Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 13s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Assessment and Prevalence of Communicable and Non-Communicable Diseases and their Risk Factors in Adults

Urooj Arif[1], Shaik Aamena Thanveer[2], P. Rakshitha[3], N. Gowthami[4], Amatul Ali Sameera[*5], Nazia Lateef Amrohi[6]

[1,2,3,4]Sree Dattha Institute of Pharmacy, Sheriguda, Ibrahimpatnam, Telangana

[*5,6] Sree Dattha Institute of Pharmacy, Sheriguda, Ibrahimpatnam, Telangana

Corresponding author:

Dr.Amatul Ali Sameera

Department of Pharmacy Practice, Assistant Professor, Sree Dattha Institute of Pharmacy, Hyderabad, Telangana.

Email ID: amatulsameera2207@gmail.com

Cite this paper as: Urooj Arif, Shaik Aamena Thanveer, P. Rakshitha, N. Gowthami, Amatul Ali Sameera, Nazia Lateef Amrohi, (2025) Assessment and Prevalence of Communicable and Non-Communicable Diseases and their Risk Factors in Adults. *Journal of Neonatal Surgery*, 14 (13s), 522-532.

ABSTRACT

Aim and objectives: To perform a prospective study on assessment of occurrence of communicable and non-communicable diseases and study their risk factors in adults.

Methodology: The study was conducted at Aware Gleneagles global hospitals in L.B. Nagar, Hyderabad, over a 6 months period among 115 subjects in the study. Patients of both genders age between 18 to 55 years and comorbidities were included in the study. Patients with OP patients, pregnant patients, patients on other medication systems (ayurvedic, Unani and homeopathy), neonates were excluded from the study. Any patient with comorbidities who are at risk of developing communicable or non-communicable diseases had their information collected using a data collection form that included patient's demographics, prescription charts, laboratory investigations, medical history and other required information.

Result: A study of 115 patient records revealed a demographic split of 60 males (52.2%) and 55 females (47.8%). The data showed 50 cases (43.5%) of communicable diseases and 65 cases (56.5%) of non-communicable diseases. Notably, 65 patients had comorbid conditions, primarily hypertension and diabetes. The 51-55 age group was disproportionately affected by both communicable and non-communicable diseases. Pseudomonas aeruginosa was identified as the most common microorganism causing Lower Respiratory Tract Infections (LRTI). The most prevalent communicable diseases were viral pyrexia and LRTI, while Urinary Tract Infections (UTI) and acute gastroenteritis were the most common non-communicable diseases. Overall, the study found a higher incidence of communicable diseases compared to non-communicable diseases.

Conclusion: This study examined 115 subjects affected by diverse communicable and non-communicable diseases, revealing varying prevalence rates among the participants over the study period.

Keywords: *Lower Respiratory Tract Infection, Dengue, Pneumonia, Hypertension.*

1. INTRODUCTION

India is a country in transition and has both epidemiological and demographic transition. Infectious diseases are still remaining as major health issues despite the fact that there are national programmes for most of these diseases for over a period of nearly half a century now. Some of the resurfacing conditions, which are worsening the burden of diseases are explained below. Also, the incidences of noncommunicable diseases are rising due to factors such as change in the diet and increased urbanization. These are the challenges that are to be solved in the new millennium. [1]

The list of communicable diseases according to WHO are:

1. Dengue
2. Viral hepatitis
3. Viral pyrexia

4. Lower respiratory tract infections (LRTI)

5. Upper respiratory tract infections

6. Typhoid (Enteric fever)

7. Pneumonia

8. Tuberculosis [2]

DENGUE:

The term dengue is derived from an African word 'denga' which means haemorrhage fever. Mosquito Aedes aegypti transmits the dengue virus with its highest peak during and post rainy season when mosquito populations are at their maximum. [3]

Treatment: Paracetamol and other pain relievers are used to decrease the fever and treat muscle and joint pains. Nevertheless, due to the increased chances of bleeding patients should avoid aspirin, ibuprofen as well as other NSAIDs. The WHO guidelines state that patients need rest, fluids intake, while severe Abdominal pain or persistent vomiting may require immediate medical attention. Most DHF patients recover within 2-7 days without admission but hospitalisation is needed in severe cases requiring support care including blood transfusion, IV fluids electrolyte replacement and monitoring closely.[4]

VIRAL HEPATITIS

Viral Hepatitis [A] Definition: Viral hepatitis, therefore, is a category of communicable diseases that causes inflammation of liver and injury that results from viral action. Such illnesses are the viral types of hepatitis which include HAV, HBV, HCV. [5]

Treatment: There is no specific therapy for HAV infections, and they are usually self-limiting. Immunoglobulin is used in both post exposure prophylaxis and preexposure prophylaxis, and offers passive immunity. Active immunity can be obtained only through vaccination.[6]

Viral Hepatitis[B] Definition: In hepatitis B a plasmid can be defined as a small, circular partially double stranded DNA, with length of 3,200 base pairs. [7]

Pharmacologic therapy:

• In the United States interferon (IFN)-α2b, lamivudine, telbivudine, adefovir, entecavir are approved for the treatment of CHB.

