The prevalence and prescription pattern of epilepsy patients in randomly selected areas in Tangail.

[A dissertation submitted to the Department of Pharmacy, Faculty of Allied Heath and Sciences, Daffodil International University, Dhaka. This report presented in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy.]

Submitted To

The Department of Pharmacy

Faculty of Allied Health Sciences

Daffodil International University

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APPROVAL

This Project paper, survey on "**The prevalence and prescription pattern of epilepsy patients in randomly selected areas in Tangail.**" submitted to the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy and approved as to its style and contents.

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Declaration

I, Jarin Akter Orpa, hereby declare that, this project is done by me under the guidance Ms. Tahmina Afroz, Assistant Professor, Department of Pharmacy, Daffodil International University, in partial fulfillment of the requirements for degree of Bachelor of Pharmacy. The results embodied in this project have not been submitted to any other university or institute for the award of any degree.

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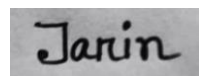
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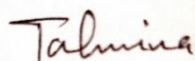
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This is to certify that the results of the investigation that are embodied in this thesis works are original and have not been submitted before in substance for any degree or diploma of this university. The entire present work submitted as a thesis work for the partial fulfillment of the degree of Bachelor of Pharmacy.

_____

Ms. Tahmina Afroz

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- Jarin Akter Orpa

DEDICATION

♥

My Parents,

The persons who always encourage me in every sphere of my life.

My teacher,

The persons who guided me in this process and the committee who kept me on track.

Abstract

The demographic analysis of epilepsy diseases and medication use in a population serves as a good foundation for evaluating epilepsy management. The aim of this study is to find out the risk factors among the patients besides the treatment prescribed by the physicians in some selected area in Tangail, Bangladesh. Study focus on the different type of epileptic patients and the risk factor of epileptic patients. In this treatment segments, there are highlighted some medication as first line, second line and combination therapy. This study was conducted in some tertiary-level hospitals which are located in Dhaka, Bangladesh. The patients were questioned about the duration of the diseases they were carrying and the current condition of seizures.

From the demographic point of view the incidence of epilepsy is higher in male than male. There was the highest number 44% of epileptic patients were found whose age between 18 to 40 years old. The grand mal or tonic-clonic was the most common type of seizure seen in 51% of patients. More than 17% of epilepsy patients had family history of epilepsy. In this study, there were 42% of patients had found a stressful condition. This study found 49% of patients who have confirmed that they were affected by epilepsy by EEG test. 39% of patients got this information by imaging (CT/MRI). First-line treatment for epilepsy was given to in total 19 patients out of 41 patients where 47% of patients were prescribed sodium valproate. second-line treatment was given to 12 patients out of 41 patients where 42% of patients have prescribed topiramate. Only 10 patients out of 41 patients who did not easily get free from seizures are prescribed combination treatment. 40% of epileptic patients were prescribed sodium valproate and levetiracetam.

Contents

Chapter One

Introduction

1. Introduction

Millions of people have epilepsy, which is a chronic condition that significantly increases morbidity and mortality [1]. Worldwide, epilepsy affects 65 million individuals and places a significant financial, social, and health burden on society [2]. There are 10 million children with active epilepsy globally [3]. In most places, the prevalence of active epilepsy is 5–10/1000, while it may be greater in isolated isolates. Younger age groups have seen a decline in incidence rates, whereas people over 60 have seen an increase. Premature death is more likely in people with epilepsy, especially those who have chronic epilepsy [4]. Cognitive and behavioural problems are more common in epilepsy patients [5]. Due to the expanding life expectancy around the world and the proportion of people who survive assaults that frequently cause epilepsy, such as birth trauma, traumatic brain injury (TBI), brain infections, and stroke, the number of people with epilepsy is predicted to rise even higher. The effects of epilepsy on people with the disorder and their families are severe on a physical, psychological, and social level. People with epilepsy and their families experience stigma and discrimination all over the world, frequently encountering significant challenges in terms of education, job, marriage, and reproduction. Nearly 80% of epileptics reside in low- and middle-income (LMIC) nations, where treatment gaps typically surpass 75% in low-income nations and 50% in most middle-income nations.

This is true even if anti-seizure medications are inexpensive and effective. Investments in the physical and mental health of all people, including those with epilepsy, are necessary for the Sustainable Development Goals (SDGs), which aim to achieve global economic, social, and environmental sustainability by 2030. In order to make epilepsy a top public health concern and encourage investment in easing its burden, this paper urges swift action [6]. According to estimates, the prevalence of epilepsy is 0.52% in Europe, 0.68% in the US, and peaks at 1.5% in developing nations. To enable a wise distribution of healthcare resources, estimation of the economic burden of epilepsy is crucial [7]. Reducing the characteristics of epilepsy to its fundamental elements—seizures, epileptogenesis, and the state of repeated unprovoked seizures that defines epilepsy itself—can help us understand potential processes [8]. Suicidality is more common, especially in people with epilepsy and co-occurring psychiatric disorders [9]. By eliminating risk factors, lowering stigma, enhancing access to biomedical diagnosis and treatment, and ensuring that there is a steady supply of high-quality antiepileptic medications, the significant burden of epilepsy in underdeveloped areas of the world can be decreased [10].

For more than three decades, employment has been acknowledged as a setting with substantial issues for those with epilepsy. Obvious limitations, such as those pertaining to driving or working in environments where they may be liable for damage, apply to people with epilepsy. Additionally, individuals frequently endure stigmatisation and misinformation, particularly in nations where epilepsy has negative cultural implications [11].

