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THE COMPARISON PANSS SCORES SYMPTOM POSITIVE AND NEGATIVE MALE PATIENTS SCHIZOPHRENIC BETWEEN LIGHT AND HEAVY SMOKERS

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ABSTRACT

Background*: Smoking is a major health problem in the human community. Patients with serious mental disorders have a higher prevalence of smoking than the general patients. Schizophrenic patients have a higher prevalence (70% -80%) to smoke cigarettes thanpatients with other psychiatric diagnoses (50%) and against the general population (21%). Schizophrenic patients tend to be heavy smokers, and can have a high risk of nicotine dependence. Excessive smoking causes high morbidity and mortality against the schizophrenic patients. Schizophrenic patients who smoke are commonly male than women (64.4%).*

Aim of research: *To identify comparative score of the PANSS positive and negative symptoms in schizophrenic male patients between light and heavy smokers.*

Research methods*: The study design cross-sectional study, location: Mental Hospital Prof. M. Ildrem North Sumatera Province. The subjects were male schizophrenic patients light and heavy smokers who come as Installing outpatients the period July 2015- September 2015. How the selection of subjects with non-probability sampling types consecutive sampling. Inclusion criteria: male schizophrenic patients who were diagnosed based on PPDGJ III, age 15-55 years, smoker, has gained haloperidol therapy for 1 week and were willing to join the study.*

Exclusion criteria*: Suffering from severe medical illness and a history of alcohol and other substances except tobacco. Measuring tools: Scale Positive and Negative Syndrome Scale (PANSS).*

Results: *From total of 60 people, divided into groups of light and heavy smokers. In heavy smokers found a mean age of 29.17 (± 873) years and in light smokers group 42.10 (± 7.98) years. Most education for junior heavy smokers are 11 people (36.7%), while light smokers group most high school education is 17 (567%). In the group of heavy smokers most do not work as many as 24 people (80%) while the most of the light smokers had worked as many as 22 people (73.3%). Marital status in the group of heavy smokers that most unmarried 25 people (83.3%) as well as the group most unmarried light smokers were 19 people (63.3%). In the group of heavy smokers, mean age start smoking 14.73 (± 1.17) years, while in the group of light smokers 24.57 (± 2.86) years. In the heavy smoker group the mean age of onset of schizophrenia 21.93 (± 3.28) years, while the light smokers 33.43 (± 5.37) years. The mean consumption of cigarettes per day in the group of smokers 27.07 (± 4.81) whereas in the group stems light smokers rod 5.30 (± 2.04).*

Conclusion: *Male patients schizophrenic found as heavy smokers were younger, unmarried, started smoking earlier and the onset of schizophrenia faster than light smokers. In heavy smokers there is a significant difference for total PANSS score and negative symptoms than light smokers. As for the score of the PANSS positive symptoms was not significantly different between the groups of heavy smokers and light smokers (p = 0.250).*

Keywords***:*** *score of the PANSS positive and negative symptoms, smokers, schizophrenic patients.*

1. BACKGROUND

According to the WHO, smoking is the cause of 20% of preventable deaths in the modern country. Death by tobacco use is higher than deaths due to suicide, homicide and accidents (Ziaaddini H.,et al, 2009)

Patients with mental disorders that seriously had a greater prevalence of the smoke than the general population. Therefore, it has been observed that people who smoke having mental disorders doubled from someone who does not smoke (JM Molina-Linde, 2011).

Patients with schizophrenia have a higher prevalence (70% to 80%) to smoke cigarettes than patients with other psychiatric diagnoses (50%) and the general population (21%) (Zhang XY,et al, 2014).

Research by Yee and colleagues of the 180 patients with schizophrenic man who direkrutdari August to November 2011 in the outpatient psychiatric clinic in a general hospital Malaysian showed result of high prevalence of smoking in male schizophrenic patients (64.1%) (Ziaaddini H.,et al, 2009). While in Indonesia, as the research performed by Tarin and Loebis in 2003 at polyclinic psychiatric Hospital Dr. Pringadi ,Terrain reported a prevalence of schizophrenic patients who smoke is 64.4% and there is also a lot more male schizophrenic patients who smoke (Tarin MG and Loebis B, 2003).

Some scientific evidence to say that smokers take up smoking in schizophrenic patients everyday more, smoke cigarettes more deeply and expects extract more nicotine than normal smokers (Kumari V and Postma P, 2005).

Schizophrenia and smoking have a relationship, such as nicotine dalammengurangi form of self-medication side effects associated with the use of non antipsikotik. Nikotin affect nicotine in the brain in accepting and educing persepsi to environmental stimuli especially noise and these factors lead to positive down simtom into schizophrenia such as hallucinations (Ziaaddini H.,et al, 2009).

In Indonesia said with heavy smokers with a man that spent cigarettes amounted to> 20 cigarettes per day, while light smokers spent cigarettes amounts to 1-10 cigarettes per day (Sitepoe M, 2000).

According to research by Zhang and his colleagues in 2013 in China, showed that the prevalence of heavy smokers is estimated at around 31% compared to light smokers, heavy smokers get more young age, and smoking at an earlier age. In heavy smokers a significant decrease in total PANSS score and negative symptoms than light smokers (Zhang XY,et al, 2014).

Research Williams and Ziedonis years 2004mengatakan perokokpada schizophrenic cenderungmenjadi heavy smokers (45% -70%) than smokers in the general population (30% -40%) and can have a high level of nicotine dependence (Zhang XY,et al, 2014).

Furthermore providers of care psychiatry dankesehatan mental itself does not really show seriousness to ban cigarette consumption in patients with schizophrenic where smoking is still used as a kind of gift, medical staff and nonmedical own smoking in the hospital environment, and do not routinely diagnose nicotine dependence (Baker AL, 2010). Based on the foregoing, and high rates of smoking prevalence in patients skizofreniklaki men, especially in heavy smokers, and this research has not been done in Indonesia researcher is interested to see the difference in scores PANSS positive and negative symptoms among light smokers and smokers heavier to schizophrenic male patients who came for treatment to outpatient BLUDs Installation RSJ Prof. Dr. M.Ildrem North Sumatra Province, which is ultimately expected to provide information to the clinician.

