

## REVIEW ARTICLE

## THE ROLE OF PSYCHIATRISTS IN TOBACCO DEPENDENCE TREATMENT

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### Abstract

**Objective:** Global tobacco control efforts in both prevention and treatment have advanced to levels never imagined 20 years ago. This review examines the relationship between mental illness and tobacco use, with particular focus on the role of psychiatrists in the treatment of tobacco dependence. **Methods:** The literature search utilised MEDLINE, Embase and PsychINFO databases using the terms psychiatry, psychiatrist, smoking cessation, tobacco use disorder and tobacco dependence treatment. A manual search of all references from relevant scientific articles obtained was also conducted. Finally, further material sourced included all major guidelines for smoking cessation or tobacco dependence treatment from the United States, United Kingdom, Canada, Australia and New Zealand. **Results:** Psychiatry has ignored tobacco dependence and its treatment resulting in multiple missed opportunities in improving the health and well-being of smokers with mental illness. Improvement in the training and knowledge of psychiatrists and those in the mental health sector will be the most effective activity to rectify this situation. **Conclusion:** Psychiatry must recognise tobacco dependence as equally important as the primary mental illness and to treat accordingly. A significant change in the training of future psychiatrists, introducing or implementing smoke free mental health services, changes in the management of caring for the mentally ill, and the introduction of tobacco treatment specialists within the mental health system is needed if psychiatry is serious about confronting this problem. *ASEAN Journal of Psychiatry, Vol. 16 (1): January – June 2015: XX XX.*

**Keywords:** Tobacco Dependence Treatment, Smoking Cessation, Smoking, Addiction, Psychiatry

### Introduction

Global tobacco control efforts in both prevention and treatment have advanced to levels never imagined 20 years ago [1]. Despite this, smoking is still the number one public health problem worldwide. Cigarette smoking is the preferred method of ingesting tobacco and causes the most harm. Cigarette smoke contains 7000 toxins and a substantial number of these are proven to be carcinogenic [2]. Smoking not only affects smokers individually but also those around them. Second-hand smoking (SHS), or

environmental tobacco smoke (ETS), a class 1A carcinogen, has been scientifically shown to be detrimental to health [3, 4]. An estimated six million lives are lost prematurely each year as a result of smoking and will increase by another four million as early as 2030 if the status quo [2].

In response to this threat to human health, the World Health Organization (WHO) established a treaty known as the Framework Convention for Tobacco Control (FCTC), which came into force in February 2005 [5]. There are now 176 nations that have ratified

this treaty, and the number is growing. The main aim was to assist member countries in their public health efforts against tobacco use, particularly in smoking. The treaty also provided new dimensions in legal health cooperation worldwide on tobacco control in response to various efforts by the tobacco industry to protect its interest using legal means [5,6]. Within the Asia Pacific region, Australia and New Zealand are at the forefront of this initiative, with the recent launch of plain packaging for all cigarette sales in Australia [7], and New Zealand's declaration to be a smoke free nation by 2025 [8]. Through its commitment to be smoke free by 2025, New Zealand will use all initiatives available to reach this goal. Both of these initiatives are being closely observed by other FCTC member countries including those in Southeast Asia.

Advances in public health measures have brought about reductions in the prevalence of tobacco use and dependence. The effect of this has been an increasingly 'hard to treat' group of addicted patients at a clinical level [9]. Psychiatrists could be argued to be the ideal practitioners to treat tobacco dependence when there is greater clinical complexity due to their training in the interaction between physical, psychological and pharmacological factors impacting on addiction and tobacco use together with social contextual issues [4,10]. They are also skilled in many forms of psychological interventions such as cognitive-behavioural therapy, motivational interviewing and relapse prevention along with prescribing pharmaceuticals [4]. Sellman [11] had previously called for psychiatry to "embrace nicotine dependence as the leading mental disorder of our age" noting that advancements in both the science of nicotine addiction and ways to manage it are rapidly advancing.

This review examines the relationship between mental illness and tobacco use and the role of psychiatrists in the tobacco dependence treatment. Finally, possible solutions are offered in order to advance the role of psychiatrists in the treatment of tobacco dependence.