1.1 Symptoms

Epilepsy is a symptom complex with multiple risk factors and a strong genetic predisposition rather than a condition with a single expression and cause [12]. When epilepsy is the only symptom of a genetically transmitted ailment, there are no structural lesions in the brain and no accompanying neurological abnormalities. Epileptic disorders are categorised as idiopathic. Symptoms occur when there is another primary brain lesion or insult [13]. Premonitory symptoms are warning indicators that might appear anywhere from 10 minutes to many days before a seizure [14]. Sensorial, aware, motor, and autonomic domains are only a few of the indications and symptoms of epileptic seizures [15]. People may be more motivated to learn how to identify the precursory behaviours, early symptoms, and precipitating events of their seizures if there is an improvement in knowledge and comprehension of preseizure activity [16].
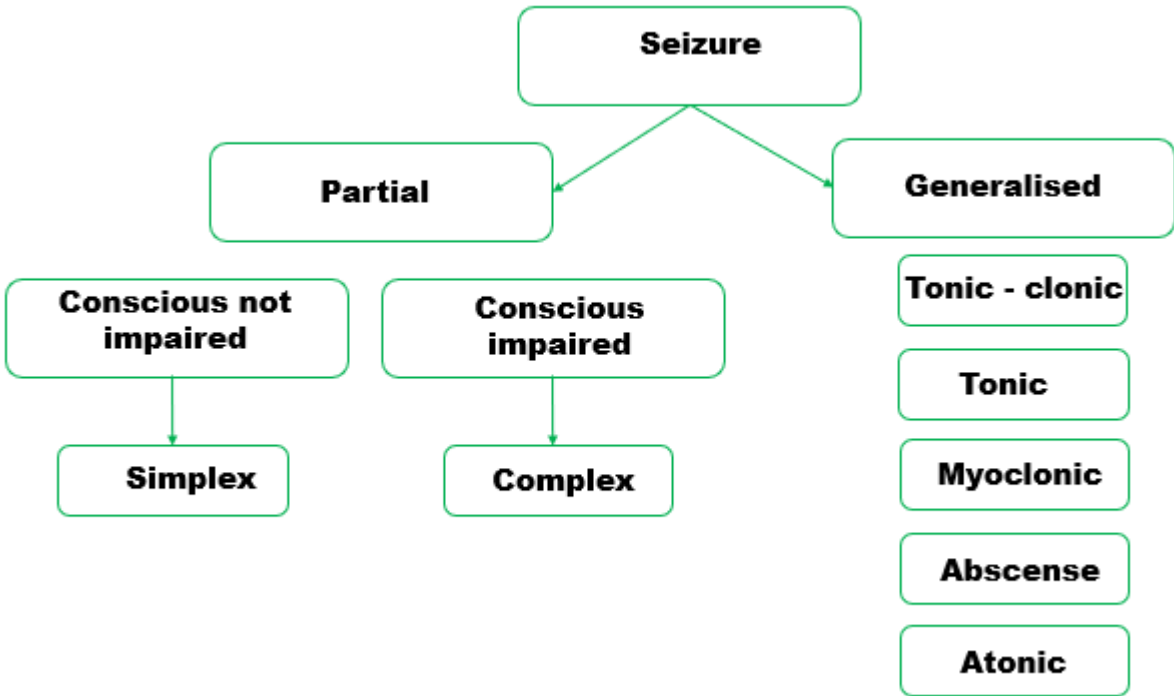
1.2 Classification of seizures

Figure 1.2: Classification of seizures

1.3 Diagnosis

EEG is useful for categorising different seizure types, helping to define the epileptic syndrome, forecasting outcomes, and assisting with patient care [17]. Gross examination of MRI scans revealed significant brain disease and added to the information from computer tomography (CT). Even with normal CT scans, significant variations from controls emerged in spin-lattice (T1) relaxation times in epilepsy patients, particularly in the temporal lobes. Increased T1 values were found in the thalamus in patients with generalised seizures. On the ipsilateral side, extended T1 in patients with focal seizures was also observed. In connection to other imaging modalities used in epilepsy, these MRI imaging data are examined [18]. The electroencephalogram (EEG) signal is crucial in the epilepsy diagnosis. A significant amount of EEG data can be found in the long-term EEG recordings of an epileptic patient that were gathered via ambulatory recording systems. It takes a lot of time for a professional to analyse the entire length of the EEG data in order to find the epileptic activity [19].

Chapter Two
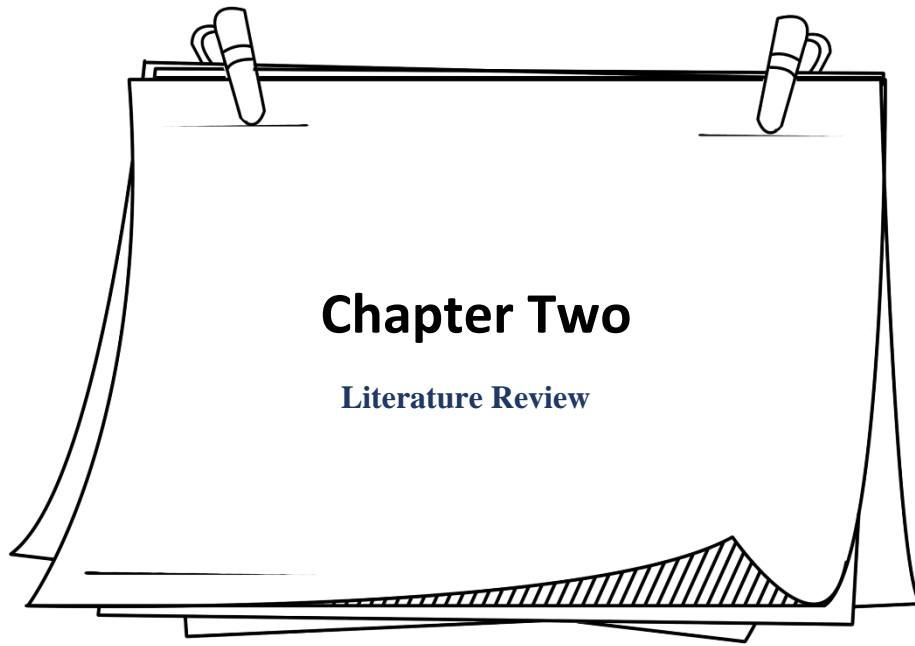
**Literature Review**

2. Literature review

i. Millions of people have epilepsy, which is a chronic condition that significantly increases morbidity and mortality. This review highlights studies on the prevalence and incidence of epilepsy that offered a precise definition of the condition and could be adjusted for age, which is necessary if comparisons between studies are to be performed. Age-adjusted prevalence estimates from record-based research (2.7-17.6 per 1000) are generally lower than those from door-to-door surveys, with a few exceptions (2.2–41.0 per 1000). With Chile being the lone outlier, where incidence was 111 per 100,000, age-adjusted incidence varied from 16 to 51 per 100,000. Variations in reported prevalence and incidence may be due to socioeconomic level, regional environmental exposures, or health care accessibility. Most prevalence studies revealed a larger percentage of epilepsy marked by generalised seizures. 20–66% of epilepsies that occurred incidentally were partial seizures epilepsy. The majority of prevalence and incidence studies note an increase in seizures with unexplained causes. There is a need for new incidence research across all regions as well as additional prevalence studies in areas where data are lacking. Understanding how cultural, social, and economic factors affect epilepsy and its treatment is necessary for interpreting variations in prevalence and incidence [20].

