FACULTAD DE MEDICINA

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TRABAJO DE FIN DE MÁSTER

ESTUDIO DE ASOCIACIÓN DEL DÉFICIT COGNITIVO Y LA FUNCIÓN RESPIRATORIA EN PACIENTES CON PSICOSIS

ASSOCIATION STUDY OF COGNITIVE DEFICIT AND RESPIRATORY FUNCTION IN PATIENTS WITH PSYCHOSIS

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DECLARACIÓN DE NO PLAGIO

D. Adrián Isla Tirado, con NIF 72353341X, estudiante del Máster Interuniversitario de Iniciación a la Investigación en Salud Mental, curso 2020/2021, como autor de este documento académico titulado: Association Study of Cognitive Deficit and Respiratory Function in Patients with Psychosis (Estudio de Asociación del Déficit Cognitivo y la Función Respiratoria en Pacientes con Psicosis) y presentado como Trabajo Fin de Máster, para la obtención del título correspondiente, cuyo tutor es Javier Vázquez Bourgon.

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Adrián Isla

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ABSTRACT

Introduction:

Psychotic disorders are associated with a higher prevalence of risky behaviours such as tobacco or cannabis use. These patients have poorer levels of respiratory and cognitive function than healthy patients.

Objective:

Patients with impaired cognitive function will present higher levels of respiratory deficit than patients with psychosis without cognitive complaint.

Methodology:

The present study was carried out as part of a longitudinal study in first episodes of non-affective psychosis (PAFIP), at the Marqués de Valdecilla University Hospital (HUMV), in Cantabria. 203 subjects were evaluated (128 patients with psychosis and 75 control subjects). The study included clinical, physical and sociodemographic variables, a cognitive and respiratory evaluation and an evaluation of quality of life.

Results:

Subjects with cognitive deficit present a lower maximum capacity for exhaled air volume (FVC), a greater risk of presenting low DCLO (diffusing capacity for carbon monoxide), some differences in the dyspnea subscales, and worse quality of life results. Patients with cognitive deficit use to present a greater rate of tobacco and cannabis use.

Conclusions:

Despite methodological limitations, such as the small sample size or the low presence of COPD in the patients, some conclusions were drawn. Subjects with cognitive deficit present a poorer respiratory health than those without cognitive deficit. The consumption of tobacco and cannabis are not entirely significant in this study.

Key Words:

Psychosis, Respiratory Function, COPD, Cognitive Deficit, Disease

INDEX

TABLE AND FIGURE INDEX

ANNEX INDEX

1. INTRODUCTION

Psychotic disorders are serious mental disorders characterized by a loss of contact with reality. Psychosis is a very important syndrome from the point of view of neurological and psychiatric practice [1].

People with psychotic disorders are more vulnerable to severe cognitive changes, such as delusions, delusions, hallucinations or bizarre behaviors [2].

The main neuropsychiatric pathology associated with psychosis is schizophrenia [3]. Schizophrenia, characterized by presenting distortions of perception, thought and emotions, is included within the so-called primary psychotic disorders. It has a prevalence of 1% in the population, which shows its importance and its need to be addressed [3].

The symptoms of this neuropsychiatric pathology can be classified into positive symptoms, such as delusions and hallucinations, in negative symptoms, such as anhedonia, poor speech, flattened affect and lack of sociability, in disorganized symptoms, such as thought disorders and strange behaviors, or into cognitive deficits, such as deficits in attention, processing speed, verbal memory, working memory or problem solving [4].

At the ethological level, its specific cause is unknown. Schizophrenia has a biological basis, evidenced by alterations in brain structure, neurochemical changes and, recently demonstrated, genetic risk factors (while the risk in the general population is around 1%, for parents, siblings and children it rises to 6, 10 and 13%, respectively) [4], [6]. Dopamine and glutamate, mainly, seem to be involved in the pathophysiology of psychotic symptoms [7]. In patients with schizophrenia, there is hypoactivity in the mesocortical dopaminergic pathway, which would be associated with cortical

glutamatergic hypoactivity; both would explain the negative and cognitive symptoms of the disease. In contrast, hyperactivity in the mesolimbic dopaminergic pathway seems to be responsible for the positive symptoms [6].

It is noteworthy that the idea of a psychosocial basis also takes hold, since environmental stressors can trigger the appearance or relapse of psychotic symptoms [5].

Schizophrenia appears fundamentally in the stage of transition between youth and adulthood, eroding with a turning point and vulnerability of the person, since it is in this stage where greater risk behaviors are assumed. The spectrum of schizophrenia shows a variable course and reveals interpersonal and intrapersonal differences in terms of their expressions and response to treatment [8].

At a functional level, the symptoms of schizophrenia impair the ability of patients to perform complex cognitive and motor functions, generating in them a clear interference with their social relationships and with their quality of life [4].

The best predictors for schizophrenia lie in good premorbid function, a late-onset disease, no family history, minimal cognitive impairment, few negative symptoms, and little time without treatment [9].

Schizophrenia can also present comorbidity with other mental disorders. It is estimated that around 80% of people with schizophrenia will have 1 or more episodes of major depression at some point in their life. Patients with severe obsessive-compulsive symptoms have a worse prognosis than patients with symptoms of a borderline personality disorder.

At the therapeutic level, currently, biological therapies, focused on the control of the positive symptoms of the disease and the containment of psychotic episodes, are mainly

used [10]. The use of antipsychotics, as will be seen later, does not ensure an integral functional preservation of the patient. These antipsychotics act primarily on the dopaminergic system, which, as seen previously, has an important influence on the appearance of schizophrenia symptoms. Psychosocial treatments complement pharmacological therapy [7], and favor achieving correct therapeutic adherence.

1.1) Stressors in Psychosis

Stressors refer to events or environmental conditions that can trigger an anxiety response in the individual, contributing to the proliferation of the psychotic disorder. These factors are of vital importance, since they are the ones that can induce epigenetic changes, i.e., they are those capable of altering the patient's genetic transcription [5].

The stressors in psychosis can be of a social nature (such as, for example, a patient who becomes unemployed and falls into a situation of vulnerability) or of a pharmacological nature (such as, for example, patients who usually abuse substances) [5].

Pelayo-Terán, Pérez-Iglesias et al (2008) present sex (higher prevalence in men), age (higher prevalence in young people aged 15 to 25 years), employment status (lower employment status, higher prevalence), marital status (higher prevalence in singles), educational level (higher prevalence at a lower educational level), urban environment (higher prevalence in urban settings) and cannabis use (higher prevalence in cannabis users) as risk factors for suffering from a first episode of non-affective psychosis. Among all these variables, the one that seems to have the greatest correlation with psychotic symptoms is that of cannabis use [11].

Patients with psychotic disorders show a higher level of adherence to tobacco and cannabis [12]. At the neurobiological level, this can be supported by the existence of a

deficit in the cholinergic system, both nicotinic and muscarinic in patients with psychosis [8].

However, despite this apparent need to cover a deficit, which lowers the perception of fear of the patient with psychosis, the chronic effects of cannabis use prevail. Among the main effects of this regular consumption are the development of mood disorders, exacerbation of psychotic disorders in vulnerable people, withdrawal syndrome, neurocognitive disorders and cardiovascular and respiratory diseases, among others [13].

1.2) Cognitive Deficit in Psychosis

The ability to think and reason is called cognition. Included in cognition is the ability to receive, remember, understand, organize, and use information gathered by the senses. Therefore, cognitive aspects include memory, attention, perception, action, and the ability to solve problems [14].

Cognitive processes in neuropsychiatric disorders continue to be one of the main avenues of research in mental health.

Cognitive deficit represents a good opportunity to assess the dimensional characteristics of mental illness, since cognitive impairment is apparently present in people with different mental disorders that share the characteristic of psychosis [15]. Cognitive dysfunction is a central feature of diseases that include psychotic symptoms.

Cognitive impairment in primary psychotic disorders is ubiquitous, with approximately 80% of patients experiencing clinically significant impairment (i.e., at least one standard deviation below the population) [16].

