"COMPARISON OF THE NEUTROPHIL-LYMPHOCYTE, PLATELET-LYMPHOCYTE AND MONOCYTE-LYMPHOCYTE RATIOS IN SCHIZOPHRENIC PATIENTS WITH HEALTHY INDIVIDUALS: A CROSS SECTIONAL STUDY"

By

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in

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DEPARTMENT OF PATHOLOGY

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DR. Vijayalaxmi Dhorigol MD.
Professor and HOD
Department of Pathology,
J. N. Medical College,
Belagavi, Karnataka

Date: 28/6/24
Place: Belagavi.

DR.(Mrs) N. S. Mahantashetti MD (Paed).
Principal
J. N. Medical College,
Belagavi, Karnataka.

Date: 28/06/2024
Place: Belagavi.

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Nehru Nagar, Belagavi- 590 010, Karnataka, INDIA

0831 - 2471350 0831 - 2470759 www.jnmc.edu jncipal@jnmc.edu

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Principal,
J. N. Medical College, Belagavi.

To,
Reg. No. BN0121013
Postgraduate Student,
2021-22 Batch,
Department of Pathology
J. N. Medical College, Belagavi.

ETHICAL CLEARANCE CERTIFICATE

K.L.E. ACADEMY OF HIGHER EDUCATION AND RESEARCH
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Accredited 'A++' Grade by NAAC in (3rd Cycle) Placed in Category 'A' by MHRD (GoI)
JNMC INSTITUTIONAL ETHICS COMMITTEE
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu
Phone: (+ 91-(0)831 Office : 2472550
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref No.MDC/JNMCIEC/ /32 **Date: 27/09/2022**

To,
BN0121013
PG Student in Pathology,
J. N. Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"COMPARISON OF THE NEUTROPHIL-LYMPHOCYTE, PLATELET-LYMPHOCYTE AND MONOCYTE-LYMPHOCYTE RATIOS IN SCHIZOPHRENIC PATIENTS WITH HEALTHY INDIVIDUALS: A CROSS SECTIONAL STUDY"** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi.

(Dr. Harsha Hegde)
Chairman,
JNMC Institutional Ethics Committee
J.N.Medical College, Belagavi

LIST OF ABBREVIATIONS USED

NMHS	National Mental Health Survey
NLR	Neutrophil-Lymphocyte Ratio
MLR	Monocyte-Lymphocyte Ratio
PLR	Platelet-Lymphocyte Ratio
ICD	International Classification of Diseases
FEP	First-Episode Psychosis
PRRs	Pattern Recognition Receptors
PAMPs	Pathogen Associated Molecular Patterns
GMP	Granulocyte, Monocyte Progenitor
CD	Cluster of Differentiation
vWF	von Willebrand Factor
GPIIb/IIIa	Glycoprotein IIb/IIIa
GPIb	Glycoprotein Ib
IL-1	Interleukin-1
IL-6	Interleukin-6
TNF-α	Tumour Necrosis Factor-α
CRP	C-Reactive Protein
MDD	Major Depressive Disorder
SIRS	Systemic Inflammatory Response Syndrome
ADHD	Attention Deficit Hyperactivity Disorder
NSSI	Non-Suicidal Self-Injury
ASD	Autism Spectrum Disorder
CNS	Central Nervous System
EDTA	Ethylenediaminetetraacetic Acid
HB	Haemoglobin
HCT/PCV	Haematocrit/ Packed Cell Volume
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
RBC	Red Blood Cell Count

RDW	Red Blood Cell Distribution Width
TC	Total Count
PLT Count	Platelet Count
N%	Neutrophils
L%	Lymphocytes
M%	Monocytes
E%	Eosinophils
ANC	Absolute Neutrophil Count
ALC	Absolute Lymphocyte Count
AMC	Absolute Monocyte Count
AEC	Absolute Eosinophil Count

ABSTRACT

Background: Schizophrenia is a complex disorder and its pathogenesis remains poorly understood. Inflammatory hypothesis has been proposed to explain the pathogenesis. In this study, we used Neutrophil-Lymphocyte ratio (NLR), Monocyte-Lymphocyte ratio (MLR) and Platelet-Lymphocyte ratio (PLR) as inflammatory markers to explore the relationship between schizophrenia and inflammation.

Objective: To investigate whether Neutrophil-Lymphocyte ratio (NLR), Monocyte-Lymphocyte ratio (MLR) and Platelet-Lymphocyte ratio (PLR) will be higher in patients with schizophrenia than in healthy comparison subjects similar in age and gender.

Methodology: In this prospective study, complete blood counts of schizophrenic patients and healthy controls were analysed. We analysed the neutrophil, lymphocyte and monocyte counts; and compared the calculated NLR, PLR and MLR between schizophrenia and healthy controls and evaluated the correlations with age and gender.

Results: NLR was found to be higher in patients with schizophrenia (2.76 ±1.74) compared to healthy controls (2.21±0.79), which was found to be statistically significant. Additionally, total white blood cell count, absolute neutrophil count was found to higher in the schizophrenia group.

Conclusions: This study supports the inflammatory hypothesis of schizophrenia in an Indian population.

Keywords: schizophrenia, inflammation, neutrophil-lymphocyte ratio (NLR), monocyte-lymphocyte ratio (MLR), platelet-lymphocyte ratio (PLR).

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INTRODUCTION

Schizophrenia spectrum disorders significantly contribute to the global disease burden as they are serious mental illnesses [1]. It has an impact on people worldwide in a variety of sociodemographic categories. The combined one-year and lifetime prevalence of schizophrenia are roughly 0.34% and 0.55% worldwide, respectively, however there have been significant variances noted in the literature [2]. In India the current prevalence is at 0.42% as per National Mental Health Survey (NMHS) of India [1].

Schizophrenia is a complicated and multifaceted mental condition with well-defined symptoms and a lifetime course, but no adequate medical explanation. Emil Kraepelin, a German psychiatrist, is credited with discovering schizophrenia. He initially named the illness *dementia praecox* and described it in the late 1800s. An increasing amount of research points to the potential significance of immunological and inflammatory processes in the pathophysiology of schizophrenia. [3]

The pathophysiological process causing schizophrenia is unknown, and it is partly attributable to its diverse genetic, neurological, and phenotypic profile. Current antipsychotic drugs have been observed to be effective for just around 30% of schizophrenia patients.[4-6]

An essential component of our immune system's reaction to an injury or illness is inflammation [7]. A diminished but persistent inflammatory response known as low-grade systemic inflammation has been connected to a number of mental illnesses, such as mood, neurotic, personality, and psychotic disorders. [8] [9]

Systemic inflammation in patients with mental illness is currently measured using the Neutrophil-Lymphocyte ratio (NLR), which was initially developed as a straightforward method of identifying systemic inflammation in severely ill patients. Compared to

cytokine testing, the NLR is simple to obtain and more accessible because it may be obtained from a complete blood count, along with the Monocyte-Lymphocyte ratio (MLR) and Platelet-Lymphocyte ratio (PLR). [9]

Because it incorporates data from both the innate (neutrophil) and adaptive (lymphocyte) immune systems, it may be less affected by confounding factors like exercise compared to other often studied inflammatory biomarkers. [9]

This study aims to investigate and compare the NLR, PLR and MLR in patients with schizophrenia and healthy individuals. Few studies have been conducted on these ratios in psychiatric disorders, and not many studies have been performed in schizophrenia and even fewer in an Indian patient setting.

Identifying reliable inflammatory markers could aid in early diagnosis, prognosis, patient stratification and treatment monitoring, potentially leading to more targeted and effective interventions.

With this study, we look to address this gap in literature and also provide a crucial avenue for advancing our understanding and management of this psychiatric condition.

AIMS AND OBJECTIVES

Primary objective - To investigate whether Neutrophil-Lymphocyte ratio (NLR), Monocyte-Lymphocyte ratio (MLR) and Platelet-Lymphocyte ratio (PLR) will be higher in patients with schizophrenia than in healthy comparison subjects similar in age and gender.

REVIEW OF LITERATURE

History of schizophrenia

Emil Kraepelin was the first to describe schizophrenia more than a century ago. The cause, neuropathology, and pathophysiology are still unknown. While Kraepelin's knowledge of schizophrenia remained limited, his study was ground-breaking in that it helped to separate the illness from other psychotic disorders like bipolar disorder. [3]

Even with criteria for accurate diagnosis, schizophrenia is still primarily a broad clinical condition characterized by reported subjective experiences (symptoms), loss of function (behavioural impairments), and varied course patterns. [3]

In 1919, Bleuler identified a set of core symptoms he believed were unique to schizophrenia. He opined that loosening of associations, blunt or incongruous affect, ambivalence, and autism were fundamental symptoms, whereas delusions and hallucinations are accessory symptoms. The fundamental symptoms are called as Bleuler’s four and are presently regarded as negative symptoms. [10]

In 1946, Jaspers suggested that the primary defect in schizophrenia was an impairment in empathic communication. This idea was followed in 1959 by Schneider's identification of 11 first-rank symptoms, which were highly valued and previously considered pathognomonic. [11]

Clinical features and diagnosis

Schizophrenic disorders are generally marked by fundamental and distinctive distortions in thinking and perception, as well as inappropriate or blunted emotional responses. Typically, individuals maintain clear consciousness and intellectual capacity, though certain cognitive deficits may develop over time.

The fundamental symptoms should not be caused by any other organic condition (for example, a brain tumour) or by the effects of a substance or medication on the central nervous system (for example, corticosteroids), including withdrawal (for example, alcohol withdrawal).

Essential Features (as per ICD 11) [12]-

At least two of the following symptoms must be present (by the individual's report or through observation by the clinician or other informants) most of the time for a period of 1 month or more. At least one of the qualifying symptoms should be from item a) through d) below:

a) Persistent delusions (e.g., grandiose delusions, delusions of reference, persecutory delusions).
b) Persistent hallucinations (most commonly auditory, although they may be in any sensory modality).
c) Disorganized thinking (formal thought disorder) (e.g., tangentiality and loose associations, irrelevant speech, neologisms). When severe, the person's speech may be so incoherent as to be incomprehensible ('word salad').
d) Experiences of influence, passivity or control (i.e., the experience that one's feelings, impulses, actions or thoughts are not generated by oneself, are being

placed in one's mind or withdrawn from one's mind by others, or that one's thoughts are being broadcast to others).

e) Negative symptoms such as affective flattening, alogia or paucity of speech, avolition, asociality and anhedonia.

f) Grossly disorganized behaviour that impedes goal-directed activity (e.g., behaviour that appears bizarre or purposeless, unpredictable or inappropriate emotional responses that interferes with the ability to organize behaviour).

g) Psychomotor disturbances such as catatonic restlessness or agitation, posturing, waxy flexibility, negativism, mutism, or stupor. Note: If the full syndrome of Catatonia is present in the context of Schizophrenia, the diagnosis of Catatonia Associated with Another Mental Disorder should also be assigned.

Onset and course

Schizophrenia is often diagnosed in the late teens to early thirties, and it tends to appear earlier in males (late adolescence to early twenties) than in females.[13]

Schizophrenia can be identified by its linear progression through several phases: the premorbid phase, the prodromal phase, first-episode psychosis (FEP), repeated episodes of psychosis, inter-episode remission, a stable phase or plateau, and finally, recovery. [14]

Co-morbidities

Schizophrenia patients exhibit higher frequencies of various comorbid medical and mental conditions. [15, 16]

Depressive disorder is estimated to affect 40% of people with schizophrenia and is associated with poorer outcomes [17]. Anxiety and other related disorders are also commonly seen comorbidities.[18].

Additionally, the occurrence of drug abuse such as cocaine, alcohol & cannabis among patients with schizophrenia is around five times that of the general population. Individuals with schizophrenia and drug addiction have greater risks of relapse, being hospitalized again, violence, poor social life, medication non-compliance poor medical outcomes, and greater rate of suicide. [19, 20]

Association of schizophrenia with cells of inflammation.

Neutrophil

The most abundant type of leucocyte in peripheral blood are neutrophils. Their fine pink to lavender granules and segmented nucleus make them easy to spot on peripheral blood smears.

Not every neutrophil is circulating at the same moment after they are released from the bone marrow into the peripheral circulation.

The marginating pool, which is made up of around half of the entire blood neutrophil pool, is temporarily marginated along the vessel walls. On the other hand, the other half—known as the circulating pool—is openly circulating. [21]

In recent years, it has become evident that neutrophils can, through a mechanism known as "reverse migration," enter the vasculature again after patrolling the tissue [22].

Neutrophils identify microbes through pattern recognition receptors (PRRs) that bind microbial structures [23].

Many pathogens carry molecular structures called pathogen associated molecular patterns (PAMPs).

PRRs may be transmembrane proteins that function to activate the leukocyte, while other PRRs are soluble serum proteins that act as opsonins to help recognise or neutralise pathogens.

Monocyte

The monocyte is produced in the bone marrow from a bipotential progenitor cell, the granulocyte, monocyte progenitor (GMP).

This progenitor cell is capable of producing either monocytes or neutrophils.

The primary role of monocytes is host defence and this role is fulfilled in the tissues.[24]

Measuring between 12 to 20 μm in diameter, monocytes are considered the largest white blood cells and are twice the size of red blood cells. They can be easily identified in peripheral blood smears by their large size, kidney shaped nuclei and sky blue cytoplasm.

[25]. The chromatin is loose and linear forming a lacy pattern in comparison to the clumped dense chromatin of mature lymphocytes or granulocytes. Vacuoles are frequently observed in the cytoplasm.[26]

Similar to neutrophils, the total vascular monocyte pool consists of a marginated pool and a circulating pool. However, unlike neutrophils, the marginating pool is about three times the size of the circulating pool.[27]

Monocytes diapedese into the tissue from the peripheral blood in a random manner after circulating for an average transit time of about 8 hours.

Monocytes have the capability to further differentiate into specialized forms based on their location [28]. These include alveolar macrophages in the lungs, mesangial cells in the kidney, microglia cells in the brain, osteoclasts in the bone and histiocytes in the connective tissue [29].

Lymphocyte

The pluripotent stem cells of the bone marrow give rise to pre B and pre T cells.

Pre T cells pass through the thymus and become immunocompetent T cells, while the pre B cells migrate to the peripheral lymphoid organs and transform into B cells.

T-cells are further sub-classified as CD8+ T-cells, CD4+ T cells, and T regulatory cells (also known as suppressor T cells). Each of these subtypes have a specific function.

B-cell is a key regulatory cell in the immune system; it acts by producing antibodies, antigen-presenting cells, supporting other mononuclear cells, and contributing to inflammatory pathways directly.

Using light microscopy, it is not possible to differentiate between types of lymphocytes (B and T cells). Identification requires the use of flow cytometry, which recognizes surface markers.

Under a light microscope, lymphocytes are roughly about 7 µm, equivalent to the size of a red blood cell. These cells have a large, dark-staining nuclei, which occupies most of the cell. The small lymphocytes have a high nuclear-cytoplasmic ratio, pale blue cytoplasm and abundant condensed chromatin. Large lymphocytes have a lower nuclear-cytoplasmic ratio, with a round to oval nucleus and chromatin is not as coarse as in small lymphocytes. (30, 31)

Platelets

They are small, anucleate fragments of cytoplasm of megakaryocytes and play a vital role in maintaining haemostasis and vascular integrity.(32)

The diameter of a mature platelet is 2-3 µm, with a life span of 5-9 days. As platelets age, their functional capacity gradually decreases.

At the cellular level, platelets express several surface receptors that facilitate their adhesion to the endothelial surface and subsequent aggregation of platelets with each other.

