REFOCUS-PULSAR recovery-oriented practice training in specialist mental health care: a stepped-wedge cluster randomised controlled trial

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Summary

Background Recovery-oriented practice promotes the strengths and recovery potential of individuals. We aimed to establish whether individuals who access mental health services where staff have received the REFOCUS-PULSAR intervention, an adaptation of the UK’s REFOCUS recovery-oriented staff intervention for use in Australia, showed increased recovery compared with people using non-intervention services.

Methods We did a pragmatic, two-step, stepped-wedge, randomised controlled trial at 18 sites grouped into 14 clusters across public mental health services and mental health community support services in Victoria, Australia. Eligible staff were working part-time or full-time in a direct service role at one of the 18 sites and had consumers being recruited for this study. Eligible consumers were receiving care from a participating cluster, with contact in the 3 months before data collection; aged 18–75 years; and not imprisoned. Clusters were randomly assigned with a web-based randomisation tool to receive the REFOCUS-PULSAR intervention in either the first year (step one) or second year (step two). Consumers, but not staff, were masked to treatment assignment. The primary outcome was the Questionnaire about the Process of Recovery (QPR), for which cross-sectional data were collected across three timepoints (baseline [T0], year 1 [T1], and year 2 [T2]). The primary analysis was done by intention to treat. This trial is registered with ANZCTR, number ACTRN12614000957695.

Findings 190 staff (111 from public mental health services and 79 from mental health community support services) received the REFOCUS-PULSAR recovery-oriented training intervention. Between Sept 18, 2014, and May 19, 2017, 942 consumers were recruited across the three timepoints (T0: n=301; T1: n=334; T2: n=307). The mean QPR score was 53·6 (SD 16·3) in the control group and 54·4 (16·2) in the intervention group (adjusted difference 3·7, 95% CI 0·5–6·8; p=0·023). The Cohen’s d value for the intervention effect was small (d=0·23).

Interpretation The REFOCUS-PULSAR intervention had a small but significant effect on the QPRs of individuals using community mental health services and might be effective in promotion of recovery-oriented practice across sectors.

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Introduction

The construct of recovery, which is commonly used in mental health care, has roots in consumer perspectives1 and can be distinguished from other conceptualisations by its reference to personal rather than clinical recovery.2 Recovery-oriented practice involves clinical and other staff facilitating a change process through which individuals who have been diagnosed with a mental illness are supported to live a self-directed life and to strive to reach their full potential.3 Promoting recovery within mental health services is well established in mental health policy internationally.4,5 However, the practice lags behind policy: service-level intervention is required to effectively implement practices through which mental health professionals can use their skills, values, attitudes, and behaviours to support individuals in their personal recovery.6

The past decade has seen the development of several recovery-oriented training programmes, such as REFOCUS6 and THRIVE7 in the UK, the Collaborative Recovery Model8 in Australia, and person-centred recovery planning6 in the USA. They typically emphasise the use of coaching and person-centred, strengths-focused, collaborative processes to support consumers in their recovery. A useful reference framework for the research on training interventions is Kirkpatrick’s four levels for evaluation of training programmes: reaction (level 1), learning (level 2), behaviour (level 3), and results (level 4).9 Evidence is strongest for levels 1 and 2, with few programmes having evidence at either levels 3 or 4. Generally, level 4 evidence has not come from randomised controlled trials (RCTs), so there is a need for stronger evidence at this level. Evidence of the effectiveness of these interventions to promote recovery-oriented practice...
is required across settings so that these interventions might be used with some confidence by services.

REFOCUS is a staff training intervention that was developed and trialled in the UK between April, 2011, and May, 2012.\(^2\) Its development was informed by the theory of planned behaviour,\(^13\) and its aim was to change both what practitioners do with consumers of mental health services and how they do it.\(^4\) REFOCUS came to include, as elements of a team-based training intervention for community mental health teams in England, three working practices: understanding values and treatment practices, working to strengths, and supporting goal striving. Thus, the REFOCUS intervention was designed to promote recovery through changes in the skills, knowledge, behaviour, and values of staff and their relationships with consumers.\(^2\)\(^,\)\(^1\)