• Pegylated (peg) IFN-α2a, and tenofovir are all approved as first-line treatment modalities for chronic HBV. [8]

Viral Hepatitis[C] Definition: HCV is a single stranded RNA virus belonging to the family Flaviviridae not too far from the family Bunyaviridae responsible for the absence of the proofreading polymerase and allowing multiple viral mutations.[9]

Treatment: It is essential to know the impact of these viral-related and host-related factors on the outcome of anti-HCV therapy in relation to DAAs therapy without interferon. [10]

Viral Hepatitis[D] Definition: Hepatitis D virus infection is a disease that occurs in a specific population of individuals co-infected with the hepatitis B virus and tends to be a severe chronic liver disease.

Treatment: The purpose of treatment is to remove both HDV and HBV from the patient's body. A second antiviral, the ribavirin employed in HCV therapy, was found to suppress HDV replication in cell culture but failed to do so in vivo even when combined with Peg-IFN-α. Orthotopic liver transplantation is indicated in hepatitis D and in End stage chronic Liver disease attributed to HDV. [11]

Viral Hepatitis[E] Definition: Hepatitis E is defined as an acute and clinically reassuring form of viral hepatitis with enterically transmitted mode of transmission. Viral hepatitis type A that affects people most commonly epidemic outbreaks and is etiologically linked with a novel and recently discovered and genetically well-defined virus, the Hepatitis E virus.

Treatment: Most patients do not need specific treatment as the diseases' nature is self-limiting. Patients with acute or acute-on- chronic liver failure need admission to an intensive care unit, measures to control cerebral oedema, and may need liver transplantation. Interferon alpha-2a/alpha-2b Pegylated for 3-12 months or ribavirin 65 for 3-12 months have been attemptedin persons with chronic HEV infection, and have a fair record of eradicating the virus so that no serum HEV RNA is detectable 3-6 months after cessation of drugs. Withdrawal or reduction in dose of immunosuppressive drugs has also led to the disappearance of HEV viremia and should be tried before considering antiviral treatment. [12]

TUBERCULOSIS:

Definition: Tuberculosis is a bacterial infection caused by Mycobacterium and it effects mainly the lungs. [13]

Treatment:

The 1st line drugs used include:

1. Isoniazid-5mg/kg/day
2. Rifampin-10mg/kg/days
3. Pyrazinamide-25mg/kg/day
4. Ethambutol-15mg/kg/day [14]

2nd line drugs include:

Fluoroquinolones, Aminoglycosides. [15]

TYPHOID

Typhoid was caused by Salmonella Typhi which is a Gram-Negative Bacteria.

Treatment: Chloramphenicol, Ampicillin, Ceftriaxone, Ciprofloxacin, Azithromycin [16]

PNEUMONIA

Pneumonia was caused by Streptococcus pneumonia which leads to inflammation of lung tissue or parenchyma of the lungs. [17]

Treatment: Benzylpenicillin, Amoxicillin, Erythromycin, Beta lactamase antibiotics [18,19]

INFLUENZA

Influenza is due to one of the influenza viruses which are mainly influenza A or B or rare stain called C stain. [20]

Treatment: Penicillin, Macrolides, Cephalexin.[21]

ACQUIRED IMMUNODEFICIENCY SYNDROME:

Definition: Acquired immunodeficiency syndrome is an illness that is brought about by the Human immunodeficiency virus that is part of the Retrovirus family. It weakens the human immune system and interrupts body metabolism. [22]

Treatment:

• Nucleoside reverse transcriptase inhibitors (NRTI's): Zidovudine, Didanosine

• Non-nucleoside reverse transcriptase inhibitors (NNRTI's): Delaviridine, Etravirine

• Protease inhibitors: Ritonavir, Indinavir

• Integrase inhibitors: Raltegravir, Dolutegravir [23]

Some of the many non-communicable diseases are enlisted below:

1. Urinary tract infections
2. COPD
3. Diabetes mellitus
4. Asthma
5. CAD
6. AKI
7. Ischemic stroke

URINARY TRACT INFECTION:

Definition: Urinary tract infection (UTI) is a condition that results from disruption of the host defence and invasion by a virulent microbe that forms, multiplies and persists in a part of the urinary system.[24]

