A PROSPECTIVE STUDY ON ISCHEMIC STROKE CAUSED DUE TO COMORBID CONDITIONS, USE OF LMWH AND ITS OUTCOME

Dr. Aishwarya Dinakaran[1*], Shaesta Maheen Fatima[2], Aleem Unnisa Begum Alias Fatika Begum[2], Mohammed Abdul Bari Ahmed[2], Misbah Zareen[2], Dr. Sudhakara Rao[3]

[1*]Associate Professor, Department of Pharmacy Practice, MRM College of Pharmacy, Chintapally guda, Hyderabad-501510.
[2]Department of Pharmacy Practice, MRM College of Pharmacy, Chintapally guda, Hyderabad501510.
[3]Professor and HOD, Department of Pharmacy Practice, MRM College of Pharmacy, Chintapally guda, Hyderabad-501510.

*Corresponding Author: Dr. Aishwarya Dinakaran
*Associate Professor, Department of Pharmacy Practice, MRM College of Pharmacy, Chintapally guda, Hyderabad-501510.

ABSTRACT
AIM:
➢ The study aims to detect the effects of co-morbid conditions leading to ischemic stroke.
➢ sage of LMWH and its outcomes in a tertiary care hospital.

OBJECTIVES:
• To assess the risk among patients in ischemic stroke with co-morbid conditions.
• To assess safety profile, and documented clinical outcomes, in patients prescribed with heparins suffering from Acute ischemic stroke.

MATERIALS AND METHOD:
An observational study was accomplished on inpatients, who were confirmed ischemic stroke throughout 6 months.

Patients on LMWH drug therapy were evaluated to know the outcomes and the co-morbid conditions leading to ischemic stroke. The data was collected and documented.

RESULT:
A total of 152 inpatients were observed according to their co-morbid conditions like CVA, DM, HTN, CAD, etc among which the prevalence of hypertension was majorly reported, followed by diabetes in concordance with the addictions like smoking and alcohol abuse, which may a reason for worsening of the condition.

Based on statistical analysis it is proven that comorbid condition indeed shows a significant affects on the progression of the disease by rejecting the null hypothesis.

CONCLUSION:
The patients suffered from co-morbid conditions such as diabetes and hypertension. In the following study 152 inpatients were observed. The collected data showed CVA, CAD and others among which the prevalence of hypertension was majorly reported and was followed by diabetes mellitus. Along with these comorbid conditions, the addictions like smoking and alcohol abuse played a vital role in worsening the stroke due to decreased oxygen supply.

Based on statistical analysis it is proven that comorbid condition indeed shows a significant affects on the progression of the condition by rejecting the null hypothesis. LOW MWH is a major drug used pharmacologically for the cure of TIA, and based upon the collected data it shows desirable outcomes in 99% of cases.

Among the 152 cases observed, its shows negative outcome in two cases by showing bleeding in patients. subjects with excessive blood loss are treated with TXA.

INTRODUCTION STROKE
A stroke is described as an urgency medical aid required when the blood flow to the brain is blocked or impaired. A stroke can be caused by several factors, including blood clots, an artery blockage, a rupturing of a blood vessel, or bleeding in the brain. The severity of a stroke based on the location of the affected part of the brain, amount of destruction that penetrated in tissues. It is also known as a cardiovascular accident (CVA) or transient ischemic stroke (TIA). This occurs when blood doesn't flow properly to the brain and gets obstructed. It averts the brain to receive oxygen and nutrients from the blood. If there is no oxygen and nutrients, brain cells start to die in less than a minute. Due to unexpected interference of the blood supply to the brain, the brain cells die and cause some effects on the patient like paralysis of the body and difficulty in thinking and speaking. Though not all strokes are the same, they all have the same symptoms and cause damage to the brain.

Sometimes a stroke is also known as a brain attack. As the cells are damaged, it causes deep- rooted disability leading to death. A stroke varies from less severity to more depending on the damage to the brain. It can affect movement, sensation, speech, memory, and even mental processes such as reasoning.

During this incident as every minute counts, calling the medical personnel or an ambulance is essential to start the life-saving treatment. Early treatment of stroke can significantly improve a patient's chances of recovery and prevent serious complications from occurring later on.

