Prevalence of Cardiovascular risk factors in Systemic Lupus Erythematous patients having Rheumatology and Renal clinc follow up by Adugnaw Kindu

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Submission date: 22-Apr-2024 08:16PM (UTC+0300)
Submission ID: 2357823241
File name: thesis_final_-_orginal_1.docx (318.12K)
Word count: 12713
Character count: 75480

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Prevalence of Cardiovascular risk factors in Systemic Lupus Erythematous patients having Rheumatology and Renal clinc follow up at Tikur Anbesa Specialized Hospital,Addis Ababa,Ethiopia:A cross sectional study

March 2024

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Abstract

Introduction: Cardiovascular disease is the major cause of morbidity and mortality in Systemic Lupus Erythematous (SLE) patients. The prevalence of CVD increase by 2 times in Systemic Lupus Erythematous as compared to general population. The most common cardiovascular risk factors in SLE are tradional risk factors,non-traditional risk factorsof SLE .

Objectives: The objective of this study is to assess the prevalence of cardiovascular risk factors in patients with Systemic Lupus Erythematous at TikurAnbessa Specialized Hospital.

Methods: a hospital based cross sectional study was conducted at Rheumatology,Renal clinc at TikurAnbessa Specialized Hospital to see prevalence of cardiovascular risk factors among systemic lupus erythematous from September 2023 to Jauary 2024 G.C.patients who were diagnosed systemic lupus erythematous based on 2019 ACR/EULAR criteria and at least on follow up for six (6) months were included in the study. Patients were seleted during their routine follow up using consecutive sampling techinque and consent was obtained from all participants. A total of 160 participants were included in this study. Data were collected by interviewing of patients and reviewing the patient's electronic medical records. The Collected Data was analysed using SPSS version 26.0. Laboratory values which included the laboratory result which was done in 6 months period for lipid profile, and CBC,ESR,CRP,OFT done in 3 months ,where as at any time of diagnosis for ANA,anti-ds DNA,anti-Smith, complement,antiphospholipid work up.

Result: the majority of the participants (40%) of were in the age group of 25-35 years and majority of the participants (93.8%)were female. Amale to female ratio was 15:1.There was cardiovascular risk in 38(24%) participants.the most common traditional cardiovascular risk pattern were hypertension (17%),dyslipidemia (8.1%),type 2 DM (6.3%).The most common predictors of cardiovascular risk factor were male gender(p=0.035),triglyceride above 199 mg/dl(p=0.032),glycated hemoglobin above 5.7%-6.4(p= 0.022) , above 6.5%(p=0.044) and high disease activities above SLEDAI-2K 20(p=0.022), lupus nephritis(p =0.003), short duration of treatment less than 1 year (p=0.032),disease duration above 5-10 years (p=0.026) and above 10 yrs(p=0.043)

Conclusion: Even if EULAR recommends comprehensive monitoring and management of cardiovascular risk factors in SLE based on general population guidelines.Systemic lupus erythematous patients have aditional SLE related cardiovascular risk factors . The most common cardiovascular risk factors predictors identified in systemic lupus erthematous in this study were male gender ,high triglyceride above 199 mg/dl ,HbA1c above 5.7% ,high SLE disease activities SLEDAI-2K above 20,lupus nephritis,short duration of treatment less than 1 year,disease duration above 5 years. Notably, other demographic factors did not show significant associations. To prevent these risks, interventions should focus on controlling disease activity, extending treatment duration, and managing ongoing inflammation.

Key words –Cardiovascular risk factors,TASH,Ethiopia Systemic Lupus Erythematous,Lupus Nephritis

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Abbreviations/Acronyms

AF- Atrial fibrillation

AHA/ACC- American College of Cardiology/American Heart Association

ALC-Absolute Lymphocyte Count

ANA-Anti Nucelear Antibody

ANC-Absolute Neutrophil Count

Anti-dsDNA- Anti double stranded dexoyribu nucleic acid Antibody

APS- Antiphospholipid Antibody Syndrome

AZT-Azathioprine

BMI- Body Mass Index

CHF- Congestive Heart Failure

CHOL- Cholestrol

CI- Confidence interval

CRP- C -reactive Protein

CVD- Cardiovascular diseases

DALYs- Disability-Adjusted Life years

DM- Diabetus Mellitus

ECHO- Echocardiography

EKG- Electrocardiography

ESR-Erythrocyte Sedimentation rate

EULAR- European League Against Rheumatism

FRS-ATP- Framingham risk Score-Adult Treatment Panel

GC- Glucocorticoid

HbA1c-Hemoglobin a1c

HDL-C- High Density Cholestrol

HGB-Hemoglobin

HHD-Hypertensive Heart disease

HMIS- Health Management Information System

HR- Hazard ratio

Ht- Height

HTN- Hypertension

IL- Interlekui

Kg- Kilogram, K –Thousands

LDL-C- Low Density Cholestrol

LN-Lupus Nephritis

ML- Milli Litre

MMF- Mycophenolate mofetil

MTX- Methotrexate

NSAIDS- non-steroidal anti-inflammatory drugs

OR- Odds Ratio

PLT-Platlets

RR- Relative risk

SCORE- Systematic Coronary Risk Evaluation

SLEDAI-2K- SLE Disease Activity Index-2000

SLE-Systemic Lupus Erythematous

SPHMMC- Saint Paul Hospital Millennium Medical College

SPSS version 26- Statistics is a powerful statistical software platform

TAG- Triglycerides

TC- Total cholesterol

TNF- Tumor necrosis factor

USA- United States of America

WBC-White Blood cell Count

WHO- World Health organization

Wt- Weight

1.Introduction

1.1 Background

Systemic lupus erythematosus (SLE) is a heterogeneous multisystem autoimmune disease. It is caused by interactions between the adaptive and innate immune systems that leads to upregulation of cytokines, deposition of autoantibodies,complement activation, immune-complex deposition, and ultimately inflammation and tissue damage [1-5].

SLE patients have two times higher risk of developing of CVD compared to age- and sex-matched patients and 27% higher risk of having non fatal CVE in DM[6]. MI rates are 2- to 10-fold higher compared to the general population. Young women have the highest relative risk, but, men carry at least 3-fold higher risk than women.Males are at increased cardiovascular risk and worse outcomes[7]. Pathogenisis of CVD in SLE,are atherosclerosis, arteritis, thrombosis, embolization, spasm, and abnormal coronary flow[8,9]. Inflammatory nature of SLE accelerating atherosclerosis which increase triglycerides, total cholesterol, and LDL and dysfunctional HDL cholesterol and leads to endothelial injury, which is the early steps in the atherosclerotic CVD[10]. Other cause of CVD in SLE,is antiphospholipid antibodies (aPL) in APS which causes both arterial and venous thrombosis. aPLcause direct pro-inflammatory and prothrombotic effects on endothelial cells and also interfere with the coagulation[11]. Dysregulation of the cytokines and adipokines is a common feature in both SLE and MetS, suggesting a complex relationship among autoimmunity, obesity, inflammation, and atherosclerosis[12].

A combination of traditional risk factors, and nontraditional risk factors like aPL,inflammation, and low anti-PC are increased risk of CVD in SLE[11]. Traditional CVD risk factors, including age, male sex, hyperlipidemia, diabetes mellitus, smoking, hypertension, previous vascular event, menopause and CRP, are associated with CVD risk in SLE patients[13,14]. The non-traditional factors in SLE are disease-specific like renal disease manifestation as Lupus nephritis (LN), presence of pro-inflammatory cytokines, some of inflammatory mediators, antiphospholipid antibodies, anti-oxLDL antibodies, corticosteroid uses and cumulative dose of glucocorticoids[14]. Several SLE-specific factors, like disease activity and duration, and specific manifestations and therapies, further increase risk[13]. Renal involvement is associated with

increased cardiovascular risk in lupus. Active lupus neprtitis manifiested by proteinuria[15,16] or incresed creatinine[17,18] associated with atherosclerosis . Anti-dsDNA antibodies increase the cardiovascular risk [19]. SLE patients with genetic risk factors had high levels of IL-10 and aPL antibodies[20]. Duration of SLE above 10 years , there is a three to fourfold increased risk of CV events and death compared to patients with out SLE with the same pattern of traditional CV risk factors[21].Higher SLE Disease Activity Index-2000 (SLEDAI-2K) and increased coronary calcium scores[22]. Remission of at least 5 years will reduce cardiovascular events[23] . Damage scores, damage index (SDI), consistently associated with CVD. In one study, SLE patients with higher baseline SDI scores were 9.6 fold to increase MACE[24]. SDI scores were independent risk of cross-sectional [25]and longitudinal carotid plaque[26]. Treatment targets of LLDAS and remission improved quality of life and protect against organ damage[27-30].Achievement of low disease activity state (LLDAS) 50% of the time reduce MI, renal injury and mortality risk[31].

The cardiovascular protection of hydroxychloroquine therapy will decrease in coronary artery disease, with out affecting stroke[32,33]. Statins reduce CVD risk by lipid-lowering property, anti-inflammatory and immunomodulatory[34,35]. But data showed mixed results regarding CVD risk reduction statin SLE.The AHA and ACC,considered SLE as similar to Diabetus mellitus as CVD risk factor[36,37].Anti hypertensive with a BP target of 130/80 for high-risk such as Diabetic or SLE[8,38]. ACE-I will delay the onset of renal involvement and lower the risk of SLE disease activity[39] . Glucocorticoids cause HTN, DM, Dyslipidemia, and obesity[40,41]. Longer duration of corticosteroid treatment[42,43]and a higher a cumulative dose[43,44] are increase atherosclerotic cardiovascular disease.

Aspirin reduce CVD in SLE particulary in lupus anticoagulant positive patients[45]. Neither NSAIDs nor COX-2 inhibitors were associated with increased blood pressure or other risk factors[46]. Recent study Cyclosporine a is protective against CVD in SLE[47,48]. Methotrexate (≥ 20 mg/week) prevents atherosclerosis progression in patients with rheumatoid arthritis (RA)[49], and in a meta-analysis of observational studies on patients with RA, psoriasis or polyarthritis, methotrexate was associated with a 21% reduced risk of total CVD incidence and 18% reduced risk of myocardial infarction [50]. Kiani *et al*.[51] Mycophenolate mofetil (MMF) does not slow the progression of subclinical atherosclerosis in SLE over 2 years .In IBD azathiprine reduce arterial stiffness [52]. Cyclophosphamide may increase atherosclerotic plaque[53,54] . Rituximab protective

effect against known risk factors for premature atherosclerosis such as HDL cholesterol, total cholesterol/HDL ratio and levels of tissue factor[55,56].