At a historical level, from the definition of schizophrenia as dementia praecox [17], cognitive deficits have been identified in individuals in chronic states of the disease. In fact, it appears that the functional impairment of psychosis is more associated with cognitive impairment than with the severity of psychotic symptoms [18].

Several longitudinal studies have shown how patients with psychosis present a greater cognitive impairment, presenting an even greater predisposition to the development of dementias. This cognitive deficit is extrapolated to variables such as verbal fluency, memory or social cognition [19].

Comprehensive meta-analytic reviews, comparing the cognitive performance of people with schizophrenia with that of healthy adults, show moderate effects on tests that assess memory and processing speed, and slightly smaller effects for measures of language and vocabulary and spatial reasoning [20], [21].

At present, since neurocognitive deterioration is considered a well-established characteristic in patients with a first episode of psychosis (PEP), it has begun to be studied in greater depth. A true reflection of this research effort may be the neurotoxicity hypothesis of psychosis, which suggests that untreated psychosis is associated with the loss of acquired cognitive abilities [22].

More severe cognitive impairments are associated with an earlier onset of schizophrenia (i.e., with an onset before age 19), particularly for general intellectual functioning, processing speed, memory, and executive functions [23].

As the psychotic symptoms appear earlier, it is possible that the patient has fewer resources to be able to control his own impulses. The early onset of psychosis is associated with higher levels of hostility and lower perceptual abilities, the result of a lower level of neurodevelopment.

Therapeutic interventions aimed at improving perception could indirectly reduce hostility and obtain better impulse control for psychotic patients [24].

Relationship of tobacco and cannabis with cognitive function

Nicotine, on the other hand, by virtue of its short-term actions on the cholinergic system, has positive effects on certain cognitive domains, including working memory and executive function, and may, under certain conditions, be neuroprotective [25].

However, continued exposure to smoke is associated with an increased risk of negative preclinical and cognitive outcomes in younger people and older adults. Possible mechanisms for the harmful effects of smoke include oxidative stress, inflammation, and atherosclerotic processes [25].

Recent studies implicate medicinal nicotine as potentially harmful, both for neurodevelopment in children and for catalysing the processes that underlie neuropathology in Alzheimer's disease [25].

Cannabis use, which has been correlated in several studies with the development of the course of psychosis, can also produce cognitive changes [25].

Cognitive changes associated with cannabis use include recent memory impairment, difficulty concentrating, decreased attention, and motor incoordination [26]. Difficulty in carrying out complex mental processes, a decrease in judgment, sensory distortion (especially if consumed orally or intravenously) and impaired motor activity appear. Deepening the effects on memory, the acute administration of cannabis or THC (tetrahydrocannabinol, the main psychoactive component of cannabis) worsens the immediate and delayed retrieval of the information provided after consumption, especially increasing intrusion errors. Cannabinoids worsen all stages of memory, including encoding, consolidation, and retrieval [27].

During acute cannabis intoxication, increased brain activity has been observed in frontal, limbic (anterior cingulate, insula, hippocampus) and cerebellum areas.

These changes can occur in two situations: after its acute consumption, as an alteration related to the high concentrations of cannabinoids reached in the central nervous system, and after its chronic use, as a reflection of the continued exposure of the nervous system to cannabinoids. While the acute cognitive effects have been shown to be reversible, there is some controversy as to whether the chronic effects recover when use is stopped. Recent data suggest that chronic cognitive impairment also recovers after stopping cannabis use [14].

Actually, antipsychotic drugs are those used for the containment of psychotic symptoms. However, despite reducing some of the obvious symptoms of the disease, they do not appear to improve cognitive decline. Contrary to what might be expected, recent findings suggested that antipsychotic medications may contribute, in the long term, to the severity of cognitive decline [28].

The cognitive system in psychotic disorders seems to be able to keep connection with other systems, as, for example, is the case of the respiratory system.

1.3) Respiratory deficit in Psychosis

Recent cross-sectional studies have shown greater respiratory deficits in patients with psychotic disorders than in the general population. One of the great hypotheses related in this regard is that tobacco and cannabis use have a higher prevalence in patients with psychosis than in the general population.

Chronic obstructive pulmonary disease (COPD) is the one with the highest prevalence and socioeconomic impact of all respiratory diseases [29]. This pathology is based on the obstruction of the air flow in the lungs.

Symptoms of COPD include shortness of breath, coughing, mucus production, and wheezing. Among the main original factors studied are tobacco consumption, obesity and metabolic problems [5].

People with chronic obstructive pulmonary disease have a higher risk of developing other diseases (heart, lung cancer ...). The most common conditions that contribute to the development of COPD are emphysema (a condition in which the alveoli are destroyed as a result of harmful exposure) and chronic bronchitis (inflammation of the lining of the bronchial tubes).

As far as clinical diagnosis is concerned, it largely depends on the patient's history and unfavourable results in spirometry tests.

Although this disease is progressive and has a worse diagnosis over time, it is treatable. Most people with COPD can achieve good control of their symptoms and quality of life.

Regarding this treatment of COPD, the cessation of tobacco consumption in smoking patients is essential, but it is more effective if this abstinence is supported by pharmacological treatment. The main treatment is the use of long-acting inhaled bronchodilators and, in more severe cases, inhaled corticosteroids, reducing symptoms and improving the patient's health status [29].

As in the cognitive deficit, characteristic of psychotic disorders, tobacco use seems to have an important relationship with respiratory function. This apparent same seems to

join, as will be seen later, paths between respiratory functions and cognitive functions in patients with psychosis.

Tobacco use increases the respiratory rate, reducing the immune function of the lung, favouring the appearance of infections and the development of neoplasms (proliferation of abnormal masses in the lung tissue).

It must be remembered that tobacco involves two characteristics: toxicity and addiction. It is an addiction, which shows a physical dependence (when the smoker's body gets used to presenting certain levels of nicotine in the blood) and a psychological dependence (through the compulsive need to carry out addictive behaviour) [30].

Among the radioactive components of conventional cigarettes, the presence of cadmium (capable of damaging the nasal mucosa and respiratory tree and of triggering moderate pulmonary obstructive syndrome), beryllium (capable of irritating the mucosa), arsenic (capable of perforating the nasal septum), nickel (capable of producing rhinitis, sinusitis, allergic asthma, and respiratory cancers), and chromium (capable of producing respiratory ulcers, perforating the nasal septum, and triggering lung cancer) [31].

It should also be remembered that passive tobacco consumption also presents, although less prevalent, the same respiratory risks. Therefore, the prevention of tobacco consumption in the presence of minors is of vital importance, since they can develop respiratory diseases that, even, in the worst case, can become chronic (among other causes because their defence mechanisms are in the process of development).

Regarding cannabis use, prolonged and high-dose cannabis smoking increases the risk of developing chronic bronchitis and emphysema and of producing histopathological changes, probably precursors of respiratory malignancies [32].

Short-term exposure to marijuana is associated with bronchodilation, which can be reversed after use is terminated. In contrast, long-term marijuana use is associated with increased respiratory symptoms that suggest obstructive pulmonary disease. It should be noted that part of the chemical components of cannabis are similar to those of tobacco, although studies show how the effect of this seems to be more forceful in the respiratory tract.

Therefore, prospective studies of cannabis use linked to lung capacity are vitally important, as cannabis is on the rise for therapeutic purposes [33].

Marijuana smoke causes epithelial damage, with loss of hair cells and hyperplasia. Concomitant tobacco use could potentiate harmful effects on respiratory function [34].

Therefore, despite the fact that there are studies with discrepancies in this regard, everything seems to indicate that cannabis use is not exempt from harmful effects and that, if consumed together with tobacco, as occurs in a large percentage of consumers, especially in young adulthood, the chances of developing COPD and cancer are higher. Similarly, the abusive use of cannabis, even if tobacco is not used, also presents risks to be considered.