Platelets contain three major granule types- alpha granules, dense granules and lysosomes(33). The most abundant are alpha granules and contain certain substances such as von Willebrand factor (vWF), GPIIb/IIIa, GPIb, P-selectin and factors V, IX, and XIII, among others.

Platelets are formed in the bone marrow by fragmentation of megakaryocytes cytoplasm. Each megakaryocyte is estimated to give rise to 1000-3000 platelets, depending on the ploidy of parent megakaryocyte.

They are released as proplatelets, which extend between the endothelial cells and break up into individual platelets under the shear stress of flowing blood. [21]

Platelets also play a crucial role in inflammation and contributes to both innate and adaptive immune systems. They have the capacity to synthesize cytokines, chemokines and inflammatory mediators[34]. They also adhere to and interact with various leukocytes, including neutrophils, lymphocytes, monocytes, macrophages, and dendritic cells[35].

Inflammatory markers in psychiatric disorders

In psychiatry, inflammatory markers play a crucial role in understanding the pathophysiology of mood disorders and other psychiatric conditions.

Studies have shown that inflammatory cytokines like interleukin-1 (IL-1), interleukin-6 (IL-6), and tumour necrosis factor-α (TNF-α) are elevated in patients with major depression and bipolar disorder, indicating a direct link between inflammation and psychiatric symptoms [36].

Additionally, C-reactive protein (CRP) has been identified as a neuro-inflammatory biomarker associated with various psychiatric disorders, including schizophrenia, mood disorders, anxiety disorders, and post-traumatic stress disorder, with elevated levels suggesting more severe symptomatology and treatment resistance [37].

Furthermore, early-life inflammatory markers, such as IL-6, have been linked to the number of depressive episodes experienced from childhood to adulthood, highlighting the possible significance of inflammation in the aetiology of psychosis and depression. [38].

The importance of neuro-inflammation and immune system parameters in psychiatric disorders is highlighted, furthering our understanding into developing potential diagnostic, prognostic, and therapeutic strategies. [39, 40].

Inflammatory ratios in schizophrenia

Inflammatory ratios which have been used in a variety of conditions, have recently been emerging as a promising indicator of inflammation in psychiatric illnesses. They are also easier to test and more affordable, in comparison to cytokine and interleukin testing.

In psychiatric disorders, inflammatory ratios like Neutrophil-Lymphocyte Ratio (NLR), Platelet-Lymphocyte Ratio (PLR), and Monocyte-Lymphocyte Ratio (MLR) have been identified as potential biomarkers of inflammation [41, 42].

Studies show elevated NLR, PLR, and MLR in conditions such as bipolar disorder, major depressive disorder, and schizophrenia compared to healthy controls, indicating inflammatory activation in these disorders [43, 44].

The severity of psychiatric disorders and their response to psychopharmacological treatment have shown inconsistent associations with these inflammatory ratios [45].

Additionally, research suggests that the intensity of inflammation, as indicated by NLR and PLR, correlates with the severity of depressive episodes in major depressive disorder and bipolar disorder-depressive episode, highlighting a complex inflammatory process in these conditions.

In a study by Ozdin S (2017), they observed that schizophrenia patients showed elevated NLR, MLR, PLR, and neutrophil counts, with decreased lymphocyte counts as compared to controls. Schizophrenia patients exhibited higher NLR and MLR compared to bipolar disorder patients, supporting the inflammation hypothesis for both disorders. [46]

In a meta-analysis by Mazza M (2018), their findings support the theory proposing inflammatory activation in non-affective psychosis, suggesting that inflammatory markers, notably NLR and MLR, could serve as valuable indicators for identifying this activation.[47]

A study by Zhu X (2022) in the Chinese population showed significantly increased NLR and MLR in patients with schizophrenia when compared to controls. This study supports the inflammatory hypothesis of schizophrenia. [48]

Neutrophil Lymphocyte Ratio

Many chronic diseases are significantly affected by inflammation and immunity.[49-51]

The Neutrophil-Lymphocyte Ratio (NLR) is determined as a ratio of the number of neutrophils and lymphocytes in the peripheral blood. It serves as a biomarker indicating the balance between acute and chronic inflammation (measured by neutrophil count) and adaptive immunity (assessed by lymphocyte count) respectively.

The NLR is a cheap, simple and easily calculable parameter that can be used for a variety of conditions.[52]

The first use of NLR was published by Zahorec et al (2000), who evaluated the ratio in post-surgery systemic inflammatory response syndrome(SIRS) patients. [53]

It has been found to be elevated in a variety of psychiatric conditions, highlighting its role in the pathophysiology of these disorders. [9, 54]

Studies have also shown it to be increased in major depressive disorder (MDD) patients who are not undergoing pharmacological therapy. NLR also shows promise as a biomarker in patients with suicidal behaviour in MDD. There is also a positive correlation between the severity of depression and degree of elevation of NLR. [55-57]

The ratio has been found to be elevated in non-affective psychosis, schizophrenia and bipolar disorder patients, compared to control subjects. Schizophrenia patients suffering from a psychotic episode had a higher NLR compared to bipolar patients suffering from a manic episode. [46, 58]

In children it has been found to be increased in attention deficit hyperactivity disorder (ADHD).[59]

Platelet Lymphocyte Ratio

In the last few decades, the platelet-lymphocyte ratio (PLR) has become widely recognized as a versatile laboratory marker capable of predicting a range of conditions including cancer, pro-thrombotic and metabolic diseases. [60-63]

PLR has also been studied in a variety of psychiatric conditions. It has been found to be elevated in mood disorders like bipolar disorder and major depressive disorder. [58] PLR was also found to be significant in the early discovery of post stroke depression. [64]

It has also been found to be a marker for increased risk of developing dementia, as presented in a study with a 9 year follow up of study participants. [65]

PLR has been found to be elevated in non-suicidal self-injury (NSSI) in adolescent demographic.[66]

PLR has also been found to be increased in schizophrenic patients undergoing psychotic episode [46].

Monocyte Lymphocyte Ratio

Monocyte-lymphocyte ratio (MLR) has been shown to be increased in various conditions. It can be easily obtained from a complete blood count.

MLR has also been studied in a variety of psychiatric conditions. It has been found to be elevated in mood disorders like bipolar disorder and major depressive disorder. [58]

In schizophrenia, MLR is found to be significantly elevated when compared to a healthy group. MLR along with PLR were found to be significantly elevated in the remission period. [46]

MLR has also been found to be increased along with an increased monocyte count in autism spectrum disorder (ASD).[67]

Inflammation in pathogenesis of Schizophrenia

- Inflammation and Schizophrenia: Schizophrenia involves risk genes promoting inflammation and is influenced by environmental stress and immune system alterations.[68]

- Neuromediator Alterations: Dopamine, serotonin, and glutamate alterations, typical in schizophrenia, are linked to neuro-inflammation and may trigger schizophrenia symptoms.[69]

- Role of Chronic Inflammation and Immune Dysregulation: Chronic inflammation is increasingly recognized in major mental disorders, including schizophrenia, and reveals new pharmacologic targets. Schizophrenia is associated with dysregulated immune responses, shown by abnormal pro- and anti-inflammatory cytokine levels in patients.[70]

- Sources of Inflammation: Chronic low-grade inflammation in schizophrenia can arise from infectious agents, environmental toxins, trauma-related neuronal lesions, or genetic factors.[71-73]

- Role of microglia: Microglia, comprising 10-20% of CNS cells, are crucial for the local immune response, activating cytokines in response to injury or disease.[74] Aging, neurodegeneration, and stress can sensitize microglia, leading to exaggerated immune responses upon additional stimuli, impacting behaviour.[75]

MATERIALS AND METHODS

Source of Data: Hospital based prospective cross sectional study.

Patients admitted in psychiatry ward with diagnosis of schizophrenia at KLE's Dr. Prabhakar Kore Hospital & MRC, Belagavi between 1st January 2023 to 31st December 2023.

Healthy group from voluntary blood donors in blood bank at KLE's Dr. Prabhakar Kore Hospital & MRC, Belagavi.

Study Design: 1-year hospital based prospective, cross sectional study

Study Period: 1st January 2023 to 31st December 2023.

Sample Size: 65 patients with schizophrenia and 130 healthy individuals were included in the study.

Sampling technique: Universal sampling

Inclusion Criteria:

- Patients admitted in psychiatry ward with diagnosis of schizophrenia using ICD 11 criteria.
- Schizophrenic patients aged 18 years or older, who can give valid informed consent.

Exclusion Criteria:

- Patients with other co morbid psychiatric disorders.
- Patients with diagnosable substance use disorder (except nicotine).
- Patients with intellectual disability disorder.
- Patients with organic mental health conditions.

Data collection procedure:

The present study is conducted on patients diagnosed with schizophrenia and admitted under Department of Psychiatry at KLE's Dr. Prabhakar Kore Hospital & MRC, Belagavi.

Comparison group of age & gender matched voluntary blood donors who present to the blood bank and willing to participate were taken.

After obtaining permission from the concerned authorities, the participants were briefed about the study and informed consent was taken from the patients of age >18 years who are willing to participate in the study.

As per ICD 11, at least two of the symptoms from the essential features list must be present (by the individual's report or through observation by the clinician or other informants) most of the time for a period of 1 month or more. At least one of the qualifying symptoms must be present from the following. They are- persistent delusions, persistent hallucinations, disorganized thinking, experiences of influence, passivity or control.

Blood samples will be drawn under aseptic precautions from a large vein of each patient by applying minimal tourniquet force. For measurement of complete blood count, blood will be drawn into a vacutainer tube, containing EDTA as an anticoagulant. Parameters such as hemoglobin, platelet count, total leukocyte count, differential leukocyte count, absolute neutrophil count, absolute lymphocyte count and absolute monocyte count will be analysed in an automated blood cell counter.

Statistical Methods:

The statistical analyses were performed using SPSS software (version 23). Data is presented as mean ± SD for continuous variables. Categorical variables are shown as number and percentage. Normally distributed variables were compared using the Student t test. Non normally distributed variables were compared using Mann-Whitney U test. Pearson correlation analysis were used to determine correlations between NLR, MLR, PLR and of schizophrenia. A p value of lesser than 0.05 was considered as statistically significant.

RESULTS

Table 1 compares the distribution of gender among healthy individuals and those with schizophrenia. The results show that:

- The healthy group consists of 54% males and 46% females.
- The schizophrenia group consists of 60% males and 40% females.
- The total percentage of males and females in both groups is 55.90% and 44.10%, respectively.
- The chi-square test shows that the difference in gender distribution between the two groups is not statistically significant (p-value = 0.4150).

Table 1: Comparison of healthy group and schizophrenia group with gender

Gender	Healthy group	%	Schizophrenia group	%	Total	%
Male	70	53.85	39	60.00	109	55.90
Female	60	46.15	26	40.00	86	44.10
Total	130	100.00	65	100.00	195	100.00
Chi-square=0.6660, p=0.4150						

Figure 1 illustrates the distribution of gender among healthy individuals and those with schizophrenia. The chart shows that the healthy group comprises 54% of males compared to the schizophrenia group 60%.

Figure 1: Comparison of healthy group and schizophrenia group with gender

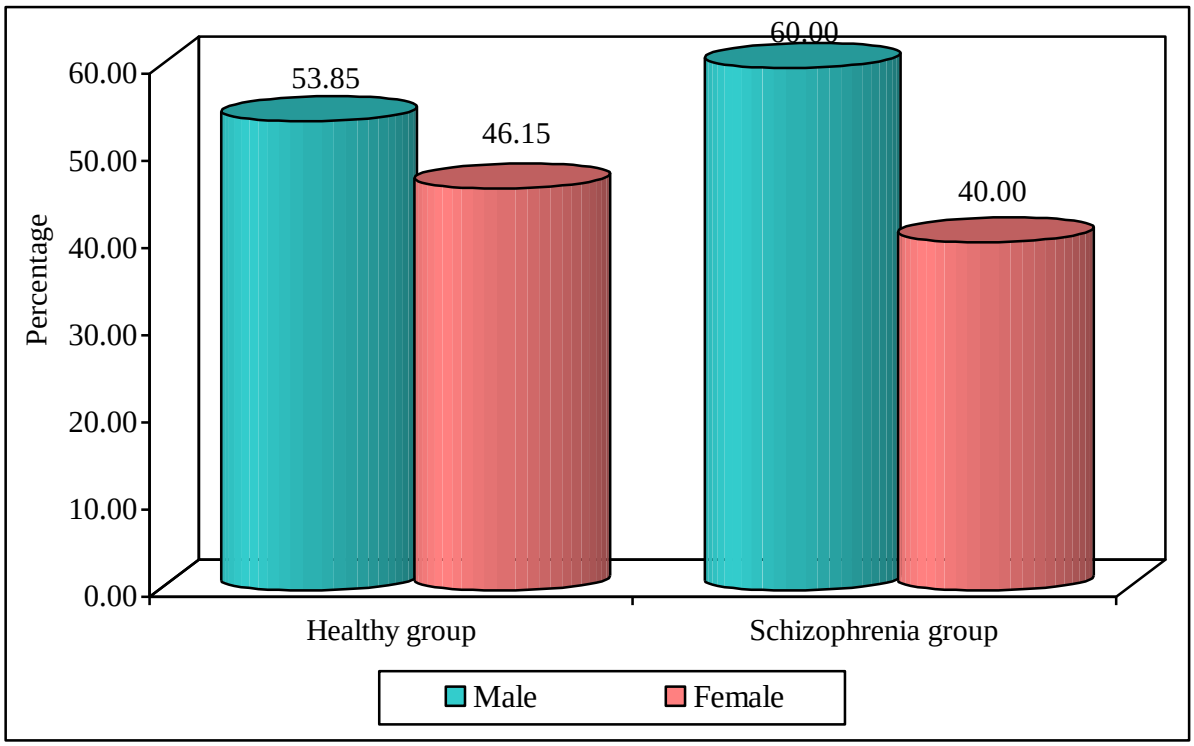


Table 2 demonstrates the age distribution more than 50% of the total samples belong to the age group of 21-40 years. A majority of schizophrenia patients (63.08%) belong to the age group of 21-40 years.

- The mean age of the schizophrenia group is similar (33.45 years) to that of the healthy group (33.66 years).
- The chi-square test suggests that the age distribution difference is not statistically significant at the 5% level (p=0.9970)

Table 2: Comparison of healthy group and schizophrenia group with age

Age groups (years)	Healthy group	%	Schizophrenia group	%
<=20	15	11.54	7	10.77
21-30	49	37.69	26	40.00
31-40	30	23.08	15	23.08
41-50	22	16.92	10	15.38
>=51	14	10.77	7	10.77
Mean	33.66		33.45	
SD	11.62		12.13	
Total	130	100.00	65	100.00

Chi-square=0.1450, p=0.9970

Figure 2 shows a bar chart which illustrates the distribution of age among healthy individuals and those with schizophrenia. The chart shows that the schizophrenia group has a higher percentage of individuals in the 21-40 years' age group (63.08%).