ii. Worldwide, epilepsy affects 65 million individuals and places a significant financial, social, and health burden on society. Significant progress has been achieved in the past ten years in our understanding of the pathophysiological mechanisms underlying the illness and the variables influencing its prognosis. These developments have resulted in new conceptual and practical definitions of epilepsy as well as updated terminology and diagnostic criteria. Even though the number of antiepileptic medications has significantly increased over the past 20 years, roughly one-third of patients are still resistant to medical intervention. Epilepsy surgery is still performed on a tiny percentage of drug-resistant patients despite the increased success of surgical operations, with more than half of operated patients gaining long-term relief from seizures. The majority of epilepsy patients' lives continue to be negatively impacted by knowledge, diagnosis, treatment, advocacy, education, law, and research gaps. Urgent action is required to address these issues in concert [21].

Chapter Three

Purpose of the study
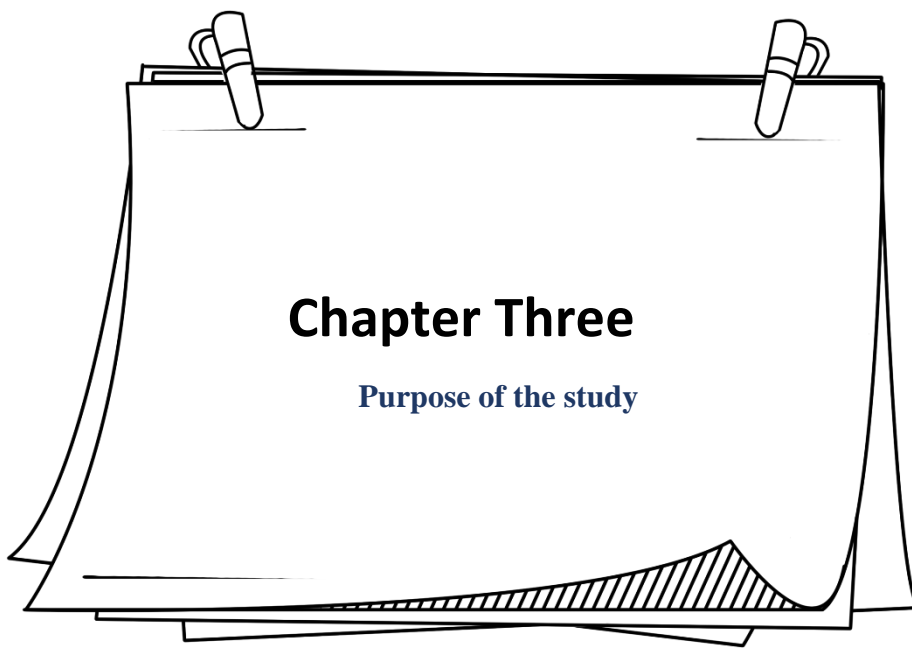
Purpose of the study

- ➢ To determine the prevalence of epilepsy among the people who are living in Tangail, Dhaka.
- ➢ Identification of some risk factor which are responsible for epilepsy.
- ➢ Identification of various therapeutic classes of medications which are used to treat epilepsy.
- ➢ Identify clinical guidelines for epilepsy management.
- ➢ To continue investigating epilepsy therapeutic strategies and safe, effective medications

Chapter Four
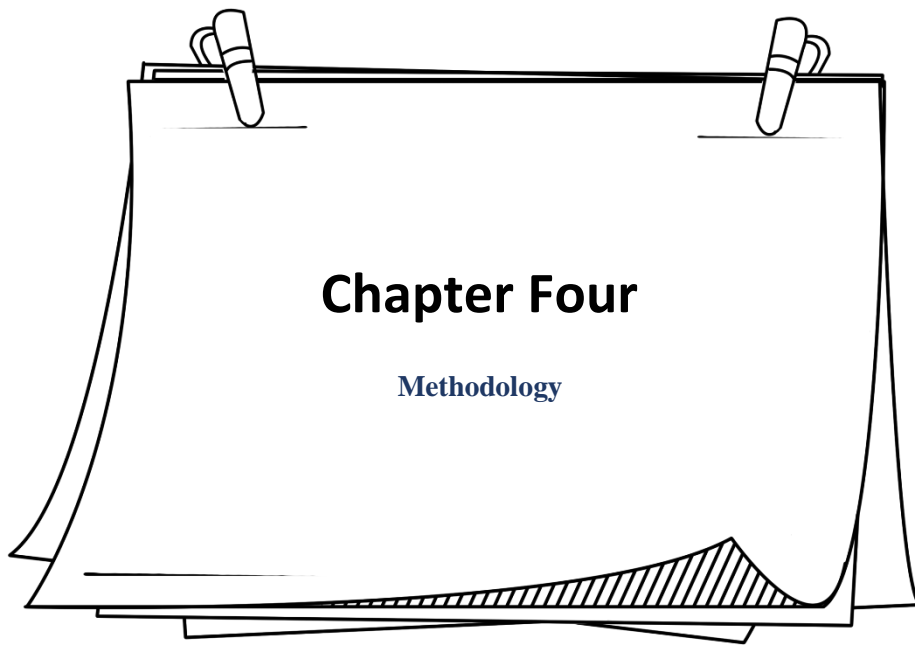
Methodology

Methodology

Firstly, before conducting this study there made up proper planning for the selection of the particular area in Tangail. As well as there was made some questionaries for the interviewing purpose. Before preparing the questionaries there were reviewed some important information on epilepsy and this information was collected from google scholar, National library of medicine, Wiley online library etc. The interview was conducted to some of the tertiary-based hospital located in Tangail, Dhaka. By taking permission, the interviewers took the interview. They asked some questionaries to the patients belonging epilepsy diseases and medication. Question was asked to random epilepsy patients about the duration of the diseases, risk-factor, life style and the diagnosis. There were some questions asked to the healthcare provider about the type of seizures of the patient and also questions were asked on the treatment for the management of this disease.