2. HYPOTHESIS AND OBJECTIVES

2.1) Hypothesis

Main hypothesis: Patients with impaired respiratory function will present higher levels of cognitive deficit than patients with psychosis without respiratory complaint.

Secondary hypothesis:

Hypothesis 1: Patients with psychosis who use tobacco will have higher levels of cognitive deficits than patients who don't use tobacco.

Hypothesis 2: Patients with psychosis who use cannabis will have higher levels of cognitive deficits than patients who don't use tobacco.

Hypothesis 3: Patients with psychosis who use alcohol will have higher levels of cognitive deficits than patients who don't use tobacco.

2.2) Objectives

2.2.1) Main Objectives:

- To assess the occurrence of respiratory function and cognitive deficit in patients with non-affective psychosis.

2.2.2) Specific Objectives:

- To assess the prevalence of respiratory disease and respiratory risk factors in patients with non-affective psychosis.
- To analyse the possible relationship between respiratory risk factors (consumption of tobacco, cannabis, alcohol) and the occurrence of cognitive deficit in patients with non-affective psychosis.

3. METHODOLOGY, MATERIALS AND METHODS

3.1) Subjects

The present study was carried out as part of a longitudinal study in first episodes of non-affective psychosis, in the program of attention to the initial phases of psychosis (PAFIP), at the Marqués de Valdecilla University Hospital (HUMV), in Cantabria.

This program, PAFIP-II, employs patients who have been included in the PAFIP program for 10 years, and who have been diagnosed with a non-affective psychosis. These patients were extensively evaluated (neuroimaging, neuropsychological evaluation, metabolic evaluation, cognitive evaluation ...) in order to analyse their progress in relation to psychosis.

Selection criteria

- Patients followed in the First Episode Psychosis Clinical Program (PAFIP) from February 2001 to December 2007.
- Patients with criteria for Brief Psychotic Disorder, SchizophreniformDisorder, Schizophrenia, or Schizoaffective Disorder.

Exclusion criteria

- Meet the DSM-IV criteria for drug dependence.
- Meet the DSM-IV criteria for mental retardation.
- Have a history of neurological disease or head injury.

The sample used is 203 subjects. The mean age of the patients is 41.31 years old.

All subjects signed an informed consent with the aim of including them in the study (after having been approved as possible study subjects by the HUMV Ethics Committee).

In the same way, they were informed of the power to cease their status as a participant in the study at any time, without any type of restriction. Therefore, the maximum guarantees of confidentiality were obtained, and the data were stored and processed for the sole purpose for which they were transferred.

3.2) Study design

As stated above, patients that had been included and treated in the PAFIP program, and with a duration of the illness (psychosis) of at least 10 years, were again connected and recruited for the "*PAFIP-10 study",* and for this particular project.

Patients were evaluated at the onset of psychosis (baseline), and at 3 months, 1 year and 3 years follow-ups, analysing their psychopathology and undergoing physical examinations, including anthropometric measurements and laboratory analysis (hematic, lipid, glycaemic and liver parameters). These evaluations were again carried out in a cross-sectionally manner at 10 years of follow-up in the context of the "*PAFIP-10 study*".

Quality of life, disability and functionality were evaluated with the Quality-of-Life Scale (QLS), Disability Assessment Scale (DAS) and Global Performance Assessment Scale (GAF), respectively. On the other hand, physical activity was evaluated with the short Spanish version of the Minnesota Free Time Physical Activity Questionnaire (VREM). These scales were evaluated by the research staff of the *"PAFIP-10 study"*, and the data were available for this project for research purposes.

3.3) Clinical and demographic variables

The sociodemographic variables contemplated were date of birth, sex and age at the time of evaluation, being collected by means of a registration notebook. In clinical terms, a diagnostic assessment was performed according to DSM-IV criteria. Social functioning was measured with the Global Assessment (GE) of the Disability Assessment Scale (DAS) in the 10-year evaluation. Good social functioning was identified as a ≤ 1 score in gee, while a score ≥ 2 in GE was considered poor social functioning.

3.4) Anthropometric Parameters and Laboratory Analysis

The weight and waist circumference of patients were determined at the start of the study, at 3 months, 1 year, 2 years, 3 years and 10 years after initiation of antipsychotic treatment. The height of the patients was measured at the time of registration. Patients' body mass index (BMI) was calculated as their body weight (kg) divided by their height into square meters.

All determinations were made in the HUMV, including both biochemical and endocrinological analyses. Fasting venous blood samples were collected at the start of the study, 3 months, 1 year, 2 years, 3 years, and 10 years after initiation of antipsychotic treatment. Glucose, triglyceride, total cholesterol and HDL levels were measured using automated methods in a TechniconDax (Technicon Instruments Corp., USA) using the reagents supplied by Boehringer-Mannheim (Germany). Low-density lipoprotein (LDL) cholesterol was determined by Friedwald et al., (1972) through the following formula: LDL - total cholesterol – (HDL + (triglycerides/5)). A complete blood count was performed on each visit, including eosinophils, and liver function tests based on standard values.

Insulin levels were measured by an immunoradiometric assay (Inmunotech, Beckman Coulter Company, Czech Republic) with an average coefficient of variation (CV) between 3.3% trials and an intra-assay CV of 2.8%. The sensitivity of the method was 0.5 U / mL. The values for subjects with normal weight were 2.1-22 U /mL. This assay shows no cross-reactivity with human proinsulin or C Peptide.

Homeostasis model evaluation (HOMA) was used to evaluate insulin resistance (RI). The HOMA index was calculated using a formula previously described (Matthews et al., 1985): HOMA (fasting insulin (U/ml) x fasting glucose (mmol/L)) / 22.5. In addition, as proposed by McLaughlin and collaborators (McLaughlin et al., 2005), the triglyceride/HDL cholesterol ratio (TG/HDL cholesterol) was calculated as a predictor of insulin resistance, using the cut-off point of 3.5 described by them as optimal.

3.5) Assessment instruments or scales used

Cognitive evaluation

The cognitive protocol used contained 12 tests that resulted in numerous variables grouped into domains. The main cognitive variables studied were verbal memory, processing speed, working memory, executive function, motor dexterity, attention, visual memory and GCF [35].

The evaluation was carried out in a session of about one hour duration. Patients completed a cognitive battery, and for the purposes of the current study, the following tests were considered: Rey's verbal auditory test, number key, pins, tower of London, the complex King Figure, TMT, vocabulary, digits, Stroop, CPT, eye-task and Edinburgh's manual laterality inventory.

A measure of global cognitive functioning (GCF) was calculated in accordance with previous methodology [36]. Scores on the seven cognitive domains fundamentally

impaired in psychosis were converted to T-scores derived from a healthy comparison sample and converted to deficit scores that reflected the presence and severity of cognitive deficit in each cognitive domain. Deficit scores were then averaged to create the GCF measure.

Respiratory clinical status though clinical scales

The *modified Medical Research Council* (mMRC) Questionnaire is widely used for assessing the severity of breathlessness in patients with COPD. This questionnaire was reported to be consistent with other measures of health status and to predict the decline of lung function and future mortality risk. Current guidelines advocate the use of this scale to assess symptoms (Global initiative for Chronic Obstructive Lung Disease 2016).

The *COPD Assessment Test* (CAT) (Jones et al, 2009) is a simple patient completed questionnaire developed to quantify the impact of COPD on health status, focusing on daily symptoms and activities.

The *Asthma Control Test (*ACT) is a self-reported 5-items questionnaire. It defines "uncontrolled asthma" with a total score < 20.

These scales will be filled in after completing the spirometry, supervised by Respiratory Department's nurses involved in the study.

