Effect of tobacco use on symptom severity and medication adherence in schizophrenia

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Introduction

- Tobacco use is the leading preventable cause of death in patients with psychiatric illnesses.¹
- Every year millions of people die because of smoking.
- Smoking status is often overlooked when treating patients with mental health problems.²

Source: Pharmaceutical-Networking.Com

¹ Lichtermann D et al., 2001 Arch Gen Psychiatry 58:573-8
² Rüther T et al., 2014 Eur Psy 29:65-82
Smokers vs. non-smokers & schizophrenia?

SMOKER

NON-SMOKER

Source: www.dreamstime.com
Tobacco use consequences

- Increased risk for cardiac, pulmonary illnesses, diabetes, cancer.\textsuperscript{1,2}
- Increased risk for suicide.\textsuperscript{3}
- Reduced life expectancy for 25 years.\textsuperscript{4}
- Worse social status (public assistance: 269,20 eur; 133.13 spent on cigarettes).
- Worse quality of life.

\textsuperscript{1} Carney CP et al., 2006 J Gen Intern Med 21:1133-7  \textsuperscript{2} De Heart M 2009 Eur Psychiatry 24:412-12  \textsuperscript{3} Breslau N 2005 Arch Gen Psychiatry 62:328-344  \textsuperscript{4} Colton CW, Manderscheid RE 2006 Prev Chronic Dis 3: A42
Aim of the study

• Smoking rates in patients with schizophrenia (PS).
• Tobacco use and symptom severity in PS.
• Medication adherence.
• Hospitalization rates.
• First outbreak of the disease in PS.
Methods I

- 91 patients with schizophrenia.
- Various form of treatment.
- 36 females (39.6%), 55 males (60.4%)
- Average age 41.33 years.
- Unemployed (41.33), retired (38.5 %).
- Single (76.9 %), divorced (9.9 %).
- More than half finished high school.
Methods II

• Part of a larger survey\textsuperscript{1}.

• Questionnaire included socio-demographic, tobacco consumption, and some other characteristics of the participants\textsuperscript{1}.

• Adherence was assessed subjectively\textsuperscript{1}.

• Clinical symptoms were rated by using the Positive and Negative Syndrome Scale (PANSS)\textsuperscript{2}.

\textsuperscript{1}Pajk B, 2014 thesis (Factors that influence adherence in patients with schizophrenia) \textsuperscript{2}Kay, 1987 Schizophrenia Bull 13:261-267.
Results I: Prevalence of tobacco use

Prevalence of tobacco use among patients with schizophrenia and general population in Slovenia.

The prevalence of tobacco use among patients with schizophrenia was 61.50%.

1. National Institute for Public Health 2012
Smokers had significantly higher total PANSS score.

<table>
<thead>
<tr>
<th>SMOKING STATUS</th>
<th>TOTAL PANSS SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMOKERS</td>
<td>97.18</td>
</tr>
<tr>
<td>NON-SMOKERS</td>
<td>83.80</td>
</tr>
</tbody>
</table>

Results II: Total PANSS score (p=0.015)
Results III: General PANSS sub-score (p=0.007)

Smokers had significantly higher General PANSS sub-score.
Guilt feelings (G3) (p=0.047)

Guilt feeling were more pronounced among smokers.
Tension (G4) (p=0.008)

Tension was more pronounced among smokers.
Mannerisms & posturing was more pronounced among smokers.

Mannerisms & posturing (G5) (p=0.004)
Poor attention (G11) (p=0.032)

Poor attention was more pronounced among smokers.
Disturbance of volition (G13) (p=0.000)

Disturbance of volition more was pronounced among smokers.
Poor impulse control (G14) (p=0.008)

Poor impulse control was more pronounced among smokers.
Excitement (P4) (p=0.020)

Excitement was more pronounced among smokers.
Hostility (P7) (p=0.008)

Hostility was more pronounced among smokers.
Blunted affect (N1) 
(p=0.022)

Blunted affect was more pronounced among smokers.
Results IV: Positive PANSS sub-score (p=0.077)

Trend indicates that smokers have higher positive PANSS sub-score compared to non-smokers.
Results V: Negative PANSS sub-score

(p=0.054)

Trend indicates that smokers have higher negative PANSS sub-score compared to non-smokers.

*Zhang XY et al., 2013 Psychol Med 43:1651-1660 Smith RC et al.,2002 Neuropsychopharmacology 27:3
Results VI: Number of hospitalizations (p=0.060)

Trend indicates that smokers have higher number of hospitalizations compared to non-smokers.
Results VII: Non-adherence among smokers

Almost 70% of smokers were non-adherent to their prescribed medication.
Source: Smolić, 2009
No association

- **Age** (p=0.343), **age of schizophrenia onset** (p=0.881) or other socio-demographic characteristics of the participants and smoking.

- **Number of prescribed medications** (3.29 vs. 3.17; p=0.735) or **daily doses** (2.45 vs. 2.29; p=0.345) among smokers and non-smokers.
Summary

- Tobacco use might be associated with more severe schizophrenia psychopathology, medication non-adherence and perhaps higher number of hospitalizations.

Source: www.hngn.com
Pharmaco-therapeutic
Self-medication & Vulnerability hypothesis

• To restore blocked dopamine effect.\textsuperscript{1,5}
• Reduce side effect.\textsuperscript{1,2,5}
• Nicotine reduces plasma level of antipsychotic medication up to 50\%\textsuperscript{3}
• Self-medication of cognitive deficit and negative symptoms.\textsuperscript{4,5}
• Genetic factors.\textsuperscript{6}

Source: www.ctri.wsc.edu

Acute vs. chronic tobacco use?
Non-adherence & tobacco use?

- Acute nicotine effect may be experienced as beneficial with regard to cognitive functioning and negative symptoms, however chronic nicotine consumption may have deterioration effect on schizophrenia psychopathology.¹

- Non-adherence to prescribed antipsychotic medication is associated with relapse, hospital admission and persistent psychotic symptoms.²

¹ Winterer G 2010 Curr Opin in Psychiatry 23:112-119  ² Morken G 2008 BMC Psychiatry 8:32
WHAT CAN WE DO?

Tobacco use is a huge burden for the patients with schizophrenia, their relatives and society.
1. Pay greater attention to patients with schizophrenia and tobacco use dependence

- None of the participants had diagnosis of tobacco dependence (F17).
- Include smoking status in the treatment process. (prescribing medication, control blood pressure, cholesterol and sugar levels, weight gain).
- Promote healthy life style.
2. Promote a smoking free environment

- Law permits smoking in psychiatric settings.
- Reconsider permitting smoking in open wards.
- We encourage patients to smoke.
3. Promote smoking cessation

- Every patient has different reason for smoking.
- Individual approach considering the causes of tobacco use.

![Pie chart showing smoking cessation reasons]

- Feel better: 13%
- To calm myself: 16%
- Reduce tension: 10%
- Redirect attention from symptoms: 8%
- I am bored: 8%
- More relaxed: 8%
- Self confident: 8%
- Taste: 8%
- Reward myself: 5%
- Friends smoke: 3%
- Overcome sadness: 5%
4. Promote 100% medication adherence

- Almost 70% of smokers were non-adherent to their prescribed antipsychotic medication!

*Source: Personal Source*
5. Educate & Research

- Patients with schizophrenia.
- Relatives.
- Health care professionals.
- Public.
- Research (more attention to tobacco use and medication non-adherence).
CONCLUSION

“It is the only thing I have in this life - cigarettes and coffee”.

Source: www.slovenia-convention.com