



# Feasibility of a Consumer Centred Tobacco Management intervention in Community Mental Health Services in Australia

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## Abstract

This study tested a new program for helping smokers with severe mental illness to reduce their tobacco use, together with determining the feasibility of such research in community mental health settings in Australia. Five Neami National sites trialled a Consumer Centred Tobacco Management program called *Kick the Habit* (n = 34). The intervention included two weeks of free Nicotine Replacement Therapy (patches only) but participants also used a variety of self-funded delivery types in addition or as an alternative to the subsidised nicotine patch. At the 3-month follow-up, *Kick the Habit* participants had reduced their number of daily cigarettes, dependency levels and average weekly expenditure on tobacco. Although a larger study is required, *Kick the Habit* represents a promising intervention for tobacco management in community mental health services. The challenges and lessons learnt for scaling up to a larger trial and integration into business-as-usual practice across multiple sites are discussed.

**Keywords** Cigarette smoking · Smoking cessation · Mental health · Adults

## Introduction

Supporting smoking cessation and reducing tobacco-related harm among people with mental illness is a major public health concern (Prochaska et al. 2017). In 2007, 36% of Australian adults with 12-month mental disorders smoked compared to 19% of those without any disorder (Lawrence et al. 2009). Smoking rates are even higher among people living with psychotic illnesses—up to 70% in schizophrenia patients (Cooper et al. 2012; Greenhalgh et al. 2018). In 2017, 13.8% of Australians smoked daily (Australian Bureau of Statistics

2018). Compared to a steady decline over past decades in the general population, smoking rates have remained relatively high among people with mental illness and high distress (Cook et al. 2014; Cooper et al. 2012; Lawrence and Williams 2016; Prochaska et al. 2017; Szatkowski and McNeill 2015). Furthermore, people with mental illness suffer disproportionately higher levels of smoking-related morbidity and mortality, and substantial gaps in life expectancy (Lawrence et al. 2013; Prochaska et al. 2017; Sharma et al. 2016).

Despite low cessation rates, people suffering mental disorders are just as motivated to quit smoking as people without mental illness (Annamalai et al. 2015; Prochaska et al. 2017; Siru et al. 2009). Both physiological and psychosocial barriers to quitting are compounded especially for those experiencing severe mental illness who smoke more heavily and intensely, have higher levels of smoking dependence and greater withdrawal symptoms than smokers from the general population (Cooper et al. 2012; Prochaska et al. 2017; Sharma et al. 2016; Tidey et al. 2005). Historically, support from mental health services to address tobacco use has been limited, partly influenced by acceptance of the ‘self-medication’ hypothesis suggesting that smoking alleviates disorder symptoms; a belief commonly held by smokers themselves (Benowitz 2008; Greenhalgh et al. 2018; Prochaska et al.

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2017; Ragg and Ahmed 2008; Sharma et al. 2016). The role of nicotine in relieving some of the negative symptoms of psychotic illness such as lethargy, apathy and lack of motivation, improving working memory and sensory gating (blocking out extraneous stimuli), and reducing some of the side effects of medication (Annamalai et al. 2015; Barr et al. 2008; Matthews et al. 2011) is thought to be a powerful motivator for these individuals to continue smoking. However, the self-medication hypothesis has been challenged with emerging evidence supporting causal, bi-directional and shared genetic and environmental vulnerability effects (Prochaska et al. 2017; Sharma et al. 2016). Furthermore, new research demonstrates positive mental health effects associated with quitting (Prochaska et al. 2017). For example, a recent meta-analysis found smoking cessation (for at least 6 weeks) reduced depression, anxiety and stress, and improved positive mood and quality of life with effect sizes similar in those with and without psychiatric disorders, and equalling effect sizes for antidepressant treatments (Taylor et al. 2014).

The financial impact of smoking is considerable especially for smokers with mental illness who often rely on income from welfare payments. This has onward negative implications for housing and nutrition (Steinberg et al. 2004). In recent years, the levying of ever higher rates of tobacco excise has become one of the Australian Government's main weapons in the war on tobacco use. The latest policy sees increases of 12.5% per annum from 2013 until 2020, with the average pack of 20 cigarettes set to cost \$40 by 2020. This represents a cost of \$280 per week, or almost \$15,000 per year (Thomas 2016) for someone who smokes a pack per day. This equates to roughly two-thirds the current annual income value of a single-adult Australian Disability Support Pension (Australian Government. Department of Human Services 2019). While these costs may well deter many people from taking up or continuing smoking, for people suffering mental illness who are also addicted to nicotine the "rational consumer" arguments of behavioural economics that underpin these excise policies don't necessarily hold (Access Economics 2007; Ashton et al. 2014). Neither wages nor pensions can keep pace with this current round of tobacco price rises, which makes welfare-dependant smokers with mental illness even more vulnerable to poverty related issues. Hence, any action that can help people with mental illness to reduce or quit smoking has implications not only for their health, but also for their financial wellbeing (Hirono and Smith 2018).