Chapter Five
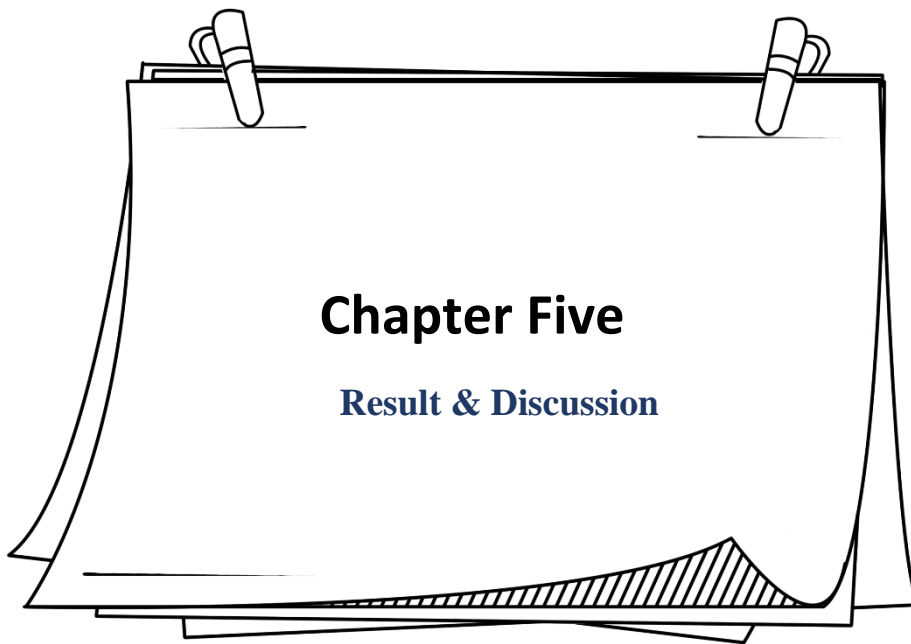
Result & Discussion

5. Result and Discussion

A total of 41 patients who are affected by epilepsy were selected for this survey. Interviewers collected those data from the randomly selected hospital around the Tangail district of Bangladesh . Most of them are tertiary-level hospitals. Data were collected from outpatients from the hospital.

5.1 Gender

From the demographic point of view the incidence of epilepsy is higher in men than female. In the district of Tangail. 54% males were fighting with epilepsy where females were only 46%.
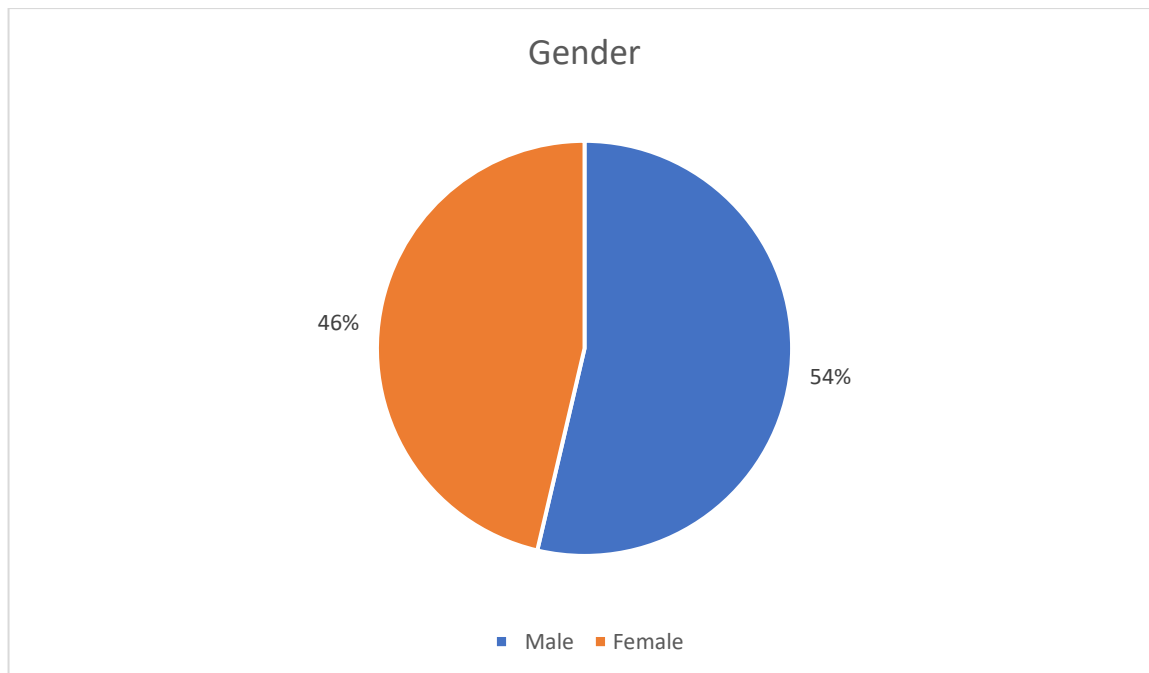
Figure 5.1: Gender

5.2 Age

There was the highest number 44% of epileptic patients were found whose age between 18 to 40 years old. The second highest number was recorded at 29% of patients in age between 40-60 years. Also 10% of patients above 60 years and 17% of patients were in below 18 years old.
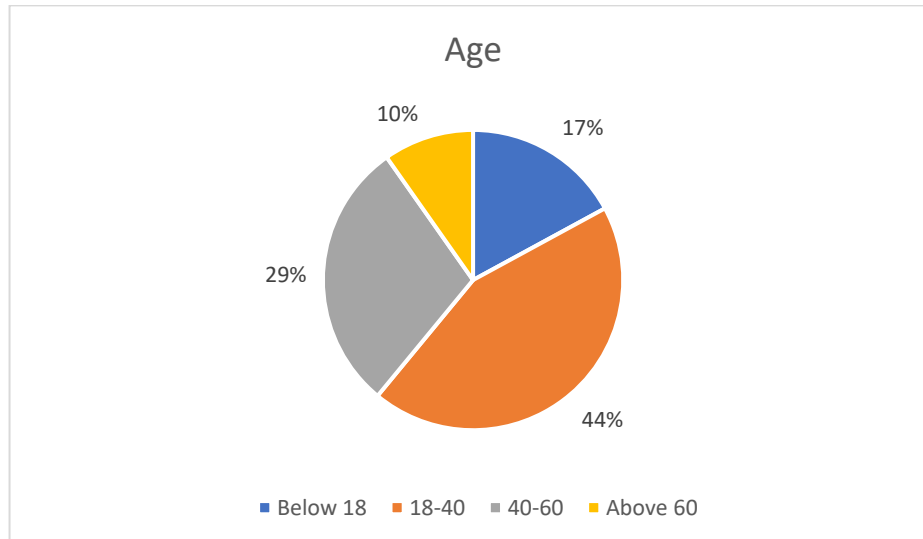