Figure 2: Comparison of healthy group and schizophrenia group with age

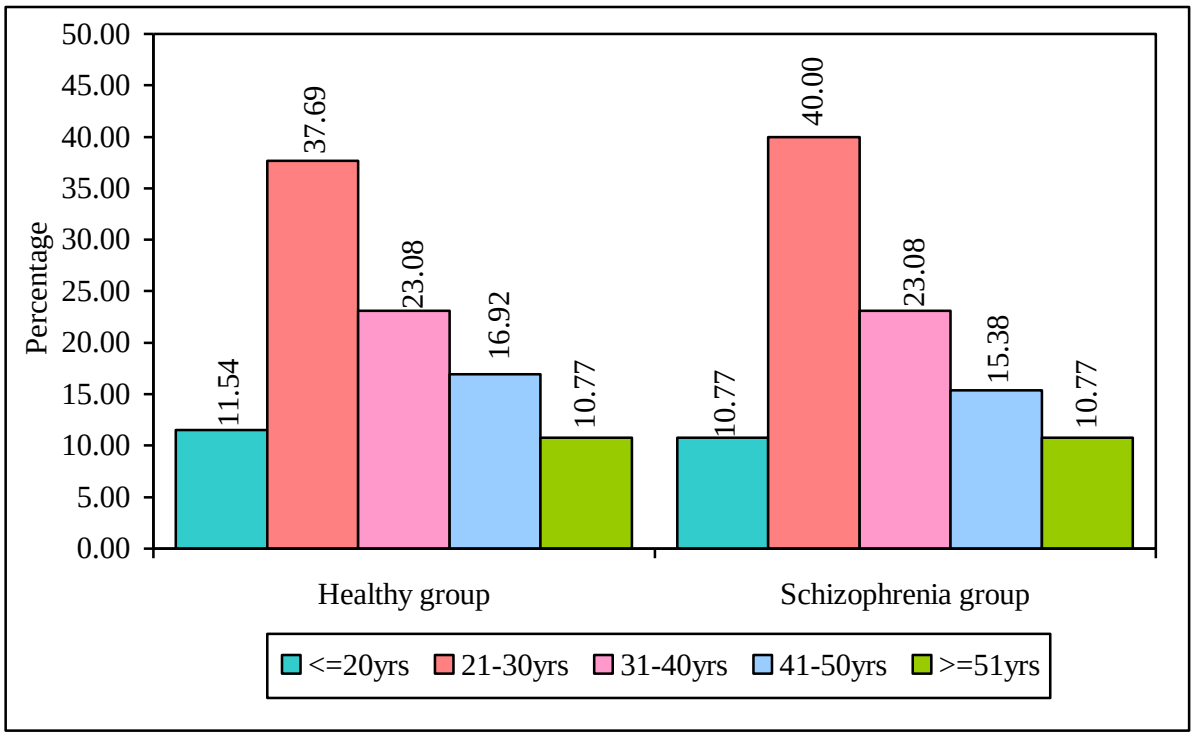


Table 3 compares the mean NLR scores of healthy individuals and those with schizophrenia using an independent t-test. The results show that:

- The mean NLR score of the healthy group is 2.21±0.79, while that of the schizophrenia group is 2.76 ±1.74.
- The mean difference between the two groups is -0.56.
- The mean NLR in the healthy group is 0.56 lower than in the schizophrenia group, and we are 95% confident that the mean is 0.20 to 0.91 lower in the healthy group compared to schizophrenia group.
- The t-test shows that the difference in NLR scores between the two groups is statistically significant (p-value = 0.0025).

Table 3: Comparison of healthy group and schizophrenia group with NLR scores using independent t test

Groups	Mean	SD	SE	t-value	P-value	Mean Diff	95% CI for mean Diff.	
							Lower	Upper
Healthy group	2.21	0.79	0.07	-3.0595	0.0025*	-0.56	-0.91	-0.20
Schizophrenia group	2.76	1.74	0.22					

*p<0.05

Figure 3 shows a bar chart which illustrates the distribution of NLR scores among healthy individuals and those with schizophrenia. The chart shows that the schizophrenia group has a higher mean NLR score (2.76) compared to the healthy group (2.21).

Figure 3: Comparison of healthy group and schizophrenia group with NLR scores

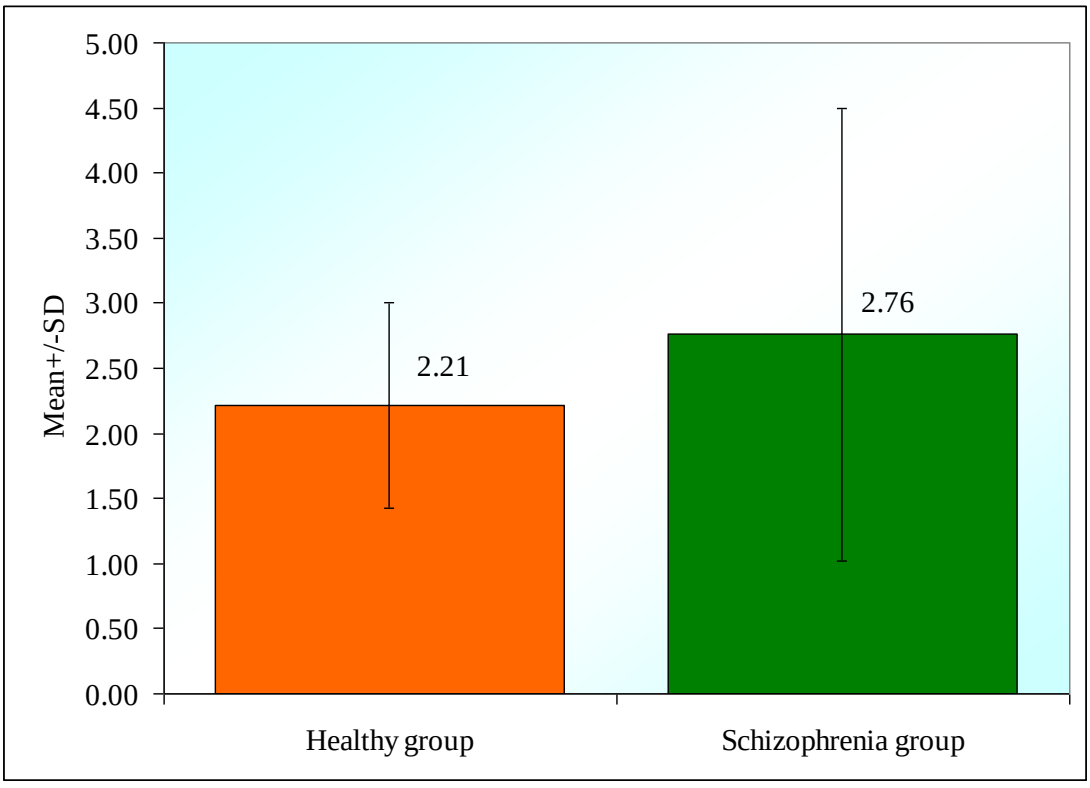


Table 4 compares the mean PLR scores of healthy individuals and those with schizophrenia using an independent t-test. The results show that:

- The mean PLR score of the healthy group is 132.76, while that of the schizophrenia group is 129.43.
- The standard deviation (SD) of PLR scores in both groups is around 45.
- The t-test shows that the difference in PLR scores between the two groups is not statistically significant (p-value = 0.6281).

Table 4: Comparison of healthy group and schizophrenia group with PLR scores using independent t test

Groups	Mean	SD	SE	t-value	P-value	Mean Diff	95% CI for mean Diff.	
							Lower	Upper
Healthy group	132.76	45.48	3.99					
Schizophrenia group	129.43	44.30	5.49	0.4852	0.6281	3.32	-10.19	16.83

*p<0.05

Figure 4 shows a bar chart which illustrates the distribution of PLR scores among healthy individuals and those with schizophrenia. The chart shows that the healthy group has a slightly higher mean PLR score (132.76) compared to the schizophrenia group (129.43).

Figure 4: Comparison of healthy group and schizophrenia group with PLR scores

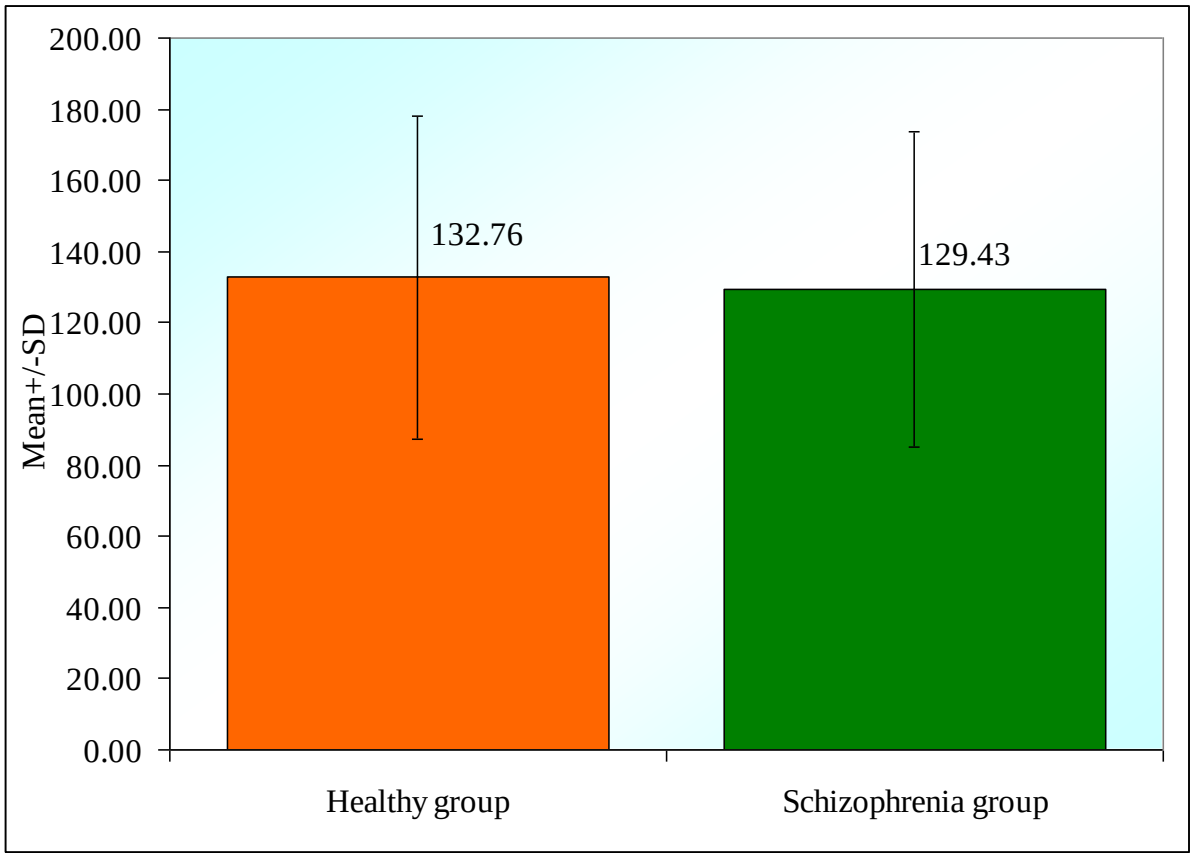


Table 5 compares the mean MLR scores of healthy individuals and those with schizophrenia using an independent t-test. The results show that:

- The mean MLR score of the healthy group is 0.27, while that of the schizophrenia group is 0.29.
- The standard deviation (SD) of LMR scores in both groups is around 0.10.
- The t-test shows that the difference in LMR scores between the two groups is not statistically significant (p-value = 0.3771).

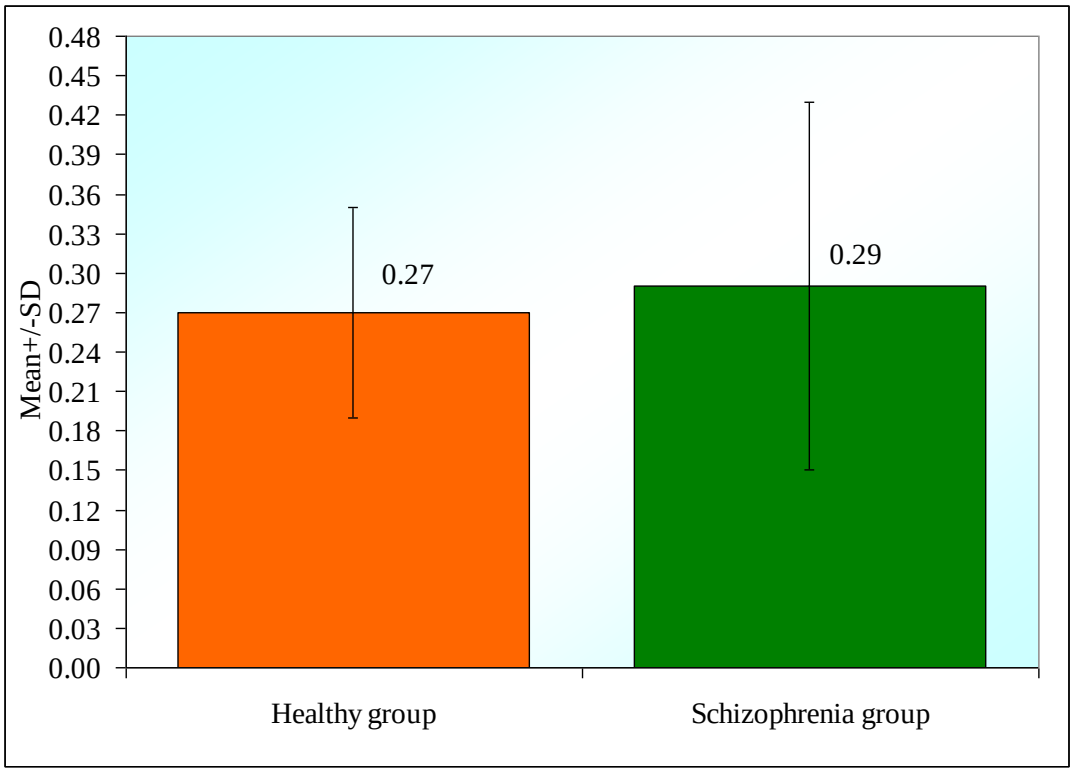
Table 5: Comparison of healthy group and schizophrenia group with MLR scores using independent t test

Groups	Mean	SD	SE	t-value	P-value	Mean Diff	95% CI for mean Diff.	
							Lower	Upper
Healthy group	0.27	0.08	0.01	-0.8853	0.3771	-0.01	-0.05	0.02
Schizophrenia group	0.29	0.14	0.02					

*p<0.05

Figure 5 shows a bar chart which illustrates the distribution of MLR scores among healthy individuals and those with schizophrenia. The chart shows that the schizophrenia group has a higher mean MLR score (0.29) compared to the healthy group (0.27).

Figure 5: Comparison of healthy group and schizophrenia group with MLR scores



In both Healthy and Schizophrenia groups, the correlations between NLR and PLR, NLR and MLR, and PLR and MLR are all statistically significant ($p < 0.05$), as shown in Table 6.

The direction and strength of the correlations differ between the two groups:

- In the Healthy group, NLR and PLR have a weak positive correlation (0.3883), whereas in the Schizophrenia group, this correlation is stronger (0.7106).
- NLR and MLR have a moderate positive correlation in both groups, with a slightly stronger correlation in the Schizophrenia group (0.5836 vs. 0.7542).
- PLR and MLR have a weaker positive correlation in the Healthy group (0.2075) compared to the Schizophrenia group (0.4845).