1.1. FORMULATION OF THE PROBLEM

Having regard to the background of the above problems can be formulated research problem as follows: Is there a difference score of the PANSS positive and negative symptoms among light smokers and heavy smokers in male schizophrenic patients?

1.2. HYPOTHESIS

There are differences in symptom score of the PANSS positive and negative among light smokers

and heavy smokers in patients with schizophrenic man who came for treatment to outpatient BLUDs Installation Mental Health Hospital Prof. Dr. M.Ildrem North Sumatra Province.

2. RESEARCH AIM

2.1. General purpose:

To determine differences in symptom score of the PANSS positive and negative among light smokers and heavy smokers in male schizophrenic patients.

2.2. Special purpose:

1. To determine the demographic characteristics of the study subjects.
2. To determine differences in PANSS total score between light smokers and heavy smokers in male schizophrenic patients
3. To know the difference score of the PANSS positive symptom among light smokers and heavy smokers in male schizophrenic patients.
4. To know negative symptoms PANSS score differences between light smokers and heavy smokers in male schizophrenic patients.

2.3 Benefits of research

a. Can be obtained a score of PANSS positive and negative symptoms among light smokers and heavy smokers in male schizophrenic patients.
b. By obtaining a score of PANSS symptom positive and negative in patients with schizophrenic that light smokers and heavy smokers, it can provide feedback to health workers in order to anticipate the high prevalence of smoking in patients with schizophrenic so that the dangers of smoking can be avoided and treating to be optimized to improve the quality of their lives.
c. The results of this study are expected to be proceeds to subsequent or similar studies or other studies that use this study as a reference material.

3. LITERATURE

1. Schizophrenia

Schizophrenia is a severe mental disorder and chronic with high prevalence (about 1% of the general population), usually begins before the age of 25 years, lasts throughout life, and the people of all social classes. Although schizophrenia is discussed as a single disease, schizophrenia may include a collection of disorders with heterogeneous aetiology (Sadock BJ and Sadock VA, 2007)

1.1. Definition.

Schizophrenia is a psychotic disorder that is generally characterized by distorted thinking and perception are fundamental and distinctive, and therefore affect the unnatural *(Inappropriate)* or blunt *(blunted).* A clear consciousness and intellectual capacity are usually maintained, although certain cognitive deficits may develop later. This disorder involves the most basic functions that give the normal person a sense of personality *(individuality),* uniqueness and self-direction *(self-direction).* Thoughts, feelings and actions of the most intimate / depth often feels known or divided flavors with others, and delusions-delusions can arise, which explains that the power of the natural and the supernatural is at work influence your thoughts and actions of people in ways that are often not included reasonable or ***bizarre*** (Ministry of Health,1993)

1.2. Epidemiology

Schizophrenia is a psychotic disorder that is often the case, namely the risk of about 1%, the most common early onset of the disease is 15-30 years of age, and is a chronic disease resulting in disruption to patients and their families, as well as a major impact on social and economy. The prevalence of schizophrenia among men and women alike, but differ in the onset of the first attack. Peak of the attacks in men between the ages of 10-25 years and 25-35 years in women. 90% of patients who received treatment of schizophrenia between the ages of 15-55 years. Attack under 10 years old or over 60 years old reported infrequently. Generally, women with schizophrenia have the results *(outcomes)* are better than men (Sadock BJ and Sadock VA, 2007).

1.3. Clinic Symptom

Some studies create a sub category of the symptoms of this disease into five parts, namely: positive symptoms, negative symptoms, cognitive

symptoms, aggressive symptoms and symptoms of depression / anxiety.

1. Positive symptoms

Delusions, hallucinations, distortions and exaggerated statements in language and communication, speech / irregular behavior, catatonic behavior, and agitation.

2. Negative symptoms

Effect blunt, emotional withdrawal, poor rapport, indifference, withdrawal from social life, annoyance abstract thinking, alogia, avolisi, anhedonia, attention deficit disorders.

3. Cognitive symptoms

Impaired thinking, inkoherensia, loose association, neologisms, information processing disorder.

4. Aggressive symptoms

Hostility, verbal humiliation, physical abuse, attack, injure themselves, damage the goods, *impulsive*, sexual acts.

5. Symptoms of depression / anxiety

Depressed mood, mood anxiety, guilt, tension, irritability anxiety.

4. Diagnosis

The diagnostic criteria for schizophrenia based PPDGJI-III are as follows: (Ministry of Health,1993).

Schizophrenia disorder based PPDGJI-III is generally characterized by distorted thinking and perception are fundamental and distinctive, and therefore affect the unnatural *(Inappropriate)* or blunt *(blunted).* A clear consciousness and intellectual ability is maintained, although certain cognitive deficits may develop later. Although there are no pathognomonic symptoms specific, in practice there is no benefit to divide the symptoms into groups that are often found together, for example:

(a) *"thought echo"*, *"thought insertion"* or *"withdrawal"* and *"thought broadcasting"*

(b) controlled Supposition *(delusion of control),* delusions were affected *(delusion of influence)* or *"passivity"*, which clearly refers to the movement of the body or limb movement, or thoughts, actions or feelings *(sensations),* specifically; *delusional* perception;

(c) The sound hallucinations constantly commenting on the behavior of the patient, or the patient discuss the matter among themselves, or other types of hallucinatory voices coming from one part of the body;

(d) Supposition-delusion settling other types according to their culture is considered unnatural and altogether impossible, such as the religious identity or politics, or the power and capabilities of the "Superman" (eg being able to control the weather, or communicate with aliens from another world);

(e) The hallucinations that persist in any modality, when accompanied either by delusions floating / floating or half form without content affective clear, or by the ideas of excessive *(over-valued ideas)* that persist, or if it happens every day during weeks or months continuously;

(f) The current thought is interrupted or experiencing inserts (interpolation) that result in incoherence or irrelevant speech, or neologisms;

(g) Conduct catatonic, such as noise-agitated state *(excitement),* a certain body posture *(posturing),* or serea flexibility, *negativism,* mutism, and stupor;

(h)Symptom-symptoms "negative" as the attitude is very time bodo (apathy), the stalled talks, and emotional responses become blunt or unnatural, usually resulting in withdrawal from social interaction and decreased social performance, but it should be clear that all things is not caused by depression or medication neuroleptika;

(i) A consistent and meaningful change in the overall quality of some aspects of individual behavior, manifest as loss of interest, aimless, lazy attitude, reticence *(self-absorbed attitude)* and social withdrawal.