Lung function examination through non-invasive methods

Respiratory function will be measured with a Respiratory Department's spirometer. The measurements will be performed by specially trained technicians (nurses) following international guidelines and instructions (Miller et al, 2005). The main outcome variables will be forced vital capacity (FVC) (i.e., the maximal volume of air, in litres,

that can be forcefully expelled from the lungs after maximal inhalation, in litres). From a minimum of two technically acceptable and consistent efforts, the highest readings of FEV1 and FVC will be recorded and used in the analyses. Spanish reference values (available from SEPAR) will be used to compute the individual FEV1 and FVC values as a percentage of those predicted for corresponding age, gender and height in healthy, non-smoking adults. Based on spirometry results, pulmonary obstruction is defined as a FEV1/FVC < 70%; and restriction as a FVC < 80% of the predicted value and a FEV1/FVC > 70% to exclude obstruction. A bronchodilation test will also be performed as part of the spirometry measurements, being positive if achieving an improvement of FEV1 > 12% and 200 mL from basal (pre-bronchodilation) test results.

3.6) Statistical analysis

All data were tested for normality (using the Kolmogorov-Smirnov test) and equal variances (using the Levene test). To ensure group comparability, basal sociodemographic and clinical characteristics were tested using 1-way ANOVA or Kruskal-Wallis tests for continuous variables or chi-square testing for qualitative variables.

Chi-square and ANOVA analyses were performed to compare qualitative and quantitative variables between the two groups. The Statistical Package for Social Science (SPSS) version 23.0 (IBM Corp., Armonk, NY, USA) was used for statistical analyses. All statistical tests were two-tailed and significance was determined at the 0.05 level.

4. RESULTS

4.1) Description of the study sample

Out of 203 participants, 128 were patients with diagnosis of non-affective psychosis (total mean: age 42.31, male 53.1%, 97.7% white) and 75 healthy control (HC) subjects (total mean: age 39.59, male 56.0%, 100% white).

Sociodemographic variables of the different groups are shown in *Table 1*. Patients and HC were comparable in several sociodemographic variables, including sex. However, these groups differed in other relevant variables, such as age, where patients presented a significant greater mean age than HC.

Table 1. *Sociodemographic differences between psychosis patients and controls*

		Patients with Psychosis	**Healthy Controls**	**Statistical Analysis**
	N	Mean (SD) N (%)	Mean (SD) N (%)	F, p χ^2, p
Age, years (SD)	203	42.31 (8.17)	39.58 (7.39)	F = 5.65, p = 0.018
Sex (male)	203	68 (53.1)	42 (56.0)	χ^2= 0.16, p = 0.77
Race (White Caucasian)	203	125 (97.7)	75 (100.0)	χ^2= 1.78, p = 0.30
Single Marital Status	178	68 (56.7)	7 (12.1)	χ^2= 31.90, p < 0.001
Education Level (high)	178	56 (47.9)	49 (84.5)	χ^2= 29.92, p < 0.001
Employment Status (Active)	177	52 (43.7)	51 (87.9)	χ^2= 31.36, p < 0.001
Urbanicity (Urban Zone)	178	74 (61.7)	42 (72.4)	χ^2= 2.492, p = 0.29

* Statistical analysis: Un-adjusted analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables.

A detailed analysis of some relevant physical variables and substance use in patients and HC was carried out, as described below, in Table 2. Among these relevant variables for respiratory health, we have to highlight the consumption of tobacco, cannabis and alcohol. Tobacco use is substantially more present among patients with psychosis than in healthy controls. Moreover, the patients´ group presented a significantly lesser physical activity when compared to the control individuals, according to VREM data.

Table 2. *Description of relevant physical variables related to respiratory functioning*

		Patients with Psychosis	**Healthy Controls**	**Statistical Analysis**
	N	Mean (SD) N (%)	Mean (SD) N (%)	*F, p* χ^2, *p*
BMI, kg/ m^2	200	29.49 (6.16)	26.92 (19.75)	F= 9.63, p = 0.002
Tobacco use (yes)	181	63 (50.8)	19 (33.3)	χ^2= 4.81, p = 0.036
VREM, hours	172	116240.62 (98227.95)	159097.73 (130034.28)	F= 5.63, p = 0.019

* Statistical analysis: Un-adjusted analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables.

Abbreviations: BMI= Body Mass Index; VREM = Minnesota Leisure Time Physical Activity Questionnaire

Regarding the clinical characterization of the patients with psychosis, 75.8% of the subjects had been diagnosed with schizophrenia, compared to 24.2% who had other diagnoses, such as schizoaffective disorder, delusional disorder, brief psychosis, or non-specified psychosis. Two thirds of the subjects maintained the same diagnosis at 10 years (66.7%) and the vast majority (86.8%) were clinically stable. *Table 3* also shows the different evaluation scales used in the study.

Table 3. *Clinical and psychopathological characteristics of patients with psychosis*

		Patients with Psychosis
	N	**N (%)** **Mean (SD)**
Diagnosis (schizophrenia)	120	91 (75.8)
Clinically stable (yes)	121	105 (86.8)
CGI	121	2.44 (1.516)
CDS	121	0.88 (2.385)
YMRS	121	1.33 (2.718)
BPRS	121	29.92 (6.853)
SAPS	121	1.05 (2.239)
SANS	121	4.22 (5.014)

Abbreviations: CGI= Clinical Global Impression
CDS= Calgary Depression Scale for Schizophrenia
BPRS= Brief Psychiatric Rating Scale
SAPS= Scale for Assessment of Positive Symptoms
SANS= Scale for Assessment of Negative Symptoms
YMRS = Young Mania Rating Scale

Regarding respiratory variables, it is noteworthy that in the different scales used, the data obtained were much more discrete in control patients than in patients with psychosis who, in general, presented non-negligible respiratory risk values. Various respiratory measurement scales were used, which are shown in *Table 4.*

Table 4. *Comparison between groups regarding clinical and functional respiratory variables*

		Patients with Psychosis	**Healthy Controls**	**Statistical Analysis**
	N	N (%) Mean (SD)	N (%) Mean (SD)	χ^2; *p* *F*; *p*
mMRC ≥2	120	8 (6.7)	0 (0.0)	χ^2= 5.01, *p* = 0.026, Yates' *p* value = 0.062
CAT ≥10	156	28 (23.1)	12 (16.0)	χ^2= 1.45, *p* = 0.28
Dyspnea-12 scale	192	4.56 (5.36)	2.08 (3.48)	*F*= 283.48, *p* > 0.001
Dyspnea-12 Subscale Sensitive (yes) Subscale Affective (yes)	194	 3.23 (3.33) 1.29 (2.51)	 1.65 (2.45) 0.43 (1.30)	 *F* = 12.50 *p* = 0.001 *F* = 7.65 *p* = 0.006
FEV1 basal	158	3.25 (0.99)	3.55 (0.83)	*F* = 3.40, *p* = 0.067
FVC basal	158	4.15 (1.30)	4.53 (0.98)	*F* = 3.99, *p* = 0.05
DCLO, low (<80%)	181	80 (74.1)	28 (38.4)	χ^2= 23.09, *p* < 0.001
KCO, low (<80%)	181	29 (26.9)	13 (17.8)	χ^2= 2.00, *p* = 0.21
Post-bronchodilatation Obstruction (yes) (%)	181	11 (10.2)	2 (2.7)	χ^2= 3.77, *p* = 0.052
Asthma (%)	180	8 (7.6)	2 (2.7)	χ^2= 2.05, *p* = 0.20

* Statistical analysis: Un-adjusted analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables.

We also explored the differences between groups in cognitive performance, which was as expected significantly poorer in patients with psychosis than in control subjects.

Besides we observed differences in quality of life between patients with psychosis and controls, by means of the WHOQOL-BREF (*Table 5*).