In a large-scale, cluster RCT,\(^9\) outcomes of usual care plus REFOCUS were compared with those of usual care only in 27 community mental health teams delivering services to adults with psychotic disorders. In primary analyses, personal recovery assessed with the consumer-rated Questionnaire about the Process of Recovery (QPR)\(^10\) did not differ between intervention and control groups. Secondary analyses suggested that higher team participation was associated with higher staff-reported, recovery-promoting behaviour and improved ratings on the QPR. Several possible reasons exist for the negative primary analyses.\(^7\) First, the REFOCUS recruitment protocol and criteria meant that, on average, participants had been using mental health services for more than 15 years. Such individuals might have entrenched ways of relating to services and problems that take longer than 1 year to change. Second, participant attrition, which was higher than anticipated in the study (26% vs 7%), reduced the study’s power to detect a difference in the primary endpoint. To address these issues, future studies might include adaptive design principles\(^16,\)\(^17\) use a more homogeneous team type (ie, function and staff composition), or stratify by team characteristics. Furthermore, transition to recovery-oriented practice might require organisation-wide rather than team-level strategies.

The Principles Unite Local Services Assisting Recovery (PULSAR) project was based in Victoria, Australia. The REFOCUS team advised on project development, enabling PULSAR—4 years behind REFOCUS in development and implementation—to benefit from lessons learned during REFOCUS. Changes to the REFOCUS intervention included adjustments to learning materials to enhance relevance to the local setting and to incorporate developments made during implementation of the programme after the REFOCUS manual\(^18\) had been finalised for study use. We refer to the intervention described in this study as REFOCUS-PULSAR (shortened to PULSAR in the protocol and when implemented locally\(^\)) because, although it was developed for the PULSAR study,\(^7\) it drew heavily on REFOCUS materials.

We did a stepped-wedge cluster RCT wherein all study sites received the intervention but the time of intervention receipt was allocated randomly.\(^9\) Given that people who might benefit most from recovery-oriented practice, in relation to personal recovery, might also experience clinical recovery and so be discharged earlier from treating services, sampling of people who have been using mental health services for a long time might bias against positive

Research in context

Evidence before this study

We searched PsycINFO, MEDLINE, and the Cumulative Index to Nursing and Allied Health Literature for articles published in English between Jan 1, 2007, and July 31, 2017, using the search terms [Mental Health/ OR “mental health” OR Mental Health Services/ OR “mental health service*”] AND [Recovery/ OR recover*]. Further relevant articles were identified from the reference lists of key papers and author and citation searches in Google Scholar. We selected articles if they were set in community mental health services and included data related to staff views, staff-related outcomes, or consumer-related outcomes in the context of staff training in recovery-oriented practice or implementation of recovery-oriented practice to promote and support personal recovery. We identified 16 relevant studies, of which most assessed staff-related outcomes after recovery-oriented training programmes. Although REFOCUS is the only intervention to have been evaluated in a randomised controlled trial, these studies generally suggest that recovery-oriented training improves staff knowledge, attitudes towards recovery, and self-efficacy in working with consumers using a recovery-oriented approach, with a recurrent theme that the organisational culture of the service setting and the provision of follow-up coaching might be important determinants of implementation success. Apart from the REFOCUS trial published in 2015, no trial has reported whether outcomes of consumers were improved by these interventions.

Added value of this study

The REFOCUS-PULSAR staff training intervention, adapted for Australian service settings from the REFOCUS package and based on the connectedness, hope, identity, meaning, and empowerment conceptual framework of personal recovery, brought about modest improvements in consumer-rated recovery for people using the involved services.

Implications of all the available evidence

Training health-care workers to deliver recovery-oriented care using the REFOCUS materials developed over time and adapted to local settings can positively affect the process of personal recovery for consumers.
findings. Hence, we recruited independently at three timepoints (baseline [T0], year 1 [T1], and year 2 [T2]), while maintaining tight control over the consistency of recruitment processes to minimise sampling bias as a source of systematic error. This approach promised greater possibility for progressive refinement of the training intervention through experience.

The aim of this study was to investigate the effectiveness of the REFOCUS-PULSAR intervention for improving the experience of personal recovery, as reported by consumers, using repeated cross-sectional samples. The term consumer is used throughout this Article because it is the most widely accepted term used in Australia to describe people who experience mental distress and use public mental health services. The primary hypothesis was that consumers in clusters that had received the REFOCUS-PULSAR intervention would experience significantly greater personal recovery than would consumers accessing other mental health services that, at relevant timepoints within the trial, had not received the intervention. We also investigated change in clinical recovery and participants’ experience of the services.

