



## Smoking and common mental disorders in patients with chronic conditions: An analysis of data collected via a web-based screening system



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### ABSTRACT

**Objective:** Smoking is the largest preventable cause of death and disability in the UK and remains pervasive in people with mental disorders and in general hospital patients. We aimed to quantify the prevalence of mental disorders and smoking, examining associations between mental disorders and smoking in patients with chronic physical conditions.

**Method:** Data were collected via routine screening systems implemented across two London NHS Foundation Trusts. The prevalence of mental disorder, current smoking, nicotine dependence and wanting help with quitting smoking were quantified, and the relationships between mental disorder and smoking were examined, adjusting for age, gender and physical illness, with multiple regression models.

**Results:** A total of 7878 patients were screened; 23.2% screened positive for probable major depressive disorder, and 18.5% for probable generalised anxiety disorder. Overall, 31.4% and 29.2% of patients with probable major depressive disorder or generalised anxiety disorder respectively were current smokers. Probable major depression and generalised anxiety disorder were associated with 93% and 44% increased odds of being a current smoker respectively. Patients with depressive disorder also reported higher levels of nicotine dependence, and the presence of common mental disorder was not associated with odds of wanting help with quitting smoking.

**Conclusion:** Common mental disorder in patients with chronic physical health conditions is a risk factor for markedly increased smoking prevalence and nicotine dependence. A general hospital encounter represents an opportunity to help patients who may benefit from such interventions.

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### 1. Introduction

Smoking is the largest preventable cause of disability and death in the UK, and one of the most cost-effective methods of maintaining health and prolonging life is to encourage smoking cessation [1]. The prevalence of smoking continues to decline in the UK, having already dropped from 45% of all adults in 1974, to 19% of adults in 2013 [2].

However this decline in smoking behaviour has not been mirrored amongst people with mental disorders: an estimated 37% of people with depression are current smokers, and people with a mental disorder smoke approximately 42% of all the cigarettes smoked by the English general population [3]. Similarly, data from a nationally representative US sample reports a slower decline in smoking rates between 2004 and 2011 in people with mental disorder in comparison to people without mental disorder [4]. The overlap between mental and physical illness is substantial, with 30% of the UK population having a long-term physical illness [5], and 30% of those also have a comorbid mental disorder [6]. Smoking in general hospital patients is prevalent, with 1.1

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million smokers treated per year in English hospitals, representing 2.6 million episodes of care [7].

There are several effective methods of enhancing smoking cessation, including behavioural support and medication, which are offered free of charge within the National Health Service (NHS) [8]. Evidence suggests that smoking cessation interventions can be effective are no less effective in smokers with common mental disorders [9]. A recent multicentre randomised controlled trial examining the impact of varenicline on smoking cessation rates in adults with stable current or past major depressive disorder has shown increased cessation with no adverse effects on symptoms of depression or anxiety [9]. Furthermore, staged intervention incorporating motivational feedback and psychological counselling can be effective for enhancing cessation in mental health outpatients [10]. Analysis of a randomised controlled trial examining the impact of counselling combined with Nicotine Replacement Therapy has also demonstrated no adverse mental health outcomes after quitting smoking in patients with clinical depression [11] and meta-analysis evidence suggests that cessation may reduce symptoms of depression and anxiety [12].

Despite the range of effective interventions available, smoking cessation rates in people with mental disorders are much lower than in the general population [13–14]. Depressed smokers are as willing to attempt cessation as non-depressed smokers, and severity of depression and history of depression recurrence are not associated with willingness to quit [15–16]. However smokers with mental disorders are less likely to be offered smoking cessation support and are frequently excluded from smoking cessation trials [17]. One hypothesis for this may be that healthcare professionals may perceive depressed smokers to be unwilling to quit, less able to quit, or have concerns that quitting may exacerbate symptoms of depression [18]. However an unsuccessful quit attempt has been previously associated with increased odds of experiencing lifetime depression and anxiety compared to non-quitters, and increased prevalence of current depression [19].

The frequency with which many patients with chronic physical conditions are required to attend hospital appointments means that a hospital encounter may be a potentially valuable intervention point. Experiencing a health scare, such as diagnosis of illness or acute health event, may provide a teachable moment to facilitate behaviour change, and result in smokers being more likely to engage in cessation interventions [20]. Smoking cessation in patients with chronic physical conditions is likely to be highly beneficial for improving health outcomes. However, as yet there has been limited assessment of smoking and mental health within the context of physical illness.