METHODOLOGY
STUDY SITE:
The study is conducted in CARE HOSPITAL, HYDERABAD.A hospital with 420 beds furnishing health care service to people from multiple locations of Hyderabad and other districts.
The hospital having multiple departments viz, Intensive Care Unit, Medical Wards, Surgical Wards, Pediatrics, and Gynecology department.

DURATION OF STUDY:
ETHICAL COMMITTEE approval was recived from MRM COLLEGE OF PHARMACY, CHINTAPALLYGUDA, IBRAHIMPATNAM, RR DISTRICT.
The study was conducted for 6 months from SEPTEMBER 2022 TO FEBRUARY 2023.

SAMPLE SIZE:
152 PATIENTS
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STUDY CRITERIA:
INCLUSION CRITERIA:
• Patients above 40 years.
• All patients with established ischemic stroke.
• Including factors like HTN, DM, dyslipidemia.
• Risk factors including smoking and alcohol consumption

EXCLUSION CRITERIA:
• Pregnant or lactating women
• Covid-19 patients.
• Haemorrhagic stroke patients.
• Trauma / CNS dysfunction.

STUDY INSTRUMENTS:
• Medical record of the patient
• Patient prescription
• History of present illness
• Past medical history
• Past medication history
• Patient progress report

STUDY PROCEDURE:
Use of LMWH in care hospital for treating patients with coexisting conditions leading to ISCHEMIC STROKE.

DATA COLLECTION PROCEDURE
• Age
• Gender
• IP NO
• Date of administration
• Diagnosis
• Laboratory data
• Medication history
• Onset of action

• Perception details such as ✦ Dose
✦   Route of administration
✦   Frequency
✦   Drug therapy
✦   Management
✦   Outcome of management

SEVERITY ASSESSMENT SCALE:
Facial pain scale
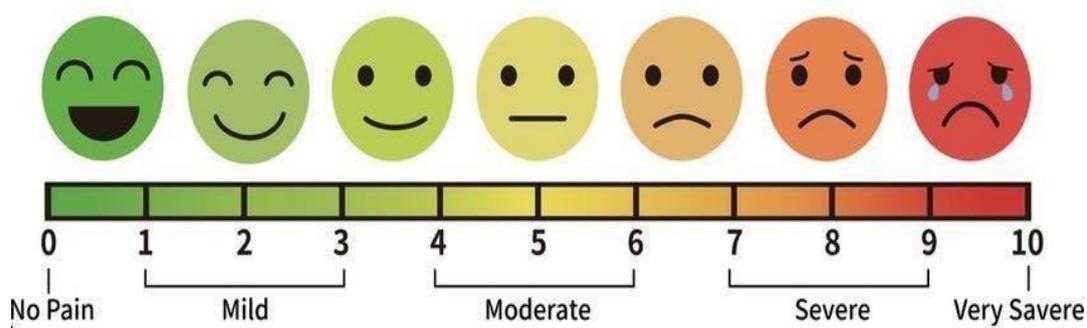
FIG.26 Facial pain scale.

RESULTS
A total of 152 patients data suffering from Ischemic Stroke, age starting from 40 years were collected at a tertiary hospital. The study includes 101 male and 51 female patients. The obtained was used to formulate the result.

1. AGE DISTRIBUTION

AGE IN GROUP	NUMBER OF PATIENTS
40-49 years	19
50-59 years	52
60-69 years	41
70-79 years	30
80-90 years	10

Table 5: Table represents the patients trailing from 40 years of age.

2. AGE AND GENDER-BASED DISTRIBUTION.

AGE	MALE	FEMALE
40-44	4	3
45-49	8	4
50-54	11	11
55-59	18	11
60-64	18	5
65-69	12	6
70-74	13	4
75-79	8	4
80-84	5	2
85-89	4	1

TABLE 6: Table represents the age, and gender Wise distribution of the collected data

T-TEST ON AGE AND GENDER DISTRIBUTION BASED ON THE NUMBER OF PATIENTS.
T-TEST

AGE	MALE (X1)	FEMALE (X2)	2 X1	2X2
40-44	4	3	16	9
45-49	8	4	64	16
50-54	11	11	121	121
55-59	18	11	324	121
60-64	18	5	324	25
65-69	12	6	144	36
70-74	13	4	169	16
75-79	8	4	64	16
80-84	5	2	25	4
85-89	4	1	16	1
	$\Sigma X1$ = 101	$\Sigma X2$ = 51	2 $\Sigma X1$ = 1267	2 $\Sigma X2$ = 365

TABLE 7: The table represents T-test on age and gender distribution based on collected data.