Diagnostic guidelines

The normal requirements for diagnostic of schizophrenia is that there should be at least one symptom of the above is very clear (and usually two symptoms or if the symptoms were less sharp or vague) of symptoms that included one group of symptoms (a) to (d) above, or at least two symptoms of the group (e) to (h) should always be clearly during the period of one month or more (Ministry of Health,1993).

2. Smoke

The use of tobacco in the world began at least 600 years after AD and was introduced into the culture of Europe in the 16th century. Initially, most of the use of tobacco through pipes, *smokeless tobacco*, or cigars. Smoking became popular starting in the early 1900s with the invention of the cigarette maker. Tobacco use is growing dramatically in the first half of the 20th century (Kumari V and Postma P, 2005).

Smoking is a major health problem common populated. Smoking is an important cause of preventable against cardiovascular disease. Activity smoke synergistically with other cardiovascular risk factors in increasing the risk of myocardial infarction, sudden cardiac death, stroke, peripheral vascular disease and aortic aneurysm and the risk of lung disease. Possibility of current smoking in the general population is almost equally between men and women (18% versus 16%). Smoking tobacco is burned and then inhaled the smoke, using either cigarettes or pipes (Sitepoe M, 2000).

Tobacco is one of those plants that contain addictive nicotine, carcinogens and racunlainnya. Nikotin is some substance in tobacco that causes addiction. Tobacco products in its extensive use and commercial production is divided into three types of tobacco processing: (World Health Organization, 2007)

1. Rolled tobacco, smoky (such as bidis, cigars, cigarettes)
2. Pipe (including *waterpipes)*
3. Oral treatment for mastication and placed in the mouth (such as snuff, *snus*, *betel liquid)*

Overseas raw materials only tobacco cigarette smoking are referred to as white, while in Indonesia the raw materials are tobacco and clove cigarette called kretek, either filtered or unfiltered (Sitepoe M, 2000).

Smoker classification: (Sitepoe M,2000).
Smokers man is composed of:
a. light smokers (1-10 cigarettes per day)
b. moderate smokers (11-20 cigarettes per day)
c. heavy smokers (> 20 cigarettes per day)

2.1. Biological effects from smokers

Smoking stimulates dopaminergic activity in the brain by two different mechanisms. First, the center of the nicotinic cholinergic receptors are stimulated by nicotine, resulting in the release of dopamine and serotonin. Secondly, suck cigarettes downing activity of *Monoamine Oxidase* (MAO), thus further increasing the concentration of dopamine in the brain, and contributes to an antidepressant effect. Therefore, smoking increases the concentration of dopamine in brain with induce releasing and inhibit their destruction. *Neuroimaging* research has recently contributed further provides evidence of complex influence of smoking on dopaminergic function in the brain. A study *Positron Emission Tomography* (PET) showed increased dopamine release in the ventral striatum in response to smoking, and activation neurotransmisi D2 dopamine in the ventral basal ganglia. Sebuh is another study revealed the low *availability* of dorsal striatal receptors (D2 / D3) to the individual smoker and nicotine dependence. However, smokers lowering *dopamine transporter availability* in the striatum compared to non-smokers. A compensation *down-regulation* of the dopaminergic system, in response to a decrease in dopamine induced by smoking. In Japan, the male participants who had the Val / Val genotype had a significantly higher risk compared to other men with 158Met Val genotype COMT *polymorphism*, whereas in women it is not found to be related (Kumari V and Postma P, 2005).

2.2. Role of Nicotine Tobacco Cigarette In Dependence.

Smoking is a way of consuming nicotine is the most appropriate, but dangerous as this will maximize the opportunity for the state of nicotine dependence. Smoking will deliver large doses of nicotine into the circuit *"reward"* of the brain and also deliver a variety of carcinogens and other

toxins that can destroy cells in the liver, lungs and other body tissues (World Health Organization, 2007).

Until now known there are two subtypes of nicotinic receptors in the brain which is the main α4 β2 nicotinic which can be found on postsynaptic dopaminergic neurons also in postsynaptic interneurons *Gamma Amino Butyric-ERGIC* (GABA- *ERGIC)* in the *ventral tegmental area* (VTA), and α7 nicotinic which can be found in the presynaptic glutamate neurons, in theory of nicotin action on the VTA associated with addictive behavior, while the action of α7 nicotinic receptors nicotine prefrontal cortex associated with pro-cognitive activity and mental alertness is not an act of addiction. A4β2 nicotinic receptor is adapting to bring nicotine dose chronic and intermittent which can lead to addiction. At the beginning of this receptor are in a resting state then desensitization when the smoke so it can not react with the addition of nicotine, the length of desensitization is roughly all the time to spend with one cigarette (± 7 minutes), and after that it takes time to resensitilisation the receptor and time it takes approximately equal to the distance required by a smoker among cigarettes one by the next cigarette is about 45 minutes that it takes approximately 20 ciggaretts to the needs of nicotine for 16 hours and this by chance according to the physical form of cigarettes that we know the length of about 7 cm and 1 pack may consist of 20 cigarettes. If all the receptors have desentralization any time, will lead to increase the amount of receptor neurons *(upregulating).* This condition plays a role in *craving behavior* (World Health Organization, 2007).