Treatment: Amoxicillin, Nitrofurantoin, Cefalexin, Trimethoprim [25]

CHRONIC OBSTRUCTIVE PULMONARY DISEASE:

Chronic obstructive pulmonary disease (COPD) or chronic obstructive airway disease (COAD) are used almost synonymously. Pathologic abnormalities in clinical medicine in which there is either sub complete or complete blockage of the airflow at any place from the trachea to the terminal bronchioles and this leads to lung disability, hence they are also referred to as diffuse lung diseases. COPD includes the following:

I. Chronic bronchitis

II. Emphysema

III. Bronchial asthma

IV. Bronchiectasis

V. Small airways disease (bronchiolitis) [26]

Treatment:

Doxycycline, Amoxicillin, Clarithromycin, Cefixime.[27]

DIABETES MELLITUS:

Diabetes mellitus (DM) is cluster of metabolic disorders that disrupts the body's normal processing of macronutrients including lipids, glucose and amino acids. [28]

Treatment:

1.Enhance insulin secretion: K+ ATP channel blockers

A) Sulfonylureas: Tolbutamide, Glibenclamide, Glipizide, Gliclazide, Glimepiride

B) Meglitinide/ Phenylalanine analogues: Repaglinide, Nateglinide, Miscellaneous drugs

2.Overcome insulin resistance

A) Biguanide: Metformin

B) Thiazolidinedione (PPARr activator): Ploglitazone

Insulins:

1.Quick acting insulin alternatives: glulisine

2.Short acting: Regular (soluble) insulin

3.Intermediate acting: Insulin zinc suspension (Lente insulin), Neutral protamine Hagedorn (NPH) or Isophane insulin

4. Extended duration insulin alternatives: glargine, degludec [29]

ASTHMA:

Definition: Asthma is a long-term inflammatory disease of the respiratory tract characterized by many cells and cellular elements play a role: especially mast cells, Eosinophils, T-lymphocyte, macrophages, neutrophils and epithelial cells. In susceptible people, this inflammation leads to recurrent paroxysms of wheezing, breathlessness, chest constriction, and coughing, especially during the night, or in the early morning. [30]

Treatment:

Aerosol treatment in asthma: The delivery of drugs for asthma via aerosols has the advantage that, where an ideal drug that can be conveniently used in asthmatic patients is expected, aerosol administration is site-specific. More rapid bronchodilation and broncho suppressive action are achieved with short-acting β2-agonists via inhalation than via parenteral or oral administration in addition to the highest obtainable protection against EIB 2 and other challenges. Doses of inhaled corticosteroids that were designed with reduced oral and systemic clearance in mind. Some of them (example cromolyn, formoterol, salmeterol, ipratropium bromide), healing by deposition is effective only by inhalation. So, aerosol drug delivery is a key concept in optimal management of asthma. [31]

CORONARY ARTERY DISEASE:

Definition: Coronary heart disease (CHD), also known as coronary artery disease (CAD) or ischaemic heart disease (IHD) occurs when coronary arteries narrow or block due to plaque build-up, blood clots, blood vessel constriction, compromising cardiac blood flow. [32]

Treatment:

1. Antithrombotic drugs (such as aspirin, clopidogrel)

2. COX-2 inhibitors

3. ACE -inhibitors

4. Statins

5. Beta-Blockers

6. Calcium channel blockers

7. Nitrates [33]

ACUTE KIDNEY INJURY:

Definition: Acute kidney injury is defined as a sudden loss of kidney function whereby the kidneys' ability to filter blood is seriously compromised. [34]

Treatment:

1. Therapies of definite/possible benefit: Normal saline infusion, Sodium bicarbonate infusion, Ascorbic acid, N - acetylcysteine.

2. Therapies where more laboratory data is needed: Anaritide (low-dose)

3.Not recommended therapies: Dopamine (low-dose), Loop diuretics, Renal replacement therapy, Epoetin alfa [35]

ISCHEMIC STROKE:

Definition: An ischemic stroke, also known as a cerebral ischemia, occurs when the cerebral blood flow is severely impaired, usually due to vascular occlusion or stenosis, resulting in inadequate oxygenation and nutrient delivery to brain cells. [36]

Treatment:

1. Non cardioembolic

A) Antiplatelet therapy

• Aspirin 50–325 mg daily

• Clopidogrel 75 mg daily 7, 28

• Aspirin 25mg and extended-release dipyridamole 200mg, taken twice daily.

2. Cardioembolic (esp. atrial fibrillation)

• Warfarin

B) Antihypertensive treatment:

• ACE inhibitor + diuretic

• Statin

1. Alternative Drug Treatments:

• Aspirin Plus Clopidogrel

• Angiotensin II Receptor Blockers

• Heparins

• Clopidogrel [37]

2. METHODOLOGY

Study design: Prospective study design.