## **Methods**

A literature review was conducted in July

2012 using the MEDLINE (From 1946 till current), EMBASE and PsycINFO online database. Search terms included psychiatry, psychiatrist, smoking cessation, tobacco use disorder and tobacco dependence treatment. Searches were limited to humans and English publications. Articles that were related to surveys on psychiatrists and their involvement with smoking cessation or tobacco control were kept for in-depth review. A second search through the references of these publications was conducted to identify publications that were missed using the databases mentioned. Publications were excluded if they did not include information on these topics.

The initial literature search identified 515 journal articles. A single author (A.S) read the abstracts of these articles. A total of 486 articles were excluded as they were not pertaining to psychiatrists and smoking cessation resulting in 29 articles that were retrieved for in-depth review. A further 18 were excluded as they were not surveys, therefore 11 were kept. Further search through these articles recovered two articles that were not included in the first search for a total of 13 published articles surveying psychiatrists and their role in smoking cessation. A manual search of all references from relevant scientific articles obtained was also conducted. Finally, further material sourced included all major guidelines for smoking cessation or tobacco dependence treatment from the United States, United Kingdom, Canada, Australia and New Zealand.

## ***Mental Illness and Tobacco Use***

Individuals with mental illness are more likely to be current smokers compared to the general public as a whole. On average, two to three times as many people with mental illness smoke [12-14]. Conditions such as schizophrenia are associated with smoking prevalence of up to 85% [13, 15]. Those with schizophrenia also smoke more (defined as smoking more than 25 cigarettes per day) [16, 17], have higher dependence or severity scores compared to the general public [18], and have been found to be more "efficient smokers" [19], absorbing more nicotine with each puff. People with mental illness constitute 16% of the New Zealand population [20] but smoke

33% of cigarettes consumed [21]. Similarly, in the United States where 25% of the population has mental illness [11], Lasser [17] found that nearly 44% of all cigarettes sold were consumed by those with mental illness, with Grant et al. [23], reporting 57.6%.

Although smoking is highly prevalent and the consequences debilitating, those with mental illness and nicotine dependence are generally neglected in psychiatry [24, 25]. It is common for them to be excluded from smoking cessation trials or not included in quit smoking initiatives altogether [26, 27]. Some professionals have referred to this group as the “underserved” population [28], and together with other groups, such as the low-socioeconomic population, often have high prevalence and more difficulties in quitting smoking.

The connection between mental illness and tobacco use is still not fully understood [13, 16]. A complex interplay between biological, psychological and social factors has been suggested [13], which is likely to vary according to specific mental illness under question.

In schizophrenia for example, the involvement of the alpha-7 nicotinic receptor may be faulty [13]. Geneticists have found a link between this receptor and chromosome 15 which is believed to be linked with nicotine addiction [29]. The  $\alpha$ -7 nicotinic receptor is involved with a physiological response to repeated auditory stimuli and also cognition in particular at the visuo-spatial working memory [13]. Abnormalities in both areas are linked to increased smoking as nicotine has been found to assist in minimising the side-effects from these abnormalities [31]. Psychosocial factors such as poverty, unemployment, lower levels of education and difficulties in accessing health services, often found in those with schizophrenia, are also important [13]. On the other hand, in anxiety disorders for example, especially post-traumatic stress disorder (PTSD), the hypothalamic-pituitary-adrenal (HPA) axis may be at fault. Impairment in the HPA axis may lead to the development of nicotine tolerance [13]. Alterations in this system can cause cortisol interference/involvement which increases the risk of smoking in those with PTSD by

enhancing both tolerance and sensitization to various effects of nicotine. Other factors that may lead to increase smoking within this group are psychological factors such as “anxiety sensitivity” and negative affect which can act as cues to initiation or continued smoking [13]. A low threshold for distressing situations and deficits in cognitive-emotional processing may also play a role in the relationship between smoking and anxiety disorders.

Unlike schizophrenia and anxiety disorders where the association appears to be unidirectional, the association for depression is thought to be bidirectional [13, 32]. Some studies report a moderating role of dopaminergic genes and depressive symptoms in determining both adolescent and adult smoking practices [13]. Others, however, suggest psychosocial stresses associated with depression make the individual highly sensitive to the reinforcing effects of smoking, and/or increase the vulnerability of the individual to social smoking influences [13]. The relationship between biological and psychosocial factors in determining smoking and mental illness is clearly a complex one.