NULL HYPOTHESIS (H0): THERE IS NO SUBSTANTIAL DIFFERENCE MEAN INCIDENCE BETWEEN GENDER AND AGE IN ISCHEMIC STROKE PATIENTS.

TABLE 8: AGE-BASED COMORBID CONDITIONS DISTRIBUTION

AGE	COMORBID CONDITION 1 (HTN)	COMORBID CONDITION 2 (DM)
40-44	4	5
45-49	8	8
50-54	19	11
55-59	21	20
60-64	20	11
65-69	15	9
70-74	13	12
75-79	7	6
80-84	1	0
85-89	3	0

TABLE 8: The table illustrates the conditions like DM and HTN distributed based on age from the collected data.

TWO WAY ANOVA TABLE 9: TWO-WAY ANOVA ON AGE-BASED COMORBID CONDITIONS

AGE	HYPERTENSION	DIABETES
40-44	4	5
45-49	8	8
50-54	19	11
55-59	21	20
60-64	20	11
65-69	15	9
70-74	13	12
75-79	7	6
80-84	1	0
85-90	3	0

TABLE 9: Table represents the two-way ANOVA on age-based comorbid condition distribution

NULL HYPOTHESIS (HO): THERE IS NO SUBSTANTIAL DIFFERENCE BETWEEN THE MEAN INCIDENCE OF ISCHEMIC STROKE CAUSED DUE TO COMORBID CONDITIONS BASED ON AGE STATING THE PREVAILING CONDITIONS AS DIABETES AND HYPERTENSION.

10. PAIN SCALE OF THE COLLECTED DATA

PAIN SCALE	NUMBER OF PATIENTS
MILD PAIN (1-4)	22
MODERATE (5-7)	111
STRONG (8-10)	19

TABLE 10: Table illustrates number of patients feeling the pain in accordance to facial pain scale which is alienated as mild pain (1-4), moderate pain (5-7), strong pain (8-10) From the collected data the majority of patients experience moderate pain.

11. RISK OF FALL OF THE COLLECTED DATA

RISK OF FALL	NUMBER OF PATIENTS
NO RISK (0-24)	39
MODERATE RISK (25-45)	41
HHIGH-RISK(45+)	72

TABLE 11: The table illustrates number of patients having a risk of falling based on Morse fall scale in which the score is considered as the risk of fall. The score is divided as (0-24) No risk, (2545) Moderate risk and a score which is above 45 i.e. (45+) is considered as High risk. According to above the data the highest number of patients shows a high risk of falls.

12. COMPARISION OF MALE AND FEMALE CASES FROM THE COLLECTED DATA

GENDER	NO OF PATIENTS
MALE	101
FEMALE	51

TABLE 12: The table illustrates number of cases in males and females. Males are more effected as compared to females.

13. OUTCOMES OF LOWMOLECULAR WEIGHT HEPARIN

| LMWH OUTCOME	NUMBER OF CASES
POSITIVE	150
NEGATIVE	2

TABLE 13: The table represents number of cases which shows the positive and negative outcome of low molecular weight heparin. From the compiled data. LMWH shows the desirable outcomes in 150 cases from the overall 152 cases.

14. ADDICTIONS

| GENDER	SMOKING	ALCOHOL
MALE	11	21
FEMALE	1	5

TABLE 14: The table shows that 32 males and 6 females from overall 152 patients were addicted to alcohol and smoking.