Best practice in tobacco management for all smokers including those with mental illness is to offer behavioral support together with pharmacotherapy (Prochaska et al. 2017; Stead and Lancaster 2012; Zwar et al. 2014). First-line pharmacological treatments for smoking cessation (Nicotine Replacement Therapy/NRT, varenicline and bupropion) are

generally safe and effective but less robust in those with serious mental illness. Some caution is expressed for prescribing bupropion with other psychiatric medications, and for the use of varenicline with monitoring recommended for unusual mood or behaviour changes (Annamalai et al. 2015; Sharma et al. 2016; The Royal Australian College of General Practitioners 2011; Tidey and Miller 2015; Zwar et al. 2014). The quality of evidence is mixed with a lack of trials measuring longer-term abstinence associated with NRT-supported cessation strategies in this population (Prochaska et al. 2017; Roberts et al. 2016) and unequal attention to disorder types across trials (Tidey and Miller 2015). For example, there is good evidence from randomized controlled trials of the effectiveness of bupropion and varenicline for people with schizophrenia with a lack of controlled trials of NRT in schizophrenia patients. Trials have shown all three first-line treatments are effective for smokers with unipolar (lifetime) depression, although relapse levels are high without maintenance therapy as for smokers with schizophrenia. In contrast, there are relatively few trials testing treatment effectiveness for smokers with anxiety disorders or Post-Traumatic Stress Disorder (Tidey and Miller 2015). In meta-analysis, behavioural cessation interventions targeted at those with mental illness showed a small but significant effect for outcomes at 6 months although the types and duration of intervention varied (Bryant et al. 2011). Regardless of disorder, there are commonalities in the biopsychosocial mechanisms and relapse is related to higher levels of craving and negative effect associated with abstinence, perhaps particularly acute for those with lifetime anxiety disorder. However, it is thought that the typically higher rates of relapse amongst those with mental illness can be reduced by extended periods of pharmacotherapy (Tidey and Miller 2015).

In Australia and elsewhere, a limited number of trials have evaluated the effectiveness of targeted smoking cessation interventions in psychiatric inpatient settings (Davis et al. 2018; Metse et al. 2017; Stockings et al. 2014). A period of smoke-free hospitalisation in a psychiatric facility may have a positive impact on smoking behaviours in the short-term especially with NRT and behavioural support (e.g. Siru et al. 2010) but early relapse is most likely without ongoing support post-discharge. A recent Australian randomised controlled trial of a multi-faceted smoking cessation intervention initiated as a psychiatric inpatient and continued post-discharge (including NRT and individually tailored telephone counselling) provided evidence of tobacco reduction and increased quit attempts at 6 and 12 months (Metse et al. 2017). Similarly, in Western Australia, an evaluation of a pilot specialist smoking cessation clinic targeting psychiatric patients receiving inpatient and/or outpatient services (Smoker's Clinic) showed a mean reduction in expired carbon monoxide of 43%, and 34% abstinence in patients with at least an initial assessment (Davis et al. 2018). The

**Table 1** Characteristics of KTH participants at baseline

Characteristic	n	%
<b>Demographic</b>		
Female	16	47
Aged < 40	17	50
Any long-term physical health problem <sup>a</sup>	15	44
<b>Mental health</b>		
Depression	19	56
Anxiety	16	47
Schizophrenia	15	44
Bipolar disorder	12	35
Personality disorder	8	24
Other mental health problem	5	15
High/very high psychological distress <sup>b</sup>	23	67
Fair/poor self-rated health	24	71
<b>Smoking history</b>		
Average age started smoking	15.3 years	
Average years smoking	25.8 years	
Previous quit attempts	32	94
<b>Average # daily cigarettes</b>		
10 or less	8	24
11–20	16	49
21–30	7	21
31+	3	9
<b>FTND (dependency score)</b>		
Low (scores 1–4)	5	15
Moderate (scores 5–7)	24	70
High (scores 8–10)	5	15
Total	34	

NRT nicotine replacement therapy, FTND fagerstrom test for nicotine dependency (range 1–10)

<sup>a</sup>Physical health conditions include arthritis, back pain, heart problems, diabetes, asthma or other problems

<sup>b</sup>Kessler 10 Psychological Distress Scale

Clinic was staffed by resident medical officers and involved pharmacotherapies, behavioural intervention and a weekly 30-min follow-up (in person or by phone) for 6–8 weeks. However, as many people with mental illness will be hospitalised only briefly or not at all, complementary efforts are needed in the community.