2. Statement of the problem

Cardiovascular disease is a major cause mortality and morbidity in Systemic Lupus Erythematous. Compared to the general population, a considerably higher risk of cardiovascular disease (CVD) is seen in patients with SLE[57,58]. Deaths in SLE within 1 year of diagnosis were largely due to active systemic lupus erythematosus (SLE) disease, another peak of mortality 8.6 years into the disease course could be attributed to cardiovascular events[58-61]. The cardiovascular risk in systemic lupus erythematous is as result of inflammatory nature involves of lipids, cytokines, and white blood cells[57]. Framingham traditional CVD risk factors are male gender ,older age[62-64],history of CVD, DM, hypertension , and hyperlipidemia[62],cigarette smoking ,post menopausal satus [64] can be worsened by steroids and other drugs[65]. Patients with high disease activity will increses very low-density lipoprotein , triglycerides and decrease levels of high-density lipoprotein as oppossed to quiescent disease[66] . Other non-Framingham traditional risk factors like high body mass index >30[66] and low body mass index <20,[44,67] early menopause, physical inactivity, and abnormal waist-to-hip ratio[68].In systemic lupus erythematous metabolic syndrome also increased cardiovascular risks and mortality[69].population-based study showed risk of myocardial infarction was the lowest in Asian and Hispanic descent as oppossed to Whites, but stroke was higher in Blacks and Hispanics[70].Controlling disease activites of SLE improve and cardiovascular risk

factors will decrease CVD in SLE

Even if cardiovascular disease risk factors in SLE is well studied in developed countries data is scarce in Africa and there is no single study particularly in Ethiopia .So this cross sectional study will determine the prevalence of cardiovascular disease risk factors in SLE patients and adds further knowledge for future cardiovascular disease and CVD risk management.

3.Literature review

3.1 Cardiovascular disease

CVD comprises,disorders of the heart and the blood vessels that supplies the heart,brain, and peripheral tissues [71,72].

3.2 Cardiovascular disease risk factors

The ten CVD risk factors include physical inactivity,dyslipidemia,diabetes mellitus ,hypertension, obesity,demographic factors (older age, race/ethnicity,and sex differences),smoking, CKD[73].

Study at Debre Berhan Referral Hospital (DBRH) . Older age smoking sedentary life style,higher waist circumference were idenitified as major cardiovascular risk factors [74].

A retrospective study at SPHMMC,Addis Ababa which assesed magnitude and spectrum of cardiovascular disease admissions and outcomes from 1st of Jan 2020 to 1st of Jan 2021,Out of 1,165 annual medical admissions. Hypertension was the predominate risk factor for CVD and present in 46.7%(168) of patients[75].

3.3 Cardiovascular disease in Systemic Lupus Erythematous

Study to see cardiovascular risk in systemic lupus erythematous, cardiovascular disease was high in blacks [IR] 10.57 [95% CI 9.96-11.22]) [70].A case-control study in USA showed Patients with SLE had a higher risk of atherosclerotic cardiovascular risk factors comapred with non - systemic lupus erythematous (25.6% vs 19.2%; OR, 1.45; 95% CI, 1.44-1.47; *P*<.001)[76].

Study in Korea, showed SLE patients had high risks for Myocardial infarction ,stroke (HR: 3.31, 95% CI: 2.84–3.86), Heart failure (HR: 4.60, 95% CI: 3.96–5.35), and cardiac death (HR: 3.98, 95% CI: 3.61–4.39)[77].

A systematic review and meta-analysis 26 studies,showed the pooled RR for ischaemic stroke was 2.18, intracerebral haemorrhage , subarachnoid haemorrhage 1.95 ,composite outcomes of stroke 2.13 and Myocardial infarctions was 2.99 (95% CI 2.34 to 3.82; I^2 85%)[78].

A Danish, cohort study showed higher risk of myocardial infarction and cardiovascular mortality in lupus nephritis compared to with out lupus nephritis but stroke is not increased despite precence of lupus nephritis[79].

3.4 Cardiovascular risk factor in Systemic Lupus Erythematous

A case control study in New York showed,Atherosclerosis(carotid plaque) was high in patients compared to non -SLE patients (37.1% vs. 15.2%, P<0.001).Factors increase plaque were older age, higher cholesterol , longer disease duration, high damage-score, a lesser use of cyclophosphamide, and negative anti-Smith antibodies[80].

A longitudinal cohort of SLE showed low income w associated with cardiovascular risk factors among whites, but smoking and diabetes were in African Americans[81].

A case-control study at Karolinska University Hospital,higher SLICC score and SLE-antiphospholipid syndrome associated bad cardiovascular outcome[82].

A cross sectional study in Japan, The risk factors for hypertension were ,age, body mass index, longer disease duration, maximum dose of prednisolone, and lupus nephritis,but for dyslipidaemia age and high BMI[83].

A case–control study showed incresed cardiovascular risk factors with higher levels of triglyceride , lupus anticoagulant ($P = 0.03$),not on hydroxychloroquine treatment($P = 0.003$) [84].

A cross-sectional study in China showed that ,age above 60 year ,high diastolic Blood pressure , high creatinine levels (OR = 1.002; 95% CI 1.000, 1.003), and longer use of glucocorticoids (OR = 1.005; 95% CI 1.000, 1.010) were risk factors for CVD. High density lipoprotein levels (OR = 0.121; 95% CI 0.041, 0.358) associated with reducing cardiovascular risk factors in SLE[85].

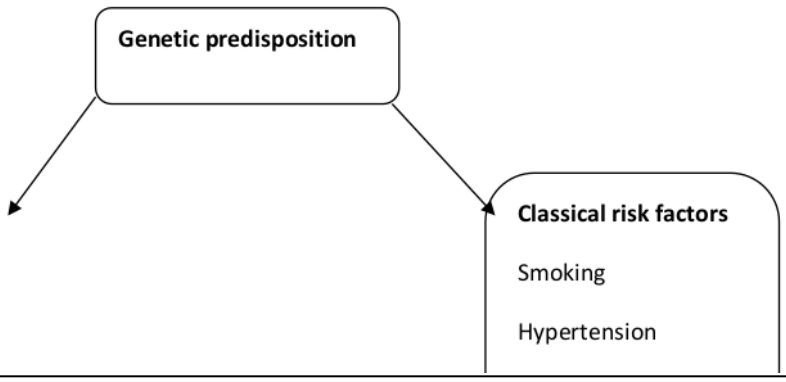
SLE patients treated with hydroxychloroquine for at least 318 day associated with lowering of cardivascular risk factors but not lower stroke[32].

A cross sectional study in Kenya which assessed Cardiovascular risk factors and carotid atherosclerosis in patients with SLE.prevalence of HTN was 42.4% in SLE patients and 24.2% in the controls (p=0.027), dyslipidemia in 74.2% of the patients and 62.1% of the controls (p=0.135) while diabetes was 4.5% in patients and 1.5% in controls (p=0.619). Obesity by Body Mass Index assessment was found in 12.1% of patients and 21.2% of the controls (p=0.330) whereas abdominal obesity (by waist: hip ratio) occurred in 33.3% of patients and 24.2% of controls (p=0.249). Carotid IMT and BMI significantly correlated with disease duration (p values= 0.006 and 0.021 respectively[86].

4.Significance of the study

Despite being an important cause of mortality and morbidity with high prevalence of both traditional and non-traditional risk factors in systemic lupus erythematous patients cardiovascular risk factors have never been studied in those groups of patients in our country.This study is the first study of its kind in our country. Identifying the prevalence of major cardiovascular disease and their risk factors in these patients with large detail will help characterize possible unique patterns of cardiovascular risk factors and traditional and non traditional risk factors and their level of control in these high risk patients. The results of this study can be used as an input for the policy makers to increase the vigilance for early identification of cardiovascular risk factors so that appropriate primary and secondary preventive measures can be taken. The results of this study can be used as a baseline data for further researches in the future in these groups of patients like prospective cohort studies and interventional studies.

5.Conceptual frame work



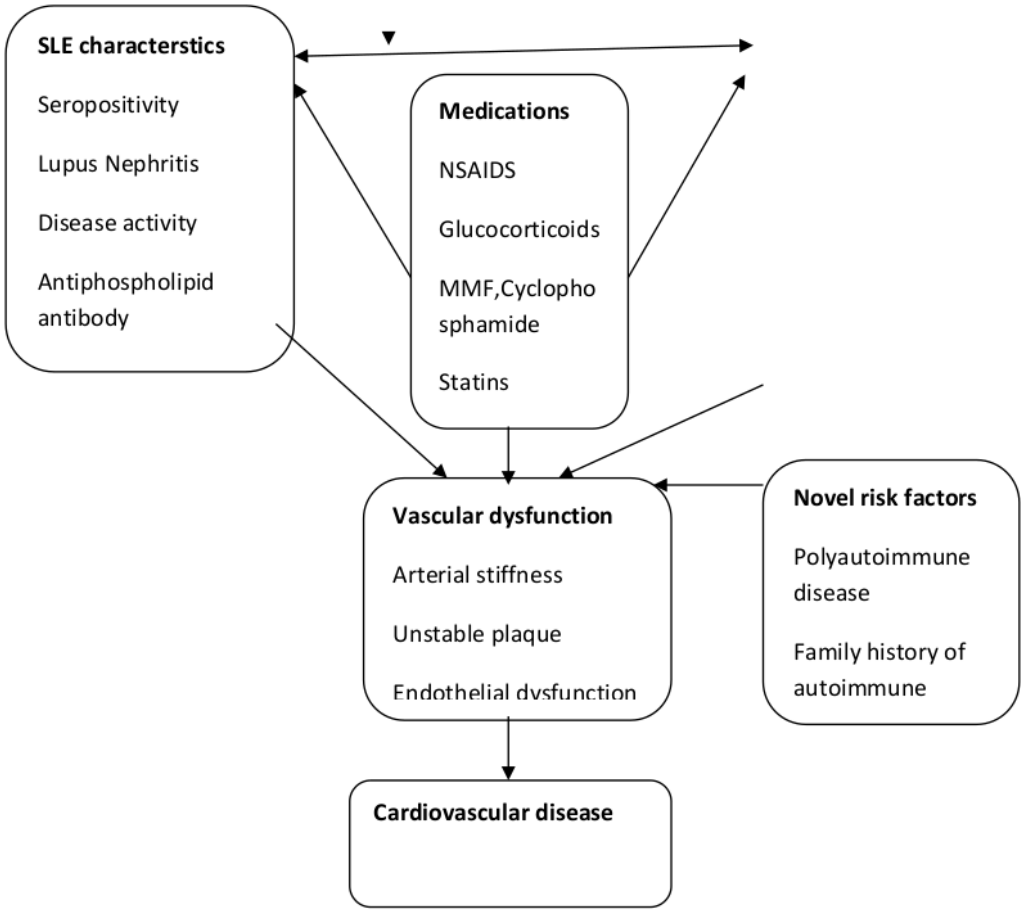


Fig.1 conceptual frame work

6.Obejectives

6.1 General objective

General objective of this study was to assess the prevalence of cardiovascular risk factors in patients with Systemic Lupus Erythematous (SLE) at TikurAnbessa Specialized Hospital.