## LIST OF FIGURES FIGURE 28: BAR DIAGRAM ON AGE DISTRIBUTION
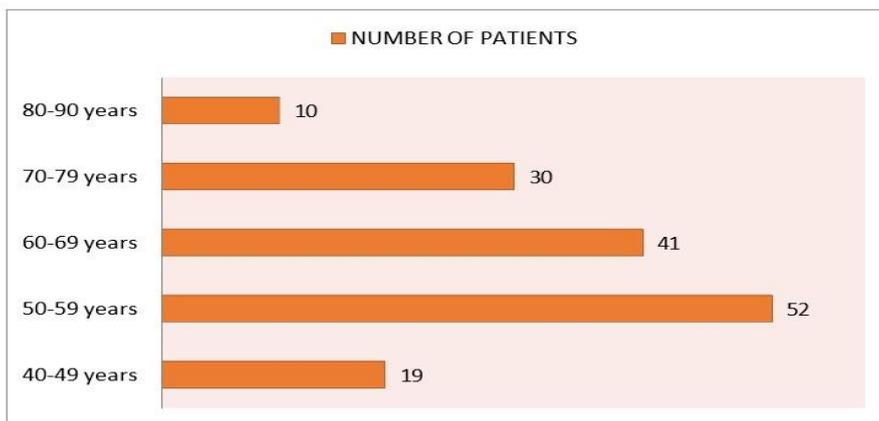
FIGURE 28: represents the number of cases under a certain age group starting from 40 years. The figure also illustrates that the highest number of cases are in the age of 50-59 years. So according to the study of collected sample, it is fair to say that the 50-59 age group is more prone to the disease (Ischemic stroke) compare to other age groups.

FIGURE 29: AGE, GENDER BASED DISTRIBUTION
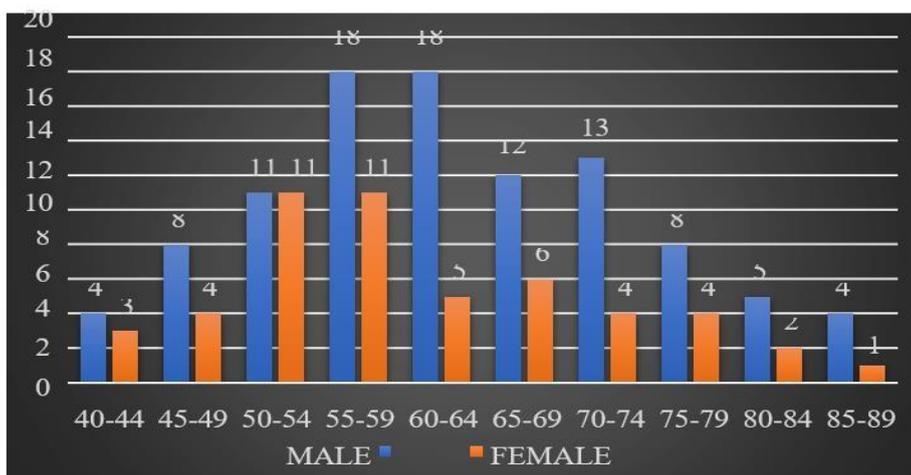
FIGURE 29: The figure two represents the number of male and female cases lies in between the age groups starting from the age of 40 and with the intervals of +5 years and the figure also illustrates that the number of males are higher comparatively to females.

## FIGURE 30: AGE, GENDER-BASED DISTRIBUTION
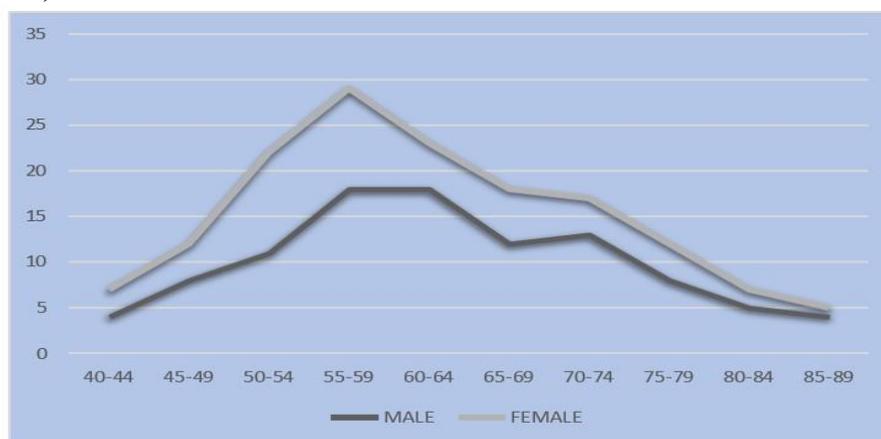
FIGURE 30: The figure illustrates that the collected data makes a curve. Hence it is parametric and the following statistical T test can be preceded.