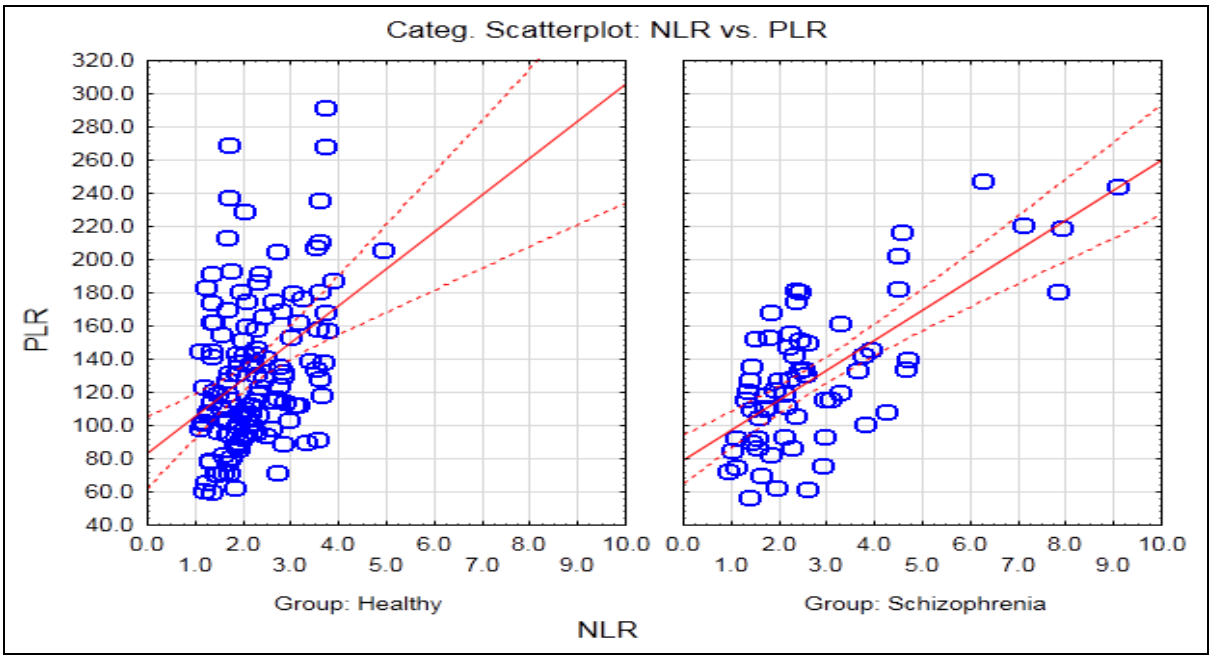
Table 6: Correlations among NLR, PLR and MLR in two groups by Karl Pearson's correlation coefficient

Group	Variables	Mean	SD	r-value	t-value	p-value
Healthy	NLR	2.21	0.79			
	PLR	132.76	45.48	0.3883	4.7667	0.0001*
	NLR	2.21	0.79			
	MLR	0.27	0.08	0.5836	8.1307	0.0001*
	PLR	132.76	45.48			
	MLR	0.27	0.08	0.2075	2.3995	0.0179*
Schizophrenia	NLR	2.76	1.74			
	PLR	129.43	44.30	0.7106	8.0157	0.0001*
	NLR	2.76	1.74			
	MLR	0.29	0.14	0.7542	9.1178	0.0001*
	PLR	129.43	44.30			
	MLR	0.29	0.14	0.5585	5.3440	0.0001*

*$p<0.05$

- Figure 6 shows the correlation between Neutrophil-Lymphocyte Ratio (NLR) and Platelet-Lymphocyte Ratio (PLR) in two distinct groups: Healthy individuals and individuals with Schizophrenia. The plot is divided into two scatterplots, one for each group, displaying the relationship between NLR (x-axis) and PLR (y-axis).
- There appears to be a positive correlation between NLR and PLR, as indicated by the upward slope of the regression line. This suggests that as NLR increases, PLR also tends to increase for both schizophrenia and healthy individuals.
- The r value is higher in the schizophrenia group (0.7106) compared to the healthy group (0.3883).

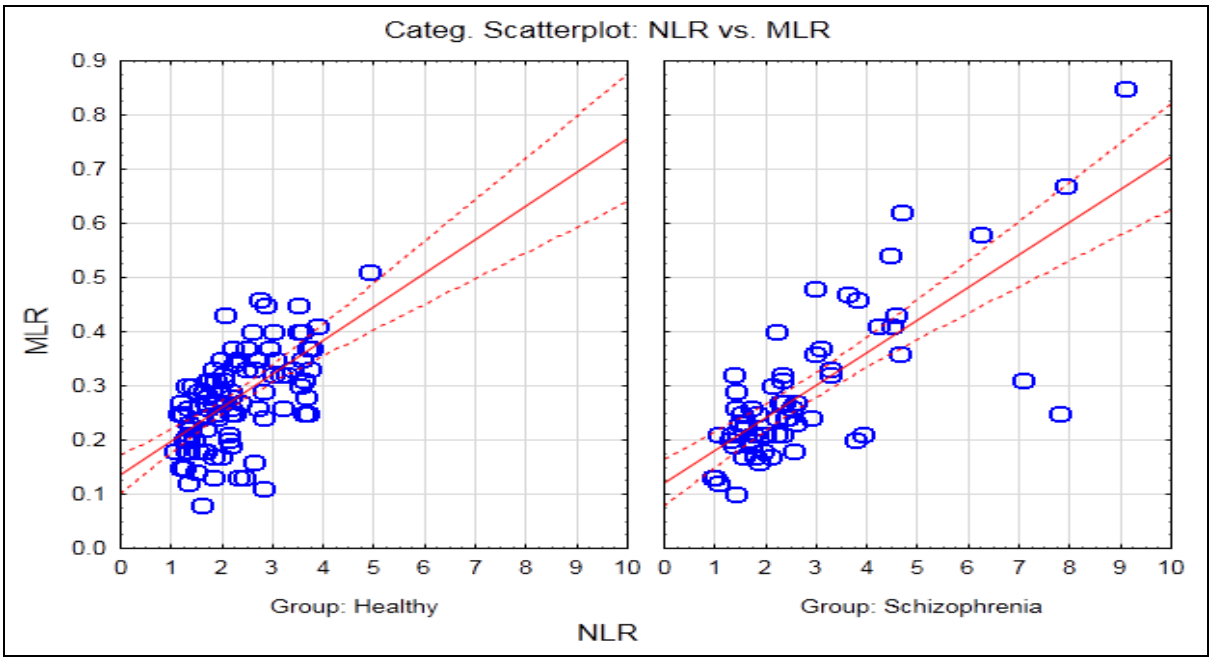
Figure 6: Correlation between NLR with PLR in two groups



- Figure 7 shows the correlation between Neutrophil-Lymphocyte Ratio (NLR) and Monocyte-Lymphocyte Ratio (MLR) in two distinct groups: Healthy individuals and individuals with Schizophrenia. The plot is divided into two scatterplots, one for each group, displaying the relationship between NLR (x-axis) and MLR (y-axis).

- There appears to be a positive correlation between NLR and MLR, as indicated by the upward slope of the regression line. This suggests that as NLR increases, MLR also tends to increase for both schizophrenia and healthy individuals.
- The r value is higher in the schizophrenia group (0.7542) compared to the healthy group (0.5836).

Figure 7: Correlation between NLR with MLR in two groups



- Figure 8 shows the correlation between Platelet-Lymphocyte Ratio (PLR) and Monocyte-Lymphocyte Ratio (MLR) in two distinct groups: Healthy individuals and individuals with Schizophrenia. The plot is divided into two scatterplots, one for each group, displaying the relationship between PLR (x-axis) and MLR (y-axis).
- There appears to be a positive correlation between PLR and MLR, as indicated by the upward slope of the regression line. This suggests that as PLR increases, MLR also tends to increase for both schizophrenia and healthy individuals.

- The r value is higher in the schizophrenia group (0.5585) compared to the healthy group (0.2075).

Figure 8: Correlation between PLR with MLR in two groups

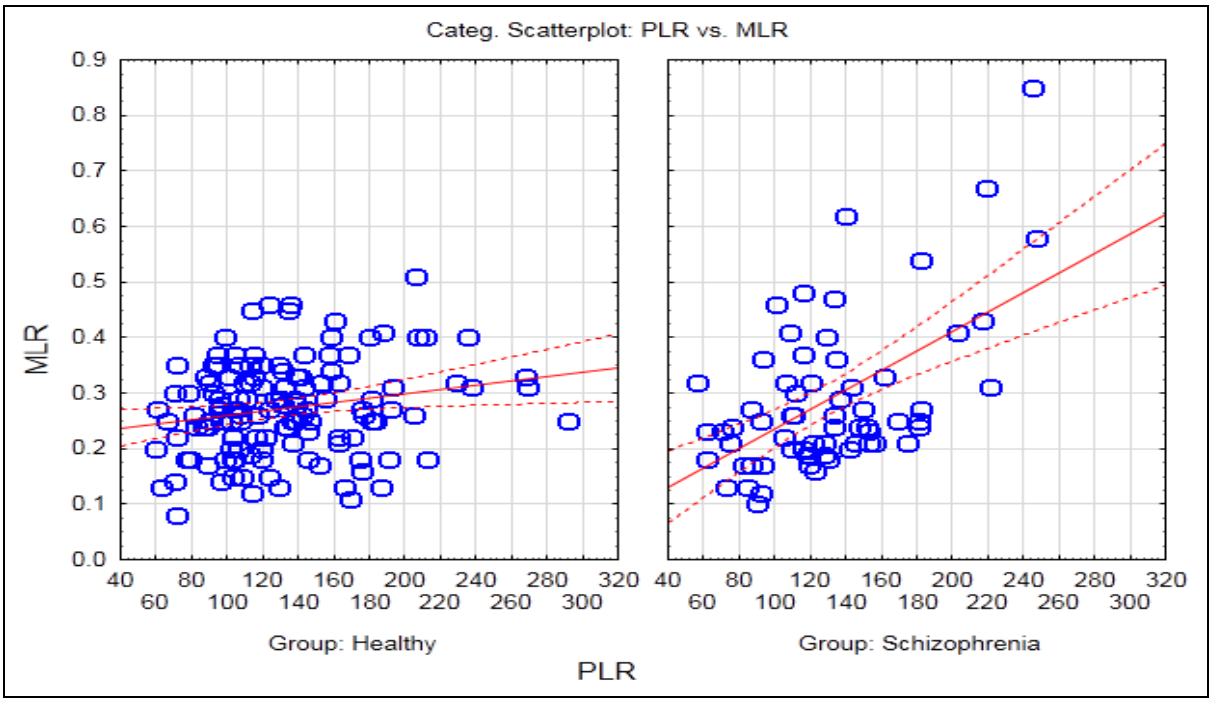


Table 7 compares the mean scores of different parameters- hemoglobin (HB), haematocrit/ packed cell volume (HCT/PCV), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), red blood cell count (RBC), red blood cell distribution width (RDW), total count (TC), platelet count (PLT), neutrophils (N%), lymphocytes (L%), monocytes (M%), eosinophils (E%), absolute neutrophil count (ANC), absolute lymphocyte count (ALC), absolute monocyte count (AMC), absolute eosinophil count (AEC) among healthy individuals and those with schizophrenia using an independent t-test. The results show that:

- The mean scores of HB, HCT/PCV, MCV, RDW, TC, M%, E%, ANC and AEC are significantly different between the two groups (p-value < 0.05).

The 95% confidence intervals for the mean differences are provided for each parameter.

Table 7: Comparison of healthy group and Schizophrenia group with scores of different parameters by independent t test.

*p<0.05

Parameters	Healthy group		Schizophrenia group		t-value	p-value	Mean Diff.	95% CI for mean diff.	
	Mean	SD	Mean	SD				Lower	Upper
HB (g/dL)	14.01	1.22	13.13	1.72	4.1204	0.0001*	0.88	0.46	1.30
HCT/PCV(%)	43.33	3.49	41.38	4.35	3.3777	0.0009*	1.95	0.81	3.09
MCV (fL)	90.89	5.25	88.92	8.05	2.0449	0.0422*	1.96	0.07	3.86
MCH (pg)	29.10	1.53	28.76	3.05	1.0229	0.3076	0.34	-0.31	0.98
MCHC (g/dL)	32.33	0.90	32.21	1.30	0.7620	0.4470	0.12	-0.19	0.44
RBC($X10^6$/µL)	4.72	0.39	4.61	0.63	1.4434	0.1505	0.11	-0.04	0.25
RDW (%)	13.41	0.90	14.06	2.34	-2.7807	0.0060*	-0.65	-1.11	-0.19
TC($X10^3$/ µL)	7.40	1.59	8.69	2.40	-4.4596	0.0001*	-1.29	-1.86	-0.72
PLT($X10^3$/ µL)	272.65	72.15	268.86	61.37	0.3630	0.7170	3.79	-16.81	24.40
N%	60.39	7.28	61.75	10.86	-1.0382	0.3005	-1.36	-3.95	1.23
L%	29.00	6.64	27.32	8.48	1.5124	0.1321	1.68	-0.51	3.86
M%	7.65	1.58	6.82	1.74	3.3782	0.0009*	0.84	0.35	1.33
E%	2.90	1.32	4.11	4.26	-2.9667	0.0034*	-1.21	-2.01	-0.40
ANC($X10^3$/ µL)	4.51	1.22	5.51	2.27	-3.9674	0.0001*	-0.99	-1.49	-0.50
ALC($X10^3$/ µL)	2.16	0.53	2.24	0.65	-0.8680	0.3865	-0.08	-0.25	0.10
AMC($X10^3$/ µL)	0.57	0.17	0.60	0.22	-0.9441	0.3463	-0.03	-0.08	0.03
AEC($X10^3$/ µL)	0.20	0.10	0.33	0.30	-4.3345	0.0001*	-0.13	-0.18	-0.07

DISCUSSION

In the present study there appears to be a male preponderance among schizophrenia patients. This is found to be similar to the findings of Ozdin S et al [46] and Zhu X et al [48] who have performed similar studies.

Schizophrenia has been observed to be more common in men, with a ratio of 1.4:1 [76]. Several reviews also state there is no gender difference in prevalence of the disease, although there was a significant difference in age of presentation. It was seen that men presented almost 3.2-4.1 years earlier than women. [77]

The mean age of patients with schizophrenia is 33.45 ± 12.13 years. The sociodemographic profile of the participants revealed that the majority were within the age ranges of 21-40 years, accounting for 63% of the study population.

This finding is in accordance with the age of onset for schizophrenia. It is diagnosed in the late teens to early thirties, with an earlier emergence of symptoms in males. [78]

The mean NLR score of the schizophrenia group is 2.76±1.74, while that of healthy group is 2.21±0.79.

The mean NLR in the healthy group is 0.56 lower than in the schizophrenia group, and we are 95% confident that the mean is 0.20 to 0.91 lower in the healthy group compared to schizophrenia group.

The t-test shows that the difference in NLR scores between the two groups is statistically significant (p-value = 0.0025).

This finding is similar to studies by Ozdin S et al [46] where they found raised NLR in schizophrenic patients with significant p value ($p<0.05$) when compared to a healthy

group. When compared to Zhu X et al [48] they had a lower mean NLR value, which could be due to the larger sample size in their study.

This finding can be explained by the significantly elevated total count (TC) and absolute neutrophil count (ANC) in schizophrenia group relative to healthy group with $p<0.05$.

This supports the immune hypothesis of schizophrenia which suggest maternal viral infections, immune activation and variants of immune genes that contribute to the etiology of schizophrenia. [79]

In our study there was no significant difference in the lymphocyte values between the two groups, which suggests that cells of adaptive immunity did not have much of a role in mediation of inflammation.

Table No. 8: Comparison of NLR in various studies

STUDY	SCHIZOPHRENIA	HEALTHY
OZDIN S [46]	2.8 ± 1.2	2 ± 0.6
ZHU X [48]	1.65 ± 0.6	1.57 ± 0.56
PRESENT STUDY	2.76 ± 1.74	2.21 ± 0.79

The mean PLR score of the schizophrenia group is 129.43 ± 44.3, while that of the healthy group is 132.76 ± 45.48

The t-test shows that the difference in PLR scores between the two groups is not statistically significant (p-value = 0.6281).