Targeted smoking interventions are increasingly being developed and evaluated in community mental health and community settings. In Australia, examples of group-based interventions include the *Tobacco Free manual* (Tobacco and Mental Illness Project, 2012) and the SmokeFree kit (SANE Australia 2009)—both designed to run for about 10 weeks and include subsidised NRT for some participants. Evaluation findings are compromised by sample attrition, although positive in those available to follow-up (Ashton et al. 2013) including benefits such as increased confidence and learning new coping strategies (Mental Health

Coordinating Council & Cancer Council NSW 2009). In the 12-month follow-up of participants in the South Australian Tobacco and Mental Illness Project there was a 19% cessation rate amongst the 60% available to follow-up—12% of all original participants. Cessation rate increased with number of sessions attended, and was higher for those with low dependence levels at baseline (Ashton et al. 2015). Other studies have evaluated the effectiveness of individually tailored interventions. In New South Wales, a randomised controlled trial allocated participants with non-acute psychotic disorders to a treatment group (8 × 1 h individual sessions of motivational interviewing, cognitive behavioural therapy and NRT) or usual care with a general practitioner (GP) and/or community mental health team (Baker et al. 2006). Smokers who completed all sessions had substantially higher (point-prevalence) abstinence rates and reduction in daily cigarette consumption than the usual care group across the 3, 6 and 12-month follow-ups. Just under a third in the treatment group achieved a smoking reduction of 50% or greater relative to baseline (Baker et al. 2006). In a later study of combined NRT and lifestyle intervention (Baker et al. 2015), telephone delivery was as effective in reducing smoking (and cardio-vascular disease risk) at 36 months as intensive face-to-face delivery; in both treatment conditions the majority never achieved a 50% or greater reduction in smoking. US studies also provide evidence of the effectiveness of community-based programs combining individual and/or group-based counselling and free NRT (or other cessation medication) for smokers with mental health issues. Greater cessation rates and reduction in tobacco use are observed in those attending more sessions or using several types of support including pharmacological (Currie et al. 2008; Meernik et al. 2018; Morris et al. 2011). Programs that set a quit date may have less success in reducing tobacco use amongst those not interested in quitting yet (Currie et al. 2008). Together, these findings highlight the need to further build the evidence base for multi-modal interventions at group and individual levels in community settings.

This paper reports the findings from a feasibility study, arising from a collaboration between Neami National and a team of researchers from The University of Western Australia (UWA) testing a Consumer-Centred Tobacco Management (CCTM) approach (Gould 2014) to smoking cessation in community mental health services. Neami National (est. 1986) supports people aged 16 years and over living with mental illness to improve their health, live independently and pursue a life based on their own strengths, values and goals (Neami National 2017). This small study therefore aimed to test the feasibility of conducting an intervention called *Kick the Habit* (KTH) based on the CCTM approach compared to usual practice at Neami in reducing tobacco use amongst consumers at residential and outreach sites. KTH has two main components – specialised staff training and

working one-on-one with consumers to develop an individually tailored tobacco management plan including free NRT, motivational interviewing and behavioural strategies. The study was also a test of the feasibility of conducting smoking intervention research in the context of a community mental health setting, and across multiple sites. We wanted to know if it was possible to establish the conditions for a controlled trial within the day-to-day operation of the service. These conditions entailed, staff training, patient recruitment and assignment, delivery of free NRT and participant follow-up. A full detailed study report is available with results for KTH participants and control participants receiving usual care (Ennals et al. 2019) showing reductions across several markers of smoking dependency and cost in KTH versus control participants. However, in this paper we provide results for KTH participants after three months and staff feedback on process and study feasibility.

## Methods

### Participants

Study participants were individuals receiving mental health services from participating Neami sites comprising five KTH intervention sites and three control sites with business-as-usual cessation practices. Selection of study sites was undertaken collaboratively by Neami and the UWA research team with the aim of including services that differed in terms of geographical location, residential capacity, length of stay and service delivery (outreach or residential care). Sites were not randomly allocated as it was necessary to ensure support from management and resourcing within sites to enable study participation. This study is focused on the KTH participants. The KTH intervention groups included one residential facility and four outreach facilities.