## FIGURE 31: AGE BASED COMORBID CONDITION DISTRIBUTION
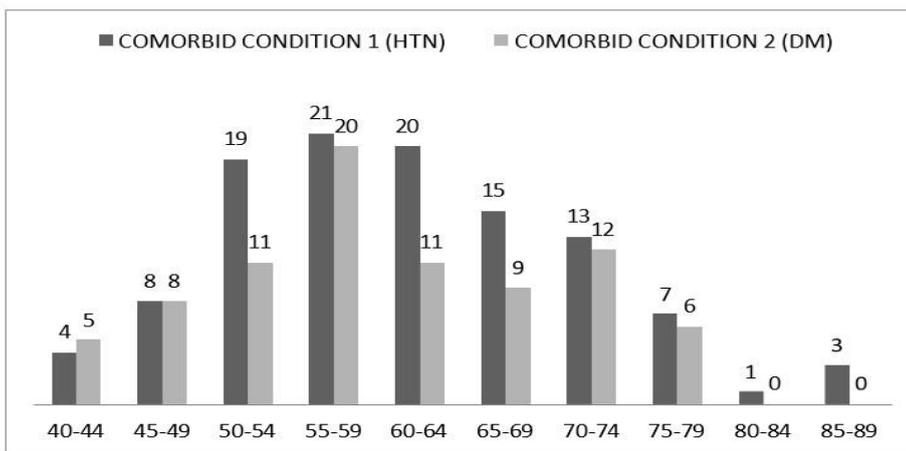
FIGURE 31: four illustrates the classification of the comorbid conditions based on age starting from 40 years and haves the intervals of (+5) years the 55-59 age group are the most affected by comorbid condition among all groups.

## FIGURE 32: AGE BASED COMORBID CONDITION DISTRIBUTION
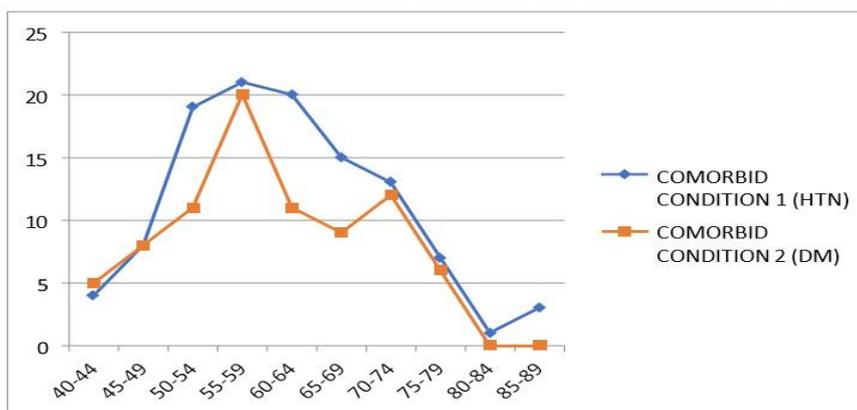
FIGURE 32: The figure 5 represents the collected data and based on the age, comorbid condition distribution makes a curve. Hence the data is parametric. The statistical two way anova proves that both the comorbid conditions have the significant effect on the occurrence disease by rejecting the null hypothesis.