Figure 5.2: Age

5.3 Classification of epilepsy

Epilepsy mainly classifies based on the type of seizures. The grand mal or tonic-clonic was the most common type of seizure seen in 51% of patients. The second most common type of seizure was myoclonic seizures seen in 17% of patients. 10% of patients had a complex seizure. Absence and refractory seizure were seen in 7% of patients. Lastly, 8% of patients had simple seizures.
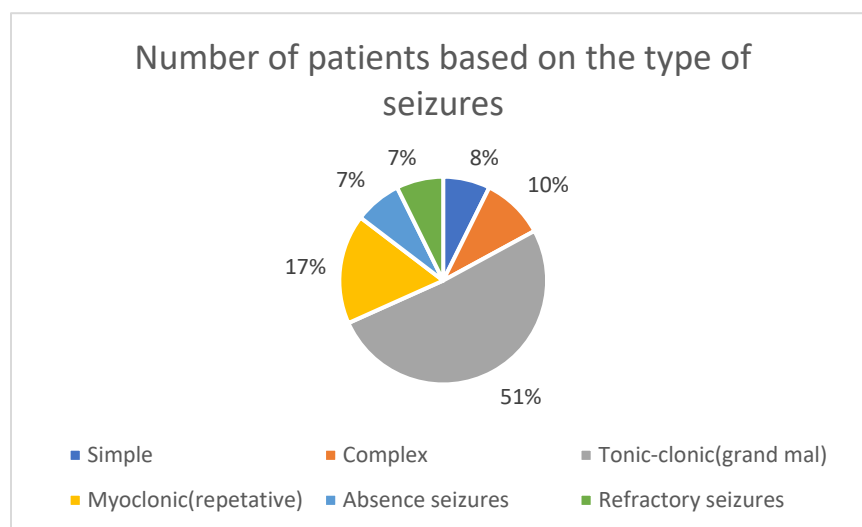

Figure 5.3: Classification of epilepsy

5.4 Patients with worst seizures

Condition of seizures: There were some questionaries asked to the patients about the condition of seizures where 76% had told that they were having a worst seizures.
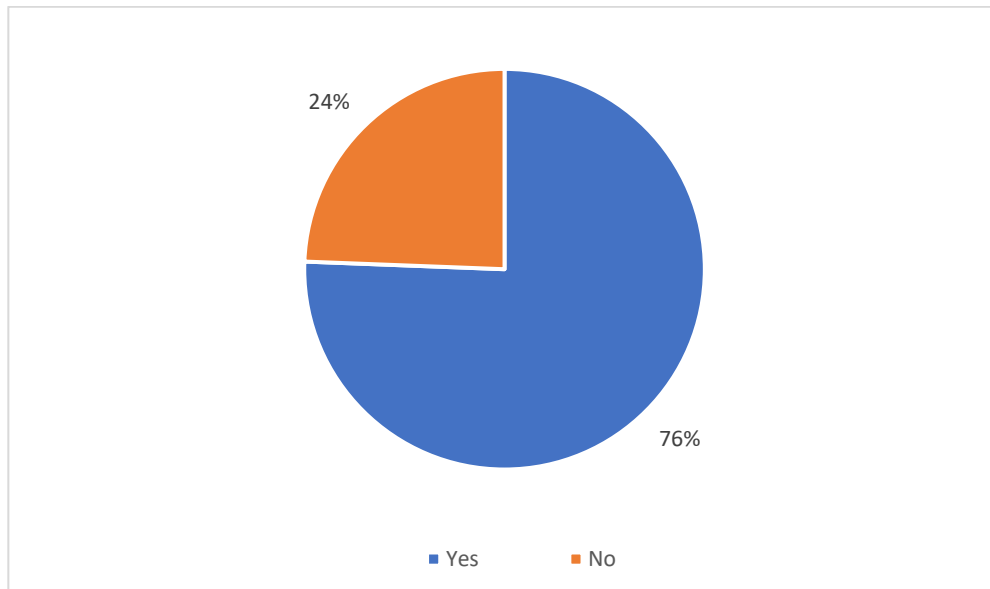

Figure 5.4: Patients with worst seizures

5.5 Patients with longer seizures

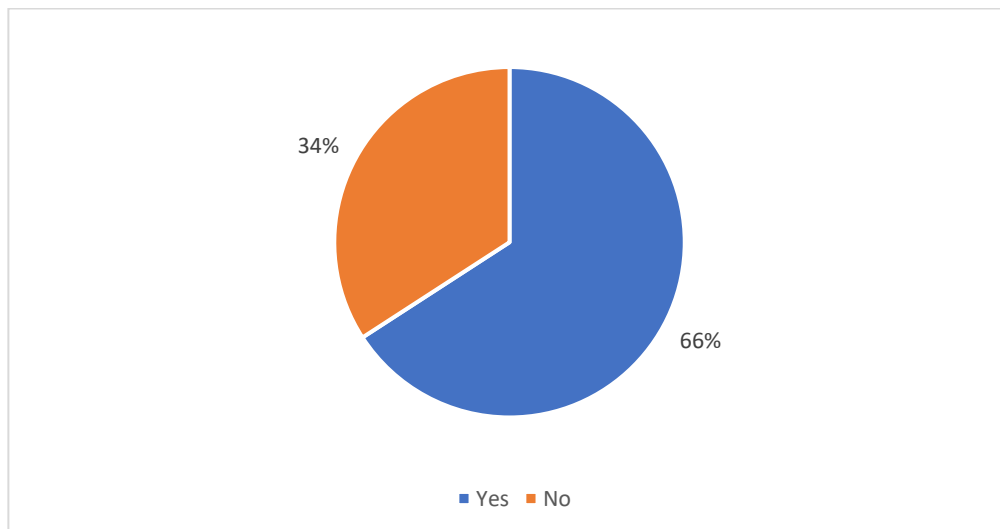There 66% of epileptic patients had longer-duration of seizures.

Figure 5.5: Patients with longer seizures

5.6 Family History of Epilepsy

More than 17% of epilepsy patients had family history of epilepsy.

