant association between overall ART fidelity and service user outcomes, nor did we find an effect of time in our analysis. This is in line with research on other care models and complex interventions, such as high and intensive care, the strengths model, the CARe methodology, and the Boston University approach, that also indicated the difficulty to investigate effects of changes in mental health care delivery on service user outcomes (Bitter et al., 2017; Latimer et al., 2022; Sanches et al., 2020; van Melle et al., 2021). There are some explanations why we did not find significant associations. First, it is possible that the timeframe of 1 year is too brief for service users to take steps in their recovery process and for care workers to fundamentally change working routines. Research over a longer period of time should be performed in order to get a more comprehensive picture of the effects. Second, the COVID-19 pandemic and the restrictions during the time of data collection may have had a significant impact on the recovery process of service users as well as on the work of care

professionals (Gobbi et al., 2020; Sánchez-Guarnido et al., 2021). Third, it is possible that the level of recovery-oriented care as measured by the ART monitor was not sufficient to induce positive effects on service users' recovery process. This is supported by Bond (2007) who argued that moderate fidelity leads to moderate outcomes. Last, it can be argued that some elements of the ART model, for example, in- or exclusion criteria for admission or working with a safety management system, help team members in improving their working routines, but are less visible for service users nor directly influence the individual recovery process. The relationships between domains of the ART monitor and service user recovery outcomes we found, confirm this line of reasoning.

We found that the domains of the ART monitor measuring collaboration in the triad, level of professionalization and team structure were positively associated with service user outcomes on clinical recovery, functioning and skills, satisfaction regarding the time spend in social roles and the amount of time spend on activities. Going into these results in detail, we first found that good cooperation between service users, significant others and

Table 6

Outcomes Multilevel Analyses of Primary Outcomes (n = 101)

	I.ROC[a]				INSPIRE[b]			
Variable	Coefficient (*SE*)	95% CI	*p*	Effect size	Coefficient (*SE*)	95% CI	*p*	Effect size
Overall ART fidelity[c]	−.12 (.13)	[−.37, .14]	.37	−.08	−3.62 (3.84)	[−11.13, 3.90]	.35	−.09
Domain 1. Recovery[c]	−.02 (.06)	[−.14, .10]	.74	−.03	−1.07 (1.93)	[−4.86, 2.72]	.58	−.05
Domain 2. The triad[c]	−.07 (.06)	[−.19, .04]	.20	−.09	−2.43 (1.81)	[−5.97, 1.12]	.18	−.11
Domain 3. Care process[c]	−.02 (.06)	[−.12, .09]	.77	−.02	1.27 (1.80)	[−2.27, 4.80]	.48	.06
Domain 4. Team culture and vision[c]	−.01 (.08)	[−.16, .14]	.89	−.01	.68 (2.19)	[−3.61, 4.96]	.76	.03
Domain 5. Professionalization[c]	.08 (.07)	[−.06, .21]	.28	.09	1.13 (2.04)	[−2.87, 5.12]	.58	.05
Domain 6. Healing environment[c]	−.09 (.07)	[−.22, .03]	.15	−.11	−.76 (1.99)	[−4.68, 3.15]	.70	−.03
Domain 7. Safety and prevention of coercion[c]	−.14 (.05)	[−.22, −.05]	<.05	−.16	−3.77 (1.57)	[−6.85, −.69]	.02	−.17
Domain 8. Team structure[c]	.03 (.05)	[−.07, .12]	.59	.03	−3.61 (1.55)	[−6.65, −.57]	.02	−.16

Note. See Supplemental Material for the extended table including all parameter estimates (fixed effects and variance components). I.ROC = Individual Recovery Outcomes Counter; ART = active recovery triad; CI = confidence interval; *SE* = standard error. [a] Scores range from 1 to 6, with higher scores indicating better personal recovery. [b] Scores range from 0 to 100, with higher scores indicating better recovery support. [c] Scores range from 1 to 5, with higher scores indicating more compliance to the ART model.