3. Smoking in Schizophrenia

3.1. Smoking Biological Effects On Schizophrenia.

It has been argued that smoking in schizophrenic patients is to try to self-medicate, in terms of reducing extrapyramidal symptoms associated with antipsychotic treatment, and reduce the cognitive deficits associated with schizophrenia. Smoke induce the metabolism of many drugs, including antipsychotics, because of increased enzyme CYP 1A2 and CYP 3A4. Smoking also significantly increases the activity of CYP2E1, CYP 1A2 and CYP 2E1 which engages in the activation of several *procarcinogen.* Most schizophrenic patients who smoke cigarettes, generally occurs between nicotinic pharmacokinetic interactions with drugs antipsikotic. Therefore, *vulnerability* (vulnerability) to schizophrenia may be associated with susceptibility smoking begun. Smoky smoking seems to induce clinical and biological effects in schizophrenic patients. Schizophrenic patients who smoke have more *gray matter* in the superior temporal gyrus and the lateral prefrontal cortex, compared with patients who did not smoke. Smokers in schizophrenic patients reported downing density platelet *vesicular monoamine transporter* 2 (VMAT2) compared with schizophrenic patients were not smokers. Meanwhile into schizophrenic patients generally increases the density of platelet VMAT2, it is hypothesized that smoking induces *downregulation* VMAT2, to which compensates for increasing the concentration of dopamine induced by smoking (Kumari V and Postma P, 2005).

There is also some scientific evidence to report the hypothesis that there is a possibility of significant genetic differences among schizophrenic patients who smoke and those who do not smoke (Kumari V and Postma P, 2005).

Neurobiological and neurogenetic evidence for the link between alpha 7 nicotinic Acetylcholine Receptor and Schizophrenia

Sensory gating is measured by using the P50 *auditory-evoked response.* In schizophrenic patients are impaired sensory gating. P50 *auditory-evoked response* occurs 40-75 ms following the auditory stimulus. When the second auditory stimulus presented approaching 500 ms, P50 *auditory-evoked response* to *the* second stimulus is reduced, where there is an inhibitory process. This disorder has been replicated in several independent laboratories and is referred to as the first episode of psychosis. Failure is related to the inhibition of bad effection that, as measured by reduced performance on digit *vigilance test* and other tests attentional dysfunction (LF Martin and R. Freedman, 2007).

Evidence for the role of *the alpha 7 nicotinic acetylcholine receptors* in the *auditory gating* was originally established by using several animal models. *auditory-evoked response* of the hippocampal CA3 pyramidal neurons in rats, the potential field of P20-N40, in parallel with the properties of P50 *auditory-evoked response* of man. *alpha 7 nicotinic receptor antagonist-bungarotoxin* interfere P20-N40 *gating*, while nicotinic receptor

channel blocker and a muscarinic antagonist scopolamine *mecamylamine* has no effect on P20-N40 *gating.* DBA / 2 mouse strain is genetically lower levels of *alpha 7 nicotinic receptors* in the CA3 region and disrupt *auditory gating.* Finally, nicotine restores *auditory gating* in fimbria-fornix lesions of mice with impaired *auditory gating* for the loss of cholinergic innervation to the hippocampus (LF Martin and R. Freedman, 2007).

Alpha 7 nicotinic receptors mediate this inhibition to increase the release of *gamma-aminobutyric acid* (GABA) from GABAergic interneurons through postsynaptic calcium dependent mechanisms. The effects of nitric oxide extend through the *second messenger system.* This is accomplished by glutamate. This effect is thought to prevent hippocampal neurons from responding to the interaction between inhibitory and excitatory (glutamate) neurons that also play a role in shaping patterns of efficiency and function of neurons in *the hippocampus* and cortex (LF Martin and R. Freedman, 2007).

A series of parallel studies in humans are also involved in *the alpha 7 nicotinic acetylcholine receptor* in the physiology of *auditory* P50 *gating.* Nicotine gum and physostigmine was found to increase the *gating* in patients schizophrenik families who also have impaired *auditory gating*. The study of the kin group is very useful because it can avoid messing up additional pathological effects of schizophrenia, chronic neuroleptic treatment effects as well as effects of chronic smoking on *nicotinic receptor levels* (LF Martin and R. Freedman, 2007).

3.2. Nikotin Dependent in Schizophrenia

In a population-based prevalence studies concluded that individuals with mental illness have a tendency to smoke 2-3 times bigger than other individuals. In research into clinical practice and epidemiology of mental health in a brief report on a patient with a mental disorder who are hospitalized in a unit psychiatric care assessing the relationship in a changing smoking habits, smoking habits found an increase of 56% before being admitted to 70% after hospitalization, and there are 17% who experienced a decrease in smoking habits and about 63% smoked more than before. The average number of smoking tobacco in a day increased by 5 to 13 times more. The main reason for smoking is boredom, stress and a desire to be able to socialize (Ker S and Owens D, 2008)

The high rate of smoking among schizophrenic patients reflects the effect that smoking has become a habit, and the inability to control impulses. In the past, cigarettes have been used in hospitals as a kind of gift. Patients usually *hypohedonic* psychiatric disorders that are less responsive to the factors driving and smoking is one of the few best motivating factor for pasien. Eventhough management has changed and the recent trend of this leads to a smoke-free hospital, but high unemployment, decrease in social activity and boredom in general contributed to the habit of smoking schizophrenic patients (Ker S and Owens D, 2008).

4. *Positive and Negative Syndrome Scale* (PANSS)

PANSS was developed in the late 1980s that aimed to assess the clinical symptoms of schizophrenia. This scale is adapted from previous psychopathology scale, including *the Brief Psychiatric Rating Scale* (BPRS). PANSS contains 30 items in three subscales, 7 items covering symptoms positive (eg, delusions and hallucinations), 7 items covering symptoms and negative (eg, *social withdrawal*, affect flat, lack of motivation), and 16 grains include psychopathology general (eg, anxiety and. Depression), PANSS was conceived as an operational instrument which shows a balanced picture of positive and negative symptoms, as well as *mood* and symptoms anxiety. Scoring can be completed within 30-40 minutes. Reabilitas and validity was excellent. Each point in the score of a Likert scale with ratings from 1 to 7. Moreover, the subscales positive and negative into each ranging from 7-49, and general psychopathology sub from 16-112 (Gottlieb JD, et al 2010).

In Indonesia have tested the validity and reliability of PANSS. Do translation into Indonesian and the translation into English. The translation into Indonesian PANSS accordance with PANSS original in English (Gottlieb JD, et al 2010).