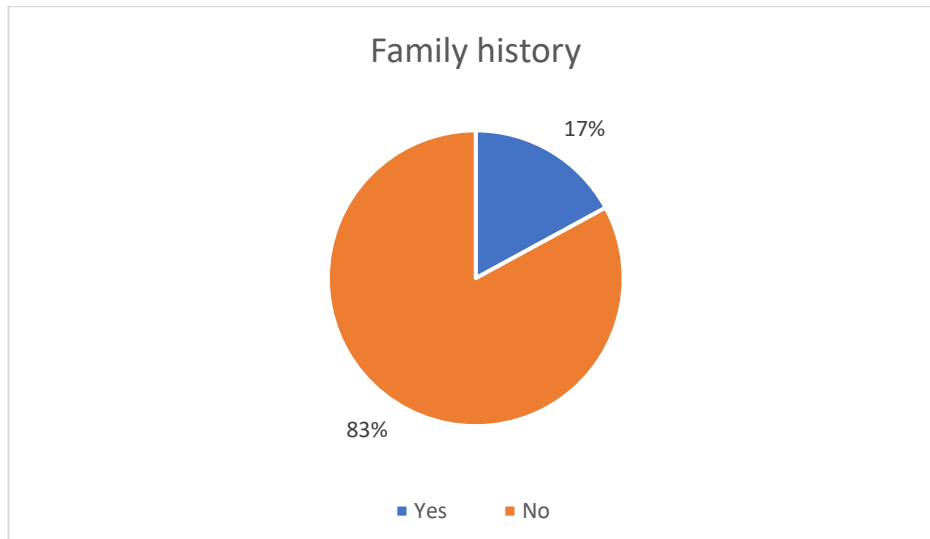**Family history**

17%

83%

■ Yes   ■ No

Figure 5.6: Family History of Epilepsy

5.7 Factor affecting the seizures

There are some factors which are directly or indirectly affect the seizure of epileptic patients. In this study, there were 42% of patients had found a stressful condition. This study found that 17% of epilepsy patients had increased the dose without consulting with their healthcare providers. 7% of patients had taken alcohol and 24% of patients had sleep deprivation and 10% has got drug-drug interaction.
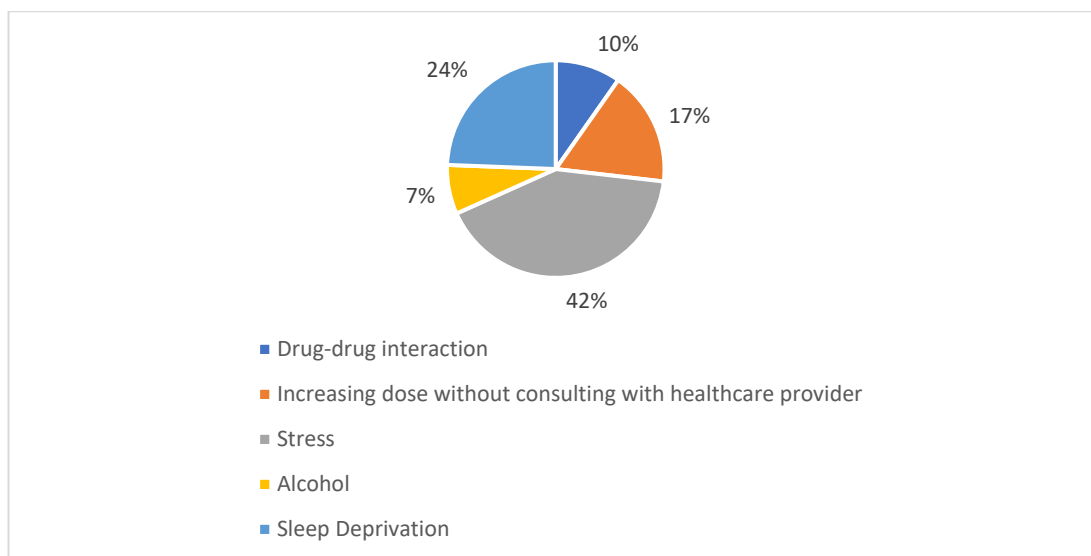
10%

24%

17%

7%

42%

■ Drug-drug interaction

■ Increasing dose without consulting with healthcare provider

■ Stress

■ Alcohol

■ Sleep Deprivation

Figure 5.7: Factor affecting the seizures

5.8 Diagnosis test

Diagnosis test is really vital for the treatment of epileptic patients. This study found 49% of patients who have confirmed that they were affected by epilepsy by EEG test. 39% of patients got this information by imaging (CT/MRI) and 12% of patients had performed Basic lab (glucose test, CBC, toxicology, LFTs/RFTs etc.)
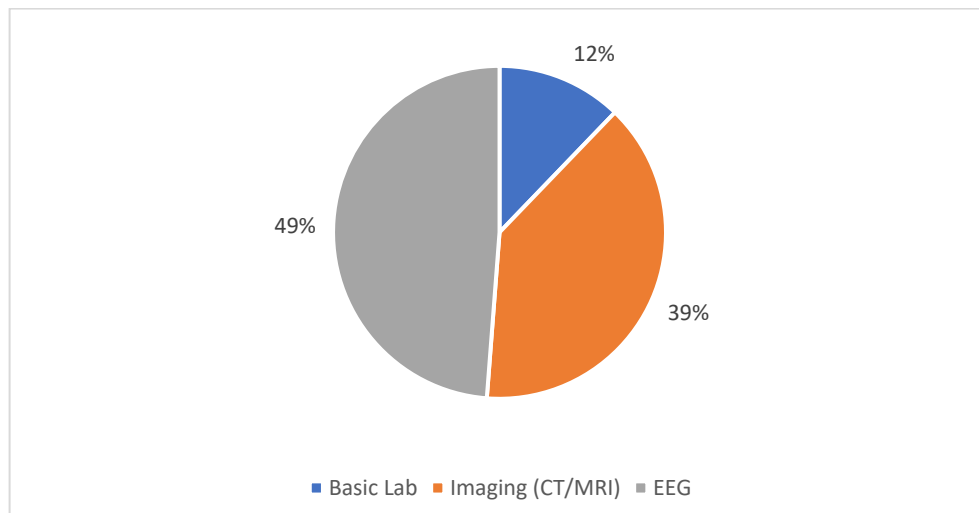