Sample size: This study includes 115 patients.

Study site: This study was conducted in the department of General Medicine, the Gleneagles Aware Hospital, L.B. Nagar, Hyderabad, Telangana.

Study period: This study is proposed to be conducted for 6 months.

Study criteria:

Inclusion Criteria:

• Patients of both genders.

• IP Patients

• Age group: 18-55 years

• Patients with comorbidities.

Exclusion Criteria:

• OP Patients

• Pregnant patients

• Patients on other medication systems (ayurvedic, Unani and homeopathy)

• Neonates

Ethical statement: Study will be conducted only after the approval of the hospital ethical committee.

Tools: Patient case reports, lab investigation reports.

Data collection: All the relevant and necessary data will be collected from patient records and laboratory records.

Statistical tools: Categorical variables analysed using SPSS and Chi-square method.

Method of study: A study will be conducted to assess patients with communicable and non-communicable diseases.

• The study will collect baseline data from patient case reports and evaluate by observing vitals, lab reports and signs and symptoms. Obtained results will be evaluated, analysed.

3. RESULTS

Table 1: Communicable and Non-communicable Diseases in both Genders

S. No	Diseases	Males	Females
1.	Communicable	31	34
2.	Non-communicable	29	21

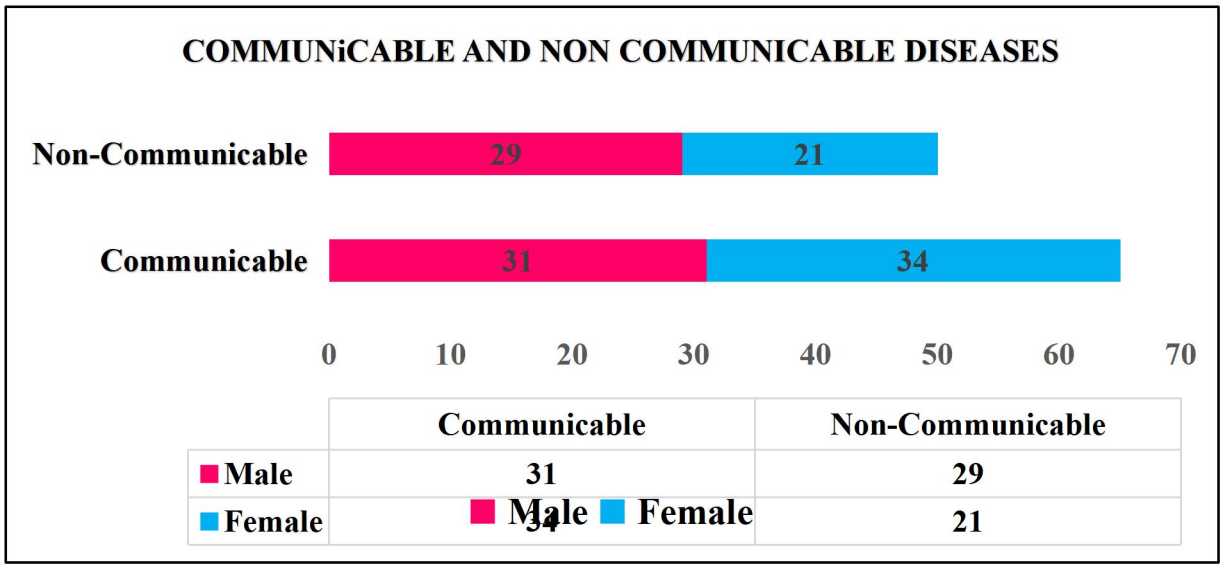

Figure 1: Bar graph presentation of Communicable and Non-communicable Diseases in both the Genders

Table 2: Distribution of risk factors in subjects with non-communicable disease

S.No	Disease	HTN	DM-2	Hypothyroidism	Already with CAD	NSAID induced AKI	CKI
1.	Stroke	5	2	1	0	0	0
2.	AKI	10	8	0	1	1	0
3.	CAD	6	5	1	0	0	3