5. Theoretical Framework

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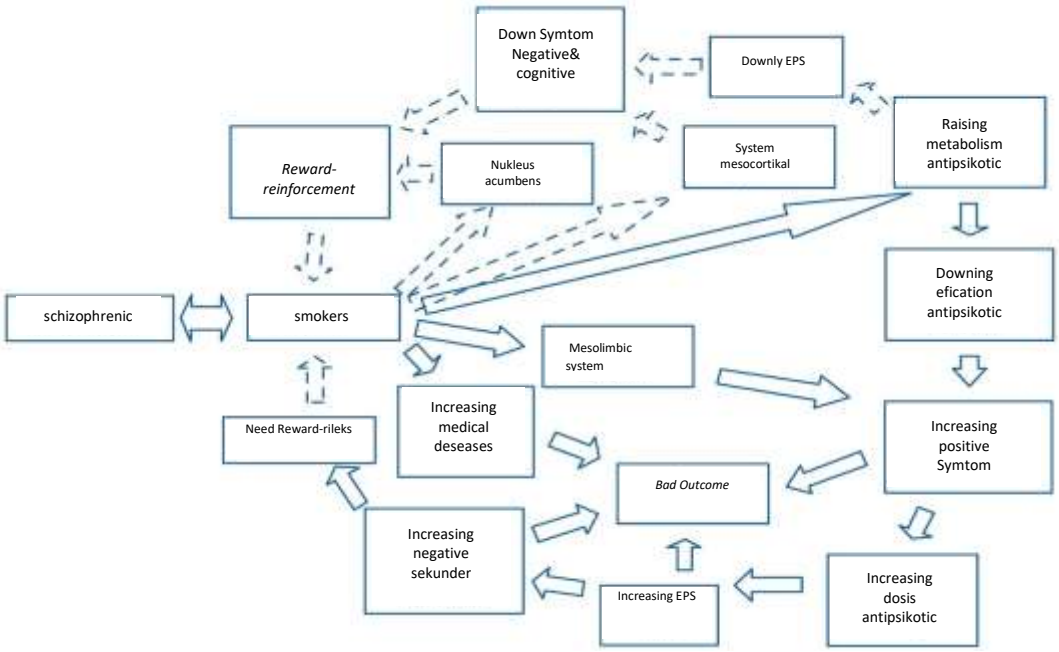
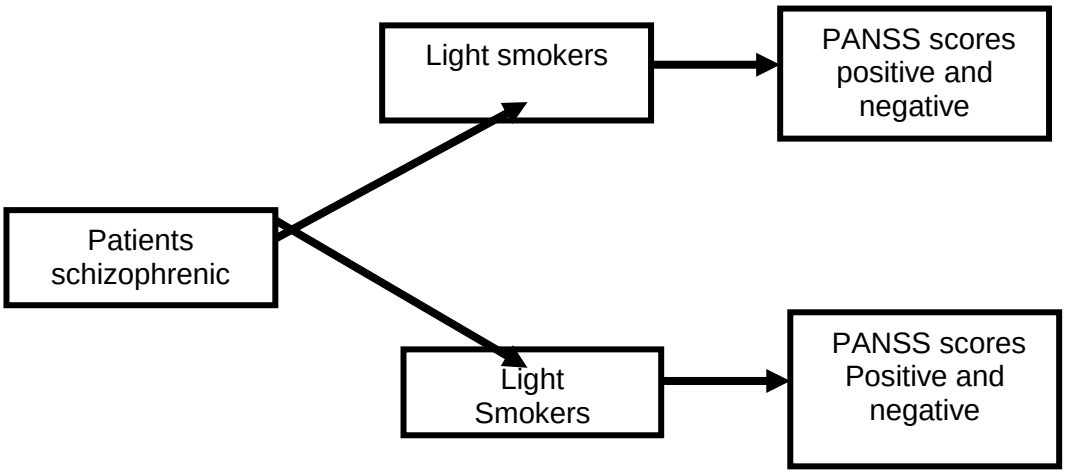


6. Framework Research



RESEARCH METHODS

This research is a comparative analytical study of numerical unpaired with *cross-sectional*

1.**Research desain**

study, *namely:* (LF Martin and R. Freedman, 2007).

Group I: The group of schizophrenic patients were light smokers.
Group II: group of schizophrenic patients who are heavy smokers.

2.Placed and Time

Placed research : Installation outpatient BLUDs Mental Health Hospital Prof.Dr. M.Ildrem Province North Sumatra.
Research time : September 2015 - October 2015

3.Population and Sample

1.The target population: male schizophrenic patients were light smokers and heavy smokers

2.Population affordable: schizophrenic patients were light smokers and heavy smokers who visiting Outpatient Installation BLUDs Mental Health Hospital Prof. Dr. Prop M.Ildrem North Sumatera Province in the period September 2015 - October 2015.

3.The research sample: schizophrenic patients were light smokers and heavy smokers who visiting Outpatient Installation BLUDs Mental Health Hospital Prof. Dr. M.Ildrem North Sumatera Province the period September 2015 - October 2015 met the inclusion criteria.

4. How sampling: *non-probability sampling consecutive sampling* type, ie all subject come and meet the selection criteria for inclusion in this study until the number of required subject met.