6.2 Specific objective

Specific objectives of this study are:

To identify baseline characteristics of Systemic Lupus Erythematous (SLE) patients

To identify traditional cardiovascular risk factors in Systemic Lupus Erythematous (SLE)

To identify nontraditional cardiovascular risk factors of in Systemic Lupus Erythematous (SLE)

7.Methodology

7.1 Study area and Study Design

A Cross sectional study was conducted at Rheumatology and Renal referral clinic TikurAnbessa Specialized Hospital (TASH) among patients with systemic lupus erythematous (SLE) on follow up from September 2023 to January 2024 G.C. TASH is a university teaching hospital affiliated with Addis Ababa University. It is the largest referral hospital in the country. It provides specialized clinical services through its several departments.

7.2 Population

7.2.1 Source population

All SLE and Lupus Nephritis patients who are on follow up at Rheumatology and Renal clinc at TASH

7.2.2 Study Population

All SLE and Lupus Nephritis patients who are on follow up at Rheumatology and Renal clinc at TASH

7.3 Eligiblity criteria

7.3.1 Inclusion criteria

Patients with SLE diagnosed(documented) according to the 2019 ACR/EULAR (American College of Rheumatology/European League Against Rheumatism) with those aged between 18 – 74 years and have follow up at least for 6 months were included in this study, while other Rheumatology diseases based on history and patient chart review were excluded.

7.3.2 Exclusion criteria

Crtically ill patients who can not sign consent

Mixed connective tissue disease

Patients who have established CVD(IHD,stroke,PAD)

Human Immunodeficiency Virusinfection

Hereditary dyslipidemia

Patients who have other active chronic inflammatory disease

Pregnant mother

8. Sampling

8.1 Sample Size Determination

The sample size was calculated using the single proportion formula

$$\frac{n = Z^2_{\alpha/2} pq}{d^2}$$

Z α/2 = is standard normal variant (at 5% type 1 Error (P <0.05) it is 1.96

d = margin of error was taken as 0.05.

p = expected proportion of the population with the event of outcome (prevalence) –the prevalence of cardiovascular risk factor in Systemic Lupus Erythematous patients in a similar set up was not known

50% prevalence was taken

q =1-p: the probability of non-occurrence of the event of interest.

The calculated sample size is 377 patients.

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Since the population size is less than 10,000 additional correction was used with

$$n = \frac{n0}{1 + \frac{n0}{N}}$$

n= Final sample size

n_0= Initial sample size (377)

N= Source population size (240)

The calculated sample size was 146 patients and 10% loss was added with resulting total size of 160 patients.

8.2 Sampling Technique

Sampling was done by consecutive sampling . The total number of systemic lupus erythematous patients having follow up at TASH were retrieved from HMIS data ant consecutive sampling was used.

9. Data Collection Method

Socio-demographic data,systemic lupus erythematous related facts,including traditional and non traditional cardiovadcular risk factors, medications, erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), anti-nuclear antibody (ANA), anti-phospholipid antibody profiling, seropositivity and complement levels was collected from medical record review and participants interview . The association of disease activity measured with the.Renal disease-associated risk factors evaluated included the following: Stage of chronic kidney disease (CKD) based on the estimated glomerular filtration rate, which was calculated from serum creatinine using the Modification of Diet in Renal Disease (MDRD) formula[87], serum creatinine levels and degree of proteinuria based on 24-h quantification. Those data was collected by trained physicians. Laboratory values which included the laboratory result which was done in 6 months period for lipid profile, and CBC,ESR,CRP,OFT done in 3 months ,where as at any time of diagnosis for ANA,anti-ds DNA,anti-Smith, complement,antiphospholipid work up were used.

10 Variables

10.1 Outcome Variables

Prevalence of cardiovascular risk factors in Systemic Lupus Erythematous

10.2 Explanatory Variables

Demographic factors,Disease activites,treatmet, laboratory values of Systemic Lupus Erythematous

11. Operational definition

Cardiovascular risk factors considered when one or more of the following is present hypertension (self-reported history of hypertension, hypertension by medical record review,on antihypertensive drugs for blood pressure-lowering or blood pressure ≥140/90 mm Hg at assessment), diabetes mellitus (history of diabetes mellitus, on antihyperglycemic agent ,HgA1c >6.5% or FBS >125 mg/dl with symptoms or repeated the test two times),dyslipidaemia (history of documented dyslipidaemia ,on lipid lowering agent or LDL-cholesterol greater than 140 mg/dL, HDLless than 40 mg/dl) and obesity (BMI ≥30 kg/m^2).[88,89]

SLE-related risk factors assessed included erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), anti-nuclear antibody (ANA), anti-phospholipid antibody profiling, seropositivity and complement levels. Novel risk factors- familial autoimmunity, more than 10 years of duration of the disease, patients working on household duties, use of systemic steroids, and low education level[90].

Traditional - risk factors, Traditional risk factors such as smoking, arterial hypertension, dyslipidemia, insulin resistance, and obesity[91].

Lupus Nephritis –evidenced by biposy ,elevation of serum creatinine and degree of proteinuria based on 24-h quantification[92]

12. Data Quality Control

Regular checkups of data collection methods and study protocol adherence will be undertaken by the team. Regular checkup for completeness and consistency of the collected data was done. Data was collected y Two general practitioners after they were trained on the objectives of the study, interview technique, and data collection process. For office blood pressure measurement, internationally validated devices was used.Weight and height was measured by standard measurement.

13. Data Processing and Analysis

Data was checked for completeness ,cleaned, edited,coded ,before and entery. SPSS version 26.0 statistical software was used for data analysis. Descriptive statistics was used as a statistical data analysis method and expressed as frequencies and numbers (percentages) for categorical variables. The results were summarized with tables, and figures.and categorical variables by frequencie . Bivarate logistic regression analysis was performed to determine the association of each independent variable with cardiovascular risk factors. Furthermore, a multivariable binary logistic regression model was done to identify predictors of cardiovascular risk factors. P-values less than 0.05 are considered to be statistical significance of the association and an odds ratio with a 95% confidence interval is used to determine the presence, strength, and direction of association between covariates and the outcome variable.

14. Ethical Approval

Data collection was carried out after ethical clearance was obtained from the institutional review board of Department of Internal Medicine, AAU, CHS. Permission was also obtained from the renal and rheumatology unit unit. Appropriate measures was taken to protect confidentiality of the collected information. All collected data were not contain patient identifications like names and specific residence addresses. Written informed consent was obtained from eligible patients. Patients were provided with information on the objectives of the study and confidentiality issues.

15.Dissemination of Result

Findings of the research will be communicated to TASH, AAU University research dissemination office. The finding of the study will be distributed to health sector staffs and other organizations working on SLE patients. The findings will also be presented in different seminars; meetings and workshops and finally efforts will be made to publish on reputable journal

16. Result

16.1 Sociodemographic characteristics of the study participants

Among 160 study participants the majority of the participants (40%) of were in the age group of 25-35 years and majority of the participants (93.8%)were female and Amale to female ratio was 15:1.More than 27% of participats were government employe..Most participants identified as orthodox Christian(71%) and 48.1% were single and 76.3% were urban residency and more than half (53.8%)of the participants were earn <1000 ETB per month .

Table 1. The sociodemographic characteristics of Systemic Lupus Erythematous patients having Rheumatology and Renal clinic follow up at TASH, 2023.

Variable		Frequency	Percent(%)
Age(years)			
	18-24	49	30.6
	25-35	64	40
	36-45	34	21.3
	46-55	7	4.4
	56-65	4	2.5
	>65	2	1.3
Gender	Male	10	6.2
	Female	150	93.8
Occupation	Student	44	27.5
	Government employee	20	12.5
	Business man	33	20.6
	House wife	60	37.5
	Other	3	1.9
Religion	Orthodox	114	71.3
	Muslim	25	15.6
	Protestant	21	13.1
Marital status	Married	70	43.8

	Single	77	48.1
	Divorced	6	3.8
	Widowed	7	4.4
Education status	No formal education	9	5.6
	Primary school	45	28.1
	High school	42	26.3
	Diploma	23	14.4
	Degree and above	41	25.6
Living area	Urban	122	76.3
	Rural	29	18.1
	Semiurban	9	5.6
Monthly income(ETB)	<1000	86	53.8
	1000-2000	6	3.8
	2000-3000	9	5.6
	3000-4000	15	9.4
	4000-5000	14	8.8
	>5000	30	18.8

16.2 Characteristics of system lupus Erythematous

Almost all SLE patients were seropositive (97.5% both ANA and anti dsDNA positive).The majority of patients (69.4%) had been diagnosed with SLE for less than 5 years.A significant portion (36.9%) of patients had lupus nephritis, where as a smaller percentage had lupus anticoagulant (2.5%) and nephrotic syndrome (7.5%).Around 36.3% of patients had normal C3 and C4 complement level and 38.8% of patients had ESR of >50 mm/hr and 76.3% had normal CRP. More than 84% of participants had GFR of >=90ml/min and 80% of the participants had 0-500mg 24hrs urine protein