### ***Psychiatry and Tobacco Use***

Tobacco use and its treatment have been underemphasised in psychiatry. One example is the establishment of smoke-free inpatient services. Despite many countries having environmental or similar laws to prevent smoking in closed buildings such as hospitals [1], not all inpatient psychiatric facilities are smoke-free [30]. In Christchurch, New Zealand, it has taken half a decade longer for all mental health services to be smoke free, achieving this in 2010 [31] compared to all public hospitals in New Zealand which have been smoke free since December 2004 [32].

### ***Benefits of Tobacco Dependence Treatment***

The benefits in treating tobacco dependence are significant for those with or without mental illness. Treating tobacco dependence improves the lives of both the smoker and those around them. Smoking causes many health problems such as lung and cardiovascular diseases but these conditions on quitting are reversible to a degree [33]. Studies have found that those who

quit experience early benefits of improved respiratory and cardiovascular functions [34]. More chronic conditions, such as cancer, are lowered as early as five years post abstinence [35]. Quitting smoking not only reduces the risk for medical health co-morbidities but has also been found to reduce the risk of developing substance abuse [27]. It may also increase the likelihood of stopping other existing substance abuse problems [27].

Tobacco use has also been shown to affect psychiatric treatments. Antipsychotic medication for schizophrenia, such as olanzapine and clozapine as well as certain antidepressants such as fluvoxemine are broken down by the cytochrome P450 enzyme system in the liver [36, 37]. These enzymes are affected by the hydrocarbons in cigarette smoke. Smoking increases the breakdown of these medications leading to reduced serum drug concentration. Those requiring these treatments will therefore need higher dosing which is not only potentially dangerous and can lead to other health complications like metabolic syndrome but is also expensive to the health system [36]. Similarly, on quitting smoking, these same levels may be elevated and will need to be carefully reassessed.

Treating tobacco dependence unfortunately is not generally undertaken as part of normal clinical practice by psychiatrists despite being one of the most cost effective interventions available at a population level [37]. Tønnesen [38], after reviewing several meta-analyses, found that treating those with tobacco dependence was much more cost effective compared to other public health interventions such as mammograms or providing treatments for elevated serum cholesterol levels. He reported the cost of adjusted quality of life years (QALY) to be between \$550-2200 (adjusted USD). Cromwell et al. [39] found the cost of adjusted QALY to be between US\$1108-4542 and also the more intensive the intervention the more cost effective it was. It is now recognised that current efforts to reduce the national prevalence further are limited by those with severe nicotine addiction who are generally more difficult to treat and less likely to respond to available treatments [9]. Many individuals with mental illness who smoke fit this description, and their widespread treatment by psychiatrists and other mental

health clinicians are likely to assist at a population level in reducing national smoking prevalence rates further.

### ***Barriers and Solutions***

There have been a number of barriers identified as to why psychiatrists are hesitant to conduct tobacco dependence treatment. Among these barriers is the failure to inculcate interest to conduct smoking cessation among psychiatrists at the outset of their training, the lack of interested supporting staff, and/or unavailability of appropriate infrastructure.

Prochaska [40] commented that one of the main reasons that tobacco control has been delayed this long in psychiatry can be attributed to the “self-medication hypothesis”. This hypothesis states that individuals with mental illness “self-medicate” with tobacco smoking to reduce or remove distressing symptoms that they may have experienced from their mental illness. For example, in schizophrenia, abnormalities in  $\alpha 7$ -nicotinic receptor have been linked to the presence of auditory hallucinations through the P50 gating response [13]. Tobacco smoking affects the P50 gating response and therefore may assist by reducing these symptoms. Similarly for depression, patients may smoke as a result of the effect of tobacco smoking on monoamine oxidase inhibitors responsible for the breakdown of the neurotransmitters dopamine and serotonin [36]. Smoking, therefore, may elevate mood by acting like antidepressants. Side-effects such as akathisia, caused by conventional antipsychotic use, in the treatment of schizophrenia, are also thought to be reduced by tobacco smoking [41]. These findings, however, were not missed by the tobacco industry. In another study Prochaska, Hall and Bero [15] found that the tobacco industry had acted upon this knowledge by slowing down efforts to treat smokers with schizophrenia through promoting self-medication as one of the strategies used to market cigarettes to patients with schizophrenia.

Another major barrier in tobacco dependence treatment in psychiatry is the delay in implementing smoke free services in mental health. Questions are still being asked if this move is necessary in certain parts of the world

[30]. At times, it is the service provider themselves that are not keen for the implementation of smoke-free services [42-44]. Among the reasons cited are that patients will relapse if asked to quit or will react aggressively, they are not motivated to quit as it is not their priority and smoking is used both as a 'reward' for positive behaviour and a 'tool' for engagement between mental health staff and patients [40, 45].