Table 7
Outcomes Multilevel Analyses of Secondary Outcomes (n = 101)

Variable	LSP[a]		SRPQ role importance[b]		SRPQ difficulty[b]		SRPQ satisfaction time[b]		SRPQ satisfaction performance[b]	
	Coefficient (SE)	Effect size	Coefficient (SE)	Effect size	Coefficient (SE)	Effect size	Coefficient (SE)	Effect size	Coefficient (SE)	Effect size
Overall ART fidelity[c]	.14 (1.17)	.01	.07 (.10)	.06	−.13 (.14)	−.11	−.17 (.16)	−.12	−.16 (.16)	−.11
Domain 1. Recovery[c]	−.35 (.57)	−.05	.09 (.05)	.13	−.06 (.07)	−.07	.05 (.08)	.06	.01 (.08)	.02
Domain 2. The triad[c]	−.62 (.53)	−.10	−.03 (.05)	−.04	−.01 (.07)	−.02	−.05 (.07)	−.06	−.05 (.07)	−.06
Domain 3. Care process[c]	.50 (.51)	.08	.05 (.05)	.07	.03 (.07)	.03	−.05 (.07)	−.06	−.04 (.07)	−.05
Domain 4. Team culture and vision[c]	−1.01 (.68)	−.16	−.10 (.07)	−.15	−.03 (.08)	−.04	.05 (.093)	.06	.03 (.09)	.04
Domain 5. Professionalization[c]	−1.57 (.63)	−.24	.08 (.05)	.11	.01 (.08)	.01	.18 (.09)	.21	.10 (.08)	.12
Domain 6. Healing environment[c]	1.45 (.60)	.23	.03 (.05)	.04	−.09 (.07)	−.12	−.15 (.08)	−.18	−.10 (.08)	−.12
Domain 7. Safety and prevention of coercion[c]	.50 (.44)	.08	.05 (.04)	.07	−.15 (.06)	−.19	−.19 (.06)	−.22	−.15 (.06)	−.18
Domain 8. Team structure[c]	.04 (.44)	.01	−.06 (.04)	−.09	−.01 (.06)	−.01	−.05 (.06)	−0.06	−.04 (.06)	−.04

Note. See Supplemental Material for the extended table including all parameter estimates (fixed effects and variance components). LSP = Life Skills Profile; SRPQ = Social Role Participation Questionnaire; SE = standard error; ART = active recovery triad. [a] Scores range from 16 to 64, with higher scores indicating worse functioning. [b] Scores range from 1 to 5, with higher scores indicating more importance, less difficulty and more satisfaction. [c] Scores range from 1 to 5, with higher scores indicating more compliance to the ART model.

care professionals is positively associated with improved clinical recovery of service users. This finding reflects the importance of involving significant others in the care process, which is also described in previous studies (Sibitz et al., 2011; Tjaden et al., 2021). It also puts emphasis on a good working alliance with family or significant others, in which family peer workers can play an important role (Tambuyzer & Van Audenhove, 2013). Second, we found that better educated staff was related to better functioning of service users and higher satisfaction regarding social roles and participation. This finding is in line with the literature, as education of staff plays an important role in the implementation of recovery-oriented care in practice (Chen et al., 2013; Gaffey et al., 2016; Roberts & Boardman, 2014). It also entails an important implication for mental health care practice as it emphasizes the importance of education and training of staff, which to date still receives little attention in long-term mental health care practice. Third, we found that higher scores on the domain team structure, including staffing intensity and availability of a variety of disciplines, is related to higher service users' performance of activities. While Killaspy et al. (2016) did not find an association between staffing intensity and recovery outcomes, other studies demonstrated that integrating different disciplines in the team does contribute to the quality of care (Bhanbhro et al., 2016; Pudalov et al., 2018). So, our finding may be a result of the combination of staffing intensity and the availability of a variety of disciplines in the team, including social workers and occupational therapists. This is captured in the domain team structure, that was found to contribute to service users undertaking more activities. Although the associations between these ART fidelity domains and recovery-oriented outcomes were significant, effect sizes were small. Nevertheless, these small effects may be clinically significant as the recovery process in this particular group of service users tends to progress slowly and heterogeneously (Leonhardt et al., 2017). In addition, studies in similar groups of service users also show small effects on recovery outcomes (Stiekema et al., 2020).