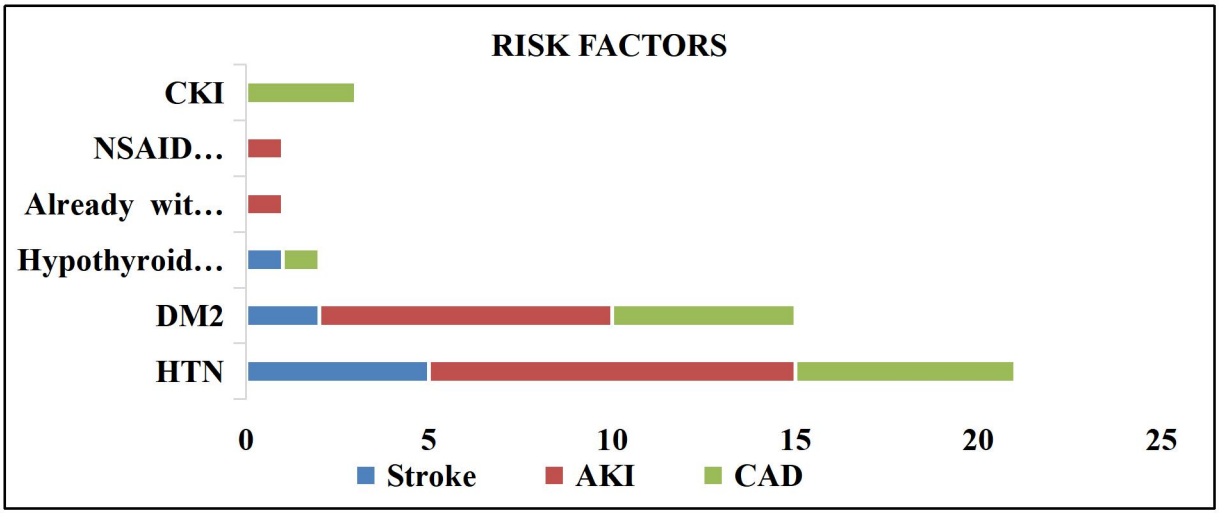

Figure 2: Clustered Bar Graph presentation of distribution Of Risk Factors in subjects with Non-communicable Disease

Table 3: Chi-square analysis of distribution of diseases based on the microorganism

S. No	Diseases	Microorganism	Number of organisms	P value
1.	UTI	E Coli	8	<0.05
2.	UTI	Other microorganisms	2	
3.	Chikungunya	CHIKV	3	
4.	Typhoid	Salmonella typhi	2	
5.	LRTI	Pseudomonas aeruginosa	15	
6.	Acute gastroenteritis	H. Pylori	1	

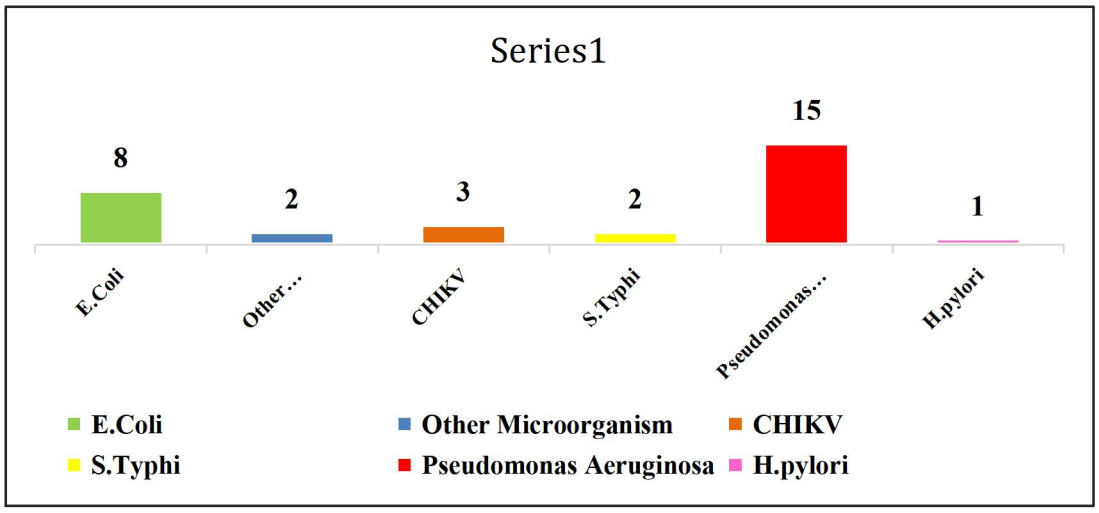

Figure 3: Column bar graph presentation of distribution of microorganisms of various diseases

4. DISCUSSION

In the previous study carried out in 2237 subjects [23.4%] had suffered from non-communicable diseases in which [53.3%] includes CAD, [6.1%] diabetes, [6.5%] respiratory diseases in which women accounted for majority of non-communicable diseases [38]. In the current study, out of 115 subjects 8[6.9%] subjects suffered from CAD, 5[4.3%] from COPD, 35[30.4%] from Diabetes Mellitus in which male accounted for majority of non-communicable diseases.