Table 2. characteristics of system lupus Erythematous

Variable		Frequency	Percent(%)
Type of SLE	Sero positive	156	97.5
	Sero negative	4	2.5
SLE duration (years)	<5	111	69.4
	5-10	35	21.9
	>10	14	8.8
ANA	Positive	156	97.5
	Negative	4	2.5
Anti dsDNA	Positive	156	97.5
	Negative	4	2.5

C3 complement level	Low	11	6.9
	Normal	58	36.3
	Not done	91	56.9
C4 complement	Low	13	8.1
	Normal	58	36.3
	Not done	89	55.6
ESR(mm/hr)	<20	38	23.8
	20-50	60	37.5
	>50	62	38.8
CRP	Normal	122	76.3
	High	38	23.8
APS work up	Not done	151	94.4
	Lupus anticoagulant	4	2.5
	Anti cardiolipin	3	1.9
	Anti B2 glycoprotien	2	1.3
Lupus nephritis	Yes	59	36.9
	No	101	63.1
Nephrotic syndrome	Yes	12	7.5
	No	148	92.5
eGFR(ml/min)	≥90	135	84.4
	60-89	15	9.4
	30-60	5	3.1
	15-30	5	3.1
24 hrs. urine protein(mg)	0-500	128	80.0
	500- 1000	13	8.1
	1000- 3500	15	9.4
	>3500	4	2.5

16.3 Types of SLE treatment,disease activities,and other autoimmune disease

All SLE patient were on treatment and more than half (58.8%) of participants were on hydroxychloroquine and prednisolone.Majority (78.8%) of the participants were on treatment more than 1 year. Most of participants (73.1%) had low disease activity (SLEDAI-2K < 2). Some(7.5%) of the participants had other autoimmune disease and from those disease, 41.7% had APS types of autoimmune disease. Only 1.3% of the participants had a family history of autoimmune disorder and from those disorder thyroid disease accounts 66.7% (n=2).

Table 3. Characteristics of autoimmune disease among SLE

Variables		Frequency	Percent(%)

SLEDAI-2K (score)	<2	117	73.1
	2-20	32	20.0
	>20	11	6.9
Treatment for SLE	Yes	160	100
Types of medication	Predinsolone	7	4.4
	Hydroxychloroquine	18	11.3
	Methotrexate	9	5.6
	MMF	11	6.9
	Azathioprine	2	1.3
	Hydroxychloroquine and prednisolone	94	58.8
	MMF and hydroxychloroquine	19	11.9
Duration of treatment(years)	6month-1 years	34	21.3
	>1 years	126	78.8
Other autoimmune disease	Yes	12	7.4
	No	148	92.6
Types of autoimmune disease	Psoriasis	1	8.3
	Hypothyroidism	4	33.3
	APS	5	41.7
	Hyperthyroidism	2	26.7
Familyhistoryofautoimmune disorder	Yes	3	1.9
	No	157	98.1
Types of autoimmune disorder in the families	Thyroid	2	66.7
	APS	1	33.3

16.4 Traditional cardiovascular risk factors and hematologic profile of the study participants

More than 17% of the study participants had known hypertensive and from those 39.3% were on RAAS inhibitors and 56.9% of the participants had normal blood pressure and 16.3% were bradycardic. Some participants (6.3%) were diagnosed with type 2 diabetes mellitus (DM), most of whom were on metformin. Sixity five(65%) of the study participants had Total cholesterol <200mg/dl and 53.8% of the participants had LDL level 70-100mg/dl and 77.5% of participats had HDL level 50-60mg/dl. Sixiten(16%)of the study participants had triglycerides >199mg/dl and 8.1% of the participants were on lipid lowering drug and all of them were on statin. 5.6% of the participants had FBS level of >125mg/dl level and 10.65% of the participants had <4000

WBC counts. More than 23% percent of the participants had moderate anemia and 3.1% of the participants had a platelet level of 50k-100k as shown in the table below..

Table 4. Traditional cardiovascular risk factors and hematologic profile of the study participants

Variable		Frequency	Percent(%)
Known hypertensive	Yes	28	17.5
	No	132	82.5
Types of medication	RAAS inhibitors	11	39.3
	Calcium channel blockers	10	35.7
	Diuretics	2	7.1
	Beta blockers	1	3.6
	CCB+RAAS inhibitors	3	10.7
	RAAS inhibitors diuretics	1	3.6
Blood pressure(mmHG)	90/60-120/80	91	56.9
	120/80-140/90	54	33.8
	140/90-160/100	15	9.4
Pulse rate(Beat/min)	<60	26	16.3
	60-100	129	80.6
	>100	5	3.1
Total cholesterol(mg/dl)	<200	104	65.0
	200-239	34	21.3
	>239	22	13.8
LDL(mg/dl)	70-100	86	53.8
	100-130	39	24.4
	130-160	35	21.9
HDL(mg/dl)	>60	21	13.1
	50-60	120	77.5
	<50	15	9.3
Triglyceride(mg/dl)	<150	101	63.1
	150-199	33	20.6
	>199	26	16.3
Lipid lowering drug	Yes	13	8.1
	No	147	91.9
Medication	Statin	13	100
Type 2 DM	Yes	10	6.3
	No	150	93.7
On treatment	Yes	10	6.3
	No	8	5
Types of treatment	Insulin	3	1.9
	Metformin	5	3.1
	Sulfonylurea	1	.6
	Metformin +sulfonyurea	1	.6

FBS(mg/dl)	<70	20	12.5
	70-100	112	70
	100-125	19	11.9
	>125	9	5.6
HbA1c(%)	<5.7	62	38.8
	5.7-6.4	80	50
	>6.5	18	11.2
WBC(cells/microlitre)	<4000	17	10.6
	4000-11000	135	84.4
	>11000	8	5
Hemoglobin (g/dl)	<7	2	1.3
	7-12	34	21.3
	12-16	118	73.8
	>16	6	3.8
PLT(cell/microlitre)	<50K	4	2.5
	50K-100K	5	3.1
	100K-150K	6	3.1
	150K-450K	142	88.8
	>450K	3	1.9

16.5 Behavioral characteristics of the study participants

The finding of the study revealed that 2.5% of the participants were ex-smoker and 33.3% were smoked 5-10 packs per year. Almost two percent of the study participants were chewing chat and 9.4% were drink alcohol and from those 46.7% were drink 50-100gm per week. Sixty-nine percent of the participants were doing physical exercise <50 minute per week and and 13.8% of the participants had <18.5 Kg/m2 body mass index

Table 5. behavioral characteristic of the study participants

Variable		Frequency	Percent (%)
Smoking status	Never smoker	154	96.3
	Ex smoker	4	2.5

	Current smoker	2	1.3
Number of packs per years (n=6)	<1 pack year	1	16.7
	1-5 pack year	1	16.7
	5-10 pack year	3	33.3
	>10 pack year	1	16.6
Chew kahat	Yes	3	1.9
	No	157	981
Drinks alcohol	Yes	15	9.4
	No	145	90.6
Bottles of beer (equivalent) per weeks	<50gm	4	26.7
	50-100gm	7	46.7
	>100gm	4	26.7
Physical exercise /week	<50 minutes	111	69.4
	50-100 minutes	6	3.8
	100-150 minutes	9	5.6
	>150 minutes	34	21.3
BMI(Kg/m2)	<18.5	22	13.8
	18.5-24.9	117	73.1
	25-29.9	17	10.6
	30-34.9	3	1.9
	>40	1	.6
Waist circumference(cm)	<88cm	133	83
	88-105cm	20	12.5
	>105cm	7	4.4
Menopause (for females)	Yes	12	8%
	No	138	92%

16.6 Prevalence of cardiovascular risk

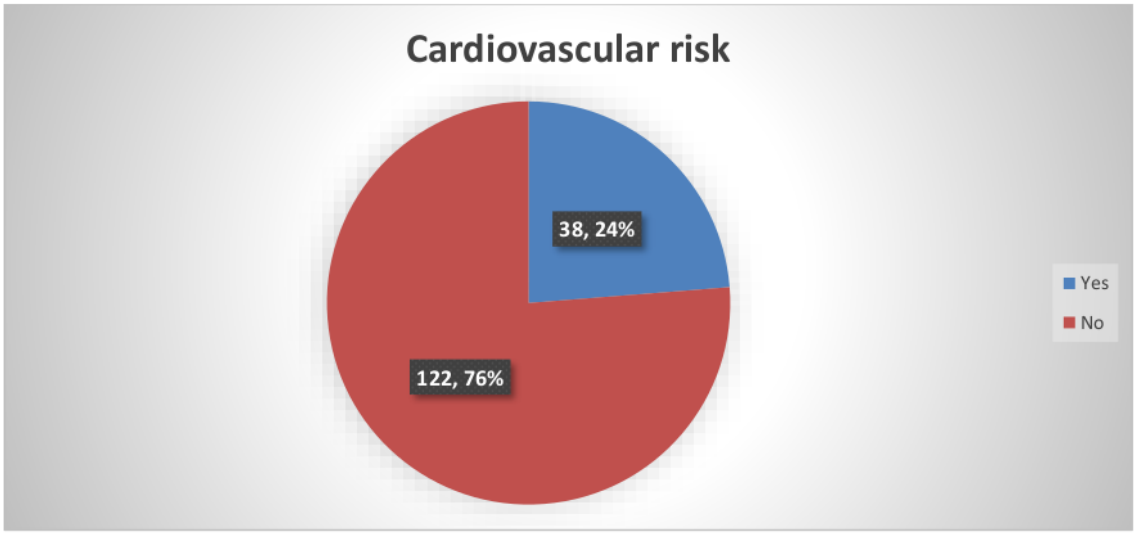

Figure .2 The prevalence of cardiovascular risk among the study participants

16.7 Traditional cardiovascular risk factors SLE

The strength of association was measured using odd ratio and 95% CI. Accordingly, gender, education level,total cholesterol,triglyceride,HbA1c and FBS were an associated with cardiovascular risk by bivariate logistic regression. The multivariate logistic regression revealed that study participant having male sex were 3.1 folds increase its cardiovascular risk compared to female (AOR=3.1, 95%CI=1.48, 20.71) and study participant having triglyceride >199mg/dl were 1.9 folds increase cardiovascular risk compared to Triglyceride<150 mg/dl (AOR=1.9, 95%CI=1.52, 7.21). The study participant whose HbA1c of 5.7-6.4 and >6.5 were 3.9 and 5.8 folds increase its cardiovascular risk respectively.