A Research Assistant (RA) was allocated to each of the sites to facilitate the research study. In most cases the RA was also a Neami support worker employed at the site. A central RA was employed to coordinate data collection and

**Table 2** Type of NRT used and change in KTH group at 3 months

Characteristic	At 3-month follow-up	
	n	%
Type of NRT used <sup>a</sup>		
None	3	9
Patch only	7	21
Patch and other type	12	36
Other type/s only	11	33
Total	33	100
Still smoking		
Change in FTND Score <sup>b</sup>		
Reduced (− 1 to − 4 points)	17	59
Same score	7	24
Increased (+ 1 to + 4 points)	5	17
Self-reported change		
No change	3	10
Reduced tobacco use	24	83
Other	2	7
Self-reported expenditure		
Reduced exp. by > = \$10	16	55
Same exp. (or < \$10 diff)	8	28
Higher exp. by > = \$10	5	17
Total	29	88

NRT nicotine replacement therapy, FTND fagerstrom test for nicotine dependency (range 1–10)

<sup>a</sup>One or more types have been used across the 3-month period (either in combination or consecutively if > 1). Other types include mist, inhaler, gum, lozenge and e-cigarette

<sup>b</sup>Score is reduced by at least one point

assist with follow-ups part way through the study. Furthermore, each site had a ‘site champion’, usually the Site Manager to actively encourage and support KTH.

### Business-As-usual Condition

Neami staff are guided by the Collaborative Recovery Model (CRM) which utilises coaching and motivational interviewing skills to support consumers in making changes that improve recovery and wellbeing. This may include conversations about smoking reduction and cessation goals. Neami has also been offering Quit Victoria’s ‘Fresh Start’ program in their Victorian sites, although consumer participation rates are low.

### KTH Intervention

KTH involved specialised staff training and one-on-one consumer support. All Neami staff had received training in the CRM which provides skills essential to deliver KTH. CCTM is consistent with the CRM and has the advantage of engaging all smokers, irrespective of their attitude to quitting or motivational stage (Gould 2014). KTH training leveraged this core training and involved a 1–2 h workshop and online materials. In addition to outlining the program steps, the training content included information on smoking cessation relevant to a mental health setting, behavioural strategies to support smoking cessation, and optimal use of NRT. Training was staggered across KTH sites from October 2016–March 2017. It was intended that all support staff at each site participate in training, and this was mostly achieved. The study (active recruitment stage) was launched January–March 2017 with data collection completed by February 2018.

The KTH training outlined six steps for Neami staff to take in recruiting and providing one-on-one support to consumers on the Program.

1. *Start a conversation about smoking and assess their nicotine dependence.* The initial conversation about tobacco use can be undertaken during the intake process, while completing needs assessment or during other regular health assessments.
2. *Introduce KTH and ask if they are interested in discussing and modifying their tobacco use.* If so, encourage them to see a GP to talk about their plans and obtain a script to access NRT patches at a subsidised cost. It is also important to support them in speaking with a mental health professional who can help monitor the possible interplay with psychiatric medication and smoking reduction.

3. *Introduce the consumer to the research study.* If interested, ask for their consent to be contacted by the RA. The RA will provide more information (including a participant information sheet) and if the consumer is willing, they can sign a consent form. Consumers can still participate in KTH if they don’t wish to be part of the research study.
4. *Develop a Tobacco Management Plan (TMP).* Establish if the consumer is interested in managing their tobacco use from a harm minimisation perspective, or if they are actively seeking to reduce their tobacco use to quit. Discuss potential NRT and behavioural strategies, and use CRM protocols to identify reasons for change, goals, plans and potential barriers. Offer a referral to the Quitline call back service and refer to a collaborating pharmacist for two weeks of free NRT (nicotine patches only).
5. *Clarify the working alliance with the consumer.* This includes where, when and how often to see the consumer. The total length of time that the consumer receives support under KTH is determined on an individual basis, taking into account the participants’ goals and length of time receiving support services.
6. *Review, consolidate and celebrate.* Report on side-effects of NRT (if using) and initiate follow-up with a treating health care professional if required. Keep working on identifying triggers and strategies for use in high risk situations and for coping with cravings. Consolidate and celebrate achievements and learnings.

### Study Measures

A set of study questionnaires was developed: Pre-Tobacco Management Questionnaire, and Post-Tobacco Management Questionnaire. All questionnaires were self-report by the patient and administered by the RAs either in person or over the phone.

### Background Questions

The Pre-Questionnaire included a set of sociodemographic questions together with questions about physical and mental health. Participants reported on specific long-standing physical or mental illnesses. Psychological distress was measured by the Kessler 10 Psychological Distress Scale (Kessler et al. 2003) and scored using standard Australian Bureau of Statistics methods (Australian Bureau of Statistics 2012). Self-rated general health was measured on a 5-point scale from *excellent* to *poor*.