The mean PLR obtained in the present study is comparable to the values obtained by Ozdin S et al [46].

The study by Zhu X et al [48] had a lower mean PLR value in their schizophrenia group, because the mean platelet count obtained was lower with a similar mean absolute lymphocyte count.

While they found a significant difference in the ratios between the two groups, in our study there appeared to be no difference which were statistically significant. This can be attributed to the larger sample size of schizophrenic patients in the above two studies.

Table No. 9: Comparison of PLR in various studies

STUDY	SCHIZOPHRENIA	HEALTHY
OZDIN S [46]	138.6 ± 54.7	104.5 ± 35.2
ZHU X [48]	110.01 ± 33.94	112.08 ± 31.49
PRESENT STUDY	129.43 ± 44.3	132.76 ± 45.48

The mean MLR score of the schizophrenia group is 0.29 ± 0.14, while that of the healthy group is 0.27 ± 0.08.

The t-test shows that the difference in MLR scores between the two groups is not statistically significant (p-value = 0.3771).

The mean MLR obtained in the present study is comparable to the values obtained by Ozdin S et al [46].

The study by Zhu X et al [48] had a lower mean MLR in their schizophrenia group, as they obtained a lower mean absolute monocyte count with a similar mean absolute lymphocyte count.

While they found a statistically significant difference in the ratios between the two groups, in our study there appeared to be no difference. This can be attributed to the larger sample size of schizophrenic patients in the above two studies.

Table No. 10: Comparison of MLR in various studies

STUDY	SCHIZOPHRENIA	HEALTHY
OZDIN S [46]	0.2 ± 0.09	0.18 ± 0.06
ZHU X [48]	0.16 ± 0.04	0.14 ± 0.05
PRESENT STUDY	0.29 ± 0.14	0.27 ± 0.08

In the present study, it was found that there was a statistically significant lower haemoglobin, haematocrit and mean corpuscular volume in the schizophrenia group compared to the healthy group. Although the mean haemoglobin did not qualify as anaemia. There are studies that suggest it could be attributed to side effects from antipsychotic medications which affects the production and lifespan of RBCs. [80]

Schizophrenic patients are likely to experience a chronic decline in their ability to care for themselves, thereby making it difficult to meet their dietary needs. [80]

The red cell distribution width (RDW) is also found to be significantly increased in the schizophrenia group compared to the healthy group. Several studies mention that due to inflammation in schizophrenia, the pro-inflammatory cytokines that are released suppresses erythropoietin gene expression, thereby inhibiting proliferation of erythroid progenitor cells. Therefore, due to reduced and ineffective erythropoiesis, there is significantly higher RDW values in schizophrenia [81].

The present study also reveals a raised mean total white blood cell count and mean absolute neutrophil count which was statistically significant. The neutrophil differential count was also raised in schizophrenia compared to the healthy group, although not statistically significant. This is in agreement with meta-analyses that have been conducted on this topic [58, 82]. This is significant as neutrophils are the most numerous leukocytes in peripheral circulation and are crucial to innate immune response[83]. This supports the immune hypothesis of schizophrenia which suggest maternal viral infections, immune activation and variants of immune genes that contribute to the etiology of schizophrenia [79].

In the Healthy group, NLR and PLR have a weak positive correlation (0.3883), whereas in the Schizophrenia group, this correlation is stronger (0.7106). NLR and MLR have a moderate positive correlation in both groups, with a slightly stronger correlation in the Schizophrenia group (0.5836 vs. 0.7542). PLR and MLR have a weaker positive correlation in the Healthy group (0.2075) compared to the Schizophrenia group (0.4845).

SUMMARY

This study was a one year, hospital based prospective study on 65 schizophrenic patients and 130 healthy individuals conducted from 1st January 2023 to 31st December 2023. It was performed in Pathology Department of KLE's Dr. Prabhakar Kore Hospital &MRC, Belagavi.

The study aimed at investigating whether Neutrophil-Lymphocyte ratio (NLR), Monocyte-Lymphocyte ratio (MLR) and Platelet-Lymphocyte ratio (PLR) will be higher in patients with schizophrenia than in healthy comparison subjects similar in age and gender.

Participants were selected using a systematic sampling method to ensure representativeness. Data were collected through standardized laboratory procedures to measure NLR, PLR, and MLR.

Significant findings in this study are as follows:

- The schizophrenia group consists of 60% males and 40% females, similar to other studies showing a higher prevalence in males.
- A majority of schizophrenic patients (63.08%) belong to the age group of 21-40 years, with a mean age of 33.45 years.
- The mean NLR score of the schizophrenia group (2.76 ±1.74) is found to be higher than in the healthy group (2.21±0.79) and was found to be statistically significant.
- The mean PLR score of the schizophrenia group (129.43 ± 44.3) when compared to that of the healthy group (132.76 ± 45.48) was not found to be statistically significant.
- The mean MLR score of the schizophrenia group (0.29 ± 0.14) when compared to that of the healthy group (0.27 ± 0.08) was not found to be statistically significant.

- In the Healthy group, NLR and PLR have a weak positive correlation (0.3883), whereas in the Schizophrenia group, this correlation is stronger (0.7106).
- NLR and MLR have a moderate positive correlation in both groups, with a slightly stronger correlation in the Schizophrenia group (0.5836 vs. 0.7542).
- PLR and MLR have a weaker positive correlation in the Healthy group (0.2075) compared to the Schizophrenia group (0.4845).
- The mean scores of HB, HCT/PCV, MCV were found to be significantly lower in the schizophrenia group (p-value < 0.05).
- The mean score of RDW was found to be significantly higher in the schizophrenia group. (p-value < 0.05).
- TC, M%, E%, ANC and AEC are significantly increased in the schizophrenia group. (p-value < 0.05).

CONCLUSION

The Neutrophil-Lymphocyte ratio (NLR), Monocyte-Lymphocyte ratio (MLR) and Platelet-Lymphocyte ratio (PLR) were studied in schizophrenia and compared with healthy subjects similar in age and gender.

It was observed that there was a male preponderance with most number of schizophrenic patients falling in-between early twenties and late thirties.

There is a statistically significant increase in NLR in the schizophrenic group, with no statistically significant change in PLR and MLR between both the groups.

This study is one of the few studies looking at these inflammatory ratios in schizophrenia in an Indian population. This study supports the immune hypothesis of schizophrenia, particularly through the elevated NLR in schizophrenic patients. These findings highlight the potential of NLR as a biomarker for inflammation in schizophrenia and underscore the need for further research in this area. Further studies on effectiveness of adjunctive anti-inflammatory drug therapy can also prove beneficial to patients.

FUTURE RESEARCH

Further studies with larger, more diverse populations are recommended to confirm these findings and explore the underlying mechanisms of immune involvement in schizophrenia.

LIMITATION

- Relatively smaller sample size.
- Cross sectional nature makes it difficult to infer causality.
- Details regarding treatment were not included in the present study.

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ANNEXURE I

INFORMED CONSENT

"COMPARISON OF THE NEUTROPHIL-LYMPHOCYTE, PLATELET-LYMPHOCYTE AND MONOCYTE-LYMPHOCYTE RATIOS IN SCHIZOPHRENIA WITH HEALTHY INDIVIDUALS: A CROSS SECTIONAL STUDY"

Principal Investigator: Reg No. BN0121013

Guide: Dr. _____

Purpose of the study: To investigate whether NLR, MLR and PLR were higher in patients with schizophrenia than in healthy comparison subjects similar in age and gender.

Procedure: During this study, complete blood count will be done to detect blood parameters.

Withdrawal from participation in the study: Participation in this study is voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will/will not have nor get any benefits by participating in this study. The data gathered will help the population at large.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person from identifying you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purposes and or presented to scientific groups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact:

1. Reg No. BN0121013 Department of Pathology, J.N. Medical College.
2. Dr. _____, Department of Pathology, J.N. Medical College
3. If you have any question or complaints with regard to your right as study participant you may contact Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waiving any of your legal rights.

CONSENT STATEMENT

I am making a voluntary decision to participate in the study "Comparison of the neutrophil-lymphocyte, platelet-lymphocyte and monocyte-lymphocyte ratios in schizophrenia with healthy individuals: a cross sectional study". My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

Date:

Address:

Phone no:

ಕಾಹೇರ್ಸ್ ಜೆ ಎನ್ ಎಂ ಸಿ

ಬೆಳಗಾವಿ

ತಿಳುವಳಿಕೆಯುಳ್ಳ ಒಪ್ಪಿಗೆ ಪತ್ರ

"ಸ್ಕಿಜೋಫ್ರೇನಿಯಾದಲ್ಲಿ ಆರೋಗ್ಯವಂತ ವ್ಯಕ್ತಿಗಳೊಂದಿಗೆ ನ್ಯೂಟ್ರೋಫಿಲ್-ಲಿಂಫೋಸೈಟ್, ಪ್ಲೇಟ್ಲೆಟ್-ಲಿಂಫೋಸೈಟ್ ಮತ್ತು ಮೊನೊಸೈಟ್-ಲಿಂಫೋಸೈಟ್ ಅನುಪಾತಗಳ ಹೋಲಿಕೆ: ಅಡ್ಡ ವಿಭಾಗೀಯ ಅಧ್ಯಯನ"

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು: ಡಾ. ವೈಷ್ಣವ್ ರಾಧಾಕೃಷ್ಣನ್

ಮಾರ್ಗದರ್ಶಿ ಹೆಸರು: ಡಾ. ಮಾನಸಿ ಗೋಸಾವಿ

ಉದ್ದೇಶ:

ವಯಸ್ಸು ಮತ್ತು ಲಿಂಗದಲ್ಲಿ ಹೋಲುವ ಆರೋಗ್ಯಕರ ಹೋಲಿಕೆ ವಿಷಯಗಳಿಗಿಂತ ಸ್ಕಿಜೋಫ್ರೇನಿಯಾ ರೋಗಿಗಳಲ್ಲಿ ಎನ್ಎಲ್ಆರ್, ಎಂ ಎಲ್ ಆರ್ ಮತ್ತು ಪಿ ಎಲ್ ಆರ್ ಹೆಚ್ಚಿದೆಯೇ ಎಂದು ತನಿಖೆ ಮಾಡಲು.

ಕಾರ್ಯವಿಧಾನದ ವಿವರಣೆ:

ಈ ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ, ರಕ್ತದ ನಿಯತಾಂಕಗಳನ್ನು ಪತ್ತೆಹಚ್ಚಲು ಸಂಪೂರ್ಣ ರಕ್ತದ ಎಣಿಕೆಯನ್ನು ಮಾಡಲಾಗುತ್ತದೆ. ಡಾ. ಮಾನಸಿ ಗೋಸಾವಿ (ಮಾರ್ಗದರ್ಶಿ) ಅವರ ಮಾರ್ಗದರ್ಶನದಲ್ಲಿ ಡಾ. ವೈಷ್ಣವ್ ರಾಧಾಕೃಷ್ಣನ್ (ಪಿಜಿ) ಈ ಅಧ್ಯಯನದ ಪ್ರಮುಖ ತನಿಖಾಧಿಕಾರಿಗಳು.

ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯಿಂದ ಹಿಂತೆಗೆದುಕೊಳ್ಳುವಿಕೆ:

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯು ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ. ಒಮ್ಮೆ ದಾಖಲಾದ ನಂತರ ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಬೇಕೆ ಅಥವಾ ಭಾಗವಹಿಸುವಿಕೆಯನ್ನು ಮುಂದುವರಿಸಬೇಕೆ ಎಂದು ನಿರ್ಧರಿಸಲು ನೀವು ಸ್ವತಂತ್ರರಾಗಿರುತ್ತೀರಿ. ನಿಮ್ಮ ಭಾಗವಹಿಸುವಿಕೆಯನ್ನು ಹಿಂತೆಗೆದುಕೊಳ್ಳಲು ನೀವು ನಿರ್ಧರಿಸಿದರೆ, ಹಾಗೆ ಮಾಡಲು ನೀವು ಸ್ವತಂತ್ರರು. ಆದಾಗ್ಯೂ, ದಯವಿಟ್ಟು ನಿರ್ಧಾರವನ್ನು ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಗೆ ತಿಳಿಸಿ.

ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವುದರಿಂದ ಸಂಭವನೀಯ ಪ್ರಯೋಜನಗಳು:

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವ ಮೂಲಕ ನೀವು ಯಾವುದೇ ಪ್ರಯೋಜನಗಳನ್ನು ಹೊಂದಿರುವುದಿಲ್ಲ ಅಥವಾ ಪಡೆಯುವುದಿಲ್ಲ. ಸಂಗ್ರಹಿಸಿದ ಮಾಹಿತಿಯು ಜನಸಂಖ್ಯೆಗೆ ದೊಡ್ಡ ಪ್ರಮಾಣದಲ್ಲಿ ಸಹಾಯ ಮಾಡುತ್ತದೆ.

ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವುದರಿಂದ ಸಂಭವನೀಯ ಅಪಾಯಗಳು:

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವುದರಿಂದ ಯಾವುದೇ ಅಪಾಯಗಳಿಲ್ಲ.

ಗೌಪ್ಯತೆ

ಯಾವುದೇ ವ್ಯಕ್ತಿ ನಿಮ್ಮನ್ನು ಗುರುತಿಸದಂತೆ ತಡೆಯಲು ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಿದ ಮಾಹಿತಿಯನ್ನು ಕೋಡ್ ಮಾಡಲಾಗುತ್ತದೆ. ನಿಮ್ಮ ಗುರುತನ್ನು ಎಂದಿಗೂ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಿದ ಡೇಟಾವನ್ನು ಗೌಪ್ಯವಾಗಿ ಇರಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಪ್ರಕ್ರಿಯೆಗೊಳಿಸಿದ ಅಥವಾ ಒಟ್ಟುಗೂಡಿದ ಡೇಟಾವನ್ನು ಮಾತ್ರ ಪ್ರಕಟಣೆಗಾಗಿ ಬಳಸಲಾಗುತ್ತದೆ.

ಆರ್ಥಿಕ ಪ್ರೋತ್ಸಾಹಗಳು:

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಿದ್ದಕ್ಕಾಗಿ ನೀವು ಯಾವುದೇ ಪಾವತಿಯನ್ನು ಸ್ವೀಕರಿಸುವುದಿಲ್ಲ.

ಒಟ್ಟುಗೂಡಿದ ಡೇಟಾದ ಪ್ರಕಟಣೆಗೆ ಅಧಿಕಾರ:

ಒಟ್ಟುಗೂಡಿದ ಡೇಟಾವನ್ನು ಪ್ರಕ್ರಿಯೆಗೊಳಿಸಿದ ನಂತರ ಪಡೆದ ಫಲಿತಾಂಶಗಳನ್ನು ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಗಳಿಗಾಗಿ ಪ್ರಕಟಿಸಲಾಗುತ್ತದೆ ಅಥವಾ ವೈಜ್ಞಾನಿಕ ಗುಂಪುಗಳಿಗೆ ಪ್ರಸ್ತುತಪಡಿಸಲಾಗುತ್ತದೆ. ಆದಾಗ್ಯೂ, ನಿಮ್ಮ ಗುರುತನ್ನು ಎಂದಿಗೂ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ.