Figure 5.8: Diagnosis test

5.9 Duration of medication

In 41 patients, there were 51% patients who were newly affected by epilepsy. 27% patients have carrying this disease for 01-02 years, Lastly, 22% of patients were carrying epilepsy for more than 2 years.
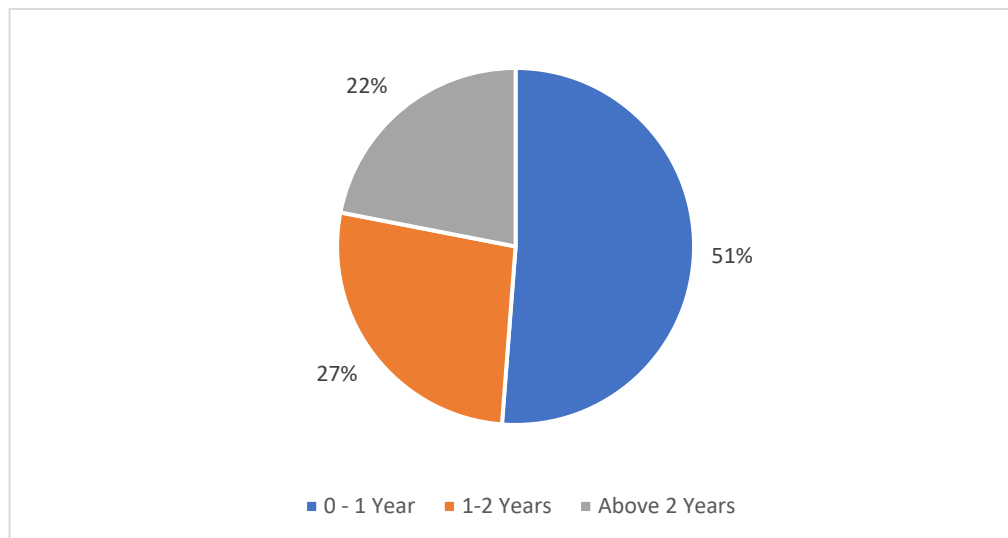

Figure 5.9: Duration of medication

5-.10 First line treatment

First-line treatment for epilepsy was given to in total 19 patients out of 41 patients where 47% of patients were prescribed sodium valproate. Levetiracetam and ethosuximide in 16% of patients. Lastly, 21% of patients had been prescribed carbamazepine.
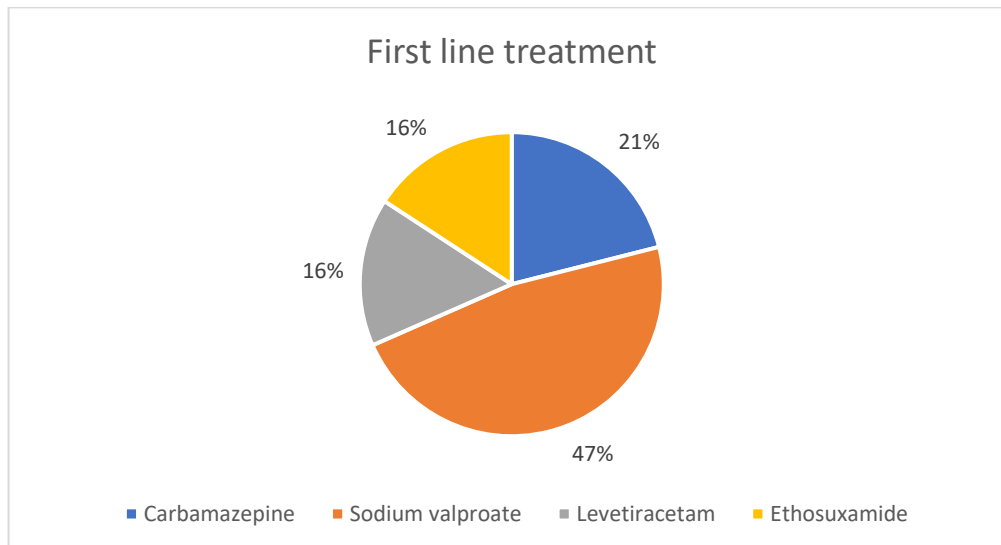

Figure 5.10: First line treatment

5.11 Second line treatment

In this study second-line treatment was given to 12 patients out of 41 patients where 42% of patients have prescribed topiramate, 25% of patients were suggested to take valproic acid and lastly, 33% of patients were advised to take lamotrigine.
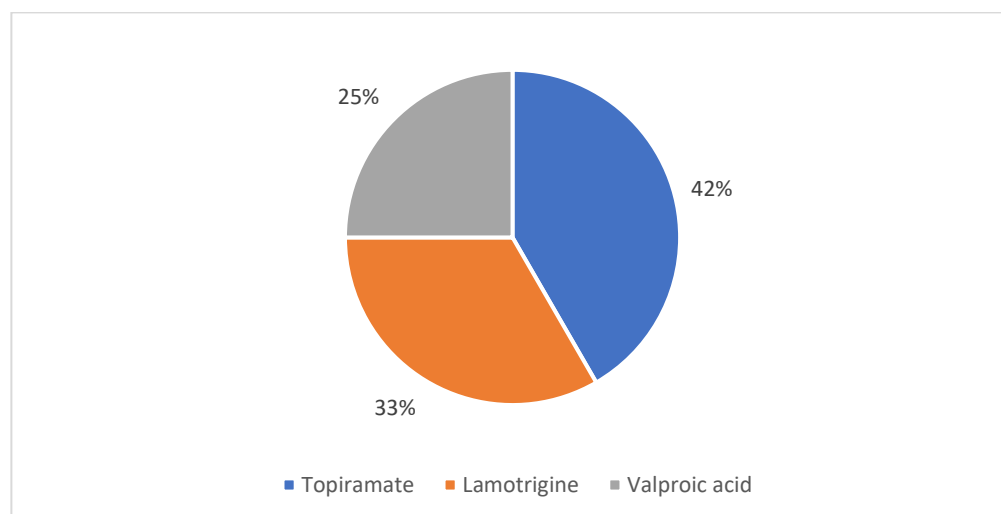