Methods

Study setting

Participating services were providers of mental health care to people living in the catchment area of a large public mental health service in Victoria, Australia. The area ranges from a relatively affluent coastal city to the most socioeconomically disadvantaged and culturally diverse area in metropolitan Melbourne and includes a semi-rural growth corridor. In Victoria, state-run, area-based, block-funded public mental health services, typically accessed by people with severe mental illnesses, include services that consist of a range of teams and service types, such as inpatient units, community-based residential rehabilitation, continuing care, and community treatment teams. Acute or longer-term residential care is typically provided in units of around 25 beds. Caseloads in community services might vary from around ten in mobile support and treatment services to 25–35 in many community clinics, while the typical length of care with a team might vary between a few days with crisis assessment and treatment teams to several years with mobile support and treatment services and community care units. Mental health care funded by the Victorian Government also includes substantial investment in the mental health community support services sector, which is run by non-government organisations and provides residential and outreach psychosocial support.

Within this setting, the temporal context for the work through 2014–16 included events worthy of some comment (details of these are provided in the appendix). The state-funded organisations that operated in the catchment area were the major public mental health service and two organisations from the mental health services sector, which is run by non-government organisations and provides residential and outreach psychosocial support.

Randomisation and masking

We grouped care delivery teams at 18 sites into 14 clusters to enable adequate recruitment in the context of some
smaller teams. Teams were classified into seven strata on the basis of similarities in their functions and characteristics. Within public mental health services, these strata were crisis assessment and treatment teams (consisting of three teams, including two smaller teams that were grouped into one cluster); two mobile support and treatment services each grouped with a community care unit (two clusters), which were four smaller teams with a shared focus on long-term intensive work with people with more complex needs; and four teams providing continuing mental health care services in the community (grouped into two strata and four clusters). The remaining strata included services delivered by two participating mental health community support services: four prevention and recovery services (grouped into two strata and four clusters), which deliver short-term, subacute, residential recovery-oriented care; and community outreach services (three teams, including two from one organisation that were grouped into one cluster).

We randomly assigned clusters to receive the intervention in either the first year (step one) or the second year (step two) using stratified randomisation to ensure that cluster types were well balanced across groups. Sequence generation was done with Research Randomizer, with seven randomisation keys corresponding to the seven strata and allocation of clusters within strata to step one or step two. Randomisation was done offsite by an independent researcher during the third quarter of 2014. Given that the intervention involves training, specialist mental health care staff became aware of their group allocation as the study progressed. Consumers, however, were not informed about whether staff at their service had received the training, and efforts were made to maintain masking of research assistants who did onsite recruitment and stream two interviews. Further information about strata and randomisation is in the protocol.19

Procedures

The REFOCUS intervention is described in a freely available manual.18 The REFOCUS-PULSAR intervention comprises a manual that was adapted from REFOCUS, a structured training intervention to support use of the REFOCUS-PULSAR manual, and follow-up sessions termed PULSAR active learning sessions.

REFOCUS-PULSAR was developed following Medical Research Council guidelines for complex interventions19 and the plan-do-study-act model as a method for controlling and improving process,20 and was guided by discussions with the REFOCUS research team and a lived experience advisory panel and by information from qualitative analysis of group sessions with staff from participating organisations. The content of the REFOCUS manual was largely retained in the REFOCUS-PULSAR manual,20 with some amendments to contextualise it for the PULSAR study setting, including legal and policy contexts. Additions, which comprised less than 25% of the manual, included material related to relapse signatures and relapse drills, and material on the connectedness, hope, identity, meaning, and empowerment (CHIME) conceptual framework for recovery-oriented practice,21 which was developed during the course of the REFOCUS study.

The REFOCUS-PULSAR training programme was supported by slide presentations, a manual, session plans, and videos. In a change from the REFOCUS intervention, training was co-facilitated throughout by professional staff and trainers with lived experience of mental health problems, including the project’s consumer researcher. This strategy, on the basis of local consultations through project leadership structures, as described in the protocol,19 was expected to enhance the recovery orientation of the training. Carer input featured in certain sessions. Quality assurance is described in the appendix.