FIGURE 33: PAIN SCALE
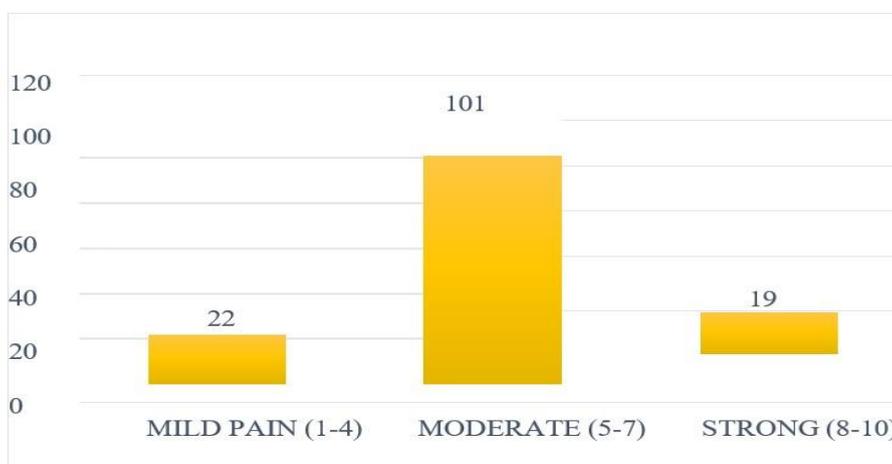
FIGURE 33: The figure represents the pain scale data. The facial pain scale was used to determine the severity of pain in which 101 cases falls under moderate pain from over all 152 cases.

FIGURE 34: FALL SCALE
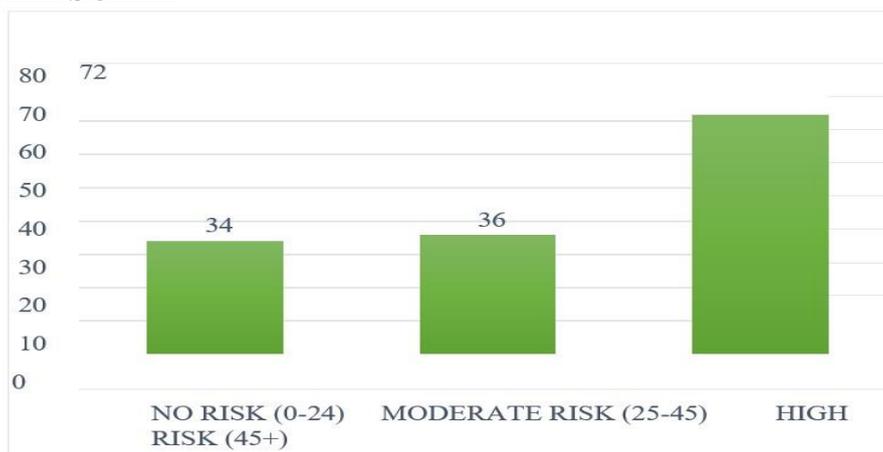
FIGURE 34: represents the fall scaledata in the compiled data. The morse fall scale is used. Total of 72 people score above 45 as high risk following 36 as moderate and 34 as no risk of fall.

## FIGUREE 35: GENDER BASED ADDICTIONS
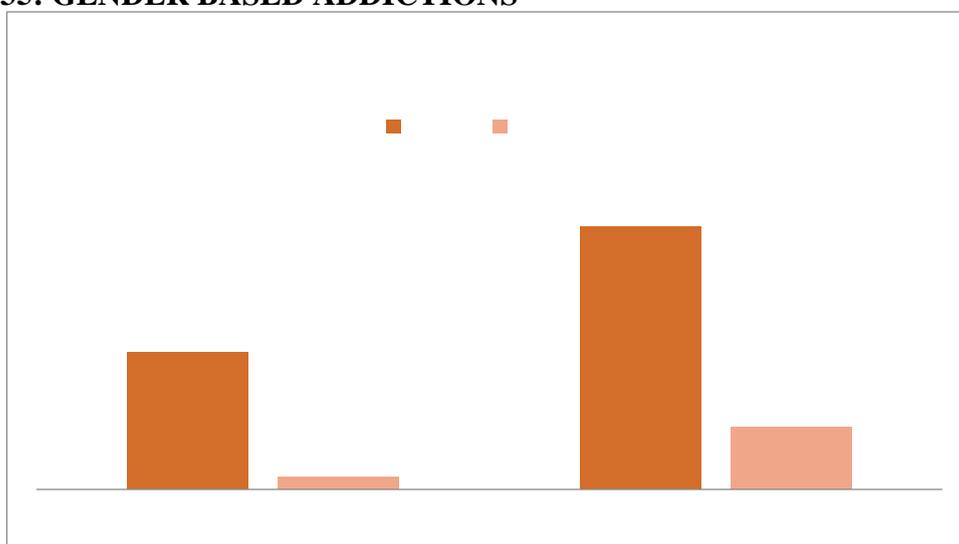
FIGURE 35: The figure represents the addictions based on gender. Among the collected data total of 43 cases have the history of addictions.