In the previous study out conducted in 5287 patients the pre disposing factors of non-communicable diseases were [15.4%] fatty liver, [11.2%] thyroid, [8.8 %] HTN, [4.9%] Diabetic mellitus [39]. In the current study having sample size of 115 subjects the pre disposing factors were HTN -41, Diabetic mellitus -35, fatty liver-1, Hypothyroidism -15 subjects.

In the previous study on the prevalence of non-communicable diseases out of 12,557 sample size the prevalence of COPD was found to be [11.7%] and CAD is [2.9%] [40]. In the current study of sample size 115 patients the prevalence of COPD was found to be in 5[4.3%] subjects and CAD in 8[6.9%] subjects.

In the previous study which was carried out in 285 patients in which 92 patients suffered from Urinary tract infection in which the most common micro-organism was found to be E. coli [49.3%][41]. In the current study conducted out of the sample size of 115 patients UTI was seen in only [10] patients upon urine culture test it was found to be E. coli was the most common micro-organism

In the preceding study out of 20,525 sample size the risk factors contributing for stroke were Hypertension [5409], Diabetes Mellitus [1248] and family history of stroke [531] [42]. In the present study with sample size of 115 subjects,[8] subjects were diagnosed with stroke and the factors promoting stroke were hypertension [5] [62.5%], diabetes Mellitus [2] [25%] and [1] [12.5%] subject with hypothyroidism and no family history of stroke.

In the previous study in which out of 108 patients participated it includes [47%] males and [53%] females and the diseases occurred in patients were [31%] viral fever, [15%] dengue, UTI [4%][43]. In the current study out of 115 patients the gender wise distribution of subjects includes 60[52.1%] subjects of male and 55[47.8%] subjects of female and the patients diagnosed with viral pyrexia 17[26.1%] dengue- 10[15.3%], and UTI- 10 [20%].

In the preceding study of 691 subjects revealed that hypertension and diabetes mellitus were significant risk factors for non-communicable diseases occurring in [22.1%] and [21.5%] of participants respectively [44]. In the contemporary study of 115with sample size of 115 subjects found that the primary risk factors for non-communicable diseases were hypertension affecting 41 participants, and diabetes mellitus, affecting 35.

In the previous study of 12,608 subjects, 4.6% reported a family history of premature CAD while [16%] had diabetes mellites in which [5.6%] newly diagnosed and [10.4%] previously diagnosed. Additionally, [21%] of participants had hypertension [45]. In the current study of 115 subjects, 8[6.96%] were diagnosed with CAD with comorbidities including hypertension [6] and diabetes mellitus [5]. Additionally, one participant had hypothyroidism, and none reported a family history of stroke.

In the previous study comprising 3489 subjects from both urban and rural areas enrolled. The prevalence of risk factors for non-communicable diseases was highest among individuals aged 24-34 years [46]. In the current study of sample size of 115 subjects conducted as per the age wise distribution of subjects having non-communicable diseases the age group was found to be between 51 -55 years

In the foregoing study out of 491 subjects 200 subjects were diagnosed with gastritis in which [41] had Pylori negative gastritis, [30] had chronic gastritis [47]. In the current study out of 115 subject's [10] subjects had gastritis out of which [1] was Pylori positive and the rest [9] had acute gastritis.

5. CONCLUSION

In the study population the percentage of communicable and non-communicable diseases in both male and female 52.2% and 47.8%

The study revealed an age-wise distribution of diseases, with the 51-55 age group having the highest prevalence of both communicable and non-communicable diseases, while the 15-20 and 21-30 age groups had the lowest number of cases (12 patients each), followed by 23 patients in both the 31-40 and 41-50 age groups.

In the study population, it was observed that 31 males, and 34 females has communicable diseases, and 29 males, and 21 females had non-communicable diseases.

In the study population it was observed that 65 patients were encountered with communicable diseases, whereas 50 patients were encountered with non-communicable diseases.

In the study population, 17 patients suffered from viral pyrexia, and 2 patients suffered from typhoid, 10 patients were suffered with UTI, and acute gastroenteritis, and 1 patient suffered with CKD

The study population revealed a diverse range of health conditions, including: hypertension (41 patients), diabetes mellitus (35 patients), hypothyroidism (15 patients), coronary artery disease (CAD) (8 patients), chronic obstructive pulmonary disease (COPD) (7 patients), asthma (5 patients), bronchitis (1 patient), cancer (3 patients), tonsillitis (1 patient), vertigo (1 patient), AV Fistula (1 patient), old cerebrovascular accident (CVA) (1 patient), food allergy(1 patient), drug allergy (1 patient), anaemia (1 patient), Parkinson's disease (1 patient), dementia (1 patient), urinary tract infection (UTI) (1 patient), seizures (2 patients), and chronic kidney disease (CKD) (3 patients).