## Current Tobacco Use

The level of tobacco dependency was assessed in the Pre- and Post-Questionnaires by the 6-item Fagerstrom Test for Nicotine Dependence/FTND (Heatherton et al. 1991). Using standard scoring, items were added up to a maximum score of 10 where a score of 1–2 = ‘low dependence’, 3–4 = ‘low to moderate dependence’, 5–7 = ‘moderate dependence’ and 8–10 = ‘high dependence’. Furthermore, within-person change in dependency was determined by subtracting the score at each follow-up from their starting score. In the Post-Questionnaires, KTH participants were asked if there had been any changes in their tobacco use (stopped, reduced, no change, other). A composite variable of tobacco reduction was also created as described in the analysis.

## Nicotine Replacement Therapy (NRT)

At each follow-up, KTH participants were asked about whether they had used NRT as part of their TMP, and if so, the type of product (including e-cigarettes). This information from the 1-month and 3-month follow-ups was used to create a summary variable at the 3-month follow-up indicating if, at any time in the three months, they had used a nicotine patch only, a patch plus another type of NRT, or only another type – one or more (mist, inhaler, gum, lozenge or e-cigarette). If they had used more than one type, it wasn’t possible to tell from responses if they were used in combination or consecutively.

## Weekly Spending on Tobacco Use

KTH participants estimated the average amount they spent on tobacco products each week in 2017 Australian dollars, at the start and at each follow-up. Estimated weekly expenditure at baseline ranged from \$10–\$150. In a few cases where the participant estimated a range, the upper value was selected. If they were still smoking at each follow-up, we calculated whether participants had reduced (or increased) their estimated weekly spending on tobacco compared to their baseline expenditure by at least \$10.

## Staff Feedback (Qualitative)

Feedback about the implementation of KTH and of the research component was obtained from Site Managers and the RAs. Site Managers gave unstructured feedback. The RAs completed the ‘End of Program Questionnaire’ as part of their handover back to the central RA at the end of the 12-week period on site. It included questions about the research process, staff training for KTH, program implementation and personal reflections on their experience in the role. In addition, the lead

researcher at TKI spoke to several sites early in the Program implementation. This combined feedback provided valuable information about the feasibility of conducting a research study in these settings including how each site implemented the KTH training and the program, what challenges were faced, what worked well and suggestions for improvement.

## Analysis

In this paper, we focus on results for KTH participants at the 3-month follow-up due to the completeness of the follow-up (31/34), and the biased loss to follow-up in the control group (Ennals et al. 2019). Values for tobacco use and expenditure change variables for two of the KTH participants who did not complete the 3-month follow-up but did go on to complete the 6-month follow-up were copied from the 6-month values resulting in responses for 33/34 KTH participants. Furthermore, we created a composite measure of change at the 3-month follow-up for KTH participants if they had either stopped smoking or reduced their tobacco use by at least a 1-point reduction in the FTND. This was used to assess whether KTH had been equally as effective across different sub-populations.

## Results

### Sociodemographic and Mental Health Characteristics of KTH Participants

Among KTH participants, there were approximately equal proportions of males and females with one other gender identified. Half were aged under 40 (Table 1). None of the KTH participants were employed and the majority were either permanently unable to work or unemployed with many on a Disability Support Pension. Just under half had a chronic physical health problem (most commonly arthritis, back pain or diabetes). Most KTH participants ( $n=28$ , 82%) had a serious mental illness (either schizophrenia, bipolar or personality disorder) and comorbidity with anxiety and/or depression was common ( $n=17$ , 61%). Around two-thirds respectively had high/very high levels of distress and fair/poor self-rated health. Most first began smoking as teenagers and nearly all had made previous attempts to quit. At baseline about half smoked 11–20 cigarettes per day; 30% smoked more equating to a moderate to high level of nicotine dependence.

### Type of NRT Used and Reduction Outcomes for KTH Participants at 3 Months

During the study period, most KTH participants were using NRT as part of their TMP with the most common therapy

being the subsidized patch, although a variety of types were in use. About a third of participants at each follow-up reported using a patch plus another type of NRT in the preceding three months (Table 2). Around 20% used a patch only, and about a third had only used other types over the first three months.

At the 3-month follow-up, about 60% of KTH participants ( $n = 17$ ) who were still smoking had reduced their score on the FTND by at least one point compared to baseline scores, 12 of these by two points or more. A small number ( $n = 5$ ) had increased scores. Most participants ( $> 80\%$ ) reported a reduction in tobacco use, and just over half reported average weekly expenditure that was at least \$10 less than at baseline (Table 2). Of the 16 participants with reduced average weekly expenditure, this ranged from a \$10 to \$90 reduction.