FIGURE 36: LOW MWH OUTCOMES
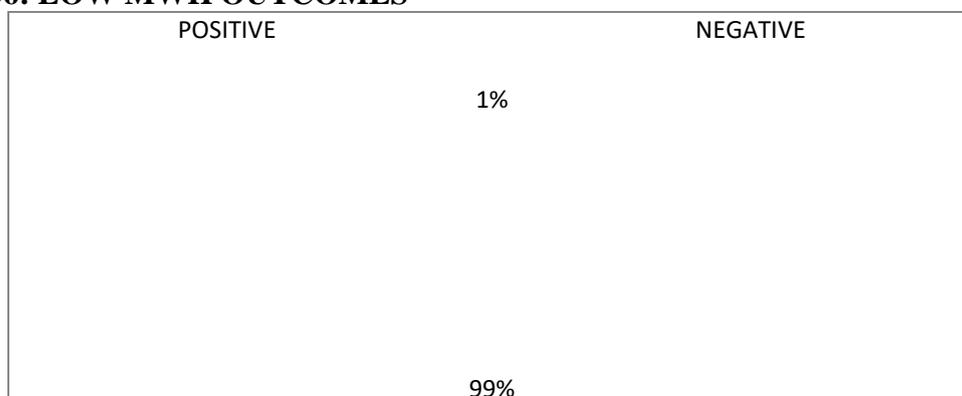
FIGURE 36: The figure represents after effects of the LMWH. which shows the desired outcomes in 150 cases of over all 152 cases.

FIGURE 37 GENDER DISTRIBUTION

MALE   FEMALE

34%

66%
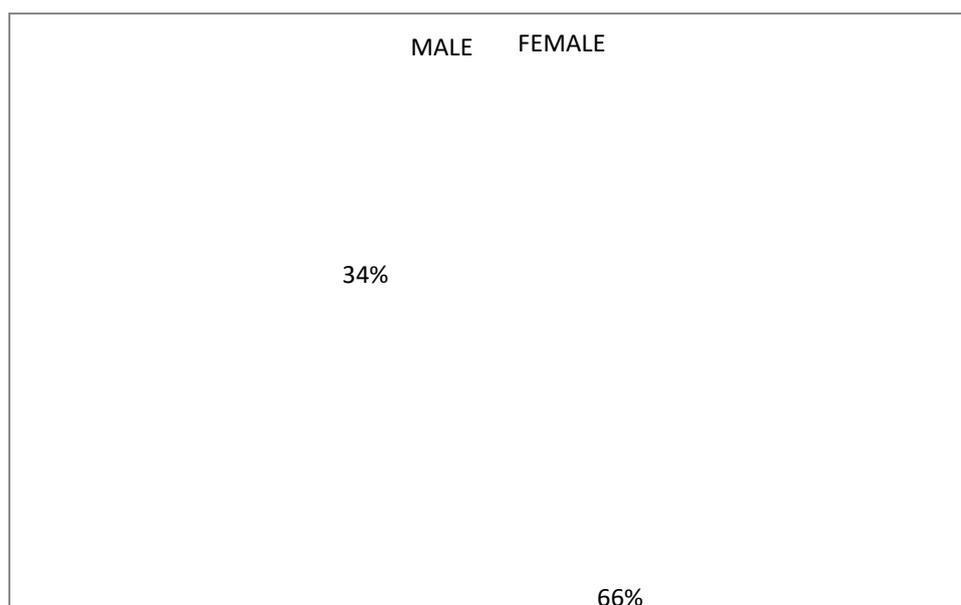
FIGURE 37: The figure represents the distribution of the collected sample based on gender. The table also illustrates that the males are high in number compare to females which is 101 males and 51 females.