ಪ್ರಶ್ನೆಗಳು

ಈ ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳಿದ್ದಲ್ಲಿ, ನೀವು ಸಂಪರ್ಕಿಸಲು ಮುಕ್ತರಾಗಿದ್ದೀರಿ: "ಡಾ. ವೈಷ್ಣವ್ ರಾಧಾಕೃಷ್ಣನ್, ಫೋನ್ ಸಂಖ್ಯೆ +91 8861373551, ಇಮೇಲ್ ಐಡಿ: vaishnavradhakrishnan@gmail.com" ನಿಮ್ಮ ಹಕ್ಕಿನ ಕುರಿತು ನೀವು ಯಾವುದೇ ಪ್ರಶ್ನೆ ಅಥವಾ ದೂರುಗಳನ್ನು ಹೊಂದಿದ್ದರೆ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವವರನ್ನು ನೀವು ಸಂಪರ್ಕಿಸಬಹುದು ಡಾ. ಹರ್ಷ ಹೆಗಡೆ, ಅಧ್ಯಕ್ಷರು, ಜೆಎನ್ಎಂಸಿ ನೈತಿಕ ಸಮಿತಿ, 0831-2473777 ವಿಸ್ತರಣೆ 4052.

ಕಾನೂನು ಹಕ್ಕುಗಳು:

ಈ ಸಮ್ಮತಿಯ ನಮೂನೆಗೆ ಸಹಿ ಮಾಡುವ ಮೂಲಕ, ನಿಮ್ಮ ಯಾವುದೇ ಕಾನೂನು ಹಕ್ಕುಗಳನ್ನು ನಾವು ಕೈ ಬೀಸಿ ಕರೆಯುತ್ತಿಲ್ಲ.

ಸಮ್ಮತಿ ಹೇಳಿಕೆ

ನಾನು ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸ್ವಯಂಪ್ರೇರಿತ ನಿರ್ಧಾರವನ್ನು ಮಾಡುತ್ತಿದ್ದೇನೆ "ಸ್ಕಿಜೋಫ್ರೇನಿಯಾದಲ್ಲಿ ಆರೋಗ್ಯವಂತ ವ್ಯಕ್ತಿಗಳೊಂದಿಗೆ ನ್ಯೂಟ್ರೋಫಿಲ್-ಲಿಂಫೋಸೈಟ್, ಪ್ಲೇಟ್ಲೆಟ್-ಲಿಂಫೋಸೈಟ್ ಮತ್ತು ಮೊನೊಸೈಟ್-ಲಿಂಫೋಸೈಟ್ ಅನುಪಾತಗಳ ಹೋಲಿಕೆ: ಅಡ್ಡ ವಿಭಾಗೀಯ ಅಧ್ಯಯನ". ಕೆಳಗಿನ ನನ್ನ ಸಹಿಯು ನಾನು ಭಾಗವಹಿಸಲು ನಿರ್ಧರಿಸಿದ್ದೇನೆ ಮತ್ತು ನಾನು ಮೇಲೆ ಒದಗಿಸಿದ ಮಾಹಿತಿಯನ್ನು ಓದಿದ್ದೇನೆ ಅಥವಾ ಮೇಲೆ ಒದಗಿಸಿದ ಮಾಹಿತಿಯನ್ನು ನನಗೆ ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುವ ಭಾಷೆಯಲ್ಲಿ ಓದಲಾಗಿದೆ ಎಂದು ಸೂಚಿಸುತ್ತದೆ. ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ನನಗೆ ಅವಕಾಶವನ್ನು ನೀಡಲಾಯಿತು ಮತ್ತು ಅವುಗಳಿಗೆ ನನ್ನ ತೃಪ್ತಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ.

ಭಾಗವಹಿಸುವವರ ಹೆಸರು:

ಭಾಗವಹಿಸುವವರ ಸಹಿ ಅಥವಾ ಎಡ ಹೆಬ್ಬೆರಳಿನ ಗುರುತು:

ಸಾಕ್ಷಿಯ ಹೆಸರು:

ಸಾಕ್ಷಿಯ ಸಹಿ ಅಥವಾ ಎಡ ಹೆಬ್ಬೆರಳಿನ ಗುರುತು:

ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು: ಡಾ. ವೈಷ್ಣವ್ ರಾಧಾಕೃಷ್ಣನ್
ಡಾ. ಮಾನಸಿ ಗೋಸಾವಿ

ತನಿಖಾಧಿಕಾರಿಯ ಸಹಿ:

काहेरचे जे एन एम सी
बेलागावी
माहितीपूर्ण संमती पत्र

"स्किझोफ्रेनियामधील न्यूट्रोफिल-लिम्फोसाइट, प्लेटलेट-लिम्फोसाइट आणि मोनोसाइट-लिम्फोसाइट गुणोत्तरांची निरोगी व्यक्तींशी तुलना: एक क्रॉस सेक्शनल अभ्यास"

मुख्याध्यापकाचे नाव: डॉ. वैष्णव राधाकृष्णन
मार्गदर्शकचे नाव: डॉ. मानसी गोसावी

उद्देश:

एन एल आर, एम एल आर आणि पी एल आर स्किझोफ्रेनिया असलेल्या रूग्णांमध्ये वय आणि लिंग सारख्या निरोगी तुलना विषयांपेक्षा जास्त होते की नाही हे तपासण्यासाठी.

प्रक्रियेचे स्पष्टीकरण:

या अभ्यासादरम्यान, रक्ताचे मापदंड शोधण्यासाठी संपूर्ण रक्त गणना केली जाईल. या अभ्यासाचे प्रमुख अन्वेषक डॉ. मानसी गोसावी (मार्गदर्शक) यांच्या मार्गदर्शनाखाली डॉ. वैष्णव राधाकृष्णन (पीजी) आहेत.

अभ्यासातील सहभागातून माघार घेणे:

या अभ्यासात सहभाग ऐच्छिक आहे. या अभ्यासात भाग घ्यायचा की नावनोंदणी झाल्यावर सहभाग सुरू ठेवायचा हे ठरवण्यासाठी तुम्ही मोकळे असाल. तुम्ही तुमचा सहभाग मागे घेण्याचा निर्णय घेतल्यास, तुम्ही तसे करण्यास मोकळे आहात. तथापि, कृपया मुख्य अन्वेषकांना निर्णय कळवा.

अभ्यासात सहभागी होण्याचे संभाव्य फायदे:

या अभ्यासात सहभागी होऊन तुम्हाला कोणतेही फायदे मिळणार/नाही किंवा मिळणार नाहीत. गोळा केलेला डेटा मोठ्या प्रमाणावर लोकसंख्येला मदत करेल.

अभ्यासात सहभागी होण्याचे संभाव्य धोके:

या अभ्यासात सहभागी होण्यात कोणतेही धोके नाहीत.

गोपनीयता

कोणत्याही व्यक्तीला तुमची ओळख पटवण्यापासून रोखण्यासाठी तुमच्याकडून गोळा केलेली माहिती कोड केली जाईल. तुमची ओळख कधीच उघड होणार नाही. तुमच्याकडून गोळा केलेला डेटा गोपनीय ठेवला जाईल आणि केवळ प्रक्रिया केलेला किंवा एकत्रित केलेला डेटा प्रकाशनासाठी वापरला जाईल.

आर्थिक प्रोत्साहन :

या अभ्यासात सहभागी होण्यासाठी तुम्हाला कोणतेही पेमेंट मिळणार नाही.

एकत्रित डेटाच्या प्रकाशनासाठी अधिकृतता :

एकत्रित डेटाच्या प्रक्रियेनंतर प्राप्त झालेले परिणाम वैज्ञानिक हेतूंसाठी प्रकाशित केले जातील आणि किंवा वैज्ञानिक गटांना सादर केले जातील. मात्र, तुमची ओळख कधीही उघड होणार नाही.

प्रश्नावळी:

या अभ्यासा संदर्भात काही प्रश्न असल्यास, तुम्ही मोकळेपणाने संपर्क साधू शकता: "डॉ. वैष्णव राधाकृष्णन, फोन नंबर +91 8861373551, ईमेल आयडी: vaishnavradhakrishnan@gmail.com." तुम्हाला तुमच्या अधिकाराबाबत काही प्रश्न किंवा तक्रारी असल्यास अभ्यासात सहभागी म्हणून तुम्ही डॉ. हर्षा हेगडे, अध्यक्षा, जे एन एमसी च्या नैतिक समिती, 0831-2473777 विस्तार 4052 यांच्याशी संपर्क साधू शकता.

कायदेशीर अधिकार :

या संमती फॉर्मवर स्वाक्षरी करून, आम्ही तुमचे कोणतेही कायदेशीर अधिकार सोडत नाही.

संमती विधान

मी अभ्यासात सहभागी होण्याचा ऐच्छिक निर्णय घेत आहे "स्किझोफ्रेनियामधील न्यूट्रोफिल-लिम्फोसाइट, प्लेटलेट-लिम्फोसाइट आणि मोनोसाइट-लिम्फोसाइट गुणोत्तरांची निरोगी व्यक्तींशी तुलना: एक क्रॉस सेक्शनल अभ्यास" . खाली दिलेली माझी स्वाक्षरी सूचित करते की मी सहभागी होण्याचा निर्णय घेतला आहे आणि मी वर दिलेली माहिती वाचली आहे किंवा वर दिलेली माहिती मला चांगल्या प्रकारे समजत असलेल्या भाषेत वाचण्यात आली आहे. मला प्रश्न विचारण्याची संधी देण्यात आली आणि त्यांना माझ्या समाधानासाठी उत्तरे देण्यात आली .

सहभागीचे नाव:

सहभागीची सही किंवा डाव्या अंगठ्याचा ठसा:

साक्षीदाराचे नाव:

साक्षीदाराची सही किंवा डाव्या अंगठ्याचा ठसा:

तपासकर्त्याचे नाव: डॉ. वैष्णव राधाकृष्णन
डॉ. मानसी गोसावी

अन्वेषकाची स्वाक्षरी:

ANNEXURE II

PROFORMA

SCREENING FORM

Name: Sample ID:

Age: Sex: Male/ Female/ Other

IP no:

Brief clinical history:

(with duration of illness)

Co morbid conditions-

Hypertension	Yes/No
Diabetes Mellitus	Yes/No
Coronary artery disease	Yes/No
Other psychiatric diagnoses	Yes/No
Hepatic/ renal failure	Yes/No
Evidence of active infection	Yes/No

PATIENT/ COMPARISON GROUP FORM

CBC

Hb :

HCT :

TC :

ANC :

ALC :

AMC :

PLT :

N% :

L% :

M% :

E% :

B% :

NLR :

MLR :

PLR :

ANNEXURE III

KEY TO MASTER CHART

IP NUMB	Inpatient number
HB	Haemoglobin
HCT/PCV	Haematocrit/ Packed Cell Volume
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
RBC	Red Blood Cell Count
RDW	Red Blood Cell Distribution Width
TC	Total Count
PLT Count	Platelet Count
N%	Neutrophils
L%	Lymphocytes
M%	Monocytes
E%	Eosinophils
ANC	Absolute Neutrophil Count
ALC	Absolute Lymphocyte Count
AMC	Absolute Monocyte Count
AEC	Absolute Eosinophil Count
NLR	Neutrophil-Lymphocyte Ratio
PLR	Platelet-Lymphocyte Ratio
MLR	Monocyte-Lymphocyte Ratio