Table 5. *Comparison between groups regarding quality of life, functioning and cognitive performance.*

		Patients with Psychosis	**Healthy Controls**	**Statistical Analysis**
	N	N (%) Mean (SD)	N (%) Mean (SD)	*F*, *p* χ^2, *p*
WHOQOL-BREF domains: Physical Health Psychological Social Relationships Environment	203	 14.17 (2.76) 13.96 (2.71) 12.90 (3.50) 14.49 (2.21)	 16.69 (1.91) 15.27 (2.27) 15.45 (3.04) 15.67 (2.29)	 $F = 48.17$ $F = 12.23$ $F = 27.04$ $F = 12.81$ all $p < 0.001$
Verbal Memory, z-score	172	-2.02 (1.43)	-0.69 (1.05)	$F = 39.33$ $p < 0.001$
Visual Memory, z-score	171	-0.59 (0.84)	0.29 (0.68)	$F = 47.37$ $p < 0.001$
Processing Speed, z-score	172	-0.63 (1.05)	0.63 (0.81)	$F = 63.71$ $p < 0.001$
Working Memory, z-score	172	-0.45 (0.88)	0.18 (0.95)	$F = 18.90$ $p < 0.001$
Executive Function, z-score	166	-0.83 (1.61)	0.03 (0.68)	$F = 15.14$ $p < 0.001$
Motor Dexterity, z-score	172	-1.12 (2.56)	0.51 (0.84)	$F = 22.47$ $p < 0.001$
Attention, z-score	167	-1.50 (3.35)	-0.14 (1.24)	$F=8.71$ $p = 0.004$
GCF, z-score	160	1.00 (0.87)	0.24 (0.33)	$F = 39.14$ $p < 0.001$
Cognitive Deficit (yes)	160	44 (42.7)	2 (3.5)	$\chi^2 = 27.54$, $p < 0.001$

* Statistical analysis: Un-adjusted analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables.

Abbreviations: DAS= Disablement Assessment Schedule; GAF= Global Assessment Functioning Scale; WHOQOL= World Health Organization Quality of Life Questionnaire

4.2) Analysis of association between respiratory function and cognitive function in patients with psychosis

We first explored the association of cognitive deficit with differences in the respiratory health variables, including symptomatology and function, in the whole cohort. For this we classified individuals according to the presence of Cognitive Deficit. Within the Cognitive Deficit group (N=46), only 2 individuals were healthy controls, while the vast majority (44 out of 46, 95.6%) were psychosis patients.

Among the main findings (*Table 6)*, it is worth highlighting the significant differences in the dyspnea subscales between subjects with and without cognitive deficit, with a greater prevalence of respiratory symptoms among the cognitive deficit group. Besides, we observed differences in the main respiratory function (spirometric) variables (FVC and FEV1), where the cognitive deficit group presented lower FVC and FEV1 than those without cognitive impairment. In line with these results, we also observed differences in one of the diffusion variables; thus, subjects with cognitive deficit showed worse results in diffusing capacity for carbon monoxide (DCLO), indicating a poorer conductance of gas transfer from inspired gas to the red blood cells; subjects with cognitive deficit presented more frequently a low DCLO, than those without cognitive deficit.

Finally, individuals with cognitive deficit presented poorer quality of life, measured by the four WHOQOL-BREF domains, than those without cognitive deficit.

Table 6. *Association between respiratory and cognitive function in the whole study sample*

		Cognitive Deficit (N=46)	**No Cognitive Deficit (N=114)**	**Statistical Analysis**
	N	N (%) Mean (SD)	N (%) Mean (SD)	χ^2; *p* *F; p*
Modified mMRC scale	151	0.41 (0.54)	0.36 (0.54)	$F = 0.31$, $p = 0.58$
mMRC ≥ 2 (yes)	151	1 (2.3)	3 (2.8)	$\chi^2 = 0.03$, $p = 1.00$
Dysponea-12 total Sensitive subscale Affective subscale	153	4.93 (5.64) 3.41 (3.64) 1.52 (2.31)	2.61 (4.26) 1.98 (2.85) 0.61 (1.74)	$F=7.64$, $p = 0.006$ $F= 6.64$, $p = 0.011$ $F= 7.15$, $p= 0.008$
CAT ≥10 (yes)	154	10 (22.2)	17 (15.6)	$\chi^2 = 0.97$, $p = 0.36$
FVC –Pre FVC% - Pre	158	4.15 (1.30) 99.5 (17.98)	4.53 (0.98) 104.82 (13.79)	$F= 3.99$, $p = 0.05$ $F= 4.04$, $p = 0.046$
FEV1 – Pre FEV 1% - Pre	158	3.25 (0.99) 94.50 (16.20)	3.55 (0.83) 99.75 (15.84)	$F= 3.71$, $p = 0.056$ $F= 3.40$, $p = 0.067$
Post-bronchodilatation Obstruction (yes)	144	2 (5.6)	10 (9.3)	$\chi^2 = 0.49$; $p=0.73$
Asthma (yes)	143	2 (5.9)	8 (7.3)	$\chi^2 = 0.08$, $p=1.00$
DCLO, low (<80%)	145	31 (77.5)	58 (55.2)	$\chi^2 = 6.06$, $p = 0.014$
KCO, low (<80%)	145	12 (30.0)	20 (19.0)	$\chi^2 = 2.02$, $p = 0.18$
WHOQOL-BREF domains: Physical Health Psychological Social Relationships Environment	 153 153 154 153	 14.06 (2.80) 13.86 (2.50) 13.12 (3.41) 14.33 (2.34)	 15.66 (2.41) 14.95 (2.38) 14.46 (3.40) 15.44 (2.00)	 $F= 12.41$, $p= 0.001$ $F= 6.21$, $p= 0.014$ $F= 4.87$, $p= 0.029$ $F= 8.56$, $p= 0.004$
Alcohol (yes)	158	11 (23.9)	33 (29.5)	$\chi^2 = 0.50$, $p =0.56$
Tobacco (yes)	155	36 (80.0)	71 (64.5)	$\chi^2 = 3.57$, $p = 0.084$
Cannabis (yes)	151	20 (45.5)	32 (29.9)	$\chi^2 = 3.34$, $p = 0.09$

* Statistical analysis: Un-adjusted analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables.

Abbreviations: WHOQOL= World Health Organization Quality of Life Questionnaire

When we explored the association between cognitive deficit and the respiratory function and health, only within the psychosis patients´ group, we observed the differences between groups where the psychosis patients with cognitive deficit presented more respiratory symptoms and a poorer respiratory function than those psychosis patients without cognitive deficit. However, these differences did not reach statistical significance (*Table 7*).

Table 7. *Association between respiratory and cognitive function in patients with psychosis*

		Psychosis patients with cognitive deficit (N=44)	**Psychosis patients without cognitive deficit (N=59)**	**Statistical Analysis**
	N	N (%) Mean (SD)	N (%) Mean (SD)	χ^2; *p* *F; p*
Modified mMRC dyspnea scale	128	0.43 (0.55)	0.33 (0.58)	*F*= 0.67, *p* = 0.42
mMRC ≥ 2 (yes)	92	1 (2.4)	3 (5.6)	χ^2= 0.60, *p* =0.63
Dyspnea-12 total Sensitive subscale Affective subscale	96	5.12 (5.70) 3.52 (3.68) 1.60 (2.34)	3.57 (4.82) 2.60 (3.07) 0.93 (2.17)	*F*= 2.07, *p* = 0.15 *F*= 1.77, *p* = 0.19 *F*= 2.09, *p*= 0.15
CAT ≥10 (yes)	78	10 (23.3)	9 (16.7)	χ^2= 0.66, *p* = 0.45
FVC –Pre FVC% - Pre	101	4.14 (1.29) 99.38 (18.02)	4.33 (0.94) 103.75 (15.52)	*F*= 0.76, *p* = 0.39 F= 1.71, *p* = 0.19
FEV1 – Pre FEV 1% - Pre	101	3.24 (0.99) 94.43 (16.26)	3.31 (0.78) 95.47 (16.47)	*F*= 0.18, *p*= 0.67 *F*= 0.10, *p* =0.75
Obstruction Postbronchodilator (yes)	88	2 (5.9)	9 (16.7)	χ^2= 2.22, *p*=0.19
Asthma (yes)	86	2 (6.3)	6 (11.1)	χ^2= 0.56, *p* =0.70
DCLO, low (<80%)	90	30 (78.9)	35 (67.3)	χ^2= 1.48, *p* =0.25
KCO, low (<80%)	90	11 (28.9)	12 (23.1)	χ^2= 0.40, *p* = 0.63
WHOQOL-BREF domains, Physical Health	96	13.87 (2.72)	14.67 (2.44)	*F*= 2.26, *p* = 0.14
Psychological	96	13.74 (2.50)	14.46 (2.50)	*F*= 1.90, *p* = 0.17
Social Relationships	97	12.88 (3.31)	13.40 (3.52)	*F*= 0.54, *p* = 0.46
Environment	96	14.12 (2.17)	15.20 (1.82)	*F*= 6.96, *p*= 0.010
Alcohol (yes)	158	11 (23.9)	33 (29.5)	χ^2= 0.50, *p* = 0.56
Tobacco (yes)	155	36 (80.0)	71 (64.5)	χ^2= 3.57, *p* = 0.084
Cannabis (yes)	151	20 (45.5)	32 (29.9)	χ^2= 3.34, *p* = 0.09

* Statistical analysis: Un-adjusted analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables.