4.Sample Calculation

5.The sample size was measured by using the formula: (Dahlan MS,2010)

$$n_1 = n_2 = 2\left(\frac{(z\alpha + z\beta)S}{x_1 - x_2}\right)^2$$

Description (Dahlan MS,2010),
Z = Raw deviat alpha = 1.64 (α = 5%) hypothesis one direction
Z = Deviat raw beta = 1.28 (β = 10%)
S = standard deviations combined
$X_1 - X_2$ = the minimum difference is considered significant mean = 10

$$(S_g)^2 = \frac{\left(s_1^2(n_1-1)+s_2^2(n_2-1)\right)}{n_1+n_2-2}$$

s_g = = Standard deviations combined = 12.85
n_1 = Number of sample group 1 (light smokers) in previous studies = 380 (Zhang XY,et al,2014).

n_2 = Large sample group 2 (heavy smokers) in previous studies = 170 (Zhang XY,et al,2014).

s_1 = Standard deviations group 1 (light smokers) in previous studies = 12.5 (Zhang XY,et al,2014).

s_2 = Standard deviations group 2 (heavy smokers) in previous studies = 13.6 (Zhang XY,et al,2014).
$(Sg)^2$ = variance combined = 165.104
Of the formula then obtained as follows: (Dahlan MS, 2010)

$$=> (S_g)^2 = \frac{\left(s_1^2(n_1-1)+s_2^2(n_2-1)\right)}{n_1+n_2-2}$$
$$= \frac{\left(12{,}5^2(380-1)+13{,}6^2(170-1)\right)}{380+170-2}$$
$$= \frac{(156{,}25\ x\ (379)+184{,}96\ x\ (169))}{548}$$
$$= \frac{90476{,}99}{548} = 165{,}104$$
$(Sg)^2 = 165{,}104$
Sg $= \sqrt{165{,}104}$
= 12,84928 = 12,85

For total sample gaining by formulation:

$$n_1 = n_2 = 2\left(\frac{(z\alpha + z\beta)S}{x_1 - x_2}\right)^2$$

$$n_1 = n_2 = 2\left(\frac{(1{,}64 + 1{,}28) + 12{,}85}{10}\right)^2$$

$$= 2\,(3{,}752)^2$$

$$= 28{,}15 = 30$$

Thus, the sample size for each groups as many as 30 people. Then all the samples in this study were 60 people.

Inclusion and Exclusion Criteria
Criteria for inclusion:

1. Male schizophrenic patients diagnosed according to PPDGJ III.
2. Smoking
3. It has been getting antipsychotic treatment during the first week of using haloperidol
4. Aged between 15-55 years.
5. Understand Indonesian.
6. Willing as respondents and interviewees

Exclusion criteria:

1. Suffering from severe medical illness.
2. Experinced use are non alcohol and other substances except tobacco.

6. Informed consent / *Inform Concent*

All the study subjects will be asked for its approval by first briefed prior to be included as a research subject.

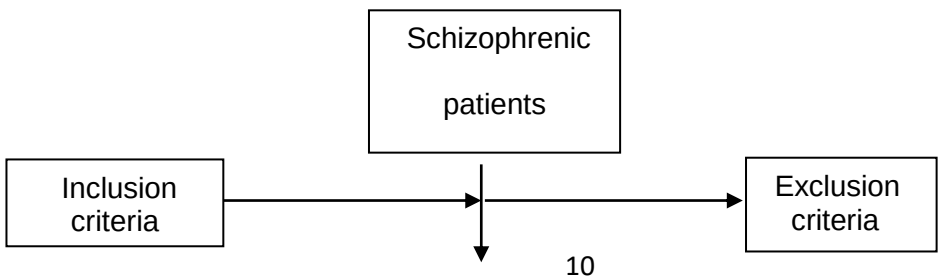
7. Research ethics

This study has received approval from the Research Ethics Committee at the Faculty of Medicine, University of North Sumatra.

8. Ways of working

- This study was conducted after obtaining an agreement of Research Ethics Committee of the Faculty of Medicine University of North Sumatra.
- All patients were male schizophrenic who smoke and meet the inclusion and exclusion criteria will vided an explanation and asked to sign a consent after receiving detailed and clear explanation of the researchers.
- Researchers conducted an interview to patients and families to ascertain the truth about the patient's smoking history. Then divide into groups of schizophrenic patients light smokers and heavy smokers.
- Researchers will assess the patient PANSS score schizophrenic male in the group of light smokers and heavy cigarette per group.
- Then in the two groups were assessed each score of the PANSS total, positive symptoms and negative symptoms.
- After all the data collected will be carried out data processing and analysis with presented in tabular form.

9. Operational framework



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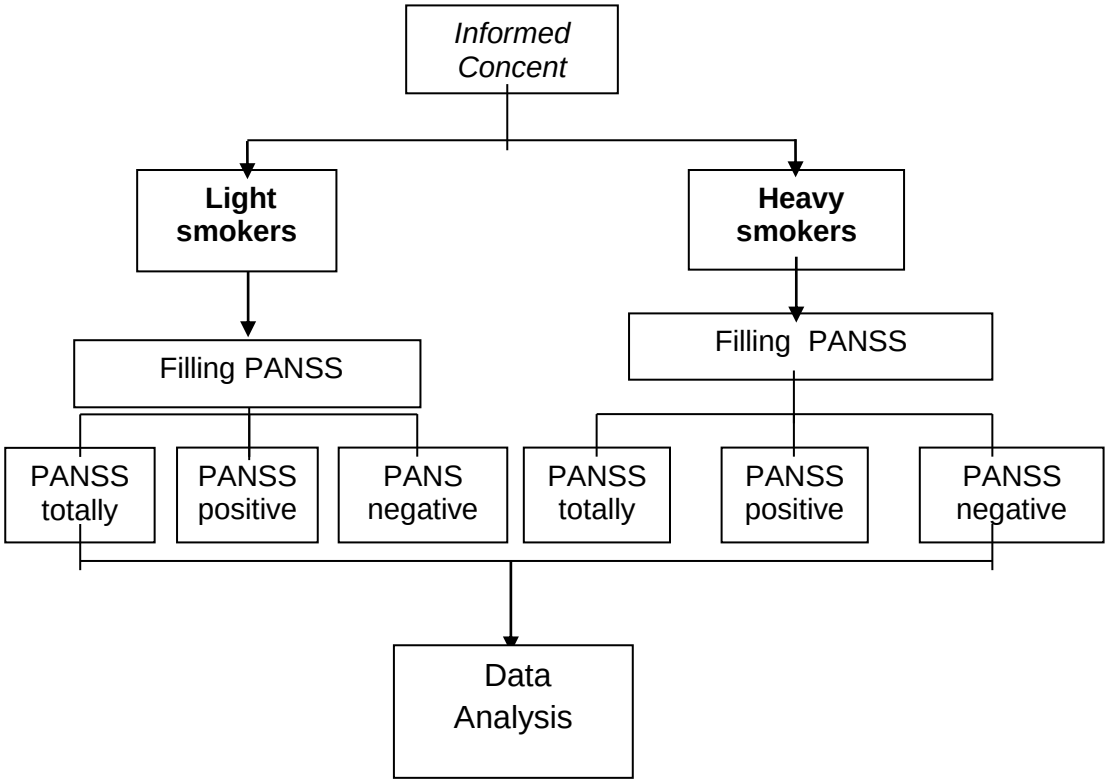