The high rate of smoking amongst mental health staff is also a barrier for treatment provision. Many studies have shown that staff working in mental health services often report higher smoking prevalence compared to their peers [44, 46]. Those who smoke have been shown to be least likely to assist smokers to quit or acknowledge that smoking is a problem for the patient in their care [46]. A study by Morris, Waxmonsky, May, & Giese [47] using a qualitative approach found that patients reported difficulty in attempting to quit when those treating them also smoked.

A series analysis of publications which primarily surveyed psychiatrists on various aspects of tobacco dependence treatment, revealed a number of psychiatrist specific barriers. Lubman, Jorm, & Morgan [48] surveyed 2000 general practitioners and 1710 psychiatrists on their belief regarding appropriate interventions for mental disorder in youth using a clinical vignette and found that compared to general practitioners, psychiatrists in the study endorsed less belief in the helpfulness of reducing smoking for young people with either psychosis or depression. However, the study had a low response rate (24% for general practitioners and 35% for psychiatrists). Another survey [49] of 80 psychiatrists working in a community mental health centre found that 20% did not even consider enquiring about their patients' smoking status. Ratschen, et al. [44], found that among workers in an inpatient unit in the United Kingdom, where the majority were psychiatrists (junior and consultants), there was a lack of knowledge in tobacco dependence, its treatment and relationship with mental illness. This lack of knowledge could be based on misconceptions that psychiatrists might not believe their efforts would lead to any success [49], or that

smoking cessation was not as important as treating the primary mental illness [49, 50].

A survey of 105 trainee psychiatrists in all years of training in the United States found more than three quarters reported their ability to assist smokers to be fair to poor [51]. They also reported no, or inadequate, training in tobacco dependence treatment in both medical undergraduate and postgraduate training. On a scale of 1 to 5 for confidence, the average rating was 3. In this sample, a third reported either being current or ex-smokers. In another survey of 114 psychiatry residency training directors [52], only half reported their centres provided training and that the median time spent was an hour. A follow-up post implementation training survey indicated an increase in both knowledge and skill and a subsequent increase in confidence in treating nicotine dependent people [53]. Implementation was found to be of minimal cost and all respondents would recommend the training to their peers [53]. A recently conducted literature review on MEDLINE up to 31 July 2013 did not reveal any new studies on training of tobacco control and dependence treatment in postgraduate psychiatry training, despite previous concerns that trainees had a lack of knowledge and skills in assisting smokers to quit. A survey of 74 psychiatrists, chairs of US academic psychiatry, found that although just under two thirds agreed that stopping cigarette smoking was "very" important and more than two thirds supported tobacco dependence treatment programs, less than half of them had such programs in their respective institutions [54]. Continuous medical education (CME) on tobacco dependence and mental illness was also found to be lacking and often reported as one of the main reasons for the lack of knowledge and treatment [44,49,55,56].

Most treatment guidelines recommend the 5 A's (ask, advise, assess, assist, arrange), as their main approach to managing tobacco dependence [57-59]. New Zealand, however, uses a modified ABC (ask, brief advice, cessation support) in its guidelines [60]. A consequence of the lack of training was the unfamiliarity with guidelines, treatment and services available to refer to. Using the National Ambulatory Care Survey which was conducted in the 1990s, Himelhoch & Daumit

[61] found that only 12.4% of patients with mental illness were offered tobacco dependence treatment. None were given a diagnosis of nicotine addiction and none were prescribed nicotine replacement therapy (NRT) or any other pharmacological intervention. Three other studies also found similar findings in prescribing practices of NRT by psychiatrists (9.7% [62], 10% [49] and 37% [56]). Another study by Price et al. [55], involving child and adolescent psychiatrists, found that NRT was not the standard care in their practice. An audit survey on diagnosis of nicotine dependence for three years in a youth speciality service where psychiatrists practiced revealed only a 3.6% written diagnosis in the first year of audit. This number jumped to 26.3% two years later, understood most likely to be the result of discussion regarding the low number and interest in the field [63].