Table 6. The bivariate and multivariate association of cardiovascular risk with traditional risk factor of independent variable.

Variable	Cardiovascular risk		P value	COR with 95%CI	P-value	AOR with 95%CI
	Yes	No				
Gender						
Male	6	4	0.011	5.5(1.47, 20.79)	0.035	**3.1(1.48, 20.71)**
Female	32	118	1		1	

Education level						
Illiterate	6	3	0.045	4.8(1.04, 22.56)	0.124	5.5(0.63, 47.91)
Primary school	7	38	0.131	0.45(0.16, 1.27)	0.225	0.46(0.13, 1.61)
High school	6	36	0.104	0.40(0.14, 1.20)	0.144	0.27(0.07, 1.97)
Diploma	7	16	0.922	1.1(0.35, 3.22)	0.622	1.4(0.37, 5.27)
Degree and above	12	29	1		1	
Total cholesterol(mg/dl)						
<200	17	87	1		1	
200-239	11	23	0.048	2.4(1.01, 5.94)	0.220	2.2(0.62, 8.11)
>239	10	12	0.004	4.3(1.59, 11.44)	0.735	1.3(0.25, 7.00)
LDL(mg/dl)						
70-100	15	71	1		1	
100-130	12	27	0.097	2.1(0.87, 5.07)	0.970	0.98(0.26, 3.59)
130-160	11	24	0.094	2.2(0.88, 5.36)	0.997	.99(0.22, 4.45)
Triglyceride						
<150	17	84	1		1	
150-199	9	24	0.192	1.9(0.73, 4.68)	0.660	1.3(0.39, 4.32)
>199	12	14	0.002	4.2(1.67, 10.74)	0.032	**1.9(1.52, 7.21)**
HGA1C						
<5.7	5	57	1		1	
5.7-6.4	24	56	0.003	4.9(1.74, 13.71)	0.022	**3.9(1.22, 12.63)**
>6.5	9	9	0.000	11.4(3.11, 41.82)	0.044	**5.8(1.97, 34.72)**
Patient drink alcohol						
No	32	113	1		1	
Yes	6	9	0.129	2.4(0.78, 7.11)	0.884	1.9(0.16, 4.72)
FBS(mg/dl)						
<70	1	19	1		1	
70-100	23	89	0.130	4.9(0.62, 38.62)	0.152	5.4(0.54, 54.87)
100-125	9	10	0.012	7.1(1.89, 54.84)	0.146	7.1(0.51, 98.49)
>125	5	4	0.10	23.7(2.15, 62.47)	0.118	11.3(0.54, 35.89)

16.8 **Nontraditional cardiovascular risk factors of in Systemic Lupus Erythematous (SLE)**

The multivariate logistic regression of nontraditional risk factor showed that study participant whose duration of SLE 5-10 and >10 years were 3.6 and 3.9 folds increase its cardiovascular risk compared to duration of age <5 years respectively. The study participant having lupus nephritis had 5 folds increase its cardiovascular risk compared to its opposite compartment (AOR=5.0, 95%CI=1.75, 14.32) and study participant whose SLEDAI-2K >20 were 10.4 folds increase its cardiovascular risk compared to those SLEDAI-2K <2 (AOR=10.4, 95%CI=1.41, 76.70) and

study participant whose duration of treatment 6month-1 years had 3.6 folds increase cardiovascular risk compared to duration of treatment >1 years (AOR=3.6, 95%CI=1.12, 11.55).

Table 7. The bivariate and multivariate association of cardiovascular risk with non- traditional risk factor of independent variable.

Variable	Cardiovascular risk		p-value	COR with 95%CI	P-value	AOR with 95%CI
	Yes	No				
Duration of SLE in years						
<5yr	21	90	1			
5-10yr	11	24	0.123	1.9(0.83, 4.63)	0.026	**3.6(1.17, 11.37)**
>10yr	6	8	0.049	3.2(1.01, 10.26)	0.043	**3.9(1.98, 15.69)**
ESR(mm/hr)						
<20	13	25	0.206	1.8(0.73, 4.37)	0.343	1.8(0.55, 5.69)
20-50	11	49	0.562	0.77(0.32, 1.86)	0.244	0.49(0.16, 1.61)
>50	14	48	1		1	
CRP						
Normal	23	99	1		1	
High	15	23	0.011	2.8(1.27, 6.20)	0.071	2.6(0.92, 7.56)
Patient has lupus nephritis						
No	12	89	1		1	
Yes	26	33	0.000	5.8(2.65, 12.91)	0.003	**5.0(1.75, 14.32)**
Nephrotic syndrome						
No	30	118	1		1	
Yes	8	4	0.001	7.9(2.22, 27.88)	0843	1.2(0.17, 8.91)
SLEDAI-2K						
<2	20	97	1		1	
2-20	9	23	0.167	1.9(0.77, 4.71)	0.981	0.98(0.32, 2.99)
>20	9	2	0.000	2.2(1.44, 10.87)	0.022	**10.4(1.41, 76.70)**
Duration of treatment						
6mounth -1 years	11	23	0.187	1.8(0.76, 4.04)	0.032	**3.6(1.12, 11.55)**
>1years	27	99	1		1	

17.Discussion

Cardiovascular risk factors are the most important phenomenia which increase mortality and morbidities in systemic lupus erythematous.Even if there are both traditional and non traditional

risk factors contributing for cardiovascular disease there is no standard risk calculator for systemic lupus erythematous as most of patients are younger individual. The most common traditional cardiovascular risk factors were hypertension found in 28(17.5%) of participants, dyslipidemia in 13(8.1%) of participants, type 2 DM in 10(6.3%),obesity 2.6 %.The prevalence of hypertension and dyslipidemia in systemic lupus erythematous is lower compared to other cross sectional study done in Japan was 43.9% and 54.7% respectively.The difference could be due to different sample charachetrstics .the majortity of participants from Japan study was on prednisolone (92.9%)[83] but from this study majority was on predinsolone and hydroxychloroquine.That is hydroxychloroquine possibly reduce the cumulative dose of predinsolone .In this study the prevalence of hypertension in systemic lupus erythematous slightly lower than general population as it was evidenced from systematic review and metanalysis in Ethiopia (19.6%)[93],cross sectional study done norther Ethiopia (21.8%) [94].The prevalence of type 2 DM in this study higher than chort study among SLE patients in Taiwan(3.34)[95],the difference could be due different study design and sample characterstics.The prevalence of type 2 DM general population from cross sectional study among civil servants at Guji zone,Ethiopia(3.9%)[96].

In this study the most common cardivovascular risk predictors were male gender,triglyceride above 199 mg/dl ,HbA1C between 5.7-6.4% and above 6.5 %.Male gender in systemic lupus erythematous increase cardiovascular risk factors 3 times as compared female gender .The possible explanation for this delayed diagnosis in male due to low consideration of systemic lupus erythematous in male and male has higher risk of having lupus nephritis . This consistent with the study done at Swiss and other studies.[97-99]. Systemic lupus patient who had triglyceride level above 199mg/dl has 1.9 times higher risk of having cardiovascular risk factors than those with triglyceride below 150 mg/dl.This is consistent with other studies[100,101] .HbA1c 5.7 -6.4% and above 6.5% were incresed cardiovascular risk factor by 3.9 and 5.8 respectively as compared to HbA1c below 5.7%. Systemic lupus erythematous might cause imapaired glycated hemoglobin and diabetus mellitus due to prolonged steroid exposure,chroinic inflammation . Elevated HbA1c levels are associated with an increased risk of cardiovascular disease in both diabetic and non-diabetic populations. Chronic inflammation may interfere with the normal glycation process, leading to inaccuracies in HbA1c measurements. Type B insulin resistance syndrome (TBIRS) in non-obese patients with de novo diabetes can be occurred secondary to

SLE which antibodies attack insulin receptors , with a good metabolic response to immunosuppressant.[102,103]

Another systemic lupus associated cardiovascular risk predictors are ,duration of systemic lupus erythematous since diagnosis,SLE disease activities,duration of treatment,lupus nephritis.Duration of SLE since diagnosis 5-10 years and above 10 years found to be associated increase of cardiovascular risk by 3.6 and 3.9 fold respectively as compared to disease duration below 5 years.This due to chronic inflammatory nature which can persist over many years and Prolonged exposure to inflammatory mediators can contribute to endothelial dysfunction, atherosclerosis, and ultimately cardiovascular disease, and more relapsing ,remitting inflammation which leads to ,prolonoged steroid exposure,which is associated with adverse metabolic effects, including insulin resistance, dyslipidemia, and obesity.Over time, the cumulative effect of chronic inflammation, disease flares, and steroid exposure can lead to increased cardiovascular risk[9,104].This also similarly observed in another study [105-107].The diagnosis of lupus nephritis in this study associated with 5 fold incresed cardiovascular risk factors as compared those SLE with out lupus nephritis.The possible explanation is Lupus nephritis is characterized by inflammation and immune dysregulation, which can contribute to endothelial dysfunction, accelerated atherosclerosis, and increased cardiovascular risk. lupus nephritis, may exacerbate cardiovascular risk through various pathways, such as hypertension, dyslipidemia, insulin resistance, and chronic kidney disease-related factors[105,108].Systemic lupus erythematous disease activities greater than 20 was associated with increased cardiovascular risk factors by 10.4 times as compared with SLE disease activities <2. The justification could be Chronic inflammation, endothelial dysfunction, accelerated atherosclerosis, and traditional cardiovascular risk factors collectively contribute to this elevated risk.This result also in the line of other study[108]. Shorter duration of treatment 6 month-1 yr were associated with increased cardiovascular risk factors compared with greater than 1 year treatment for systemic lupus erythematous .This is possibly due to aggressive inflammation before controlling of the disease with disease activities and higher dose of steroid exposure for cotrolling the inflammation . This is not consistenent with other studies as other studies showed prolonged treatment leads to more cardiovascular adverse effects due to drugs like steroids,NSAIDS [46,107].Even if there is a strong association between cardiovascular risk factors atiphospholipid syndrome[109],there is no association observed in this study.probably only few participants had those investigation.