In the study population, 65 patients presented with comorbid condition, 50 patients presented with no comorbidities.

In the study population hypertension was the most common risk factor seen in patients with stroke, AKI, and CAD.

In the study population, 40 subjects belonging in the age group between 51-55 years were with non-communicable diseases the most, and the least was found to be in the age group of 15-20 years.

CONFLICT OF INTEREST: Nil

REFERENCES

[1] Baridalyne Nongkynrihs, BK Patro, Chandrakanta S Pandav: Current Status of Communicable and Non-communicable Diseases in India; Journal of the association of physician of India.2003 Dec 31;118-123.

[2] Theodore H Tulchinsky, Elena A Varacikova: Communicable diseases; The New Public Health. 2014 Oct 10;149-236.

[3] Harsh Mohan. Chapter 6: Infectious and Parasitic Diseases. In: Harsh Mohan, Textbook of Pathology, 7th Edition (2015). P.175

[4] Teddy Namirimu, Sunjoo Kim: Dengue fever: epidemiology, clinical manifestations, diagnosis, and therapeutic strategies; Annals of Clinical Microbiology.2024 May 20;131-141.

[5] Joseph. T. Dipiro. Chapter 47: Viral Hepatitis. In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 685

[6] Joseph. T. Dipiro. Chapter 47: Viral Hepatitis. In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 687

[7] Joseph. T. Dipiro. Chapter 47: Viral Hepatitis. In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 689

[8] Joseph. T. Dipiro. Chapter 47: Viral Hepatitis. In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 692

[9] Joseph. T. Dipiro. Chapter 47: Viral Hepatitis. In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 696

[10] Hui-Chun Li, Shih-Yen Lo: Hepatitis C virus: Virology, diagnosis and treatment. World Journal of Hepatology.2015 March 30;1377-1389.

[11] Stéphanie Pascarella, Francesco Negro: Hepatitis D virus: an update. Liver International.2010 July 6

[12] Krzysztof Krawczynski: Hepatitis E; Hepatology. volume 17 1992 Dec 11: 932-941.

[13] Roger Walker and Cate Whittlesea. Chapter 40: Tuberculosis. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 608

[14] K D Tripathi. Chapter 56: Anti-Tubercular Drugs. In: K D Tripathi, Essentials of Medical Pharmacology, 8th Edition (2019). P. 825

[15] K D Tripathi. Chapter 56: Anti-Tubercular Drugs. In: K D Tripathi, Essentials of Medical Pharmacology, 8th Edition (2019). P. 816

[16] Uttam Kumar Paul, Arup Bandyopadhyay: Typhoid fever: International Journal of Advances in Medicine; 2017 March 2;300-306.

[17] Roger Walker and Cate Whittlesea. Chapter 35: Pneumonia. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 550

[18] Roger Walker and Cate Whittlesea. Chapter 35: Pneumonia. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 551

[19] Roger Walker and Cate Whittlesea. Chapter 35: Pneumonia. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 552

[20] Cate Whittlesea, Karen Hodson. Chapter 36: Influenza. In: Cate Whittlesea, Karen Hodson, Clinical Pharmacy and Therapeutics,6thEdition (2019). P. 608

[21] 21.Roger Walker and Cate Whittlesea. Chapter 35: Influenza. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 547

[22] Roger Walker and Cate Whittlesea. Chapter 41: AIDS. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 621

[23] K D Tripathi. Chapter 60: Anti-Viral Drugs. In: K D Tripathi, Essentials of Medical Pharmacology, 8th Edition (2019). P. 861

[24] Roger Walker and Cate Whittlesea. Chapter 36: UTI. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 561

[25] Roger Walker and Cate Whittlesea. Chapter 36: UTI. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 568

[26] Harsh Mohan. Chapter 15: The Respiratory System. In: Harsh Mohan, Text Book of Pathology, 7th Edition (2015). P.458

[27] Roger Walker and Cate Whittlesea. Chapter 35: Respiratory Infections. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 550

[28] Joseph. T. Dipiro. Chapter 83: Diabetes Mellitus. In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 1255

[29] KD Tripathi. Chapter 19: Insulin, Oral Anti-Diabetic Drugs and Glucagon. In KD Tripathi: Essentials of Medical Pharmacology, 8th Edition (2019). P. 294

[30] Joseph. T. Dipiro. Chapter 33: Asthma In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 439

[31] Joseph. T. Dipiro. Chapter 33: Asthma In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 448

[32] Roger Walker and Cate Whittlesea. Chapter 20: Coronary Heart Disease. In: Roger Walker and Cate Whittlesea, Clinical Pharmacy and Therapeutics, 5th Edition (2012). P. 312