In addition to positive associations, we found some significant negative associations, also with small effect sizes. First, we found that higher ART fidelity on the domain healing environment is associated with worse service user functioning. This domain covers both the physical environment and housing conditions, reflecting service users' independence levels. Moving toward independent housing should be a shared decision, based on collaboration with service users. However, care providers may have emphasized independence excessively, causing stress for service users and their significant others. Our qualitative data (L. Zomer et al., 2024) indeed suggests that pursuing independence can result in stress in service users and significant others. Furthermore, as individuals move toward more independent living, challenges in daily living skills become more visible on the observation list measuring daily living skills in our study. Teams emphasizing the physical environment and independence may become more aware of service users' daily living skills and levels of independence. Last, considering the diversity of housing conditions, it is possible that when service users exhibit higher levels of functioning may be given lower priority for renovation of housing.

Moreover, we found that higher scores in the domain concerning safety and prevention of coercion were related to lower personal recovery scores, reduced service user satisfaction, social roles, and the performance of activities. This domain encompasses aspects

Table 8
Outcomes Multilevel Analyses of Secondary Outcomes (n = 101)

Variable	HoNOS[a]		Total hours of activity[b]		Service user transition[c]	
	Coefficient (SE)	Effect size	Coefficient (SE)	Effect size	Coefficient (SE)	Effect size
Overall ART fidelity[d]	−.64 (.58)	−.12	−.36 (1.78)	−.02	−.47 (11.86)	−.01
Domain 1. Recovery[d]	−.24 (.30)	−.07	−1.01 (.87)	−.10	−6.93 (6.64)	−.19
Domain 2. The triad[d]	−.77 (.27)	−.23	−1.12 (.79)	−.12	.91 (6.87)	.03
Domain 3. Care process[d]	−.51 (.27)	−.15	−.30 (.76)	−.03	6.07 (6.85)	.17
Domain 4. Team culture and vision[d]	−.51 (.34)	−.15	1.35 (.99)	.14	−4.30 (7.29)	−.12
Domain 5. Professionalization[d]	−.21 (.31)	−.06	1.62 (.89)	.17	1.58 (6.95)	.04
Domain 6. Healing environment[d]	−.25 (.29)	−.08	−1.04 (.91)	−.11	−.39 (6.72)	−.01
Domain 7. Safety and prevention of coercion[d]	.12 (.26)	.04	−2.02 (.63)	−.21	1.15 (7.02)	.03
Domain 8. Team structure[d]	.19 (.25)	.06	1.37 (.63)	.14	−.15 (6.95)	−.004

Note. See Supplemental Material for the extended table including all parameter estimates (fixed effects and variance components). HoNOS = Health of the Nation Outcome Scales; *SE* = standard error; ART = active recovery triad.
[a] Scores range from 0 to 20, with higher scores indicating more symptoms. [b] Indicating the average number of hours service users have been engaged in (community) activities in a week. [c] Indicating the percentage of service users who moved to a form of living or care involving more independence, from the total number of service users who transitioned. [d] Scores range from 1 to 5, with higher scores indicating more compliance to the ART model.