The step-one intervention for clinical services was designed as a 2-day session, with the community services training planned as a separate 2-day session during the same week. In addition to having two project-employed consumer academics, trainers were employed from clinical services for clinical sessions and from the community sector for community sessions. This strategy enabled the inclusion of specialist skills and experience in training delivery.19 Step-two training was modified according to analyses of participant and trainer feedback from step one. Details of changes to step-two training can be found in the appendix. PULSAR active learning sessions, offered monthly as 1 h sessions to staff and managers of involved teams to support practice-based implementation of recovery-oriented practice, were facilitated by PULSAR investigators and local trainers.

Standard treatment was governed by national standards, adhering to which is maintained by regular accreditation. Consumers often have their locus of care change in response to their changing needs, moving between more intensive community teams (eg, crisis assessment and treatment teams or mobile support and treatment services) and residential options (eg, prevention and recovery care services) or less intensive community options. Case management in community clinics co-ordinates transitions through these levels of care and seeks to ensure that needs for medication, monitoring, support, and psychosocial interventions are met. Teams typically have multidisciplinary representation from mental health care disciplines, with nursing as the largest single workforce component.

Baseline (T0) data collection occurred in the year before and 3 months after delivery of the step-one intervention. The first 3 months after intervention delivery was deemed suitable for baseline data collection on the basis of Kirkpatrick’s training evaluation model, which considers that the embedding of practice change requires at least 9 months: 3 months for consolidation and
6 months for implementation. During the next 2 years (T1 and T2 periods), data were collected at a minimum of 9 months after delivery of the intervention to allow embedding of intervention principles and practices.19

Staff finishing REFOCUS-PULSAR training were asked to complete a training evaluation (level 1 evidence11), in which they rated satisfaction from 1 “extremely dissatisfied” to 10 “extremely satisfied”. Team managers
or administrators were asked to record staff movements (staff leaving or joining their team) every 3 months. The proportion of the team who attended at least one training session, by headcount, was calculated for time of training. Sector staff turnover was calculated as the number of staff who left, joined, or moved teams in the organisation over the following year, divided by the staff headcount at the end of the core training period.

Outcomes
Outcomes were divided into measures of clinical and personal recovery and measures of consumers’ experience of health care. The primary outcome was the QPR, which is a 22-item, consumer-rated questionnaire used to assess personal recovery; each item is rated on a 5-point Likert scale that ranges from 0 (disagree strongly) to 4 (agree strongly), with higher scores indicating increased recovery. Secondary outcomes, assessed in stream-two participants, were the importance of services in recovery questionnaire (INSPIRE), which has support (20 items) and relationship with worker (7 items) subscales, and the Warwick-Edinburgh Mental Well-Being Scale, which assesses emotional and functional wellbeing and has 14 Likert-scaled items, with higher scores indicating greater mental wellbeing. The subscale scores for INSPIRE were obtained by converting mean ratings on a 5-point Likert scale to percentages. Other secondary outcomes assessed in stream-two participants were the Perceived Need for Care Questionnaire, which assesses perceptions of mental health care and classifies perceived needs of consumers as unmet, partially met, or met; the Client Satisfaction Questionnaire, which assesses consumers’ satisfaction with services; the Mind Australia Satisfaction Survey, which rates consumers’ satisfaction with services, their involvement in service delivery, and individual service-use outcomes; the Coercion Ladder, a visual analogue scale that measures consumers’ perception of coercion in mental health service interactions; the Global Assessment of Functioning Scale, which is a researcher-rated (0–100) measure of an individual’s social, occupational, and psychological functioning; the Social and Occupational Functioning Assessment Scale, which ...
is a researcher-rated (0–100) measure of function, independent of psychological condition severity; and days out of role, which measures the effect of mental health problems on usual daily activities over the past 30 days.

Health economic analyses, including those based on work time lost, will be the subject of a future publication.