10. Identification of variables

1. The independent variable *(independent variable).* In this study is the schizophrenic patients were smokers
2. The dependent variable *(dependent variable).* In this study, the dependent variable is the score of the PANSS

11. Operational definition

No.	Variable	Operational definition	Measurement and How to Measure	Measure results	Scale
1	Male schizophrenic patients	Patients who upheld diagnosis based on PPDGJ-III-sex male	Structured interviews with the Mini-ICD X	Schizophrenic male	Nominal
2	Age	The length of time living or existing since birth	Interview	• 15-25 years • 26-35 years • 36-45 years • 46-55 years	Ordinal
3	Level of education	Qualification normally consists of formal primary education, secondary education and higher education	Interview	• Basic education • Middle education • Higher education	Ordinal
4	Marital status	Distinguished still in the bond of marriage	Interview	• Married	Nominal

		(married), and not in matrimony (/ widowers, or not married)		• not married	
5	Work	Activities that make money.	Interview	- Work - Jobless	Nominal
6	Smoker	Someone who smoked more than one cigarette per day and had been smoking at least 1 year. Light smokers: smoked 1-10 sticks / day. Heavy smokers: smoke> 20 cigarettes / day (Sitepoe M,2000)	Interview Autoanamnesis	-Light smokers: 1-10 cigarettes per day -Heavy smokers :> 20 cigarettes per day	Ordinal
7	*Positive and Negative SyndromeScale*	To measure the severity symptom schizophenic	*rating scale*	PANSS total score PANSS positive score PANSS negative score	Numeric (ratio)
8.	Age started smoking	Age at first once smoke	Interview	• 10-15 years • 16-20 years • 21-25 years • 26-30 years • 31-35 years	ordinal
9.	Age of on set off schizophrenia	The current age of patients indicated to suffer from a mental disorder, characterized by family businesses seeking help	Interview Alloanamnesis	• 15-20 years • 21-25 years • 26-30 years • 31-35 years	ordinal

12. Analysis and Presentation of Data

Once the data is collected, the data processing performed by stages as follows: (1) Editing, is a step to examine the completeness of the data obtained through interviews; (2) Coding, is an attempt to classify the answer is no according to its kind; (3) Tabulation, is an activity of the research data into a table based on the variables studied; (4) Analysis of data, research data were analyzed using a statistical test that is uji- *t independent* facility SPSS *for windows* (if eligible) and previous test data normality. (Dahlan MS, 2010).

RESEARCH RESULTS

A total of 60 samples of patients with schizophrenic man who came for treatment to outpatient BLUDs Installing Mental Health Hospital Prof. Dr. M.Ildrem Prop. North Sumatra were included in this study. Election sample

by *consecutive sampling* in the period September 2015-October 2015 that met the inclusion criteria.

The subjects were divided into two groups with the same amount based on the number of cigarettes consumed are heavy smokers and light smokers as many as 30 people each.

Table 4.1 describes the demographic characteristics of each group. The mean age of the

group was 29.17 years of heavy smokers and light smokers in the group was 42.10 years. Education last in the group of heavy smokers is the most junior of 11 subjects (36.7%), while the high school group light smokers are as many as 17 people (567%). Generally, the group of heavy smokers do not work as many as 24 people (80%) and in the group of most of the light smokers had worked as many as 22 people (73.3%). A total of 83.3% of the subjects in the group of heavy smokers unmarried and as much as 63.3% of the subjects light smokers are also unmarried.

On the subject of heavy smokers, mean age started smoking was 14.73 years, while the mean age of the group light smokers started smoking was 24.57 years. The mean age of onset in the group of heavy smokers was 21.93 years and 33.43 years light smokers. The mean consumption of cigarettes per day in heavy smokers is 27.07 rods of the control group was 5.3 trunk light smokers.

Table 4.1 Distribution of the sample based on demographic characteristics

Demographic characteristics	Heavy smokers (N = 30)	Light smokers (N = 30)
Age, years		
Average	29.17	42.10
Standard Deviation (SB)	± 8,73	± 7.98
Education, n (%)		
Elementary school	9 (30)	6 (20)
Junior High school	11 (36.7)	6 (20)
Senior High School	10 (33.3)	17 (56.7)
College	0	1 (3.3)
Jobs, n (%)		
Work	6 (20)	22 (73.3)
Jobless	24 (80)	8 (26.7)
Marital status, n (%)		
Married	5 (16.7)	11 (36.7)
Single	25 (83.3)	19 (63.3)
Age Beginning Smoking, year		
Average	14.73	24.57
Standard Deviation (SB)	± 1.17	± 2,86
The onset age, years		
Average	21.93	33.43
Standard Deviation (SB)	± 3.28	± 5.37
The number of cigarettes consumed, cigarettes / day		
Average	27.07	5.30
Standard Deviation (SB)	± 4.81	± 2.04

Table 4.2 Differences between the PANSS scores Heavy Smokers and Light Smokers

	Heavy smokers (N = 30)	Light smokers (N = 30)	p
PANSS score, Mean (SB)	73.94 (± 6.66)	82.9 (± 12.79)	0,008

Mean PANSS Total Score at the group of heavy smokers was 73.94 and in the group of light smokers was 82.9. By using the Mann Whitney test found no significant difference in total PANSS scores between the group of heavy smokers and light smokers (p = 0.008).