[33] KD Tripathi. Chapter 40: Anti-Anginal and other Anti-Ischemic Drugs. In: KD Tripathi,Essentials of Medical Pharmacology, 8th Edition (2019). P. 585

[34] Joseph. T. Dipiro. Chapter 51: Acute Kidney Injury In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 742

[35] Joseph. T. Dipiro. Chapter 51: Acute Kidney Injury In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 751

[36] Joseph. T. Dipiro. Chapter 27: Stoke In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 353

[37] Joseph. T. Dipiro. Chapter 27: Stoke In: Joseph. T. Dipiro, Pharmacotherapy – A Pathophysiologic Approach, 8th Edition (2011). P. 358

[38] Alemu Belayneh, Legese Chelkeba, Firehiwot Amare Henok Fisseha, Senbeta Guteta Abdissa, Mirgissa Kaba, Shivani A. Patel and Mohammed K. Ali: Investigation of non-communicable diseases prevalence, patterns, and patient outcomes in hospitalized populations: a prospective observational study in three tertiary hospitals; Journal of health, population and nutrition.2024; 1-11.

[39] Fariba Tohidinezhad, Ali Khorsand, Seyed Rasoul Zakavi, Reza Rezvani, Siamak Zarei-Ghanavati, Majid Abrishami, Ali Moradi, Mahmoud Tavakoli, Donya Farrokh, Masoud Pezeshki Rad, Bita Abbasi, Mitra Ahadi, Lahya Afshari Saleh, Mohammad Tayebi, Mahnaz Amini, Hossein Poustchi, Ameen Abu-Hanna and Saeid Eslami: The burden and predisposing factors of non-communicable diseases in Mashhad University of Medical Sciences personnel: a prospective 15-year organizational cohort study protocol and baseline assessment; BMC Public Health.2020 Oct 14;1-15.

[40] Meghnath Dhimal, Khem Bahadur Karki, Sanjib Kumar Sharma, Krishna Kumar Aryal, Namuna Shrestha,Anil Poudyal, Namra Kumar Mahato, Ashwin Karakheti, Milesh Jung Sijapati, Puspa Raj Khanal, Suresh Mehata, Abhinav Vaidya, Binod Kumar Yadav, Krishna Prasad Adhikary, Anjani Kumar Jha: Prevalence of Selected Chronic Non-Communicable Diseases in Nepal; J Nepal Health Res Counc.2019 Jul-Sep;394-401.

[41] Hadiati Setyorini, Artaria Tjempakasari, Nunuk Mardiana: Risk Factors for Urinary Tract Infection in Hospitalized Patients; Biomolecular and Health Science Journal.2019 June 10;4-8.

[42] Song Zhang, Zheng Liu, Yong-Liang Liu, Yu-Ling Wang, Tao Liu1 and Xiang-Bin Cui: Prevalence of stroke and associated risk factors among middle-aged and older farmers in western China; Environmental Health and Preventive Medicine.2017 March 4; 1-6.

[43] A. Bharath Kumar, Dr. S. Chandra Babu, V. Vinod Kumar, K. Vyshnavi Bai, P. V. Harish5 C. Gopinath: Assessment of types of fevers in tertiary care hospital; World Journal of Pharmaceutical Research.2016 Feb 29;1681-1689.

[44] Tarek Tawfik Amin, Ali Ibrahim Al Sultan, Ola Abdelmoniem Mostafa, Amr, Ahmed Darwish, Mohamed Rashad Al-Naboli: Profile of Non-Communicable Disease Risk Factors Among Employees at a Saudi University; Asian Pacific Journal of Cancer Prevention.2014 ;7897-7907.

[45] T Sekhri, R S Kanwar, R Wilfred, P Chugh,M Chhillar, R Aggarwal,Y K Sharma, J Sethi, J Sundriyal, K Bhadra, S Singh,N Rautela, Tek Chand,M Singh, S K Singh: Prevalence of risk factors for coronary artery

disease in an urban Indian population; BMJ open.2014 Aug 20;1-7.

[46] Aroor Bhagyalaxmi, Trivedi Atul, Jain Shikha: Prevalence of Risk Factors of Non-communicable Diseases in a District of Gujarat, India; Journal of health population and nutrition.2013 March ;78-85.

[47] Helena Nordenstedt, David Y Graham, Jennifer R Kramer, Massimo Rugge, Gordana Verstovsek, Stephanie Fitzgerald, Abeer Alsarraj, Yasser Shaib, Maria E Velez, Neena Abraham, Bhupinderjit Anand, Rhonda Cole, Hashem B El-Serag: Helicobacter pylori -Negative Gastritis: Prevalence and Risk Factors; AM J Gastroenterol.2013 Jan;65-71.