Anticipated possible study-related adverse events included risk of participant distress during an interview, issues related to disclosure of potential self-harm or harm to others, and risk of harm to staff. A risk prevention and management protocol was approved by the governing human research ethics committee. Participants were provided with written contact details of the manager of the governing human research ethics committee to whom they could make complaints. We did not systematically collect other adverse event information from consumers. Further information about adverse events and complaints procedures is in the appendix.
Statistical analysis
Sample size calculations were based on 14 clusters, an intra-cluster correlation coefficient of 0·05, a significance level of 0·05, a power of 80%, and published SDs.30,31 Stream one and stream two were powered to detect medium effects (Cohen’s d=0·5) in the primary outcome. Stream one required 756 consumers (252 in each wave, 18 per cluster per wave) to detect a change in the mean QPR score of 6·34. Stream two required 252 consumers (63 at T0, 126 at T1, and 63 at T2; nine per relevant cluster per step) to detect a change in the mean QPR score of 7·68. For stream-two secondary outcomes, expected detection thresholds were mean changes in the Warwick-Edinburgh Mental Well-Being Scale of 4·8 and in INSPIRE of 7·72 (also medium effects).

The primary analysis was done by intention to treat. We analysed all outcomes using multilevel regression models (linear or Poisson regression, as appropriate), with timepoint and intervention status as fixed effects and clusters as a random effect. Timepoint was included as a categorical variable. Covariates, selected on the basis of statistical and clinical considerations (appendix), were age group, gender, sector (public mental health service or mental health community support service), and step group (step one or two; for stream-one models only). Age group and gender were included as covariates because they commonly affect clinical outcomes. Sector was included as a covariate because we deemed it to be the most important stratification variable; the other seven strata were not included because their inclusion would have produced an overfitted model. Step group was not included in stream-two models; collinearity of step group with intervention status was an intrinsic feature of the stepped-wedge cluster RCT design of stream two.

We planned to include consumers as a random effect in the model to account for repeated measures, but 90% of the data in streams one and two came from singletons (ie, individuals contributing data only once to the study; stream one: n=854; stream two: n=234). Given that studies have found low levels of bias for models with up to 70% singletons and 50–500 clustering units,30 we did not include consumers as a random effect in the model. Model development is described in greater detail in the appendix.

Intervention effects were estimated from the models (appendix) using methods described by Hussey and Hughes.31 Additionally, we used models with interaction terms between timepoint and intervention status to assess trends across the sectors (public mental health services and mental health community support services).32 The statistician was not masked to treatment allocation during the analyses. All statistical analyses were done with Stata, version 11 or 15.

This trial is registered with ANZCTR, number ACTRN12614000957695.

Role of the funding source
The funder had no role in study design, data collection, data analysis, data interpretation, or writing of the manuscript. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results
84 staff from the three services attended step-one REFOCUS-PULSAR workshops in the first quarter of 2015, which were delivered over 22 days by five professionals and two consumers. Step-two training was delivered from June to October, 2016, to 106 staff over 21 days by six professionals and two consumers. In total, 190 team staff (111 from public mental health services and 79 from mental health community support services) received training (with 23 team staff from step one participating in step two training). Thus, 167 (63%) of 266 staff employed at the time of training attended at least one training session in their allocated step, including 92 (51%) of 182 staff within public mental health services and 75 (89%) of 84 staff in mental health community support services. Staff turnover was 68% (124 of 182) for the major public mental health service and 50% (42 of 84) for mental health community support services. Team-specific findings with associated outcomes will be reported in future publications.

The proportion of responding staff who rated training satisfaction as greater than 5 improved from year 1 (44% [17 of 39]) to year 2 (68% [23 of 34]; odds ratio 2·71, 95% CI 1·04–7·05; p=0·04). Staff who received training included representatives of multiple disciplines, but the team-based training approach generally did not succeed in engaging senior medical staff; it became apparent through the project that they would be more likely to attend service-wide, profession-specific training, which would not be readily compatible with the cluster RCT model. Medical-specific training in two 1·5-h sessions was attended by 11 registrars but no consultants.

For two public mental health service teams, no PULSAR active learning sessions occurred for logistical and engagement reasons. For all public mental health service teams in which PULSAR active learning sessions occurred (seven team settings, including some that were combined), the mean total number of sessions was 8·1 (SD 4·7). For 22% of these settings, team sessions could not be arranged and so meetings were with individual clinicians. In mental health community support service settings, PULSAR active learning sessions were integrated into monthly staff support sessions, and the aspects of these sessions that were specific to PULSAR active learning could not be quantified.