sl no	Age	Gender	HB	HCT/PCV	MCV	MCH	MCHC	RBC	RDW	TC	PLT COUNT	N%	L%	M%	E%	ANC	ALC	AMC	AEC	NLR	PLR	MLR
1	22	F	12.1	35.8	85.8	28.9	33.6	4.18	13.1	10	258	56	35	6	3	5.7	3.6	0.3	0.1	1.58	71.67	0.08
2	50	F	13	39	83.3	27.6	33.2	4.7	13.1	7.4	333	67	25	5	3	5	1.9	0.3	0.2	2.63	175.26	0.16
3	48	M	15.4	47.4	102	33.3	32.5	4.62	13.8	6.85	295	50	41	6	3	3.42	2.87	0.44	0.2	1.19	102.79	0.15
4	27	M	15.1	48.8	100	31.7	31	4.76	12.9	8.87	266	72	15	7	6	6.34	1.29	0.66	0.5	4.91	206.2	0.51
5	29	M	15.2	47.7	88.5	28.2	31.9	5.39	13.2	7.13	397	51	38	8	3	3.64	2.73	0.62	0.2	1.33	145.42	0.23
6	20	M	14.9	45.4	88.7	29.1	32.8	5.12	12.9	7.1	289	63	28	7	2	4.46	1.97	0.49	0.1	2.26	146.7	0.25
7	31	M	16.3	48.9	88.9	29.5	33.2	5.5	13.3	9.1	292	62	29	6	3	5.6	2.6	0.5	0.2	2.15	112.31	0.19
8	47	M	13	38.8	99.1	31.9	32.2	4.5	15	6.3	322	71	20	7	2	4.47	1.2	0.4	0.12	3.73	268.33	0.33
9	33	M	14.4	42.8	93.2	31.3	33.6	4.59	13.7	8.2	334	56	34	6	4	4.6	2.8	0.5	0.3	1.64	119.29	0.18
10	40	F	14.5	44.4	91.9	30	32.8	4.83	14.9	7.1	221	67	24	7	2	4.8	1.7	0.5	0.1	2.82	130	0.29
11	28	F	13.6	42.3	96.6	31.1	32.2	4.38	12.1	10.2	315	54	33	9	4	5.58	3.3	0.9	0.3	1.69	95.45	0.27
12	31	F	12.6	37.9	101	33.7	33.2	4	13.7	6.09	314	63	27	7	3	3.86	1.64	0.45	0.2	2.35	191.46	0.27
13	26	F	13.8	40.4	82.7	31.6	34.1	4.35	13.4	8.7	279	68	24	6	2	5.9	2.1	0.5	0.2	2.81	132.86	0.24
14	46	M	13	38.3	87.4	29.5	33.8	4.39	14.4	10.3	292	69	20	7	4	7.1	2.1	0.7	0.3	3.38	139.05	0.33
15	28	M	14.6	44.2	91.1	30.1	33	4.85	12.2	7.54	206	58	29	10	3	4.39	2.23	0.79	0.1	1.97	92.38	0.35
16	20	F	14.3	42.6	89.4	30	33.5	4.77	14.3	6.1	206	65	26	4	5	3.9	1.6	0.2	0.3	2.44	128.75	0.13
17	22	M	15.9	47.9	93.5	31	33.2	5.13	14.5	7.5	239	61	27	10	2	4.6	2	0.7	0.1	2.3	119.5	0.35
18	29	M	14.1	43.2	90	29.4	32.7	4.8	14.2	6.7	267	48	39	10	3	3.1	2.6	0.7	0.2	1.19	102.69	0.27
19	40	M	14.4	44.2	85.3	27.8	32.6	5.18	13.7	7.72	237	51	39	7	3	3.87	3	0.55	0.23	1.29	79	0.18
20	29	M	14	43.7	99.5	31.9	32	4.39	12.9	7.26	236	70	18	9	3	4.29	2.22	0.65	0.1	1.93	106.31	0.29
21	19	M	14.7	44.6	93.9	30.9	33	4.75	12.3	5.45	402	52	38	6	4	2.83	2.1	0.37	0.3	1.35	191.43	0.18
22	47	F	14.5	43.8	80.7	26.8	33.3	5.42	14.2	8.6	254	62	29	6	3	5.3	2.5	0.5	0.2	2.12	101.6	0.2
23	30	M	13.7	43.2	98.2	31.1	31.7	4.4	12.8	6.72	157	52	39	8	1	3.5	2.62	0.52	0.03	1.34	59.92	0.2
24	30	M	13.9	44.8	85.5	27	31	5.24	13.3	8.65	304	71	20	8	1	6.3	1.62	0.67	0.03	3.89	187.65	0.41
25	48	M	16	49.6	91.4	30.3	33.1	5.43	15.1	9.6	337	69	23	7	1	6.6	2.2	0.7	0.1	3	153.18	0.32
26	20	F	13.3	40.2	85.5	28.3	33	4.7	14.9	7.3	337	58	31	10	1	4.3	2.1	0.9	0.1	2.05	160.48	0.43
27	48	M	16	49.6	91.4	30.3	33.1	5.43	15.1	9.6	337	69	23	7	1	6.6	2.2	0.7	0.1	3	153.18	0.32
28	45	F	12.4	37.2	90.1	30.1	33.4	4.12	12.9	8.7	212	44	40	10	6	4.2	3	0.9	0.5	1.4	70.67	0.3
29	24	M	14.5	43.5	82.1	27.4	33.3	5.3	15.8	6.22	164	60	28	7	5	3.7	1.7	0.48	0.3	2.18	96.47	0.28
30	23	M	13	42.4	88	27	31	4.82	13.5	7.14	256	63	26	8	3	4.51	1.82	0.6	0.2	2.48	140.66	0.33
31	33	M	15.1	47.7	86.3	27.3	31.7	4.71	13.1	4.71	219	61	31	5	3	2.84	1.44	0.25	0.2	1.97	152.08	0.17
32	27	M	13.7	40.1	84.9	29	34	4.72	14.4	6.2	232	66	20	9	5	3.2	2.1	0.6	0.3	1.52	110.48	0.29
33	52	F	13.5	41.1	87	28.5	32.7	4.73	13	9.9	254	54	36	6	4	5.3	3.6	0.5	0.4	1.47	70.56	0.14
34	24	F	13.1	40.1	86	28.1	32.6	4.66	13.8	7.9	190	72	21	6	1	5.8	1.6	0.5	0.1	3.63	118.75	0.31
35	38	M	15.2	48.6	87.4	27.3	31.3	5.56	13.4	9.69	354	54	36	6	4	5.21	3.4	0.6	0.4	1.53	104.12	0.18
36	21	M	14.6	44.6	81.2	27	32.7	5.49	14	4.73	415	55	33	10	2	2.62	1.54	0.48	0.1	1.7	269.48	0.31
37	53	M	13.3	41.2	90.9	29.4	32.3	4.53	14	4.98	307	56	32	10	2	2.79	1.59	0.49	0.1	1.75	193.08	0.31
38	29	F	13.9	44.2	90.4	28.4	31.4	4.89	12.9	8.13	191	66	23	8	3	5.39	1.84	0.68	0.19	2.93	103.8	0.37
39	21	M	13.8	42.4	87.7	28.5	32.4	4.83	13.4	9	249	73	20	5	2	6.6	1.8	0.5	0.2	3.67	138.33	0.28
40	25	M	16	50	95.8	30	31	5.28	12.5	9.44	243	71	20	7	2	6.74	1.89	0.67	0.1	3.57	128.57	0.35
41	47	F	14.4	42.7	100	33	34	4.24	14.1	4.49	188	71	20	8	1	3.18	0.89	0.36	0.1	3.57	211.24	0.4
42	40	F	13.3	45.9	100	29.6	31	4.49	15.8	4.49	215	65	25	6	4	4.95	1.84	0.48	0.31	2.69	116.85	0.26
43	51	M	14.4	44.3	89.3	29	32.5	4.96	13.2	5.27	220	54	33	9	4	2.84	1.73	0.5	0.2	1.64	127.17	0.29
44	57	M	16	50	91	28.7	31.6	5.5	13.6	6.51	344	50	37	10	3	3.24	2.43	0.63	0.2	1.33	141.56	0.26
45	25	M	14.6	44.5	95.1	31.2	32.8	4.68	12.6	6.32	209	60	30	9	1	3.8	1.9	0.6	0.1	2	110	0.32
46	40	M	13.9	43.7	100	32	31.8	4.5	14.6	7.64	217	63	23	10	4	4.81	1.75	0.8	0.3	2.75	124	0.46
47	41	M	16	50	100	31	32	4.74	13	8.35	276	59	31	7	3	4.92	2.57	0.63	0.2	1.91	107.39	0.25
48	48	F	12.5	39.2	91.6	29.2	31.9	4.28	12.8	8.39	378	58	31	8	3	4.83	2.63	0.71	0.2	1.84	143.73	0.27
49	51	F	12.5	40	89.3	27.9	31.3	4.48	13.2	6.14	272	50	37	8	5	3.05	2.25	0.5	0.3	1.36	120.89	0.22
50	55	M	14.6	44.9	93.7	30.5	32.5	4.79	12.5	4.79	372	63	27	8	2	5.71	2.6	0.95	0.1	2.2	143.08	0.37
51	36	F	13.4	41.4	91.2	29.5	32.4	4.54	13.5	7.64	296	61	28	7	4	4.66	2.16	0.55	0.24	2.16	137.04	0.25
52	52	F	13.5	43.5	91.8	28.5	31	4.74	13.3	8.03	220	58	30	8	4	4.65	2.44	0.6	0.31	1.91	90.16	0.25
53	38	M	16	50	100	31	33	5.03	12.5	6.59	155	55	33	7	5	3.64	2.16	0.48	0.27	1.69	71.76	0.22
54	40	M	13.1	43.1	88.5	27	31	4.87	13.3	8.34	269	57	32	7	4	4.35	2.62	0.58	0.35	1.66	102.67	0.22
55	33	M	16	50	87.3	28	32	5	14	9.36	303	71	20	7	2	6.66	1.8	0.67	0.2	3.7	168.33	0.37
56	54	M	14.2	46.2	90.4	27.8	31	5.11	13.2	6.93	203	50	37	10	3	3.41	2.6	0.77	0.2	1.31	78.08	0.3
57	26	F	12.2	40.8	87.7	27	31	4.65	14.7	8.08	358	54	37	8	1	4.36	3	0.61	0.1	1.45	119.33	0.2
58	50	M	14.7	45.8	91.2	29.3	32.1	5.02	12.9	7.16	249	60	26	9	5	4.3	1.9	0.64	0.31	2.26	131.05	0.34
59	52	M	15.3	46.2	96.7	32	33.1	4.78	14.2	9.2	248	52	38	8	2	4.78	3	0.73	0.2	1.59	82.67	0.24
60	21	F	13.8	41.9	91.1	30	32.9	4.6	12.5	8.69	235	58	33	8	1	5	2.89	0.74	0.1	1.73	81.31	0.26
61	38	F	12.6	40.3	87	27.2	31.3	4.63	14.7	6.22	334	66	29	4	1	4.13	1.79	0.24	0.1	2.31	186.59	0.13
62	43	M	13.6	42	97.4	31.6	32.4	4.31	13.2	6.21	166	60	34	5	1	3.6	2.15	0.38	0.1	1.67	77.21	0.18
63	42	F	12.4	40.3	97.3	30	31	4.14	15	9.6	241	63	22	10	5	6.04	2.11	0.96	0.5	2.86	114.22	0.45
64	31	F	12.7	40.5	89	27.9	31.4	4.55	12.5	7.02	288	59	31	8	2	4.15	2.18	0.52	0.1	1.9	132.11	0.24
65	58	F	13.2	42.1	93.6	29.3	31.4	4.5	13.3	8.76	278	49	39	7	5	3.05	2.83	0.5	0.34	1.08	98.23	0.18
66	26	F	13.4	44.1	87	27	31	5.07	14.3	6.12	161	48	40	10	2	2.93	2.44	0.61	0.12	1.2	65.98	0.25
67	52	M	16	50	89.2	28.4	31.9	5	13.9	8.43	210	69	22	7	2	5.85	1.86	0.59	0.17	3.15	112.9	0.32
68	60	M	14.7	45.3	95.6	31	32	4.74	12.4	8.08	377	71	20	8	1	5.74	1.6	0.64	0.1	3.59	235.63	0.4
69	55	M	13.7	43.6	89.5	28.1	31.4	4.87	12.5	7.75	241	57	31	9	3	4.41	2.4	0.78	0.23	1.84	100.42	0.33
70	27	F	12.6	48.9	88.3	28.7	32.5	4.4	14.1	10.7	187	66	24	8	2	7	2.6	0.9	0.1	2.69	71.92	0.35
71	24	F	12.8	39	80.6	27	32.8	4.84	15	9.8	277	61	26	9	4	6	2.6	0.9	0.2	2.31	106.54	0.35
72	33	F	13.6	40.9	89.9	29.9	33.3	4.55	12.4	4.89	191	71	22	6	1	3.47	1.08	0.28	0.1	3.21	176.85	0.26
73	60	M	13.3	40	90.2	30.2	33.5	4.4	15	7.88	310	66	23	10	1	5.13	1.83	0.2	0.1	2.8	169.4	0.11
74	35	F	13.8	42.1	90.1	29.6	32.8	4.67	11.9	5.12	221	50	40	6	4	2.56	2.04	0.3	0.2	1.25	108.33	0.15
75	20	F	12	36.5	88.9	27.7	32.6	4.3	13.7	9.25	225	64	26	10	1	5.92	2.39	0.89	0.1	2.48	94.14	0.37
76	28	F	13.1	41.7	92.1	28.9	31.4	4.53	15.3	9.78	189	70	21	7	2	6.88	2.09	0.66	0.1	3.29	90.43	0.32
77	49	M	13	41.3	88.1	27.7	31.5	4.69	12.9	8.63	258	72	20	8	2	6.18	1.64	0.61	0.2	3.77	157.32	0.37
78	28	F	12.4	36.2	89.7	30.8	34.3	4.04	14	7.6	150	58	32	8	2	4.4	2.4	0.3	0.1	1.83	62.5	0.13
79	40	M	16	47.1	91.1	30.3	33.9	5.16	13.5	5.1	157	60	29	8	3	3.1	1.5	0.4	0.1	2.07	104.67	0.27
80	32	M	13.2	39	84.7	28.6	33.8	4.6	12.8	9.6	290	62	28	6	4	5.8	2.7	0.7	0.4	2.15	107.41	0.26
81	44	M	13.1	40.5	84.4	27.3	32.4	4.8	14	8.6	311	73	20	5	2	6.2	1.72	0.43	0.17	3.6	180.81	0.25
82	23	M	14.4	43	100	33.6	33.6	4.29	14	6.5	264	46	40	10	4	3	2.6	0.65	0.26	1.15	101.54	0.25
83	44	F	14.4	46.4	89.6	27.8	31	5.18	14.8	9.04	257	58	32	6	4	5.26	2.9	0.49	0.33	1.81	88.62	0.17
84	38	F	15.4	47.9	89.7	28.8	32.2	5.34	13.2	8.72	337	61	28	8	3	5.32	2.44	0.7	0.21	2.18	138.11	0.29
85	45	M	14.5	46.9	94.6	29.2	31	4.96	14.6	10.01	276	63	24	8	5	6.3	2.4	0.8	0.5	2.63	115	0.33
86	33	M	16	48.8	87.5	29.2	33.4	5.5	12.6	5.26	215	58	31	9	2	3.05	1.63	0.5	0.1	1.87	131.9	0.31
87	18	F	15	46.7	84.9	27.5	32.3	5	15	7.53	302	67	23	9	1	5.07	1.68	0.68	0.1	3.02	179.76	0.4
88	50	F	13	39	89	29.7	33.4	4.95	13	7.17	225	70	20	8	2	5.01	1.42	0.57	0.1	3.53	158.45	0.4
89	45	F	14.1	42.9	91.7	30.1	32.9	4.68	12.7	5.33	227	50	40	8	2	2.66	2.13	0.42	0.1	1.25	106.57	0.2
90	31	F	12.1	37	90.9	29.7	32.7	4.07	12.2	4.07	251	50	38	8	4	2.03	1.54	0.32	0.2	1.32	162.99	0.21
91	28	F	12.2	38.4	94.6	30	31.8	4.06	12.9	10	269	70	20	9	1	7	2	0.9	0.1	3.5	134.5	0.45
92	50	M	15.4	48	92.9	29.6	31.9	5.2	12.9	7.26	300	58	29	9	4	4.21	2.1	0.65	0.3	2	142.86	0.31
93	49	M	14.7	45	88.1	28.8	32.7	5.11	15	7.09	159	61	20	7	2	4.32	1.41	0.5	0.1	3.06	112.77	0.35
94	23	F	12.1	38.7	90.8	28.4	31	4.26	14.2	9.46	174	71	20	6	3	6.71	1.89	0.57	0.28	3.55	92.06	0.3
95	29	F	12.1	38.5	90.6	28.5	31.4	4.25	14	7.92	328	70	20	8	2	5.54	1.58	0.63	0.16	3.51	207.59	0.4
96	34	M	13.8	42.5	92	29.9	32.5	4.62	11.9	5.05	292	74	20	5	1	3.7	1	0.25	0.1	3.7	292	0.25
97	29	F	14.8	43.9	84	28.2	33.6	5.23	14.6	9.7	383	62	29	6	3	6	2.8	0.6	0.2	2.14	136.79	0.21
98	32	F	13.7	40.6	100	30	32	3.86	12.6	9.05	217	63	24	10	3	5.73	2.21	0.89	0.19	2.59	98.19	0.4
99	19	M	14.5	42	93	29.3	31.7	4.73	13	6.2	263	55	32	9	4	3.41	2	0.56	0.25	1.71	131.5	0.28
100	18	F	12.8	41.1	85.3	28.6	32.5	4.8	12.8	7.75	210	57	31	9	3	4.41	2.4	0.78	0.23	1.84	87.5	0.33
101	18	M	15	44.6	96	29.3	33.1	4.9	12.7	5.1	263	60	29	8	3	3.1	1.5	0.4	0.1	2.07	175.33	0.27
102	17	F	12.3	46	84.6	27.9	31.8	4.3	13.1	7.13	312	51	38	8	3	3.64	2.73	0.32	0.2	1.33	114.29	0.12
103	19	M	15.8	49.1	88.6	28.3	31.4	4.8	12.9	6.8	354	50	41	6	3	3.42	2.87	0.44	0.2	1.19	123.34	0.15
104	16	F	12.4	48.2	82.9	27.4	31.1	4.13	12.8	7.1	189	63	28	7	2	4.46	1.97	0.49	0.1	2.26	95.94	0.25
105	19	M	15.4	43.1	90.2	28.2	32.1	4.51	13.5	6.09	203	63	27	7	3	3.86	1.64	0.45	0.2	2.35	123.78	0.27
106	19	F	12.9	40.6	83.6	27.9	31.8	4.36	12.7	7.54	211	58	29	10	3	4.39	2.23	0.79	0.1	1.97	94.62	0.35
107	18	M	15.9	43.6	95.2	29.1	32.9	4.9	11.8	6.1	265	65	26	4	5	3.9	1.6	0.2	0.3	2.44	165.63	0.13
108	33	F	12.1	40.1	84.1	27.4	31.1	4.06	12.1	6.7	159	48	39	10	3	3.1	2.6	0.7	0.2	1.19	61.15	0.27
109	39	M	14.3	44.2	88.2	28.4	31.6	4.31	12.6	5.45	366	52	38	6	4	2.83	2.1	0.37	0.3	1.35	174.29	0.18
110	31	F	12.4	40.6	90.1	27.6	31.1	4.45	13	7.3	402	70	18	9	3	4.29	2.22	0.65	0.1	1.93	181.08	0.29
111	32	M	15.9	39.8	98.4	28.9	32.9	4.95	12.8	8.7	187	68	24	6	2	5.9	2.1	0.5	0.2	2.81	89.05	0.24
112	37	F	12.6	40.3	81.9	27.6	31.8	4.28	12.4	6.2	326	66	20	9	5	3.2	2.1	0.6	0.3	1.52	155.24	0.29
113	32	M	14.7	43.4	91.3	27.6	32.5	4.88	12.4	9.9	348	54	36	6	4	5.3	3.6	0.5	0.4	1.47	96.67	0.14
114	23	F	13.8	42.1	88.6	27.9	32	4.59	13.5	4.73	366	55	33	10	2	2.62	1.54	0.48	0.1	1.7	237.66	0.31
115	28	M	15.2	43.9	93.5	28.2	33.6	5.12	12.8	4.49	378	65	25	6	4	4.95	1.84	0.48	0.31	2.69	205.43	0.26
116	25	F	13.9	40.8	92	27.9	31.9	5.1	11.8	6.14	366	50	37	8	5	3.05	2.25	0.5	0.3	1.36	162.67	0.22
117	21	M	15.5	46.6	88.4	28.3	31.3	4.06	12.5	6.59	250	55	33	7	5	3.64	2.16	0.48	0.27	1.69	115.74	0.22
118	22	F	13.2	40.2	82.2	27.9	33.4	4.8	13	6.21	222	60	34	5	1	3.6	2.15	0.38	0.1	1.67	103.26	0.18
119	24	M	16.2	48	98	28.9	33.5	5	13.6	6.32	435	60	30	9	1	3.8	1.9	0.6	0.1	2	228.95	0.32
120	28	F	12.3	39.9	83.6	28	32.1	4.08	11.9	8.3	446	57	32	7	4	4.35	2.62	0.58	0.35	1.66	170.23	0.22
121	24	M	14.8	43.2	92.6	29	34.1	4.44	12.8	6.21	458	60	34	5	1	3.6	2.15	0.38	0.1	1.67	213.02	0.18
122	28	F	13.3	43.2	96.5	30	30.9	4.7	12.5	7.63	238	63	23	10	4	4.81	1.75	0.8	0.3	2.75	136	0.46
123	21	M	15.8	44.9	100	29.6	32.7	5.02	13.6	4.8	299	63	27	8	2	5.71	2.6	0.95	0.1	2.2	115	0.37
124	29	F	12.6	43.2	97.4	28.5	33.1	5.09	12.8	8.81	410	49	39	7	5	3.05	2.83	0.5	0.34	1.08	144.88	0.18
125	23	M	14.9	44.8	98	27	31.8	4.21	13.9	8.43	302	69	22	7	2	5.85	1.86	0.59	0.17	3.15	162.37	0.32
126	25	F	12.8	41.1	92.5	27.4	32.6	4.87	13.4	7.02	188	59	31	8	2	4.15	2.18	0.52	0.1	1.9	86.24	0.24
127	28	M	15.6	40.8	99.5	28.5	31.4	4.3	12.7	5.27	165	54	33	9	4	2.84	1.73	0.5	0.2	1.64	95.38	0.29
128	21	F	12.4	42.6	96.3	27.5	31.6	4.89	13.6	8.03	338	58	30	8	4	4.65	2.44	0.6	0.31	1.91	138.52	0.25
129	27	M	16	49	99.3	29	33	5.05	13	6.12	448	48	40	10	2	2.93	2.44	0.61	0.12	1.2	183.61	0.25
130	26	F	12.7	40.1	80.6	27.2	31	4.1	13.8	7.16	301	60	26	9	5	4.3	1.9	0.64	0.31	2.26	158.42	0.34

