Profile of Tobacco Use in Patients with Schizophrenia

Thesis

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By

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Abstract

Background: Although much attention has been drawn to trends in smoking and smoking related diseases in the general population, increasing evidence suggests that individuals suffering from mental illness are at increased risk for tobacco use and nicotine addiction. Smoking is the single greatest preventable cause of death in our society. It is recently demonstrated that, in smokers compared with nonsmokers with schizophrenia, the risk of mortality is doubled, and the risk of cardiac-related morality is increased about 12-fold**.**

Aims: To study the pattern of tobacco use among schizophrenic patients. To measure how schizophrenic perceive the effect and risk of tobacco use in relation to their symptoms. To study the degree of motivation to quit in patients with schizophrenia. To highlight factors that increase severeity in tobacco use in schizophrenia.

Methodology: Study design: A case control study. Site of the study: The outpatient clinic and inpatient in the institute of psychiatry of Ain Shams University. Ain Shams University is located in Eastern Cairo and serves a catchment area of about the third of Greater Cairo. It serves both urban and rural areas, including areas around Greater Cairo as well.

Results: The sample was consisting of patients with the diagnosis of schizophrenia attending the outpatient clinic or inpatient of the institute of psychaitry Ain Shams University Hospitals. The sample size were consisted of 180 patients and they were selected randomly.

Conclusion: This is study emphasize on the relation between tobacco smoking and schizophrenia, it demonstrate the pattern of smoking in the given sample of patients with schizophrenia who underwent treatment in inpatient and outpatient facilities.

Recommendation: Test the Nicotine dependence as a part of the routine assessment of patients with schizophrenia. Further research of tobacco smoking in patients with schizophrenia a larger multi-center study to involve patients with different sociodemographic variables

Keywords: Tobacco, Somking, Schizophrenia

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Dedication

Dedicated to the one who inspired me

Throughout my whole life to the

Soul of My Father

Contents

List of Abbreviations

AMPA : Alpha amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid

BDNF : Brain derived neurotrophic factors

CO : Carbon monoxide

COMT : Catechol-Omethyltransferase

CYP : Cytochrome P

DA : Dopamine

DBH : Dopamine beta hydroxylase

DNA : Deoxyribonucleic acid

EEG : Electroencephalography

EMG : Electromyographic

EPA : European psychiatric association

ERP : Event -related potentials

Fmri : Functional magnetic resonance imaging

FTND : Fagerstrom Test for Nicotine Dependence

GABA : Gamma-Aminobutyric acid

GAD : Glutamic acid decarboxylase

GLU : Glutamate

5HT : 5 hydroxytryptamine

Kg : Kilogram

LWDS- 11 : Lebanon Waterpipe Dependence Scale-11

MMN : Mismatch negativity

MOA : Monoamine oxidase

mRNA : Messenger ribonucleic acid

nAChRs : Nicotinic acetylcholine receptors

NMDA : *N*-methyl-d-aspartate

NRT : Nicotine replacement therapy

PANSS : Positive and negative syndrome scale

PPI : Prepulse inhibition

RFQ : Reason for quitting scale

SCID : Structured clinical Interview for DSM

SCQ-A : Smoking consequences questionnaire –Adult

SNPs : Single nucleotide polymorphisms

SPEM : Smooth pursuit eye movement

VTA : Ventral tegmental area

WISDM-68 : Wisconsin inventory of smoking dependence motives

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Introduction

Although much attention has been drawn to trends in smoking and smoking related diseases in the general population, increasing evidence suggests that individuals suffering from mental illness are at increased risk for tobacco use and nicotine addiction ***(Lasser et al., 2000).***

Smoking is the single greatest preventable cause of death in our society. It is recently demonstrated that, in smokers compared with nonsmokers with schizophrenia, the risk of mortality is doubled, and the risk of cardiac-related morality is increased about 12-fold ***(Kelly et al., 2011).***

People with schizophrenia have a high prevalence of smoking with reported rates of 58%–90% ***(Moeller, 2008).*** This is considerably higher than smoking rates of 24% ***(NSDUH, 2009)*** in the general public and approximately 50% in people with other psychiatric diagnoses ***(Baker et al., 2006).***

Additionally, people with schizophrenia who smoke are also heavier smokers than smokers in the general population. Although the causes of this high prevalence are not known, increased smoking in schizophrenia is believed to be due to a complex interaction of psychological,

behavioral, and environmental factors ***(Kelly & McCreadie, 1999).***

It was believed in the past that heavy and frequent cigarette smoking in people with schizophrenia was attributable to boredom, institutionalization, or cigarette rewards for good behavior on treatment units ***(Hughes et al., 1986).***

More recently, it has been recognized that smoking represents more than ‘‘something to do.’’ Cigarette smoking may partially represent an attempt at self-medication to control symptoms not addressed by antipsychotic medications ***(Simosky et al., 2002).***

Studies of the effects of nicotine in people with schizophrenia have shown improvements in areas including learning and memory, eye tracking, prepulse inhibition of acoustic startle response, and P50 sensory inhibition ***(Barr et al., 2008)***. Additionally, smoking is associated with reduced akathisia ***(Barnes et al., 2006).***

There is evidence implicating the nicotinic cholinergic system, specifically the alpha7 nicotinic receptor, in the pathophysiology of schizophrenia ***(Martin & Freedman, 2007).*** Activation of the nicotinic acetylcholine receptors can increase glutamate release onto layer V pyramidal neurons of the prefrontal cortex. This is

important because schizophrenia pathology also involves abnormal cortical activation, n-methyl-D-aspartate (NMDA) hypofunction, and difficulty with cognition ***(Lambe et al., 2003).***

NMDA hypofunction may contribute to cognitive impairments associated with schizophrenia, and agents targeting both nicotinic and NMDA receptors may show promise for improving cognitive deficits present in many people with this illness ***(Kantrowitz & Javitt, 2010).***

The self-medication hypothesis has been increasingly used to explain the high association between smoking and schizophrenia, the mechanisms include possible regulation of central dopamine availability by pharmacodynamic and pharmacokinetic processes (e.g. enzyme induction of the hepatic enzyme system, lowering antipsychotic effectiveness). These processes have also been implicated in reducing the side-effects of dopamine blockade of typical antipsychotics. More recently, based on a number of preclinical and clinical studies, this theory proposes that patients with schizophrenia smoke in order to 'treat' underlying negative symptoms and cognitive deficits ***(Matthews et al., 2011).***