Between Sept 18, 2014, and May 19, 2017, 942 consumers (575 of public mental health services and 367 of mental health community support services) were recruited across three timepoints (figure 1; appendix), of whom 273 were recruited for stream-two interviews at timepoints related to
intervention delivery (140 at baseline and 133 at follow-up; figure 2). Overall, recruitment targets were surpassed and most clusters had the planned sample size (n=18 per cluster) at each timepoint (appendix). As expected, overall recruitment from mailouts was low (8% [622 of 7686]; appendix) but yielded 622 (66%) of 942 valid QPRs. Overall, the onsite recruitment rate was 46% (320 of 702; appendix), yielding 34% (320 of 942) of all QPRs. Proportions of QPRs derived from onsite recruitment were 32% (95 of 301) at T0, 34% at T1 (115 of 334), and 36% at T2 (110 of 307). The characteristics of consumers were well balanced across timepoints (table 1; appendix). The majority of consumers were aged 30–49 years, were born in Australia, and spoke English as their main language (table 1).

The mean QPR score for stream one was 53.6 (SD 16.3) in the control group and 54.4 (16.2) in the intervention group (adjusted difference 3.7, 95% CI 0.5–6.8; table 2). The Cohen’s d value for the intervention effect was small (d=0.23). In the model that included interaction terms between timepoint and intervention status, the mean difference between treatment and control groups at year 1 was 3.7 (95% CI 0.6–6.8; appendix). QPR scores improved from before to after intervention delivery for consumers of public mental health services in the step-two group (mean difference 4.9; Z score=3.0; p=0.003; d=0.30) and for consumers of mental health community support services in the step-one group (1.1; Z score=2.7; p=0.006; d=0.07; figure 3).

There were ten stream-two measures, considering the INSPIRE and days out of role as single measures (table 2) and including the Perceived Need for Care Questionnaire (appendix). None of the outcomes were significantly different between the intervention and control groups (table 2; appendix), although central estimates suggested an effect favouring the intervention in nine of the ten outcomes (appendix). If the intervention had no effect, the binomial probability that an effect favouring the intervention would occur by chance in nine of ten results is 0.01.

During the course of the project, four complaints were reported to the governing human research ethics committee, which led to changes in procedures under their direction as appropriate. No complaints were received that related to the REFOCUS-PULSAR intervention. Additionally, one participant expressed suicidal ideation, which was followed up as per our ethics protocol to ensure the individual’s safety.

Discussion
We found that the REFOCUS-PULSAR staff training intervention had a small but significant effect on the QPR scores of consumers in stream one. Small effects in pragmatic trials are expected, and the significant finding is encouraging.11 A significant interaction effect for service sector suggests that changes in sectors should be considered separately: in public mental health services, QPR scores did not change significantly from T0 to T1 for the step-one group, when change might have been expected because of staff training between these timepoints, whereas they changed significantly for the step-two group during their intervention period (T1–T2). By contrast, in mental health community support services, there was a small but significant change in the QPR scores of step-one clusters during their intervention period (T0–T1), whereas those of step-two clusters did not significantly change from T1 to T2.
The 3.7-point improvement in QPR score in stream-one consumers after receipt of the intervention represents a 5.7% change in the full-scale score. Standardised effect sizes are easily distorted by factors unrelated to effect size, and are not straightforward to interpret because of expected variance differences in the mixed model components. Nevertheless, Cohen’s d calculations suggested a small positive effect on the primary endpoint (d=0.23). Furthermore, based on QPR questionnaire content, changes of 1–2 points might be clinically meaningful. For instance, a 2-point change is achieved if the item “I feel part of society rather than isolated” goes from neutral to strongly agree. The training team, working in a plan-do-study-act approach, modified the training delivered in step two following analysis of feedback from staff participants.

Although speculative, mechanisms that might have led to the intervention having a greater effect on the primary outcome in step-two than in step-one clusters in the public mental health service sector include increased attention on the relationship between the two types of trainers (one a consumer and the other a clinician; appendix), which had the intended effect of providing a better model of behaviour for staff to follow (through clearer demonstration of respect for a lived-experience perspective) and more advanced communication skills, and the introduction of dedicated content on coaching. Earlier availability of the manual might have improved uptake of principles by some staff, and the team might have gained experience with the delivery of both the core training and the PULSAR active learning sessions over time. Findings for mental health community support services might have been affected by pressures building in that sector during the course of the study, which might have particularly affected step-two findings. Within this setting, the temporal context for the work through 2014–16 included events worthy of some comment. As well as the general problem of under resourcing, there was also a major reform of the mental health community support service during the course of the study, resulting in considerable staff turnover, adjustment, and a long transition period (further details are provided in the appendix).