To the best of our knowledge, this will be the first paper to examine the relationships between mental and physical comorbidity and smoking, using screening data collected as part of routine clinical practice, representing a large heterogeneous secondary care sample. We aimed: 1) to describe the prevalence of mental disorders, current smoking status, and level of nicotine dependence in patients with chronic physical conditions; 2) to examine the associations between mental disorders and smoking prevalence and level of nicotine dependence in patients with chronic physical health conditions; and 3) to establish the association between mental health status and wanting help with quitting smoking in patients with chronic physical conditions.

## 2. Method

### 2.1. Procedure

Data were collected via the Integrating Mental and Physical Healthcare: Research, Training and Services (IMPARTS) screening interface [21]. IMPARTS was designed to integrate the detection and management of mental disorders within physical healthcare environments; the web-based screening platform also facilitates the routine collection of patient-reported outcomes, and health behaviours, including smoking. IMPARTS provides this screening interface within a

novel model of service delivery allowing physical health specialties to routinely monitor pertinent elements of mental and physical health, and health behaviours in real-time, and provide appropriate, tailored support and recommendations for onward referral. IMPARTS has been implemented within King's Health Partners (KHP), an Academic Health Science Centre in London, including a university (King's College London), two acute NHS Hospital Trusts (King's College Hospital (KCH) NHS Foundation Trust and Guy's and St. Thomas' (GSTT) NHS Foundation Trust), and an NHS Mental Health Trust (South London and the Maudsley NHS Foundation Trust).

Patients attending general hospital appointments were given an information sheet inviting them to complete a series of questionnaires whilst waiting for their appointment. The information sheet informed them that the information is being collected as part of their routine care at the hospital, and that the information they provide is confidential and will be dealt with anonymously if used for audit or research purposes. Informed consent is not required for these purposes. Patients completed a series of measures chosen by the clinical team and specific to their physical condition on an iPad. The data were then transferred immediately to their Electronic Patient Record (EPR), allowing the clinicians to review the results in real-time, facilitating discussion during the appointment. Positive screens for probable major depressive disorder (pMDD), suicidal ideation or probable generalised anxiety disorder (pGAD) were flagged, with appropriate care pathways and risk assessment procedures provided. The system has been designed to be fully embedded in clinical care, with existing staff taking responsibility for implementing screening, and managing the screening results, supported by ongoing training from the IMPARTS team when required.

Twenty-one clinical services across 3 acute hospital sites were utilising the IMPARTS screening system at the time of these analyses. These represent services that have identified the need to standardise their collection of patient-reported outcomes, and approached the IMPARTS team requesting the implementation of routine screening in their clinics. These services range from large rheumatology and dermatology clinics, seeing hundreds of patients per week, to smaller services seeing less common physical conditions such as neuroendocrine tumours and endocarditis. The heterogeneity in services has resulted in vastly differing sample sizes for each chronic physical condition. For the purposes of this study, a pragmatic decision was made to include only services contributing data from over 100 unique patients between February 2011 (when the first service implemented IMPARTS) and June 2015. Patients were asked to complete questionnaires via the IMPARTS screening system at every hospital visit, however smoking data is only collected at one hospital visit per year. This analysis focused on the data collected at each patient's first screening encounter. Although primarily a method of collecting patient-reported outcomes for clinical care, IMPARTS has received ethical approval for anonymised data collected via the screening interface to be used for research purposes (REC: 12-SC-0422).

### 2.2. Setting

Data from 10 services were used in the current analysis. Pilot data collected from Rheumatology, Limb Reconstruction and Dermatology services show that uptake of screening was high, with the majority of patients attending appointments being successfully screened (62.5%–98.2%) and only a small proportion of patients declining screening (0.6%–5.1%) [21]. The services contributing data to the current analysis were: adult congenital heart disease (ACHD); dermatology (a tertiary service comprising patients with hidradenitis suppurativa, psoriasis or eczema); dialysis (representing patients on haemodialysis in three satellite units); limb reconstruction; liver transition (adolescents or young adults with chronic liver disease or liver transplant); musculoskeletal physiotherapy; chronic pain (an interdisciplinary unit delivering intensive outpatient or residential treatments); rheumatology (representing

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