### Change Amongst KTH Participants at 3 Months by Participant Characteristic at Baseline

Using a composite variable of change at the 3-month follow-up (participants had either stopped smoking or had a lower score on the FTND), we examined overall reduction in tobacco use by characteristics of participants at baseline (Table 3). Overall 64% of KTH participants had either stopped ( $n = 4$ ) or reduced their tobacco use ( $n = 17$ ). There was no statistically significant difference in this achievement by participant gender, age group, type of site, self-rated general health or level of psychological distress at baseline. There was an indication that those with at least one chronic physical health condition may have had less success ( $p = 0.06$ ) and those with schizophrenia may have had more success ( $p = 0.07$ ) in stopping or reducing their tobacco use. Although the proportion of those without anxiety compared to those with anxiety had reduced their tobacco use (72% v 53%), the difference was not statistically significant.

### Summary of Staff Feedback on Process and Study Feasibility

In this section, comments from Neami and research staff have been summarised across major areas:

#### Staff Training

The delivery of training relative to program launch was not always timely. At some of the original sites, it was too long (several months) which meant that the training was not necessarily retained by staff and they felt underprepared. In contrast, for one site that came on board in early 2017 it was too short (a few weeks) and there was not enough time to reflect on the content and review the training resources. In

terms of training content, many expressed the need for more hands on training. There was also a need for greater clarity around the different roles of staff involved in KTH.

#### Staff Attitudes, Perceptions and Existing Workload

Staff support was critical for successful adoption of KTH at each of the sites and initial attitudes and/or lack of confidence or time to implement a new program (including the research component) acted as barriers to implementation. Some staff and mental health providers had negative attitudes about the desire of clients to modify their smoking, and did not believe that such programs worked. Staff who were also smokers were less motivated. Initial low motivation was further linked to low confidence and uncertainty in how to introduce the program and work with consumers. “Sometimes it seems that the staff have less motivation than the participants,” Site Manager. As staff became more familiar with the program and had practice in completing TMPs, attitudes improved and confidence grew. Additionally, there was reference to workload and the number of competing demands on staff time. “There was initial reluctance (mainly due to other work pressures and uncertainty), and it took some encouragement and repetition of process to get staff to engage. Once they had done one tobacco management plan, they appeared to be ok and rapidly gained confidence in further delivery of the programme,” Site Champion.

#### Recruitment and Implementation Processes

The recruitment process ran smoothly. However, some staff did report having difficulties in starting a conversation with consumers especially if the consumer was experiencing a crisis and/or the support worker felt that they weren't ready to talk about smoking. “Talking with consumers has highlighted the importance of providing information regardless of my ‘hunch’ that someone isn't in the ‘right place’ to talking about their smoking habit,” Support Worker. Some consumers in control sites didn't want to feel pressured to change (quit or reduce their tobacco use) and therefore it was difficult to talk about smoking and recruit them into the research project. Recruitment at the KTH residential site presented its own difficulties due to the shorter time-period for recruitment alongside work pressures (28-day stay) restricting actual support time. There was minimal contact with Neami for some consumers at outreach sites.

#### Consumer Barriers to Participating and Staying Motivated

Staff identified several consumer-based barriers to participation that either prevented them from approaching the consumer to talk about smoking, or meant that the consumer

was unwilling or unable to participate. There were also barriers to staying motivated. Barriers included: consumer being in crisis, in hospital or homeless; smoking when in hospital not being discouraged by staff; not being ready to change; focused on bigger problems such as on reducing their alcohol and other drug use or gambling addiction; changing mental health status or current stressful circumstances; being restricted by existing medication regime/health condition that made it difficult to use NRT; discomfort with interview or research-type situations; feeling of inadequacy or shame when they have not succeeded with their smoking goal; living with smokers, and cheap cigarettes on offer nearby. “Talking about smoking highlighted the desire consumers have to improve and better themselves but how difficult it is when coping skills are limited and situations challenging. Self-judgement was a major barrier and holding that positive non-judgemental space was essential,” Support Worker.

### Availability, Cost and Dispensing of NRT

Many KTH participants would have liked free access to NRT for a longer period. Some had difficulties getting their GP to prescribe further NRT after the program completed and others had already used their annual quota. Staff also thought that a greater variety of free NRT was needed. Patches were not suitable for everyone but the cost of other types of NRT were often prohibitive. At the residential site, there were some initial problems with the timely dispensing of NRT by nursing staff relative to completion of the TMP.

### Follow-Up Questionnaires

Issues in completing the questionnaires included: the consumer being difficult to contact or missing scheduled meetings; difficulty in completing follow-ups for consumers who were in and out of hospital; language/cognitive difficulty; reluctance to answer questions; and needing mental health support during the course of administering the questionnaire. Additionally, several staff reported that the K10 was a trigger for distress and ended the survey on a negative note whilst some consumers wanted to elaborate and explain their answers to other questions (which was positive but not recorded by the RA).