Table 4.3 Total Score Positive Difference between Smokers and Smokers Light Weight

	Heavy smokers (N = 30)	Light smokers (N = 30)	p
Total Score Positive, Mean (SB)	23.10 (± 3.50)	24.70 (± 4.05)	.250

The mean number of positive scores on the group of heavy smokers was 23.10 and in the group of light smokers was 24.7. By using the Mann Whitney test found no significant difference in the number of positive scores between groups of heavy smokers and light smokers (p = 0.250).

Table 4.4 Total Score Negative difference between Smokers and Smokers Light Weight

	Heavy smokers (N = 30)	Light smokers (N = 30)	p
Total Score Negative, Mean (SB)	19.07 (± 3.72)	24.03 (± 6.17)	0.0001

The mean number of negative scores in the group of heavy smokers was 19.07 and in the group of light smokers was 24.03. By using the Mann Whitney test found a significant difference between the number of negative scores group of heavy smokers and light smokers (p = 0.0001).

DISCUSSION

The study "comparison score of the PANSS positive and negative symptoms among light smokers and heavy smokers in male schizophrenic patients" is an analytic study with approach *cross sectional* The aim of this study was to determine differences in symptom score of the PANSS positive and negative among light smokers and heavy smokers in male patients with schizophrenic special.The aim of this study was to determine the demographic characteristics of the study subjects, to determine differences in PANSS total score between light smokers and heavy smokers in male schizophrenic patients, to know the difference score of PANSS positive symptom among light smokers and smokers weight in male schizophrenic patients and to know the score of the PANSS negative symptom among light smokers and heavy smokers in male schizophrenic patients.

Based on the demographic characteristics of the study sample, most are found in the group mean age was 29.17 years of heavy smokers and light smokers in the group was 42.10 years. This is according to research Zhang and his colleagues in 2013 in which more common in heavy smokers younger than light smokers. This situation can be attributed to *vulnerability* (vulnerability) that schizophrenia may be associated with susceptibility commencement of smoke. (Sadock BJ and Sadock VA, 2007).Education last in the group of heavy smokers is the most junior of 11 subjects (36.7%), while the high school group light smokers are as many as 17 people (567%). Smoking is more common in most people who have less income and education, especially prevalent in psychiatric

patients. Generally, the group of heavy smokers do not work as many as 24 subjects (80%) and in the group of most of the light smokers had worked as many as 22 subjects (73.3) .Sebanyak 83.3% of the subjects in the group of heavy smokers was unmarried and as much as 63.3 % subject light smokers are also unmarried.

On the subject of heavy smokers, mean age started smoking was 14.73 years, while in the group of light smokers begin no age 24.57 years. The results are consistent with research conducted by Zhang et al which locate in heavy smokers ages younger than light smokers (Zhang XY,et al,2014).

Most patients with schizophrenia reported started smoking in their teens and report before the onset of symptoms. The mean age of onset in the group of heavy smokers was 21.93 years and 33.43 years light smokers. The mean consumption of cigarettes per day in heavy smokers is 27.07 rods of the control group was 5.3 trunk light smokers.

In this study found the mean PANSS total score in the group of heavy smokers was 73.94 and in the group of light smokers was 82.9 and found a significant difference between the groups in total PANSS antaraskor heavy smokers and light smokers ($p = 0.008$) in accordance with the .Studi studies conducted by Zhang et al, in China, in 2014, which showed that heavy smokers had a PANSS score lower than light smokers (Zhang XY,et al,2014).

Schizophrenia and smoking have a relationship, such as the nicotine form of self-medication in reducing the side effects associated with the use of non antipsikotik.Nikotin affect nicotine in the brain in recepting to environmental stimuli especially noise and these factors lead to positive down simtom into schizophrenia such as hallucinations (Ziaaddini H.,et al, 2009).

In this study found the mean number of positive scores in the group of heavy smokers was 23.10 and in the group of light smokers was 24.7. By using the Mann Whitney test found no significant difference in the number of positive scores between groups of heavy smokers and light smokers ($p = 0.250$) this .Studi according to a study conducted by Zhang et al, in China, in 2014, which showed that found no significant difference between heavy smokers with light smokers by positive symptoms ($p = 0.10$) (Zhang XY,et al,2014).

However, the positive symptom believed to be associated with hyperactivity of subcortical dopamine in schizophrenia, and found no effect of smoking on positive symptoms (Zhang XY,et al 2012).

In this study found the average amount of negative scores in the group of heavy smokers was 19.07 and in the group of light smokers was 24.03. By using the Mann Whitney test found a significant difference between the number of negative scores group of heavy smokers and light smokers ($p = 0.001$) this .Studi according to a study conducted by Zhang et al, in China, in 2014, which indicates that the met significant differences between heavy smokers with light smokers by negative symptoms ($p = 0.001$) (Zhang XY,et al,2014).

Receptors have been identified on the nicotinic acetylcholine neurons in the mesolimbic dopaminergic nigrostiatal and mice, in which nicotine acute dopamine release in the striatum and *nucleus accumbens* and chronic nicotine release in the dorsal striatum dopamine catabolism. Negative symptoms in schizophrenic patients associated with dopaminergic hipo-aktivity, so by smoke with dopamine in *the nucleus accumbens* (Zhang XY,et al 2012).

Limitations of this study are in the study did not assess the drug dose and old schizophrenic patient pain that can affect the assessment of the PANSS score schizophrenic. But patients in this study showed that heavy smokers can improve negative symptoms and decrease the value of PANSS scores in schizophrenic patients, so can be input to the clinician.

CONCLUSIONS

From this research gaining that male schizophrenic patients who are heavy smokers start smoking at an earlier age than light smokers. Encountered heavy smokers aged younger than light smokers. In heavy smokers significantly different for total PANSS score with an average value of 73.94 (± 6.66) than light smokers with an average value of 82.9 (± 12.79). In heavy smokers significantly different to score PANSS negative symptoms with an average value of 19.07 (± 3.72) than light smokers with an average value of 24.03 (± 6.17). As for the score of the PANSS positive symptoms no significant difference between the group of heavy smokers and light smokers (p = 0.250).

2. SUGGESTION

Further research needs to be done for the next writer to examine other factors associated with positive and negative symptoms in schizophrenic patients using antipsychotic haloperidol or other antipsychotics.

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