18.Conclusion

Even if EULAR recommends comprehensive monitoring and management of cardiovascular risk factors in SLE based on general population guidelines.Systemic lupus erythematous patients have aditional SLE related cardiovascular associated risk factors . The most common cardiovascular associated risk factors predictors identified in systemic lupus erthematous in this study were high triglyceride above 199 mg/dl,male gender,HbA1c above 5.7%.The other systemic lupus erythematous associated cardiovascular risk predictors were SLEDAI-2K above 20,lupus nephritis,short duration of treatment less than 1 year,disease duration above 5 years.there was no a significant association with other demographic factors,LDL levels,antiphospholipid sydrome.To prevent cardiovascular risk factors Comprehensive management strategies focusing on controlling disease activity and managing tradtitional cardiovascular risk factors are essential in improving outcomes .Furthermore,cardiovascular risk factors associated with systemic lupus erythematous should be identified and modified by further studies.

19.Recommendation

This is a hospital-based study with a small sample size, thus a large-scale and prospective study with a longer duration of follow-up is needed for the determination of cardiovascular risk factors associated with systemic lupus erythematous patients.Further prospective study on prevalence of specific cardiovascular disease risk factors and SLE specific factor will contribute for more understading of the cardiovascular risk factors

20.Strengths and Limitations of the Study

The strength of this study is as it is a cross-sectional study, and data were collected over specified time duration and which enabled us to execute an accurate assessment of the descriptive and analytic analysis. This study is one of the first studies conducted both in TASH and Ethiopia. We believe this study will add more information regarding the current status

cardiovascular risk factors in SLE in the country's largest hospital and motivate the cardiology unit,Rheumatology unit and department of internal medicine to assess Systemic lupus specific cardiovascular risk factors and targeting disease activities .The relatively small number of SLE patients may reduce the power of our study.

21.Acknowledgement

First, my gratitude goes to Addis Ababa university college of health science, department of Internal Medicine forgiving me this opportunity to do this research, for allowing me to use the resources of the institution while doing the research. Second, my gratitude goes to my advisors,Dr Sintayehu Abebe , Dr Birhanu Demelash, and Dr Nebyu Getachew who gave me a great deal of their time and skill in providing me guidance and advice to complete the research.

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23.Annex

1. English Version Questionnaire

Prevalence of cardiovascular disease risk factors among SLE patients in TikurAnbessa specialized hospital, Addis Ababa, Ethiopia

After taking written informed consent and ethical approval, the following data will be retrieved by reviewing patient's medical recpords and interviewing patients

Eligibility criteria

Inclusion Criteria	
- Is the patient aged between 18 and 74 years?	Yes-------- No----------
- Does the patient has established diagnosis of SLE	Yes--------- No----------
Exclusion Criteria	
- Is the patient very ill and unable to consent? -Is the patient has established diagnosis of mixed connective tissue -Is the patient has diagnosed IBD,RA,HIV	Yes---------- No----------

A. Sociodemographic factors

No	Variables	Response
1	Card number	----------
2	Age	----------
3	Sex	Male-------- Female------
4	Occupation	Student------- Government employee----- Business man---- House wife-------Farmer--------- Other---------
5	Religon	Orthodox ---- Musilm----- protestant---- Others------
6	Marital status	Married---- Single------Divorced---- Widowed ------
7	Monthly income(ETB)	<1000------ 1000-2000----- 2000-3000----- 3000-4000---- >5000----
8	Educational status	No formal education---- Primary school----- High school----- Diploma--- Degree and above------
9	Living area	Urban------ Rural-------- Semi urban-------
10	Region	Addis Ababa---------Oromiya-------_Amhara---- SNNRP---- OtherS--------_

B. **Clinical and lab parameters**

No	Variables	Response
1	Types of SLE	Seropositive _____seronegative _____
2	SLE duration	5yr ---------- 5-10yr---------- >10yr----------

3	ANA	Positive----------Negative----------
4	Anti-dsDNA	Positive---------- Negative ----------
5	C3 complement level	----------
6	C4 complement level	----------
7	ESR	----------
8	CRP	----------
9	APS work up	Lupus anticoagulant---------- Anti cardiolipin ---------- Anti –B2 glycoprotein----------
10	Is the patient has Lupus nephritis ?	Yes ----------No----------
11	Stage of Lupus nephritis	I------II--------III-----IV------V-------
12	Nephrotic syndrome	Yes ----------No--------
13	eGFR	----------
14	24 hr urine protein	0-500mg --- ---- 500- 1000 mg -------- 1000- 3500mg -------- >3500 mg----------
15	SLEDAI-2K	<2---------2-20----------->20-------
16	Is the patient on treatment for SLE	Yes----- No---------
17	If yes to Q 16, what medication/s?	NSAIDS------ predisolone ---- Methyl predinsolone pulse---------- Hydroxychloroquine ------ Methotrexate---- MMF------ Azathioprine------- Cyclophosphamide -------- Any combinations of drugs-------
18	Duration of treatment	Month ----------yrs-------
19	Cumulative dose of drugs (mg)	----------
20	Is the patient has other autoimmune disease?	Yes ----- No----
21	If yes for the above question,What type of autoimmune disease does the patient has?	Psoriasis ---- -----Thyroid disorder ----------APS---- others
22	Is there family history of autoimmune disorder?	Yes ---------- No----------
23	What type of autoimmune disorder in the families?	Psoriasis ---- -----Thyroid disorder ----------APS---- others
24	Is the patient known hypertensive?	Yes ----------No----------

25	If yes to Q 24,on what medications?	RAAS inhibitors---- Calcium channel blockers------- Diuretics Beta blockers---------- Others----------
26	Lipid profile	Total cholesterol---------- LDL---------- HDL---------- Triglyceride----------
27	Is the patient on lipid lowering drugs?	Yes------ No-------
28	If yes to Q27, what medication/s?	Statin---------- Ezetimibe-------- Fibrates--------- Niacin-------- Others---------
29	Is the patient known to have DM?	Yes---------- No----------
30	If yes to Q 29, Is the patient on treatment?	Yes---------- No----------
31	If yes to Q30, What medication/s?	Insulin---------- Metformin----- ---- Sulfonylurea------- SGLT2i---------- DPP4i---------- Others----------
32	FBS	---------
33	HGA1C	----------
34	CBC	WBC------ANC----ALC------HGB-----PLT-------

C. Physical measures and behavioral risk factors

No	Variables	Response
1	Smoking status	Current smoker------ Ex smoker---- Never smoker----
2	How many pack years(For ex and current smokers)	----------
3	First degree relative with premature cardiac death (male<45 and female <55)	Yes------- No--------
4	Does the patient chew chat?	Yes-------- No--------
5	Does the patient drinks alcohol?	Yes--------- No-------
6	If yes to Q5, bottles of beer (equivalent) per week?	

7	Physical exercise at least 30 minutes 3*/week	Yes----- No-------
8	Is the patient at menopause (for females)?	Yes------- No-------
9	Office blood pressure	Left----------Right----------
10	Office pulse rate	----------
11	Current weight/height/BMI	-------Kg/---------M/---------Kg/m2
12	Waist circumference	----------
13	Is the patient has cardiovascular risk factors	Yes ------No

2. Information Sheet

Title of Project: Prevalence of Cardiovascular Risk Factors in SLE Patients at TikurAnbessa Specialized Hospital, Addis Ababa, Ethiopia: A Cross Sectional Study

Name of the Investigators: Adugnaw Kindu, Sintayehu Abebe, Birhanu Demelash,Nebyu Getachew

My name is **Dr._Adugnaw Kidu** and I am working with the cardiovascular disease team. You are invited to participate in this study. Before you decide to take part it is important for you to understand why this research is being done and what it involves. Please take time to read/listen to the following information carefully. Raise question if there is anything not clear. Thank you for the time you have spent already.

Background to the study.

We would like to see the prevalence of cardiovascular risk factors in SLE patients in our hospital. Cardiovascular disease is an important cause of death and poor quality of life in SLE patients .However, data is scarce in Africa in general and in Ethiopia in particular. You will be interviewed with a prepared questionnaire; your medical record will be revised for clinical, laboratory and imaging findings.

Possible harms. There is no harm in participating in this study.

Benefits. You will not directly benefit from this study. However, the findings of the study may help plan for care of patients with SLE and for strategic prevention/control of cardiovascular disease in such patients.

Confidentiality. All information which is collected about you during the course of the research will be strictly confidential.

Autonomy. All the information you give us is highly valuable to the study. It is up to you to decide whether to take part or not. If you decide to participate, you will be given this information sheet to keep and be asked to sign a consent form. Whether you consent or do not consent to be part of the study, your rights for care in the health care facility will not be compromised and you can withdraw from the study any time.

What will happen to the research? The data will be collected over five months period and the result will be available in 6 months time, and we hope to disseminate the result publishing it on national and/or international journals.

Who is organizing and funding the research? Research is funded by Addis Ababa University. The research proposal will be reviewed by the department Ethical Committee
Thank you in advance!

PI address: Adugnaw Kindu MD
Internal Medicine Resident at Addis Ababa University
Mob. No. : 0928495370
e-mail: kinduadugnaw@gmail.com

3. Informed Consent Form

Cardiovascular disease is a common cause of morbidity and mortality in SLE patients. SLE patients have a high burden of cardiovascular risk factors some of which are modifiable with timely identification and optimal intervention. This study aims to look for the burden of cardiovascular risk factors in SLE patients. The information obtained will be used by policy makers and managing physicians for better care of individual patient and the strategic control of risk factors.

For this reason,we kindly request you to participate in the study by responding to the interview, allowing to review your medical record and to undergo some investigations. We assure you that confidentiality of the information obtained is kept. If you have any questions, we will be so happy to entertain them.

I confirm that I have understood what has been read/what I have read has been clear to me, and I have agreed to participate in the study.

Name_____

Signature_____ Date_____

4. Investigators Signature Form

I agree to conduct the study in accordance with the relevant, current protocol and will not make changes to the protocol without permission of Department of Internal Medicine, except when necessary to protect the safety, rights, or welfare of study participants. I agree to personally conduct or supervise this study. I will ensure that the requirements relating to obtaining informed consent and Ethics Committee (EC) or Institutional Review Board (IRB) review and are met. I agree to maintain adequate and accurate study records and to make those records available for inspection by the department or unit heads, hospital administrators, and/or other applicable regulatory entities. I also agree to promptly report to the EC/IRB all changes to the study and all unanticipated problems involving risks to human subjects or others. I agree to ensure that all staff members involved in the conduct of this study are informed about their obligations in meeting the above commitments.