Nicotine dependence has already been recognised as a medical condition in both the International Classification of Disease (ICD) and the Diagnostic Statistical Manual of Mental Illness (DSM) [64,65]. However, due to the lack of awareness as highlighted, the condition is seldom documented [63, 66]. Without diagnosis documentation, the importance in treating the tobacco dependence may be lost [62]. Opportunity to provide treatment and the possibility for reimbursement was reduced. It is of interest to note that other studies [46,50,61,67], reported that surveys on other specialities such as primary care and even medical colleagues reveal they were detecting and treating patients with mental illness who want to quit more often than psychiatrists.

Apart from providing direct treatment, referral is also one of the strategies to assist smokers to quit [57,60]. Psychiatrists like other physicians, have time constraints and one method of assisting patients to quit smoking is to refer them to tobacco dependence treatment services within the community they are working in. However, Steinberg, et al.[50] who surveyed 5726 physicians in the New Jersey area found that psychiatrists were least likely to be familiar with existing services in that area compared to their peers, such as primary care physicians, respiratory physicians or even cardiologists. Williams, et al. [56],

also found that psychiatrists in the study were not familiar with services available to them and therefore referred only a quarter of the time and 10% of these were referrals to quit-line services.

### ***The Way Forward***

More training has been shown to improve detection, action to assist and also referral or treatment provision in both trainees and psychiatrists. A study by Prochaska et al. [53], on 55 psychiatry residents attending a four hour training session noticed an increase in knowledge, improved attitude towards tobacco dependence training in psychiatry and confidence for treatment provision. Confidence was sustained for three months in follow-up data ( $p < 0.005$ ). Williams, et al. [56], also found in a two day training session for 41 mental health service providers, where 51% of them were psychiatrists, that participants scored better on post test scores from 47% to 91% after day two. Participants were also very positive on feedback evaluation for this study. Apart from the general acceptance of such training for psychiatrists, Prochaska et al. [53], also found that training was cheap at US\$139 per participant. Follow-up training can be maintained through continuing medical education (CME) sessions. Easton et al. [67], found that physicians (including psychiatrists) who completed >16 CME monthly hours were more likely to frequently counsel compared to those who received less. Price, et al. [55], in a study looking at child and adolescent psychiatrists, found that the more confident and prepared the respondents were, the less barriers were reported. Steinberg et al. [50], also reported that although initially referrals were low amongst psychiatrists in the study, once familiar with available services their referral rate was similar to others. Training definitely increases awareness, diagnosis documentation and subsequently treatment provision and introducing tobacco treatment specialisation (TTS) amongst psychiatrists may further assist the agenda of tobacco control within psychiatry [68].

Morris et al. [47], found from interviews that those with mental illness are already facing many barriers to access treatment. It would therefore be helpful if they could get access to tobacco control services from those trained in

both mental illness and tobacco dependence to ensure that their needs are adequately met. Prochaska et al. [52], noted that one reason for the lack of implementation of tobacco dependence treatment in all residency training centres was the lack of expertise on smoking cessation among qualified psychiatrists. Having a TTS program within each mental health services, or shared between a number of services, might improve treatment in a number of ways. A dedicated TTS would be able to “jump start” training and push for more awareness, and also be a source of information and support to other practitioners interested in tobacco dependence treatment [68-70]. Further, a TTS within a mental health service would be an excellent referral person to assist with more difficult cases within the mental health system [68].

Tobacco treatment specialist specialisation in mental health settings is one method of increasing awareness of tobacco control among practitioners [68]. As highlighted in the study by Prochaska et al. [52], one reason why residency training did not implement such training is the lack of experts. Current available treatments are medications and interventions familiar to psychiatrists such as nortriptyline and cognitive behavioural therapy for example, and the side effects that have been reported such as mood disturbances are also under the purview of psychiatrists. Having an expert in the field has an advantage in providing a supportive environment where other colleagues can exchange information and learn [68-70]. At present, those that do receive slightly more attention in tobacco dependence among mental illness patients are those with co-morbid medical illnesses [46, 61]. Although reassuring to an extent, these findings also indicate that detection is only made for the most complex of cases in psychiatry. As many of the complex mental health patients have both psychiatric and addictive disorders, specialists of all disciplines are referring more to TTS [70, 71].