Abbreviations: WHOQOL= World Health Organization Quality of Life Questionnaire

5. DISCUSSION

Studying a subject in the process of expansion, at a research level, is always risky, since it brings with it methodological limitations linked to the search for a scientific reality not yet established. This is a pioneering study exploring the link between cognitive function and respiratory function in patients with non-affective psychosis in a fairly homogenous sample of patients with psychosis and a group of healthy patients.

From our study we extract two main findings. In the first place, we report that there were significant differences in respiratory functioning and symptoms between patients and controls. For instance, regarding the Dyspnea-12 scale we observed statistically significant differences between groups where the score obtained for patients was 4.56 compared to a score of 2.08 for controls. These differences between groups were also seen in both Dyspnea-12 subscales, the sensitive and the affective.

Regarding respiratory functioning, we observed significant differences between psychosis patients and healthy controls in the DCLO test ($p<0.001$), which determines the ability of the lungs to transfer the gas from the inspired air to the blood flow. Thus, 74.1% of patients presented low levels of DCLO (<80%), compared to 38.4% of non-psychiatric healthy controls. Similarly we observed a trend towards significant association between groups in other main respiratory measures; thus psychosis patients presented worse basal FEV1 and FEV measures than controls (3.25 vs. 3.55, $p=0.067$; and 4.15 vs. 4.53, $p=0.050$).

These differences between psychosis patients and non-psychiatric controls in respiratory functioning are in line with the observations from a previous study by Partti, Vasankari, Kanervisto et al. (2015), in which a representative sample of Finnish adults was studied, measuring respiratory function by spirometry [37]. Participants with

schizophrenia and other non-affective psychoses had significantly lower lung function values compared to the general population and the association remained significant for schizophrenia after adjustment for smoking and other potential confounders. Schizophrenia was associated with increased risk of suffering from pneumonia (probability rate (OR) = 4.9), chronic obstructive pulmonary disease (COPD, OR = 4.2), and chronic bronchitis (OR = 3.8). In this sense, our study also observed that patients with psychosis met more frequently spirometry criteria for post-bronchodilatation obstruction than non-psychiatric control individuals (10.2 vs 2.7%), however these differences did not reach statistical significance (p=0.052).

It should not be forgotten that these clinical and respiratory differences may be due to observed differences between groups in other variables with known impact on respiratory function, such as such as BMI or tobacco consumption, which, in addition to being variables more typical of psychosis, are also variables that promote the appearance of respiratory problems. In our study, tobacco consumption were significantly more frequent among psychosis patients than in controls (50.8 vs. 33.3%). These data agree with the study by Pelayo-Terán, Pérez-Iglesias et al (2008) [11], who present this factor as risk factor for the triggering of psychotic episodes. Rodriguez, Donoso et al. (2019) carried out a study with 57 university participants, to whom the maximum inspiratory and expiratory pressures were measured [38]. Obese patients and controls with a normal body mass index were recruited. The results showed a significantly lower respiratory function for patients with high BMI. In our study, patients with psychosis presented a significantly greater mean BMI than controls (29.5 vs 26.9 kg/m^2, p=0.002).

Our study results´ revealed an association between cognitive impairment and a poorer respiratory health in terms of self-reported symptoms and a worse respiratory functioning (spirometry measures).

Thus, when we clustered and compared the whole study populations regarding their cognitive performance (cognitive deficit versus no deficit), we observed that those subjects with cognitive deficit presented a significantly greater severity of respiratory symptoms, measured by the Dyspnea-12 scales than those subjects without cognitive deficit (4.93 vs. 2.62, p=0.006).

Moreover, our results showed differences in respiratory functioning between groups; subjects with cognitive deficit showed poorer measures of FVC (4.15 vs 4.53, p=0.05) and FEV1 (3.25 vs. 3.55, p = 0.056) than those without cognitive deficit. And there were significantly more individuals meeting criteria for a poor CO diffusion (DCLO <80%) among the cognitive deficit group (77.5 vs. 55.2%, p=0.014).

Our results are in lie with previous studies. Villeneuve, Pepin et al (2012) [39] conducted a preliminary study with 45 patients with moderate and severe COPD and 50 healthy control subjects, who underwent a neuropsychological evaluation (completing the standard MCI criteria) to measure their cognitive function. The results showed that 36% of COPD patients had a mild cognitive deficit, compared to 12% of the healthy population who presented this cognitive deficit. To date there is no clear knowledge explainig the mechanisms underlying this association between cognitive performance and respiratory health. Tobacco (and cannabis) is the main risk factor for respiratory diseases and has lately been proposed to also modulate cognitive performance. For instance, Ashton [26] (2001) and Seidman (2018) [28] conducted studies in which they proposed that tobacco and cannabis use had a clear effect on cognitive decline.

These greater severity of respiratory symptoms and poorer respiratory functioning among subjects with cognitive deficit, when compare to those without cognitive impairment, may in part explain the significant differences also observed between groups in self-reported quality of life (QoL), where subjects with cognitive deficit presented poorer scores in all the four WHOQOL-BREF domains (i.e.: Physical, Psychological, Social relationships, and Environment).

In line with these results, previous studies, such as Calverley and Walker (2003) one, have already reported a relation between QoL and respiratory health [29].

These differences between groups (cognitive deficit vs. no deficit) were also observed when we replicated the statistical analyses only among psychosis patients, however without reaching statistical significance, probably due to the small sample size.

5.1) Limitations and strengths of the study

The study has several limitations. In first place, its methodological design as a cross-sectional study difficults the exploration of the incidence and progression of respiratory problems, and the exploration of risk factors that may early predict futures respiratory diseases. Studying the relation between two wide health areas, cognition and respiratory, makes it difficult to control the confounding factors (those factors that can potentially distort the association between variables, in this case between cognitive function and respiratory function) [36]. There are studies developed in psychosis, in which the real risk of being exposed to these distorting factors is appreciated [40]. Therefore, a more important clinical effort is necessary than with other pathologies that, for example, do not present with psychotic symptoms. The lack of previous evidence in this field complicates the comparison and interpretation of our results. It is not possible to give conclusive results on something that no one has previously studied empirically

[41]. And finally, our study, due to the population studied (early psychosis cohort) present relevant sampling problems. The main one is the sample mean age which is considerably low for the usual appearance of chronic lung diseases such as COPD. This may explain the unexpected low rate of respiratory diseases among the study sample. According to Maselli et al. (2019) [42], COPD can take up to 10 years to develop. Therefore, COPD is associated with older patients. Moreover, the mean age of the controls is significantly lower than the one for psychosis patients, which may also have had an impact on the respiratory health differences between groups.

On the other hand, the study presents various strengths. First, the study sample is a well-characterized one, with psychopathological and cognitive evaluations. The psychopathological evaluation is characterized by forcefully taking into account the symptoms of the study subjects, and the cognitive evaluation is governed by a protocol, seeking to optimize its usefulness and effectiveness. This established characterization of the study makes it more objective and may open the doors to being a study in mental health with a relatively high degree of utility.