Principal Investigator: _____

Signature: _____ Date: _____

1. የአማርኛ ቃለ መጠይቅ

በጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል፣ አዲስ አበባ፣ ኢትዮጵያ የልብና የደም ሥር (cardiovascular) በሽታዎች ተጋላጭነት ምክንያቶች ላይ የሚጠና ጥናት።

በመረጃ ላይ የተመሰረተ ስምምነት እና የስነምግባር ማረጋገጫ ከወሰድን በኋላ፣ የታካሚውን ሁኔታ በመገምገም እና ታካሚዎችን ቃለ መጠይቅ በማድረግ የሚከተለው መረጃ ይሞላል።

የብቃት መስፈርት

የማካተት መስፈርቶች	
- ታካሚው/ዋ እድሜው ከ18 እስከ 74 ዓመት ነው?	አዎ ----------አይደለም----------
- ታካሚው/ዋ የ SLE ምርመራን አረጋግጧል?	አዎ---------- የለም----------
ከጥናቱ የማግለል መስፈርቶች	
- ታካሚው/ዋ በጽኑ ታሟል እና ፈቃደኛ መሆን አይችሉም? -ታካሚው/ዋ የተደባለቀ(mixed connective tissue disorder) ቲሹ ምርመራን አረጋግጠዋል? - ታካሚው/ዋ የአንጀት(IBD)፣ ሪሁማቶይድ አርትራይጽ(RA)፣ የኤችአይቪ ምርመራ ተመርምረው ያውቃል?	አዎ---------- የለም----------

ሶሺዮ ዲሞግራፊ ይዘቶች

ተ/ቁ	ተለዋዋጮች	ምላሽ
1	የህክምና ካርድ ቁጥር	----
2	ዕድሜ	----
3	ጾታ	ወንድ--------- ሴት------
4	ሥራ	ተማሪ ------- የመንግስት ሰራተኛ----- ነጋዴ ---- የቤት እመቤት -------ገበሬ ---- ሌላ -----
5	ሃይማኖት	አርቶዶክስ ---- ---ሙስሊም------- ፕሮቴስታንት ---- ሌሎች --
6	የጋብቻ ሁኔታ	ያገባ --- ያላገባ ---የተፋታ ---- ባል የሞተባት ------
7	ወርሃዊ ገቢ	<1000------ 1000-2000----- 2000-3000----- 3000-4000---- >5000-----
8	የትምህርት ደረጃ	መደበኛ ትምህርት የለም ---- የመጀመሪያ ደረጃ ትምህርት ያጠናቀቀ/ች----- ሁለተኛ ደረጃ ትምህርት ያጠናቀቀ/ች----- ዲፕሎማ -- ዲግሪ እና ከዚያ በላይ --
9	የመኖሪያ አካባቢ	ከተማ ------ ገጠር ------- ከፊል ከተማ ---
10	የመጡበት ክልል	አዲስ አበባ -----አሮሚያ-----አማራ---- የደቡብ ክልል----ሌሎች-----

የህመሙ ሁኔታ እና የላብራቶሪ ምርመራዎች

ተ/ቁ	ተለዋዋጮች	ምላሽ
1	የኤስ/ኤል/ኢ(SLE)ዓይነት	ሴሮፖዝቲቭ ----------ሴሮኔጋቲቭ ----------
2	የኤስ/ኤል/ኢ(SLE) ከታወቀ ጀምሮ ስንት ጊዜ ሆነው?	5 ዓመት ---- 5-10 አመት - > 10 አመት --
3	አና(ANA)titer	አወንታዊ ---------- አሉታዊ -------
4	ፀረ(Anti-ds DNA)	አዎንታዊ ---------- አሉታዊ ----------
5	ማሚያ (C3 complemment) መጠን	----------
6	ማሚያ(C4 complement) መጠን	----------
7	ኢኤስአር(ESR) መጠን	----------
8	ሲአርፒ(CRP) መጠን	----------
9	ኤፒኤስ(APS) ምርመራ	ሉፐስ የደም መርጋት(lupus annticoagulat) ---------- ፀረ-cardiolipin(anticardiolipin) ----- ፀረ-B2 ግላይኮፕሮቲን (anti B2 glycoprotein)-----
10	ታካሚው ሉፐስ (lupus nephritis)አለባቸው?	አዎ ----------የለም----------
11	የሉፐስ (lupus nephritis) ደረጃ	I----- II -----III------IV-------V-------
12	ታካሚው የኔፍሮቲክ ሲንድሮም(nephrotic syndrome)አላቸው?	አዎ---------- የለም--------
13	የኩላሊት የማጣራት አቅም (eGFR)	----------
14	የ 24 ሰዓት የሽንት ፕሮቲን መጠን	0-500ሚ.ግ --- ---- 500-1000 ሚ.ግ ---- 1000-3500ሚ.ግ ---- > 3500 ሚ.ግ.
15	ለ ኤስ/ኤል/ኢ(SLEDAI-2ኬ) መለኪያ	<2-----2-20-------->20-------
16	ታካሚው ለ ኤስ/ኤል/ኢ(SLE) ህክምና ላይ ነው?	አዎ---------- የለም---------
17	ለ ጥያቄ ተ/ቁ 16 መልስዎ አዎ ከሆነ፣ ምን አይነት መድሃኒት/ቶች ይወስዳሉ?	ኤንኤሳይዲስ(NSAIDS) ------- ስቴሮይድ(steroids) -------- ሜቲል ፕሪዲኒሶሎን ፕልስ(methyl predinsolone) ------- ሃይድሮክሲክሎሮኩዊን (HCQ)------ ሜቶቴሬክሳቴ(MTX) ---- ኤምኤምኤፍ(MMF)------ አዛቲዮፕሪን(AZT) ---- ሳይክሎፎስፋሚድ(cyclophosphamide) ----

28	የሕክምናው ቆይታ	ወር ----------ዓመታት------
19	ታካሚው የወሰዱት ድምር የመድኃኒት መጠን(cummulative dose) (ሚግ)	---ሚግ
20	በሽተኛው ሌላ ራስን የመከላከል በሽታ አለበት?	አዎ---------- የለም----------
21	ከላይ ለተጠቀሰው ጥያቄ አዎ ከሆነ፣ በሽተኛው ምን አይነት ራስን የመከላከል በሽታ አለው?	ሶሪያሲስ ---------የታይሮይድ ዲስኦርደር ----------ኤፒኤስ(APS)---- ሌሎች
22	ተመሳሳይ ህመም በሌላ የቤተሰብ አባል ላይ አለ ?	አዎ ----------የለም----------
23	በቤተሰቦች ውስጥ ምን አይነት ራስን የመከላከል ችግር አለ?	ሶሪያሲስ ---------የታይሮይድ ዲስኦርደር ----------ኤፒኤስ(APS)---- ሌሎች
24	ታካሚው የታወቀ የደም ግፊት አለባቸው?	አዎ---------- የለም----------
25	ለ ጥያቄ ተ/ቁ 24 መልስዎ አዎ ከሆነ ምን አይነት መድሃኒት/ቶች ይወስዳሉ?	የአኗኗር ዘዴ ማሻሻል------ የራአስ(RAASI) አጋቾች ---- የካልሲየም ቻናል ማገጃዎች(CCB) --- ዳዩረቲክስ(diuretics) ቤታ ብሎከር(BB) ሌሎች-------
26	የደም የቅባት (Lipid) መጠን	አጠቃላይ ኮሌስትሮል ---- ኤልዲኤል(LDL)-- ኤችዲኤል(HDL) ---- ትራይግሊሰርይድ(TAG) ----------
27	ታካሚው የሊፕዲድ ዝቅ የሚያደርጉ መድኃኒቶች ይወስዳሉ?	አዎ---------- የለም-------
28	ለ ጥያቄ ተ/ቁ 27 መልስዎ አዎ ከሆነ፣ ምን አይነት መድሃኒት/ቶች ይወስዳሉ?	ስታቲን (statin)-------- ኢዜቲሚብ(ezetimib) ---- ፋይብሬትስ(fibirates) ---- ኒያሲን(niacin) ---- ሌሎች ----
29	ታካሚው የታወቀ የስኳር ህመም አለበት?	አዎ-------- የለም----------
30	ለ ጥያቄ ተ/ቁ 29 መልስዎ አዎ ከሆነ፣ በህክምና ላይ ነዎት?	አዎ---------- የለም----------
31	ለ ጥያቄ ተ/ቁ 30 መልስዎ አዎ ከሆነ፣ ምን አይነት መድሃኒት/ቶች ይወስዳሉ?	ኢንሱሊን ---- ሜትፎርሚን ---- ሳልፎናይልዩሪያ ---- ኤስጄኤል2 (SGLT2i)ማገጃ---------- ዲፒፒ4ይ ማገጃ(DPP4I) ---------- ሌሎች----------
32	የጾም የስኳር መጠን ኤፍ.ቢ.ኤስ(FBS)	----

33	የሶስት ወር የስኳር ልኬት(HGBA1C)	-------
34	ሲቢሲ(CBC)	ነጭ የደም ህዋስ(WBC)------ኒዩትሮፊል(ANC)----ሊምፎሳይት(ALC)----- ሄሞግሎቢን(HGB)-----ፕሌትሌት(PLT)-------