## Discussion

This small study tested the feasibility of conducting and evaluating a new smoking intervention for individuals experiencing severe mental health problems in a service

setting. Based on several measures, there was sufficient evidence of a reduction in tobacco use for those participating in KTH—rates of tobacco reduction (or cessation) at three months were similar by gender, age group, site type, self-rated general health and levels of psychological distress at baseline. In this study, those with long-standing physical illness may have had less success in reducing their tobacco use due to barriers to NRT use associated with existing medication regimes. Due to the small numbers participating, these findings are tentative, and require replication in a larger study but indicate a positive change for these consumers and potential for success of the approach. Feedback from staff reveals challenges to implementing such a study in community mental health services and highlights where clear improvements could be made to KTH and to the research process.

One of the main reasons for consumers wanting to quit or reduce their tobacco use was to improve their finances and many participants in KTH did reduce the amount of money they spent on tobacco each week, even if just by a small amount (at least \$10; equating to \$260 in 6 months). The overall savings for KTH participants in this study was difficult to quantify as we did not collect data on individual number of cigarettes, and the cost of smoking a similar number of cigarettes varied considerably amongst consumers. Some consumers may have been accessing cigarettes for free or buying cheaper brands or at a substantially discounted price at supermarkets, or even black market cigarettes. Qualitative feedback from KTH participants, indicated that financial benefits were experienced by many of those who did reduce their tobacco use, enabling them to better meet essential living expenses and for some, allowing for discretionary spending (Ennals et al. 2019). Recording the number of individual cigarettes smoked and packet cost is an important aspect for consideration.

Quitting during the study period was one possible outcome although very few consumers in KTH quit smoking; a result generally consistent with other community-based programs where quitting may or may not have been the primary intent (Ashton et al. 2013; Baker et al. 2006; Baker et al. 2015; Mental Health Coordinating Council & Cancer Council NSW 2009; Morris et al. 2011). Although Neami support workers at KTH sites developed a TMP based on the consumer’s individual goals (cessation or harm minimisation), for the purposes of the study, data were not collected on participant goals, progress in meeting those goals or about any quit attempts in the periods between follow-ups. Data collection in the future for a larger trial and for standard practice would be improved by formalising the TMP, requiring staff to review and record contacts and progress creating greater staff accountability and better evaluation metrics.



Free NRT (specifically nicotine patches for two weeks) was a key part of the KTH intervention but it wasn't always adequate and a greater range of NRT options were needed. At three months just over half of consumers in KTH were using patches but many participants used other types such as gum, lozenges, mist, an inhaler or e-cigarettes at their own expense, either in combination with patches, or as alternatives to patches. It is possible that participants also used other prescribed cessation medication but that information was not captured. Along with adherence to counselling, the availability and use of NRT has been a key factor attributed to cessation (Currie et al. 2008; Meernik et al. 2018; Morris et al. 2011) and tobacco reduction (Baker et al. 2006) in community-based programs. One Australian study, although offering free access to four different products (patches, gum, lozenge and inhalers), subsidised access to combination therapy was not offered, and access to any NRT was restricted according to certain criteria, such as very low CO readings which likely influenced cessation rates for more highly dependent patients (Ashton et al. 2015). Combination therapy involving a long-acting form (nicotine patch) with a rapid delivery form (gum, inhalator, mouth or nasal spray, lozenge or micro-tablet) has proven to be more efficacious than a single form of nicotine replacement (Zwar et al. 2014). It takes time, usually multiple attempts and relapse which can be reduced by extended periods of pharmacotherapy and support including other established therapies for smoking cessation in those with chronic mental illness (Tidey and Miller 2015). Therefore, in extending and modifying the program, it will be necessary to identify how to fund and provide NRT in a way that is consistent with best practice and this may include partnerships with local pharmacies, state government contributions and ideally an expanded range of NRT provided at a subsidised cost by the Pharmaceutical Benefits Scheme.

Staff attitudes, motivation and training, and capacity of the site to incorporate KTH were all critical elements of its successful adoption. Initially staff attitudes at some sites reflected what has been a prevailing stigmatising attitude in the mental health sector towards smoking amongst people with mental illness. Such perceptions have been encountered (and overcome) in other interventions when staff have been given the opportunity to hear the consumer perspective (Mental Health Coordinating Council 2009). Staff also lacked motivation due to low confidence and uncertainty in how to introduce the program to consumers. There was existing pressure and competing demands on staff including rollout of the National Disability Insurance Scheme. All these aspects reflected the reality of working in community mental health settings and thus staff training and adequate time allowed for the introduction of KTH was crucial. Staff wanted more practical hands-on training to help start the conversation with consumers and to complete a TMP. For

**Table 3** Number and proportion in KTH who have either stopped or had a lower FTND score at 3-month follow-up (composite variable) by characteristics at baseline