Second, we conducted wide and specialized respiratory evaluation including both symptomatology and functional evaluations (spirometry) at the Pneumology Department. In addition, having respiratory results, provided by a department other than psychiatry, also encourages the interdisciplinarity of the study, making it methodologically richer and more diverse. Moreover, there is very little mental health literature that includes a respiratory analysis of this type, which encourages the idea of its innovative character.

Finally, we included a patient-centre approach through the inclusion of self-reported QoL measures. Qualitatively collecting the quality of life of patients who suffer non-affective psychosis and present some type of cognitive or respiratory impairment is very

useful to try to understand how suffering from a physical or cognitive disability conditions the lives of patients. From the clinical point of view, it also allows, as Tuesca (2005) explains, to evaluate the usefulness of the treatments that are being applied, to control the social support that the patient presents, the type of support that the patient requires, and to a certain extent, the hospital and social health management actions that must be taken [45]. If this aspect were not studied in a study like this, it would be committing a deontological failure and a methodological failure from the clinical point of view.

With investigations like this opens a considerable number of lines of future research, such as the most in-depth and complete study of respiratory function and cognitive function in patients with psychosis, the interaction that may exist between the two in these patients or the interaction of risk factors such as the consumption of toxins in patients with these deficits.

It would be very useful to carry out a similar investigation with a sample with a somewhat older age (to be able to observe respiratory disease), with less significant age differences between patients and controls and with a more sophisticated design. In addition, more and more data are becoming known that are reducing the bibliographic limitation that supports recent studies.

5.2) Conclusions

The results of this study open the door to a more exhaustive study of the relationship between cognition and respiratory health in mental health. The sample size is not sufficient to achieve solid results, but it is to speak of a clear trend towards the correlation of these two functions.

In this study, subjects with cognitive deficit present a poorer respiratory health than those without cognitive deficit. Cognitive deficit was significantly associated to greater severity of respiratory symptoms according to the Dyspnea 12 scale, and to poorer respiratory function in terms of various main spirometric values, the FVC, FEV1 and the DCLO, suggesting that these subjects present an underlying restrictive pulmonary disease.

Therefore, the results show an association between a poorer and symptomatic respiratory function to a poorer cognitive performance (cognitive deficit) in patients with non-affective psychosis, which also impacts on their quality of life.

Finally, although tobacco use is clearly a risk factor for respiratory diseases, the cognitive deficit was not associated with tobacco and cannabis consumption in our sample.

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Declaration of Interest

The author of this Master's Dissertation does not present any conflict of interest.

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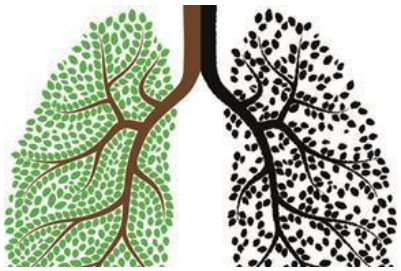
ANNEX INDEX

PAFIP

Estudio Salud Respiratoria

[Prim-Val 2017]



Fecha: ……

Etiqueta paciente

Peso: …… Talla: .....

Check-list

Etiqueta.....☐

Peso/Talla..... ☐

Cuestionarios:

CAT.....☐

mMRC.....☐

Disnea-12……☐

Espirometría……☐

Difusión CO……☐

Programa de Atención a Fases Iniciales de Psicosis – PAFIP

Breve cuestionario sobre hábito de fumar

TABACO

1. Elige de entre las siguientes opciones:

- ○ Soy fumador/a de tabaco
- ○ Soy exfumador (más de 6 meses sin fumar)
- ○ Nunca he fumado

2. ¿Vives con gente que fuma dentro de casa?: Sí….☐ No.…☐ Antes sí (ya no)….☐

3. Elige de entre las siguientes opciones:

- ○ Soy fumador/a de tabaco
- ○ Soy exfumador (más de 6 meses sin fumar)
- ○ Nunca he fumado

4. ¿Vives con gente que fuma dentro de casa?: Sí….☐ No.…☐ Antes sí (ya no)….☐

5. Contesta a las preguntas de la columna a la que pertenezcas (fumador/a, exfumador/a):

Soy exfumador/a	Soy fumador/a
¿Con qué edad comenzaste a fumar tabaco? .....años	¿Con qué edad comenzaste a fumar tabaco? .....años
¿Con qué edad comenzaste a fumar diariamente? ……. años	¿Con qué edad comenzaste a fumar diariamente? ……. años
¿Cuántos cigarros fumabas al día?.....	¿Cuántos cigarros fumas al día?.....
¿Con qué edad dejaste de fumar? .....años	

CANNABIS

6. Elige de entre las siguientes opciones:

- ○ Fumo porros.
- ○ Antes fumaba porros (más de 6 meses sin fumar)
- ○ Nunca he fumado porros

7. Elige de entre las siguientes opciones:

- ○ Soy fumador/a de tabaco
- ○ Soy exfumador (más de 6 meses sin fumar)
- ○ Nunca he fumado

8. ¿Vives con gente que fuma dentro de casa?: Sí….☐ No.…☐ Antes sí (ya no)….☐

9. Contesta a las preguntas de la columna a la que pertenezcas (fumador/a, exfumador/a):

Soy exfumador/a	Soy fumador/a
¿Con qué edad comenzaste a fumar tabaco? .....años	¿Con qué edad comenzaste a fumar tabaco? .....años
¿Con qué edad comenzaste a fumar diariamente? …….. años	¿Con qué edad comenzaste a fumar diariamente? …….. años
¿Cuántos cigarros fumabas al día?.....	¿Cuántos cigarros fumas al día?.....
¿Con qué edad dejaste de fumar? .....años	

10. ¿Fumas/fumabas hachís o marihuana?

Escala modificada de Disnea - mMRC

Este cuestionario está diseñado para ayudarnos a saber cómo le afecta su respiración. Por favor, lea cada punto y elija el que mejor describa su situación actual.

GRADO	ACTIVIDAD
0	Ausencia de disnea al realizar ejercicio intenso.
1	Disnea al andar deprisa en llano, o al andar subiendo una pendiente poco pronunciada.
2	La disnea le produce una incapacidad de mantener el paso de otras personas de la misma edad caminando en llano, o tener que parar paradescansar al andar en llano a su propio paso.
3	La disnea hace que tenga que parar a descansar al andar unos 100 metros, o pocos minutos después de andar en llano.
4	La disnea impide al paciente salir de casa o aparece con actividades como vestirse o desvestirse.

Cuestionario Disnea-12

Este cuestionario está diseñado para ayudarnos a saber cómo le afecta su respiración. Por favor, lee cada punto y marca la casilla que mejor se adapta a tu situación respiratoria actualmente. Si no experimentas alguno de los puntos, marca la casilla "nada". Por favor, contesta a todos los puntos.

	Nada	**Poco**	**Bastante**	**Mucho**
Cuando cojo aire no consigo llenar del todo los pulmones				
Tengo que hacer más esfuerzo para respirar				
Siento que me falta el aire				
Me resulta difícil recuperar el aliento				
No soy capaz de coger suficiente aire				
Me resulta incómodo respirar				
Respirar me agota				
Mi forma de respirar me hace estar decaído				
Mi forma de respirar me hace estar abatido				
Mi forma de respirar me preocupa				
Mi forma de respirar me hace estar angustiado				
Mi forma de respirar me hace estar irritable				

Cuestionario CAT

Este cuestionario está diseñado para ayudarnos a saber cómo te afecta su respiración. Por favor, lee cada punto y elije el que mejor describa tu situación actual.