አካላዊ እንቅስቃሴ እና የባህርይ ሁኔታ

ተ/ቁ	ተለዋዋጮች	ምላሽ
1	ሲጋራ ያጨሳሉ/ያጨሱ ነበር?	የአሁን አጫሽ ------ የቀድሞ አጫሽ ---- በጭራሽ አታጨስ ----
2	ስንት ጥቅል ዓመታት (ለቀድሞ እና ለአሁኑ አጫሾች) አጭሰዋል	----------
3	ከቤተሰብ መካከል በወጣትነት እድሜው በልብ ህመም ምክንያት ህይወቱ ያለፈ (ወንድ <45 እና ሴት <55 አመት በታች) አለ?	አዎ---------- የለም--------
4	ታካሚው ጫት ያኝካል?	አዎ---------- የለም--------
5	ታካሚው አልኮል ይጠጣል?	አዎ---------- የለም-------
6	ለ ትያቄ ተ/ቁ 5 መልስዎ አዎ ከሆነ፣ በየሳምንቱ ስንት የቢራ ጠርሙሶች (ተመጣጣኝ) ይጠጣሉ?	
7	በሳምንት ቢያንስ 30 ደቂቃ የአካል ብቃት እንቅስቃሴ ያደርጋሉ?	አዎ---------- የለም-------
8	ታካሚዋ ማረጥ ላይ ነች (ለሴቶች)?	አዎ--------- የለም-------
9	የክሊኒክ የደም ግፊት መጠን	በግራ ክንድ----- በቀኝ ክንድ----------
10	የክሊኒክ የልብ ምት ፍጥነት	----------
11	የአሁኑ ክብደት/ቁመት/ቢኤምአይ	-------ኪግ/-----ሜ/--------ኪግ/ሜ2
12	የወገብ ዙሪያ/WHR	----------ሜ
13	ታካሚው/ዋ የታወቀ የልብና የደም ሥር ተጋላጭነት ምክንያቶች አሏቸዉ?	አ_____የለም_____

2. የመረጃ ወረቀት

የፕሮጀክት ርዕስ ፡ የልብና የደም ቧንቧ በሽታዎች ምክንያቶች በ ኤስኤልኢ(SLE) በተጠቁ ታካሚዎች ላይ የሚጠና ሲሆን የሚጠናዉም በጥቁር አንበሳ ስፔሻላይዝድ ሆስፒታል ውስጥ ያሉ ታካሚዎች ላይ ነው ፣ አዲስ አበባ፣ ኢትዮጵያ

የመርማሪዎቹ ስም፡- አዱኛው ከንዱ፣ ስንታየሁ አበበ፣ ብርሃኑ ደመላሽ፣ ኑብዩ ጌታቸው

ስሜ ዶ/ር _____ አባላለሁ፣ እና ከካርዲዮቫስኩላር በሽታ ቡድን ጋር እየሰራሁ ነው። በዚህ ጥናት ላይ እንድትሳተፉ ተጋብዘዋል። ለመሳተፍ ከመወሰንዎ በፊት ይህ ጥናት ለምን እንደሚደረግ እና ምን እንደሚያጠቃልል

መረዳት ለእርስዎ አስፈላጊ ነው። እባክዎ የሚከተለውን መረጃ በጥንቃቄ ለማንበብ/ያዳምጡ። ግልጽ ያልሆነ ነገር ካለ ጥያቄ ያንሱ። ስለሰጡን ጊዜ ከልብ እናመሰግናለን።

የጥናቱ ዳራ .

በሆስፒታላችን ውስጥ ባሉ የኤስኤልኢ (SLE) ሕመምተኞች ላይ የልብና የደም ሥር (cardiovascular) በሽታዎች መንስኤዎቻቸውን ማየት እንፈልጋለን . የልብና የደም ሥር (cardiovascular) ሕመም በ SLE ሕመምተኞች ላይ ለሞት እና ለሕይወት ጥራት መጓደል ዋነኛ መንስኤ ነው.፤ነገር ግን በአፍሪካ በአጠቃላይ በተለይም በኢትዮጵያ መረጃው በጣም አናሳ ነው። ከተዘጋጀ መጠይቅ ጋር ቃለ መጠይቅ ይደረግልዎታል፣ፋይልዎ የርስዎን የህመም ሁኔታ የሚገልጹ ክሊኒካል መገለጫዎች፣ ላቦራቶሪ እና ኢሜጂንግ ግኝቶች ለማየት እንጠቀምበታለን።

ሊኖሩ የሚችሉ ጉዳቶች። በዚህ ጥናት ውስጥ መሳተፍ ምንም ጉዳት የለውም.።

ጥቅሞች. ከዚህ ጥናት በቀጥታ ተጠቃሚ አይሆኑም። ይሁን እንጂ የጥናቱ ግኝቶች ለ SLE ታካሚዎች እንክብካቤ እና ለእንደዚህ ዓይነቶቹ ታካሚዎች ስልታዊ መከላከያ / የልብና የደም ቧንቧ በሽታዎችን ለመቆጣጠር እቅድ ለማውጣት ይረዳል.

ሚስጥራዊነት. በጥናቱ ወቅት ስለእርስዎ የሚሰበሰቡት መረጃዎች በሙሉ ሚስጥራዊ ይሆናሉ።

ራስ ገዝ አስተዳደር(autonomy) የሚሰጡን መረጃ ሁሉ ለጥናቱ በጣም ጠቃሚ ነው። ለመሳተፍ ወይም ላለመሳተፍ መወሰን የእርስዎ ውሳኔ ነው። ለመሳተፍ ከወሰኑ፣ ይህን የመረጃ ወረቀት ለማየት እና የፍቃድ ፎርም እንዲፈርሙ ይጠየቃሉ። የጥናቱ አካል ለመሆን ፍቃደኛም ሆነ ፍቃደኛ ካልሆኑ በጤና ተቋም ውስጥ ያለዎት የመታከም ሙበት አይጣስም እና በማንኛውም ጊዜ ከጥናቱ መውጣት ይችላሉ።

ጥናቱ ምን ይሆናል? መረጃው በአራት ወራት ጊዜ ውስጥ የሚሰበሰብ ሲሆን ውጤቱም በ ስድስት ወራት ጊዜ ውስጥ ይገኛል, እና ውጤቱን በአገር አቀፍ እና / ወይም በአለም አቀፍ መጽሔቶች ላይ ለማሳተም ተስፋ እናደርጋለን.

ጥናቱን በማዘጋጀት እና የገንዘብ ድጋፍ እያደረገ ያለው ማነው? ጥናትና ምርምር የሚሸፈነው በአዲስ አበባ ዩኒቨርሲቲ ነው። ጥናቱ በአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ ተቋማዊ ግምገማ ቦርድ ይገመገማል።

የቀደመ ምስጋና!

PI አድራሻ : Adugnaw Kindu MD

በአዲስ አበባ ዩኒቨርሲቲ የውስጥ ደዌ የመጨረሻ አመት ተማሪ

ስልክ. ቁጥር፡ 0928495370

ኢሜል፡ kiduadugnaw@gmail.com

3. በመረጃ የተደገፈ የስምምነት ቅጽ

በ SLE ሕመምተኞች ላይ ለበሽታ እና ለሞት የሚዳርግ የተለመደ ምክንያት ነው . የኤስኤልኤ ሕመምተኞች የልብና የደም ሥር (cardiovascular) አደጋ ምክንያቶች ከፍተኛ ተጋላጭ ናቸው, አንዳንዶቹ በጊዜው በመለየት እና በጥሩ ህክምና ሊሻሻሉ የሚችሉ ናቸው። ይህ ጥናት የልብና የደም ሥር (cardiovascular) በሽታዎችን በ SLE ሕመምተኞች ላይ የሚያደርሱትን አደጋ ለመፈለግ ያለመ ነው። የተገኘው መረጃ ለግለሰብ ታካሚ የተሻለ ህክምና እና መንስኤዎችን ስትራቴጂያዊ ቁጥጥር ለማድረግ በፖሊሲ አውጪዎች እና በ ሐኪሞች ጥቅም ላይ ይውላል።

በዚህ ምክንያት፣ ለቃለ መጠይቁ ምላሽ በመስጠት፣ የህክምና መዝገብዎን እንድንመለከት እና አንዳንድ ምርመራዎችን እንዲያደርጉ በጥናቱ እንዲሳተፉ በትህትና እንጠይቃለን። የተገኘው መረጃ ምስጢራዊነት እንደሚጠበቅ እናረጋግጥልዎታለን። ማንኛቸውም ጥያቄዎች ካሉዎት ጥያቄዉን ለማብበራራት በጣም ደስተኞች ነን።

ያነበብኩት/ ያነበብኩት ግልጽ ሆኖልኝ እንደተረዳሁ አረጋግጣለሁ፣ እናም በጥናቱ ለመሳተፍ ተስማምቻለሁ።

ስም_____

ፊርማ _____ ቀን

4. የመረጃ ሰብሳቢዎች ፊርማ ቅጽ

የጥናት ተሳታፊዎችን ደህንነት፣ሙበት ወይም ደህንነት ለመጠበቅ አስፈላጊ ካልሆነ በስተቀር ከውስጥ ደዌ ህክምና ዲፓርትመንት ፈቃድ ውጭ በፕሮቶኮሉ ላይ ለውጥ አላደርግም አግባብ ባለው፣አሁን ባለው ፕሮቶኮል መሰረት ጥናቱን ለማካሄድ ተስማምቻለሁ። ይህንን ጥናት በግሌ ለመምራት ወይም ለመከታተል ተስማምቻለሁ። በመረጃ ላይ የተመሰረተ ስምምነት እና የስነምግባር ኮሚቴ (EC) ወይም የተቋማዊ ግምገማ ቦርድ (IRB) ከማግኘት ጋር የተያያዙ መስፈርቶች መገምገማቸውን እና መሟላታቸውን አረጋግጣለሁ። በቂ እና ትክክለኛ የጥናት መዝገቦችን ለመጠበቅ እና እነዚያን መዝገቦች በመምሪያው ወይም በክፍል ኃላፊዎች፣ በሆስፒታል አስተዳዳሪዎች እና/ወይም ሌሎች የሚመለከታቸው የቁጥጥር አካላት እንዲመረመሩ ለማድረግ ተስማምቻለሁ። እንዲሁም በጥናቱ ላይ የተደረጉ ለውጦችን እና ያልተጠበቁ ችግሮችን በሰዎች ወይም በሌሎች ላይ የሚደርሱ አደጋዎችን ለEC/IRB በፍጥነት ሪፖርት ለማድረግ ተስማምቻለሁ። በዚህ ጥናት ውስጥ የተሳተፉ ሁሉም ሰራተኞች ከላይ የተጠቀሱትን ቃል ኪዳኖች ለማሟላት ስላለባቸው ግዴታዎች እንዲነገራቸው ተስማምቻለሁ።

ዋና መርማሪ፡ _____

ፊርማ፡ _____ ቀን፡ _____

Prevalence of Cardiovascular risk factors in Systemic Lupus Erythematous patients having Rheumatology and Renal clinc follow up by Adugnaw Kindu

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