Figure 5.11: Second line treatment

5.12 Combination therapy

Combination therapy was less prescribed in epileptic patients because of adverse reactions. Only 10 patients out of 41 patients who did not easily get free from seizures are prescribed combination treatment. 40% of epileptic patients were prescribed sodium valproate and levetiracetam, 40% of patients were advised to take lamotrigine and valproate and lastly, 20% of patients were prescribed phenobarbital and carbamazepine.
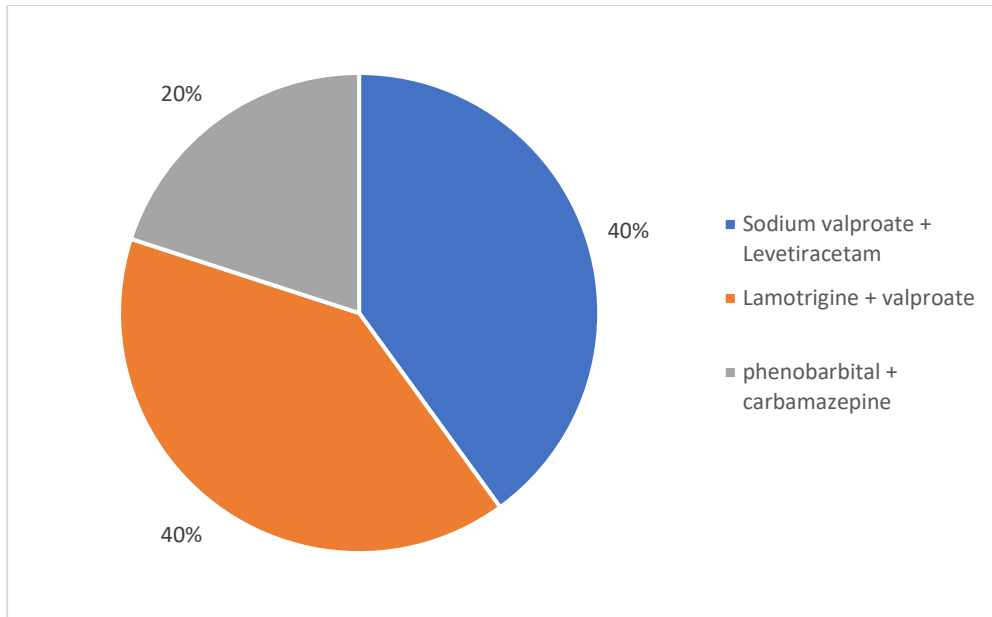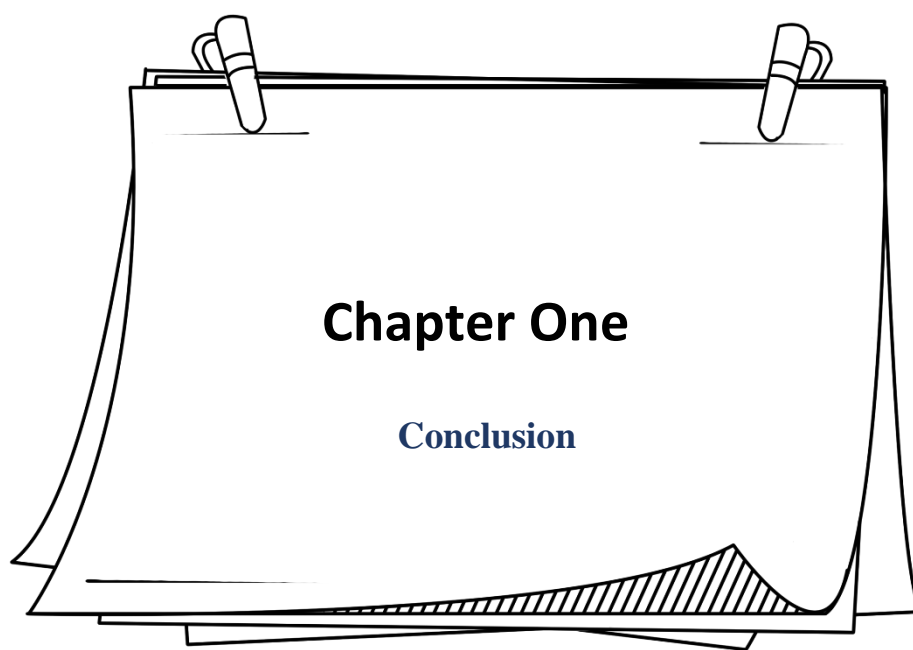

Figure 5.12: Combination therapy

Chapter One

Conclusion

Conclusion: This particular study allowed for a thorough and in-depth review of epilepsy, several techniques of diagnosis, and the doctor's chosen course of therapy. The majority of the patients were prescribed sodium valproate in first-line therapy, topiramate in second-line therapy and in difficult patients, sodium valproate with levetiracetam as combination therapy. This study reveals that the treatment of epilepsy depends on the type of seizures and the conditions patients treated with first-line, second-line and combination therapy. This study will surely help the healthcare system and must ensure safe and effective medication for epileptic patients.

Chapter Seven
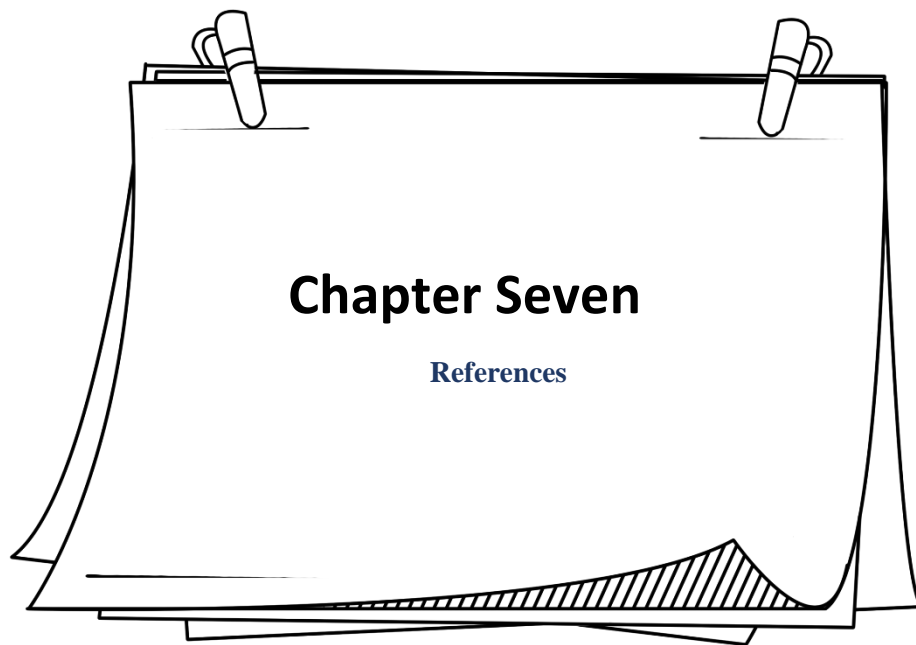
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