Baseline characteristic	n	%	p <sup>a</sup>
Gender			
Male	11	65	0.72
Female	9	60	
Other	1	100	
Age group			
19–39 years	11	69	0.55
40 and over	10	59	
Site type			
Residential	7	64	1.00
Outreach	14	64	
Schizophrenia			
No	9	50	0.07
Yes	12	80	
Anxiety			
No	13	72	0.26
Yes	8	53	
Depression			
No	10	67	0.74
Yes	11	61	
Physical health condition <sup>b</sup>			
No	14	78	0.06
Yes	7	47	
Self-rated general health			
Fair/poor	13	57	0.20
Good/very good/excellent	8	80	
Distress <sup>c</sup>			
Low/moderate	8	73	0.44
High/very high	13	60	
Total	21	64	

<sup>a</sup>Chi-sq test

<sup>b</sup>Physical health conditions include arthritis, back pain, heart problems, diabetes, asthma or other problems

<sup>c</sup>Kessler 10 Psychological Distress Scale

some sites the delay between training and program start resulted in loss of knowledge and confidence in 'starting the conversation' whilst for others there was not enough time. As time went on and staff became more familiar with the program and practiced in working with consumers, attitudes improved and confidence grew. The program itself did not involve organisational level changes to policy and practice, so the degree to which KTH was adopted was very site dependent. Regular support and check-ins through the site champion helped to maintain momentum, accountability and problem solve creative ways to offer support to consumers. A revision of training content, the timing of delivery and

mechanisms for ongoing staff support will be necessary for future studies and embedded practice.

Although robust in design, the research aspect of the study was compromised by the practical issues and barriers associated with implementation. Because of this, the study has several limitations. The small numbers recruited prevented statistical analysis comparing outcomes for KTH and control groups. Although the research design called for a standardised approach, the way in which KTH was implemented varied across sites and was subject to the capacity and support within each site at the time. As we have reported, some site changes occurred during the study and these were unavoidable. This highlighted the need for a pragmatic approach. Differential exposure to the intervention, and loss to follow-up are common for trials in this population (Metse et al. 2017). Furthermore, we don't know how many consumers were approached but declined to participate, reasons for declining, and the characteristics of these consumers. Therefore, in addition to the small number of participants, not knowing the extent to which all of those eligible in each setting were offered treatment precluded intent-to-treat analysis. There was also no recording of actual support worker (GP or other health professional) contacts, specific NRT usage, or of progress against the TMP. Based on lessons learnt from the study, a number of recommendations have been made to improve data collection procedures and instruments.

## Conclusion

Kick the Habit is a promising smoking cessation intervention for many people living with severe mental illness. The study has demonstrated that with training and practical experience, community mental health workers can support smokers with mental illness to address their tobacco use, and highlighted areas for program refinement including staff training, NRT provision and data collection. State-level guidelines for community and social services such as the Cancer Council NSW Tackling Tobacco Project to support disadvantaged smokers to quit may also prove valuable in mental health settings by fostering a whole-of-organisation approach. Despite the challenges faced in the research process, a larger trial across sites is considered feasible with funding and partnerships to support the provision of a range of NRT options.

A major hurdle to quitting for disadvantaged Australian smokers is the cost of non-subsidized NRT options, which have been proven to increase the chance of quitting (Hartmann-Boyce et al. 2018). Proposed changes to the Pharmaceutical Benefits Scheme to widen the variety of NRT types available on subsidy in 2019 (lozenges and gum) are welcomed, but we note this still excludes spray and mist applications, doesn't address the 12-week time quota for

subsidised NRT, or allow for combination NRT (Australian Government Department of Health 2018). In comparison to Australia, all smokers in New Zealand already have subsidised access to patches, gum and lozenges, allowing for combination therapy and up to two repeats on each prescription from a medical practitioner or as authorised by pharmacists (Ministry of Health 2014; Pharmaceutical Society of New Zealand 2017). Other first-line subsidised medications such as varenicline (Champix) that has increasing evidence of efficacy and safety for smokers with serious mental illness should also be considered, allowing for maintenance therapy within the same 12-month period of subsidised NRT (The Royal Australian College of General Practitioners 2011). Although our study is focused on people with mental illness, there are many vulnerable high-risk groups who may have trouble with tobacco cessation (Bryant et al. 2011), and restricting extended Pharmaceutical Benefits Scheme access to those with mental illness would be impractical and unethical.

## Compliance with Ethical Standards

**Ethics Approval** This study was approved by the Neami Research and Evaluation Committee and the University of Western Australia Ethics Committee (Ref: RA/4/1/8437; 25 October 2016).

**Conflict of interest** The authors have no conflict of interest to report and certify responsibility for the manuscript.

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