The increasing establishment of smoke free mental health units will also make a difference in tobacco dependence treatment in psychiatry. However, this will also need to be complemented with a change in the current culture of psychiatry with respect to tobacco dependence [44, 66]. Inpatient admissions into

a smoke free unit may encourage quitting.<sup>45</sup> Contrary to popular belief, there is no added burden to manpower in terms of patient aggression through this action [45]. Parker, McNeill, & Ratschen [72], carried out a pilot study in four adult psychiatric wards and found 31% of patients attending tobacco dependence treatment services attempted a quit attempt, of which half were successful. This may not be feasible for some centres considering this study employed a specifically designed pathway to attain services. Nevertheless, it indicated that patients can and want to quit smoking [73]. In another study, Lawn & Pols [45] reported that mental health staff increased their quit attempts when smoke free inpatient units were established. Staff who did not smoke was more likely to be receptive of tobacco dependence treatment, and were more likely to encourage assistance and referrals [74]. Furthermore, staff who did not smoke could also become role models to patients and other staff [47, 75]. Previous studies had reported that a change in status, namely from smoking to smoke free, was not always associated with a change of culture when no clear strategies and appropriate resources were in place [72]. The culture of engaging with patients through smoking and smoking breaks needs to be addressed by both patient and mental health practitioners [40-42]. Morris et al.[47], related a patient describing his difficulties as “give me something to occupy my time. There is nothing to do...except smoke, sleep and shower”. Experiences similar to this will need serious consideration if and when all units become smoke free. Another change needed will be the management of smokers within the unit [62, 66]. The recognition of smoking and the need to address the above suggestions would need management changes in terms of ward work. Regular documentation of diagnosis, a system to remind psychiatrists and staff to follow-up on patients and familiarity with treatment both psychological and pharmacological are among some of the suggestions made by researchers in this area [42, 62, 66]. Patients themselves have also reported the use of group or peer support to be useful for them [47]. Studies have also shown that group therapy is equally effective in assisting to quit smoking [76, 77] and could easily be initiated in an inpatient or outpatient mental health setting.

Reimbursement for treatment has also been reported in several studies [49, 56, 62] as barriers to implement services. Reimbursement however needed accountability of services [77] and that is where the TTS could play a role [68, 71, 78]. Reimbursement has been shown to increase usage [79]. Although no increase in the proportion of quit attempts were found, it was suggested that changes may be too small at the national level to have a beneficial public health impact. However, unlike West et al., [79]; Thornley, Jackson, McRobbie, Sinclair, & Smith<sup>80</sup> found that in New Zealand not all levels of society showed increased use in pharmacological treatments (in this case, NRT) despite being subsidized. In this study, Māori and Pacific people were not shown to acquire treatment compared to those of European ethnicity. A Cochrane Review involving eleven trials had, on the other hand, reported favourable impact for smokers to quit on full subsidization but not for health providers. Smokers who were fully assisted were nearly three times likely to be abstinent for six months or more (RR 2.45, CI 1.17-5.12) [81]. Smokers were also more likely to use behavioural interventions with full aid (RR 1.77, CI 1.19-2.65) [81]. These findings are useful as smokers with mental illness were usually the more challenging patients and normally require this additional support. In addition, current evidence indicates greater success with a combination of both pharmacological and psychological interventions [57, 59, 60].

Among the major challenges faced by psychiatrists is the need to fully recognise tobacco dependence as equally important as the mental illness conditions they treat regularly. This will involve an overhaul in both medical school and residency training in psychiatry. Management changes may also be required in order for psychiatrists to be serious in their responsibility to their patients who are addicted to tobacco smoking.

Further implementation of smoke free mental health facilities is also needed. The longer these facilities are allowing psychiatric patients to smoke, the more harm is caused to the patients and mental health staff working in these facilities. The science of tobacco dependence and its treatment is rapidly

advancing from the realms of genetics, imaging and also pharmacology. Psychiatrists need to be familiar with these changes in order to provide the best level of care [82]. Newer treatments, such as varenicline, can cause mood changes and has a warning for suicide [83]. Psychiatrists need to be aware of this and other potential interaction between treatment for tobacco dependence and existing treatments available. Newer devices such as electronic cigarettes, which are not yet well understood in terms of benefits and potential risk, should also be investigated by psychiatrists as treatment options for their patients [84, 85].

## **Conclusions**

Psychiatrists have ignored tobacco dependence and its treatment for too long, resulting in multiple missed opportunities in improving the health and well-being of smokers with mental illness. Improvement in the training and knowledge of psychiatrists and those in the mental health sector will be the most effective activity to rectify this situation. More research is needed in both the pre-clinical sciences and clinical care in order to improve existing services in psychiatry and the provision of tobacco dependence treatment.

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