DISCUSSION

In this study we observed that the most cases of Ischemic Stroke are due to comorbid conditions commonly HTN and DM. We studied that ischemic stroke is caused due to obstruction of arteries in brain. Ischemic stroke can be mainly caused due to hypertension and diabetes and some other leading causes can be alcohol and smoking addiction. The comorbid conditions that are main source of ischemic stroke are HTN, DM, CVA, TIA. Using more fall rate patients were examined, source were calculated and a graph was plotted. Through T test, age and gender distribution is calculated based on total number of patients. It is represented as Tcal>Ttab (2.52>2.101). therefore, null hypothesis is rejected. By determining two way ANOVA on comorbid conditions based on age, the result found is Fcal>Ftab (13.83>3.18). hence, no statistical significance exists. Facial pain scale results show that high number of patients sense moderate pain. Interviewing the patients using morse fall scale then analysing the result show that plurality of patients are under high risk of fall (45+) According to the study males (101) are more liable then females. From over all 152 cases, 150 patients have positive outcome, except 2 patients with -ve outcomes.

CONCLUSION

The present study made an observation on the prevalance of Ischaemic stroke due to comorbid conditions and usage LMWH and its outcomes in males and females

A total of calm data was 152 for the study from the care hospital

This study proves the comorbid conditions do play a prominent role in developing/worsening the condition of Ischaemic stroke in patients

The data collected showed patients agonizing from coexisting conditions such as diabetes, hypertension, cerebrovascular accident, Coronary artery disease and others among which prevalence of hypertension was majorly reported and was followed by diabetes mellitus.

Along with comorbid conditions the addictions like Smoking and alcohol abuse are the reasons for worsening of Ischaemic stroke.

Based on statistical analysis it is proven that comorbid conditions indeed shows a significant effect for the progression of ischemic relationship in the progression of Ischaemic stroke by rejecting the null hypothesis

Low molecular heparin is a major drug for treating Ischaemic stroke and based upon collected data

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it shows desirable outcomes in 99% of the collected cases and among from 152 cases its shows its negative outcome in two cases by showing the over blood loss in patient and the subjects with severe blood loss are treated with **TXA**.

BIBLIOGRAPHY

1. NIH National heart lung and blood institute, stroke-introduction, March 24 2022.
2. Robert brown M.D stroke JAN 20 2022
3. Health navigator New Zealand, Stroke last updated, Nov 24 2022.
4. CDC- Centre for disease control and prevention, Stroke, Nov 2 2022.
5. MDPI-International journal of molecular science, Stroke-treatment and pathophysiology Diji Kuriakose and Zhicheng Xiao, doi: 10.3390/ijms21207609
6. International journal of Pharma research and review, Stroke, pathophysiology and treatment Neema Kanyalet.al, IJPRR 2015; 4(10).
7. NIH National heart lung and blood institute, stroke-symptoms last updated March 24 2022
8. Computed Tomography (CT) Scan, what is a CT scan?, Johns Hopkins medicine.
9. Computed tomography (CT) Scan, Mayo clinic, 20 Jan 2022.
10. Magnetic Resonance Imaging (MRI), diagnosis, NHS services, 13 sept 2022.
11. Magnetic resonance imaging (MRI), Mayo clinic, 4 sept 2021.
12. Electrocardiogram (ECG), NHS services, 7 sept 2021.
13. Electrocardiogram (ECG), Mayo clinic, 19 March 2022.
14. Sunil k. Agarwal, Elsayed Z. Soliman, electrocardiogram (ECG) abnormalities and stroke incidence, 2013;11(7):853-861.
15. Electroencephalogram (EEG), Mayo clinic, 11 may 2022.
16. Farishte Erani and co., electroencephalogram (EEG), might improve diagnosis of acute stroke and large vessel occlusion, 18 sept 2020.
17. Two-dimensional Echocardiogram (2D Echo), types and what they show, Cleveland clinic, 5 Nov 2022.
18. Michael brainin, wolf- dieter heiss; stroke medicine, two dimensional echocardiogram (2D Echo), text book of stroke medicine, Cambridge University press, 10.1017(may 2019).
19. Complete blood picture (CBP), National heart lung and blood institute, NHLBI, NIH (24 March 2022).
20. WoIters kluwer, schemic stroke treatment,Patient education: Ischemic stroke treatment (Beyond the Basics), up to date.