Yo nunca tos	**0**	**1**	**2**	**3**	**4**	**5**	Toso todo el tiempo
No tengo flema (moco en el pecho)	**0**	**1**	**2**	**3**	**4**	**5**	Tengo el pecho lleno de flema (moco)
No siento el pecho oprimido	**0**	**1**	**2**	**3**	**4**	**5**	Siento el pecho oprimido
No me falta el aliento al subir pendientes o escaleras	**0**	**1**	**2**	**3**	**4**	**5**	Me falta el aliento al subir pendientes o escaleras
No tengo limitación para tareas del hogar	**0**	**1**	**2**	**3**	**4**	**5**	Estoy totalmente limitado para las tareas del hogar
No tengo problemas para salir de mi casa	**0**	**1**	**2**	**3**	**4**	**5**	No me siento seguro para salir de mi casa
Duermo profundamente	**0**	**1**	**2**	**3**	**4**	**5**	Mi problema respiratorio me impide dormir
Tengo mucha energía	**0**	**1**	**2**	**3**	**4**	**5**	No tengo nada de energía

Test AUDIT, consumo de alcohol

1. ¿Con qué frecuencia consume alguna bebida alcohólica?	0. Nunca 1. Una o menos veces al mes 2. De 2 a 4 veces al mes 3. De 2 a 3 veces a la semana 4. Cuatro o más veces a la semana
2. ¿Cuántas consumiciones de bebida suele realizar los días que consume?	0. Una o dos 1. Tres o cuatro 2 Cinco o seis 3. De siete a Nueve 4. Diez o mas
3. ¿Con qué frecuencia toma 6 o más bebidas alcohólicas en una sola ocasión de consumo?	0. Nunca 1. Menos de una vez al mes 2. Mensualmente 3. Semanalmente 4. A diario o casi a diario
4. ¿Con qué frecuencia en el curso del último año ha sido incapaz deparar de beber una vez que había empezado?	0. Nunca 1. Menos de una vez al mes 2. Mensualmente 3. Semanalmente 4. A diario o casi a diario
5. ¿Con qué frecuencia en el curso del último año no pudo hace lo que se esperaba de usted, porque había bebido?	0. Nunca 1. Menos de una vez al mes 2. Mensualmente 3. Semanalmente 4. A diario o casi a diario
6. ¿Con qué frecuencia en el curso del último año ha necesitado beber en ayunas para recuperarse después dehaber bebido mucho el día anterior?	0. Nunca 1. Menos de una vez al mes 2. Mensualmente 3. Semanalmente 4. A diario o casi a diario
7. ¿Con qué frecuencia en el curso del último año ha tenido remordimientos o sentimientos de culpa después de haber bebido?	0. Nunca 1. Menos de una vez al mes 2. Mensualmente 3. Semanalmente 4. A diario o casi a diario
8. ¿Con qué frecuencia en el curso del último año no ha podido recordar lo que sucedió la noche anterior porque había bebido?	0. Nunca 1. Menos de una vez al mes 2. Mensualmente 3. Semanalmente 4. A diario o casi a diario
9. ¿Usted o alguna persona han resultado heridos porque usted había bebido?	0. No 2. Sí, pero no en el último año 4. Sí, en el último año
10. ¿Algún familiar, amigo, médico o profesional sanitario, han demostrado preocupación por su consumo de bebidas alcohólicas o le han sugerido que deje de beber?	0. No 2. Sí, pero no en el último año 4. Sí, en el último año

Cuestionario de calidad de vida - WHOQOL-BREF -

Este cuestionario sirve para conocer su opinión acerca de su calidad de vida, su salud, y otras áreas de su vida. Por favor conteste a todas las preguntas. Si no está seguro sobre qué respuesta dar a una pregunta, escoja la que le parezca más apropiada.

Tenga presente su modo de vivir, expectativas, placeres y preocupaciones.

Por favor, pensando en las 2 últimas semanas, conteste a las siguientes preguntas:

Muy mal	Poco	Lo normal	Bastante bien	Muy bien
1	2	3	4	5

1. ¿Cómo puntuaría su calidad de vida? 1 2 3 4 5 …… ☐

Muy insatisfecho	Poco	Lo normal	Bastante satisfecho	Muy satisfecho
1	2	3	4	5

2. ¿Cuán satisfecho está con su salud? 1 2 3 4 5 …… ☐

Las siguientes preguntas hacen referencia a cuánto ha experimentado ciertos hechos en las dos últimas semanas

Nada	Un poco	Lo normal	Bastante	Extremadamente
1	2	3	4	5

3. ¿Hasta qué punto piensa que el dolor (físico) le impide hacer lo que necesita? 1 2 3 4 5 …… ☐
4. ¿Cuánto necesita de cualquier tratamiento médico para funcionar en su vida diaria? 1 2 3 4 5 …… ☐
5. ¿Cuánto disfruta de la vida? 1 2 3 4 5 …… ☐
6. ¿Hasta qué punto siente que su vida tiene sentido? 1 2 3 4 5 …… ☐
7. ¿Cuál es su capacidad de concentración? 1 2 3 4 5 …… ☐
8. ¿Cuánta seguridad siente en su vida diaria? 1 2 3 4 5 …… ☐
9. ¿Cuán saludable es el ambiente físico a su alrededor? 1 2 3 4 5 …… ☐

Las siguientes preguntas hacen referencia a cuán totalmente usted experimenta o fue capaz de hacer ciertas cosas en las dos últimas semanas

Nada	Un poco	Moderado	Bastante	Extremadamente
1	2	3	4	5

10.	¿Tiene energía suficiente para la vida diaria?	1	2	3	4	5	…… ☐
11.	¿Es capaz de aceptar su apariencia física?	1	2	3	4	5	…… ☐
12.	¿Tiene suficiente dinero para cubrir sus necesidades?	1	2	3	4	5	…… ☐
13.	¿Qué disponible tiene la información que necesita en su vida diaria?	1	2	3	4	5	…… ☐
14.	¿Hasta qué punto tiene oportunidad para realizar actividades de ocio?	1	2	3	4	5	…… ☐

Nada	Un poco	Lo normal	Bastante	Extremadamente
1	2	3	4	5

15.	¿Es capaz de desplazarse de un lugar a otro?	1	2	3	4	5	…… ☐

Las siguientes preguntas hacen referencia a cuán satisfecho o bien se ha sentido en varios aspectos de su vida en las dos últimas semanas

Muy insatisfecho	Poco	Lo normal	Bastante satisfecho	Muy satisfecho
1	2	3	4	5

16.	¿Cuán satisfecho está con su sueño?	1	2	3	4	5	…… ☐
17.	¿Cuán satisfecho está con su habilidad para realizar sus actividades de la vida diaria?	1	2	3	4	5	…… ☐
18.	¿Cuán satisfecho está con su capacidad de trabajo?	1	2	3	4	5	…… ☐
19.	¿Cuán satisfecho está de sí mismo?	1	2	3	4	5	…… ☐
20.	¿Cuán satisfecho está con sus relaciones personales?	1	2	3	4	5	…… ☐
21.	¿Cuán satisfecho está con su vida sexual?	1	2	3	4	5	…… ☐
22.	¿Cuán satisfecho está con el apoyo que obtiene de sus amigos?	1	2	3	4	5	…… ☐

Muy insatisfecho	Poco	Lo normal	Bastante satisfecho	Muy satisfecho
1	2	3	4	5

23. ¿Cuán satisfecho está con las condiciones del lugar donde vive? 1 2 3 4 5 …… ☐
24. ¿Cuán satisfecho está con el acceso que tiene a los servicios sanitarios? 1 2 3 4 5 …… ☐
25. ¿Cuán satisfecho está con su transporte? 1 2 3 4 5 …… ☐

La siguiente pregunta hace referencia a la frecuencia con que usted ha sentido o experimentado ciertos hechos en las dos últimas semanas

Nunca	Raramente	Medianamente	Frecuentemente	Siempre
1	2	3	4	5

26. ¿Con qué frecuencia tiene sentimientos negativos tales como tristeza, desesperanza, ansiedad, depresión? 1 2 3 4 5 …… ☐