While stream-two findings across ten measures were of small and non-significant effects, findings for nine of the ten measures favoured the intervention. This finding is unlikely to be a chance occurrence and suggests possible beneficial effects.

The findings of this study regarding the improvement in personal recovery as assessed by QPR are more positive than those of the REFOCUS study, which might be due to differences in the PULSAR and REFOCUS recovery-oriented practice staff training interventions. The literature on stepped-wedge study designs advanced in the period between design of REFOCUS and design of PULSAR, and the adaptive nature of PULSAR allowed for refinements of the training intervention after evaluation of feedback from step one. If this study had a similar parallel-group RCT design to that of REFOCUS, then without the inclusion of the step-two findings, PULSAR would not have yielded the positive findings reported here. The involvement of facilitators with lived experience of mental health issues and recovery is central to challenging conventional practices and in making progress towards an effective recovery-oriented mental health workforce.

Having people with lived experience
as co-trainers might be the reason for the significant findings in this study, particularly in step-two, public mental health service clusters, in which the relationship between co-trainers had been the most developed.

This study has several limitations. First, we used the 22-item QPR scale, which is thought to be less psychometrically robust than the 15-item scale, although this has not been independently validated, other than within the 22-item questionnaire. Given that we collected data for the 22-item version and powered the study on the basis of its reported psychometric properties, we used the 22-item score. In this study, Cronbach’s alpha was 0.95 for both versions. Second, the accuracy of estimates of change from pre-intervention to post-intervention might have been affected by multiple challenges facing the services at the time (see appendix for details). In both sectors, the trend from T0 to T1 in the step-two group, which had not received the intervention at this time, was of declining QPR scores, suggesting that external challenges were acting across the services to drive QPR scores down, particularly for users of mental health community support services. This downward trend in QPR scores might have led to underestimation of the effect of the REFOCUS-PULSAR intervention. Third, REFOCUS-PULSAR training reached only half of public mental health services staff in intervention sites and few medical staff, which might have reduced the effect of the intervention. Better results might be expected from implementation of the intervention outside the constraints of a team-randomised cluster RCT due to greater engagement of medical staff, whether in team-based or profession-specific training. Fourth, the REFOCUS intervention recommends some changes to record (ie, files or forms) structure, with more emphasis placed on prompting and recording recovery-oriented practice. However, this restructuring was not possible in our study because it would have required changes to some form structures that have organisation-wide support services. This downward trend in QPR scores might have led to underestimation of the effect of the REFOCUS-PULSAR intervention.

Taken together, these results suggest that the REFOCUS-PULSAR intervention can lead to a modest improvement in personal recovery. From an educational intervention perspective, we have provided some level 4 evidence for the REFOCUS-PULSAR intervention, which has otherwise been lacking for recovery-oriented practice. Although the findings of this study are modest, this is not surprising in view of the pragmatic trial design, and they provide at least some indication of positive change for individuals accessing the intervention services.

Contributors
GM was the principal investigator of this trial and, together with JCE, led development of key elements of the design and analysis approach and interpretation of the findings. MS developed the original REFOCUS intervention and advised on its adaptation. LB chaired the research module task group and provided oversight to development and implementation of all elements of the design. F5 provided overall coordination for field work and staff training and was centrally involved in the day-to-day operations of trial implementation. JCE did the data analyses. EF and EW-E made specialist contributions to certain elements of study design. CDT contributed to study design and implementation within mental health community support services and was a chair of the adaptation module task group. PJW chaired the implementation module task group, which oversaw the delivery of the training intervention. VE, LB, GM, PJW, and EW-E developed the specialist care-specific training intervention and associated resources. GM, LB, F5, VE, and EW-E developed the specialist care instrumentation and fieldwork trial protocols. GM, LB, F5, JCE, and MS comprised the core drafting group.
for this paper; the remaining authors critically revised the manuscript for important intellectual content. All authors read and gave final approval for this version of the paper to be published.

Declaration of interests
We declare no competing interests.

Data sharing
In compliance with the requirements of the Monash Health Research Ethics Committee, the data supporting our findings in the manuscript will not be shared because we did not obtain participant consent to do so.

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