like safety expertise and management, on which most teams scored high. While these scores underline the significance of safety, one may question whether the principles of safety management align inherently with recovery-oriented care (see also Davidson et al., 2021). For example, it is possible that teams which prioritize safety and the reduction of coercion may overly emphasize rules and regulations in their efforts to create a safe environment, inadvertently affecting the perception of service users negatively. Our data highlight this challenge and suggest a need to reevaluate existing safety management systems in alignment with the vision of recovery-oriented care. This may include a distinction between focusing on rules and regulations on the one hand and explaining consequences of service users' choices in order to foster responsibility on the other hand. This should be taken into account in future adaptions of the ART model. Finally, given that the overall fidelity score is not related to any of our outcome measures, while the individual domains do relate to a variety of outcomes measures, we conclude that each domain in the ART model is distinct and that the domains are complementary. This may be a strength in applying this instrument in clinical practice. When implementing the ART model, teams can opt for a phased approach, focusing on specific domains which in their situation are regarded as especially relevant or urgent to enhance care. In research, it may also be beneficial to investigate the domains individually rather than collapsing them into a single fidelity score.

Strengths and Limitations

A strength of this study is that service users and professionals from a large number of organizations in the Netherlands participated. This reflects the need in practice to work according to the ART model. Most (large) mental health care organizations in the Netherlands invest time and resources in order to implement the ART model. In addition, we used the consensus score for the ART audits, which is in line with previous studies indicating that consensus ratings show higher reliability (Kottner et al., 2011; Streiner et al., 2015). Following up on our previous study evaluating the ART monitor, we found improved interrater reliability.

There are also some limitations to this study. Given that the ART model and the accompanying ART monitor were developed to improve recovery-oriented care in long-term psychiatric teams, we expected that ART fidelity and recovery-oriented care would increase over time. However, our results did not demonstrate a significant increase in ART fidelity, nor in recovery-oriented care, as measured with the ROPI-R. Therefore, the first and most important limitation to our study was that we decided to not include time as interaction effect in the multilevel model, as calculating an association between differences in ART fidelity scores over time and differences in outcome measures over time was no longer expected to provide relevant information. The short timeframe of the study as well as the COVID-19 pandemic and the restrictions at the moment of data collection made it challenging to transform mental health care practice (Piat et al., 2021). Further research needs to be performed to create insight into these developments over a longer period of time. In addition, due to the COVID-19 restrictions, ART fidelity was assessed differently over time, as the audits were performed digitally at baseline and on-site during follow-up. Performing online audits in the follow-up measurement (instead of on-site) might have yielded more comparable results with the baseline assessment. However, since the present study also served as a driver for the implementation of the ART model, we aimed to contribute to the learning effect and the impact of the audits in practice. Therefore, we chose to perform the audits of the second assessment on-site as the COVID-19 restrictions were eased during follow-up. It can be argued that the auditors might have obtained a better picture when visiting the location and might have evaluated the items of the ART monitor more critically during the follow-up measurement. Another limitation concerns the response bias of service users, as only 101 of the 515 service users approached for this study completed participation. Furthermore, due to the dropout of three teams during follow-up, we were not able to create insight into the developments within these teams and their service users. This dropout could have caused a positive bias in our results, as these teams struggled with ART implementation due to their financial situation and/or shortage of staff. Besides the service users of these three teams, some participants of other teams also dropped

out during follow-up. One of the reasons was moving out to another facility or own home during the course of data collection. It is possible that this influenced the outcomes regarding recovery we found in this study, as in this case service users who made a positive step in their recovery process dropped out. Finally, it may be expected that teams operating in different types of long-term settings (i.e., open/closed wards on institutional grounds, supported housing in community settings) may differ in their implementation process. This should be investigated in future studies.

Conclusion

In conclusion, we found that compliance to the principles of the ART model is positively related to recovery-oriented care, as results on the ART monitor were associated with the ROPI-R. Second, overall ART fidelity was not associated to outcomes regarding recovery or service user satisfaction, but some domains were. A good cooperation in the triad, focusing on education and professionalization of staff and a variety of disciplines in the team seem to be elements of the ART model that contribute to meaningful recovery outcomes. Further research over a longer period of time needs to be performed in order to get a more comprehensive picture of the effects of the ART model on recovery on service user level.

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