IP NUMB	AGE	Gender	HB	HCT/PCV	MCV	MCH	MCHC	RBC	RDW	TC	PLT COUN	N%	L%	M%	E%	ANC	ALC	AMC	AEC	NLR	PLR	MLR
1165575	24	MALE	15.6	45.7	91	31.1	34.2	5.06	12.00%	7.5	214	64	30	5	1	4.8	2.3	0.4	0.1	2.09	93.04	0.17
1165837	25	FEMALE	12.6	38.5	80.9	26.6	32.8	4.76	13.3	7.9	320	57	34	7	2	4.6	2.7	0.5	0.1	1.7	118.52	0.19
1165791	23	MALE	15.5	46.5	87.4	29.1	33.3	5.32	13.2	7.9	287	62	31	5	2	5	2.4	0.4	0.1	2.08	119.58	0.17
1165748	26	MALE	16.7	49.4	84.8	28.6	33.7	5.83	14.1	14.9	283	71	19	8	2	10.6	2.8	1.3	0.2	3.79	101.07	0.46
1165781	28	MALE	15	46.2	93.8	30.6	32.6	4.92	14.7	9.7	184	74	18	7	1	7.2	1.7	0.7	0.1	4.24	108.24	0.41
1165826	45	FEMALE	12	37.8	82.4	26.2	31.8	4.59	15.9	15.2	240	66	26	6	2	10.1	3.9	0.9	0.3	2.59	61.54	0.23
1166382	46	MALE	13.7	41.2	92.7	30.9	33.3	4.45	13.1	8.5	251	53	34	6	7	4.5	2.9	0.5	0.6	1.55	86.55	0.17
1166407	20	FEMALE	10.1	30.6	102.9	34	33	2.98	17.4	8	300	58	34	8	0	4.6	2.7	0.7	0	1.7	111.11	0.26
1167838	23	MALE	14.5	40.1	91.2	31	34	5	15	11.1	414	60	26	8	6	6.7	2.9	0.9	0.7	2.31	142.76	0.31
1168406	53	FEMALE	12	37.7	86.6	27.7	32	4.35	13.2	8.7	330	65	26	6	3	5.7	2.2	0.6	0.3	2.59	150	0.27
1168607	27	FEMALE	9.9	42	92	28	33	3.34	15	8.9	444	58	33	6	3	5.1	2.9	0.6	0.3	1.76	153.1	0.21
1169118	20	FEMALE	12.8	40.2	77.7	24.7	31.8	5.18	14.4	9.9	254	70	19	9	2	6.9	1.9	0.9	0.2	3.63	133.68	0.47
1169196	59	MALE	13.9	42	88	28	32	4.82	14	8.2	237	70	16	9	5	5.8	1.3	0.7	0.4	4.46	182.31	0.54
1169583	24	FEMALE	10.9	34.5	80.1	25.2	31.5	4.3	17.6	10.7	267	64	22	10	4	6.8	2.3	1.1	0.5	2.96	116.09	0.48
1170002	46	MALE	14.4	47	90	28	32.2	4.82	14.8	7.2	210	42	39	8	11	3	2.8	0.6	0.8	1.07	75	0.21
1170179	66	FEMALE	13.3	45	85	30	32	3.78	14.2	7.9	259	55	35	9	1	4.3	2.8	0.7	0.1	1.54	92.5	0.25
1170293	30	MALE	14.4	44.6	92.2	29.6	32.1	4.84	13.2	8.4	182	73	16	10	1	6.1	1.3	0.8	0.1	4.69	140	0.62
1170474	51	FEMALE	11.8	38.4	74.6	22.8	30.6	5.15	19.8	8.8	304	73	16	7	4	6.4	1.4	0.6	0.4	4.57	217.14	0.43
1170678	23	MALE	11.1	37.3	80	23.8	29.8	4.66	16	7.2	257	60	29	10	1	4.4	2	0.8	0.1	2.2	128.5	0.4
1171000	18	FEMALE	14.4	42.7	85.2	28.7	33.7	5.01	13.7	8.4	291	70	21	7	2	5.9	1.8	0.6	0.1	3.28	161.67	0.33
1171265	40	MALE	16.1	49.4	97.6	31.8	32.6	5.06	14.1	13.63	245	72	24	3	1	9.34	3.22	0.76	0.14	2.9	76.09	0.24
1171148	47	FEMALE	12	36.7	84.3	27.6	32.7	4.35	15.3	9.2	248	59	32	6	3	5.4	3	0.5	0.3	1.8	82.67	0.17
1172292	25	MALE	14.1	43	89.9	29.5	32.9	4.79	14.4	6.3	291	51	38	8	3	3.2	2.4	0.5	0.2	1.33	121.25	0.21
1172279	62	MALE	10.7	33.6	115.9	36.9	31.9	2.9	18.4	4.8	200	54	24	6	16	2.6	1.1	0.3	0.8	2.36	181.82	0.27
1172883	46	MALE	14.4	43	89.9	29.5	32.9	4.79	13.2	7.2	210	42	39	8	11	3	2.8	0.6	0.8	1.07	75	0.21
1172756	23	MALE	14.7	47	95.5	32	32.9	5.14	14	8.2	318	63	25	6	6	5.1	2.1	0.5	0.5	2.43	151.43	0.24
1173058	28	MALE	12.7	42.9	76.2	22.6	29.7	5.63	15.5	10.2	264	71	22	6	1	7.2	2.2	0.7	0.1	3.27	120	0.32
1173092	23	MALE	15.2	45.9	83	27.4	33	5.53	13.6	6.6	242	55	35	7	3	3.6	2.3	0.5	0.2	1.57	105.22	0.22
1173161	21	MALE	15.4	46.8	95.5	31.4	32.9	4.9	14.7	6.7	307	62	25	6	7	4.1	1.7	0.4	0.5	2.41	180.59	0.24
1173857	32	MALE	15.2	45.5	91.2	30.5	33.4	4.99	13.8	8.2	190	61	27	8	4	5	2.2	0.6	0.3	2.27	86.36	0.27
1173707	57	FEMALE	13.7	41.7	90.5	29.8	32.9	4.61	13.4	8.1	233	63	27	8	2	5.1	2.2	0.7	0.1	2.32	105.91	0.32
1173877	18	FEMALE	13.4	47	97	32	33	4.21	14.2	7.3	224	40	43	6	11	2.9	3.1	0.4	0.8	0.94	72.26	0.13
1174076	22	MALE	14	42	91	29.8	32.9	4.4	13.4	9.4	210	52	33	7	8	4.8	3	0.7	0.8	1.6	70	0.23
1174102	20	MALE	12.9	45	85	30	32	4.65	14	13.1	249	59	31	6	4	7.8	4	0.7	0.5	1.95	62.25	0.18
1174355	36	FEMALE	12.2	36.6	85.5	28.6	33.4	4.28	13.2	7.2	397	54	36	8	2	3.9	2.6	0.6	0.2	1.5	152.69	0.23
1174533	20	MALE	12.8	39.1	85.4	27.9	32.6	4.58	13.2	7.9	305	60	31	6	3	4.7	2.5	0.4	0.3	1.88	122	0.16
1174523	27	FEMALE	10.9	35.2	89.9	27.7	30.8	3.92	14.4	8.4	375	62	29	6	3	5.3	2.4	0.5	0.2	2.21	156.25	0.21
1176258	40	MALE	13.7	42.8	85.4	27.3	32	5.01	13.8	9.5	385	53	37	9	1	4.9	3.5	0.9	0.1	1.4	110	0.26
1180885	21	MALE	14.5	44	87	29.2	33.2	4.87	14.1	7.1	332	62	27	6	5	4.4	1.9	0.4	0.3	2.32	174.74	0.21
1181010	27	FEMALE	13.2	39.2	87.5	30	32.2	4.6	13.4	6.6	290	48	39	7	6	3.2	2.5	0.5	0.4	1.28	116	0.2
1181616	35	MALE	15	44.9	87	29	33.4	5.16	13.7	7	240	40	37	4	19	2.8	2.6	0.3	1.3	1.08	92.31	0.12
1182445	30	FEMALE	14	42.2	90	30	33.2	4.6	13.8	5.9	220	58	35	6	1	3.4	2	0.4	0.1	1.7	110	0.2
1182792	34	FEMALE	15.1	44.2	91.2	29.8	33.2	5.43	13.6	10.9	287	84	12	4	0	9.2	1.3	0.4	0	7.08	220.77	0.31
1182830	40	MALE	13	46.2	88.6	30.8	33	4.8	15	14.7	290	85	11	3	1	12.5	1.6	0.4	0.2	7.81	181.25	0.25
1182866	45	FEMALE	12.6	38.2	113	37.3	33	3.38	15.1	7.9	306	60	31	7	2	4.7	2.4	0.5	0.2	1.96	127.5	0.21
1183567	46	MALE	12.6	39.1	92.2	29.6	32.1	4.24	12.8	10	205	65	22	8	5	6.5	2.2	0.8	0.5	2.95	93.18	0.36
1184085	18	FEMALE	11.6	36.7	97.1	30.7	31.6	3.78	11.9	6.6	124	46	33	10	11	3	2.2	0.7	0.7	1.36	56.36	0.32
1184713	23	MALE	13.9	42.2	86.1	28.4	32.9	4.9	12.6	5	270	58	32	8	2	2.9	1.6	0.4	0.1	1.81	168.75	0.25
1185448	55	FEMALE	10.5	34.5	88	26.8	30.4	3.92	14.9	6.8	268	43	33	6	18	2.9	2.1	0.4	1.3	1.38	127.62	0.19
1187208	27	FEMALE	12	40	86	28	31.2	4.22	14.7	7.9	310	58	27	6	9	4.6	2.1	0.5	0.7	2.19	147.62	0.24
1188419	24	MALE	11.9	37.6	89.5	28.3	31.6	4.2	12.8	8.9	308	65	26	7	2	5.8	2.3	0.6	0.2	2.52	133.91	0.26
1208175	32	FEMALE	9.6	43	88	27	32	4.2	13	10.3	344	73	16	7	4	7.6	1.7	0.7	0.4	4.47	202.35	0.41
10000210	35	MALE	14.1	45.7	78.9	24.4	30.9	5.79	15	8.6	270	50	35	3	12	4.2	3	0.3	0.9	1.4	90	0.1
10003667	41	FEMALE	11.1	37.2	100	29.8	29.8	3.72	12.3	9.7	297	79	13	7	1	7.5	1.2	0.7	0.1	6.25	247.5	0.58
10004050	33	FEMALE	10.5	33.1	86.4	27.4	31.7	3.83	14.3	8.4	188	77	17	6	0	6.5	1.4	0.5	0	4.64	134.29	0.36
10005015	43	MALE	10.6	34.8	92.8	28.3	30.5	3.75	15.9	6.8	327	50	36	10	4	3.4	2.4	0.7	0.3	1.42	136.25	0.29
1006055	26	MALE	13.7	42.1	87.9	28.6	32.5	4.79	12.5	12.2	313	68	22	8	2	8.3	2.7	1	0.2	3.07	115.93	0.37
1000915	23	MALE	12.7	39.6	83.5	26.8	32.1	4.74	13	3.3	136	47	48	5	0	1.6	1.6	0.2	0	1	85	0.13
10016573	31	MALE	12.8	39.3	82.2	26.7	32.5	4.78	14.9	6.4	222	66	27	5	2	4.3	1.7	0.3	0.1	2.53	130.59	0.18
10011434	40	MALE	15.1	45.4	88.4	29.4	33.3	5.14	13.8	7.6	204	72	20	4	4	5.5	1.4	0.3	0.3	3.93	145.71	0.21
10011167	36	MALE	14.8	42.1	91.9	32.3	35.2	4.58	11.6	8.3	257	59	28	9	4	4.9	2.3	0.7	0.3	2.13	111.74	0.3
10010477	40	FEMALE	10.7	36.9	85.2	24.7	29	4.33	14.8	6.5	227	63	27	7	3	4.1	1.7	0.4	0.2	2.41	133.53	0.24
10009519	45	MALE	10.5	37.5	62.9	17.6	28	5.96	18.8	14.3	318	83	9	8	0	11.8	1.3	1.1	0	9.08	244.62	0.85
10006990	38	MALE	15	47.4	100.4	31.8	31.6	4.72	12.6	11.5	263	82	11	7	0	9.5	1.2	0.8	0	7.92	219.17	0.67
10006553	22	MALE	13.8	46.3	101.1	30.1	29.8	4.58	13.7	8.4	239	75	20	4	1	6.3	1.68	0.33	0.08	3.75	142.26	0.2