

**PREVALENCE AND TREATMENT OUTCOMES OF PRETERM BABIES ADMITTED  
IN KIU- TEACHING HOSPITAL**

**BY**

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**A RESEARCH DISSERTATION SUBMITTED TO THE FACULTY OF CLINICAL  
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KAMPALA INTERNATIONAL UNIVERSITY,  
WESTERN- CAMPUS.**

**OCTOBER 2014**

**DECLARATION:**

I hereby declare that the work presented in this research proposal is entirely the result of my own effort and has been submitted to you with my supervisor, Dr. Barnabas Atwiine's, approval and to the best of my knowledge has never (partially or in its entirety) been submitted in any form, for either publication or award of any qualification to any institution.

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Signed.....

Date.....

**SUPERVISOR'S APPROVAL:**

This research proposal has been produced under my supervision and submitted with my approval.

Signed.....

Date.....

**DEDICATION:**

I dedicate this research to my parents Mr. and Mrs. Mweseli and to KIU-TH for giving me an opportunity to do this research.

## **ACKNOWLEDGEMENT:**

I would like to thank the Almighty God for bringing me this far into my course and for helping me throughout this research work.

I would like to thank all that labored to guide and correct errors in my research, my supervisor Dr. Barnabas Atwiine, Mr. Peter Nsiko and Sheila Mukarye. I also thank Mr. Amon Banturaki and all others who have directly or indirectly been an encouragement and a source of support to me.

## **LIST OF ABBREVIATIONS:**

KIU- TH      Kampala International University – Teaching Hospital

WHO          World Health Organization

UNICEF      United Nations Children’s Fund

## **DEFINITION OF TERMS**

**Preterm baby**– is a baby born alive before 37 completed weeks of gestation.

**Extreme preterm baby**– is a baby born alive at < 28 weeks of gestation.

**Very preterm baby** – is a baby born alive at 28 to < 32 weeks of gestation.

**Moderate preterm baby** – is a baby born alive at 32 to < 37 weeks of gestation.

**Low birth weight infant** – is an infant born weighing < 2.5 kg.

**Extremely Low birth weight** – is an infant born weighing <1 kg.

**Very low birth weight** – is an infant born weighing < 1.5 kg.

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## **ABSTRACT:**

**Background:** Deaths resulting from preterm births contribute to a very high percentage of perinatal mortality and morbidity. It is on this basis that there was a need to carry out a research investigating the prevalence and treatment outcomes of the premature babies admitted in KIU – TH paediatric ward.

**Methodology:** In- patient numbers of premature babies were obtained both from the paediatric ward. They were submitted to the medical records office where additional numbers were found. A check list was used to collect information from each case file. The number of files evaluated was 33. The proportion of premature babies admitted in the paediatric ward of KIU – TH was calculated as a numerator over the total number of babies admitted in KIU –TH multiplied by 100. The treatment outcomes and the clinical features that the premature babies presented with were given as a percentage. All the information that was obtained was presented in table form.

**Results:** The results found out that about 5% of the babies admitted in KIU –TH paediatric ward were premature babies. The major clinical features were poor suckling reflex (39%) and respiratory distress (27%). The treatment outcomes were: 52% of the premature babies improved and were discharged, 27% died at discharge, 9% escaped before discharge / condition at discharge was not indicated, 6% were discharged against medical advice and 3% were referred to another hospital.

**Conclusion:** The deaths of premature babies result in a high prevalence of neonatal deaths and complications in those that survive. Therefore, medical institutions and various health care providers need to curb these by putting up neonatal intensive care units in hospitals and bringing awareness to the community concerning the importance of attending antenatal clinics.

# CHAPTER ONE: INTRODUCTION

## 1.1 BACKGROUND

The World Health Organization (WHO) defines preterm as babies born alive before 37 weeks of pregnancy are completed. There are sub-categories of preterm birth, based on gestational age: extremely preterm (<28 weeks), very preterm (28 to < 32 weeks) and moderate to late preterm (32 to <37 weeks). Some of the causes of preterm birth are fetal distress, multiple gestation, placenta praevia, abruption placentae, incompetent cervix (premature dilatation), preeclampsia, chronic medical illness (cyanotic heart disease, renal disease), infection (*Listeria monocytogenes*, group B streptococcus, urinary tract infection, bacterial vaginosis, and chorioamnitis, drug abuse (cocaine), premature rupture of membranes, polyhydromnios, iatrogenic and trauma ( Kliegman *et al.*, 2011).

Preterm birth poses a major challenge for perinatal medicine, contributing to over 70% of perinatal mortality in developed countries (excluding deaths associated with congenital defects). Infants that survive preterm birth are more likely to suffer cardio-respiratory problems, mental retardation, cerebral palsy, and vision and hearing impairment, when compared to infants born at term. Survival of extremely preterm infants has improved over the past decade, with the threshold of viability (defined as the gestational age at which 50% of infants survive) falling to less than 24 weeks. Improved survival is a direct result of advances in perinatal care that include the use of antenatal glucocorticoids for precocious maturation of fetal organs, postnatal surfactant therapy for optimizing lung function, and the use of less injurious neonatal resuscitation strategies such as continuous positive airway pressure and non injurious positive pressure ventilation. The incidence of premature birth in developed countries varies from 7.6 to 12% of all births, whilst in many low-to-middle-income countries the incidence of preterm births is  $\geq 15\%$  of all births: alarmingly, the incidence continues to rise (Galinsky *et al.*, 2013).

The World Health Organization estimates that there are 15 million preterm births globally and 1 million direct fatalities annually. Data from the United States indicate that the annual cost of neonatal care for preterm babies is ~US\$6 billion annually, whilst the estimated societal economic impact is ~US\$26.6 billion. The cost of caring for individual infants varies according

to their gestational age, with care for an extremely preterm infant reaching ~US\$250,000 (WHO, 2013).

## **1.2 PROBLEM STATEMENT**

The ideal situation is that a baby should be born at 37 to 40 completed weeks of gestation. Anything before 32 weeks of gestation or 37 weeks of gestation will result into loss of life or incompatibility with life or complications which the baby may carry into his or her adult life. What is on ground at the hospital level or the health centre level is that there are babies that are born before 37 completed weeks of gestation, that is, premature babies.

There is a gap in the knowledge of the prevalence and treatment outcomes of premature babies in Uganda. Little or no research has been done about it yet premature babies account for a big percentage of the neonatal mortality rates in Uganda.

Preterm birth is both a direct cause of death and also a risk factor for other specific causes of death, notably infections. In Uganda, 25 % of all newborn deaths are estimated to be attributed to preterm birth, similar to the average in sub-Saharan Africa. Accessing accurate data on the prevalence of prematurity itself is difficult due to unknown gestational age. In addition, more than half of all women give birth at home, and mothers do not take their babies to be weighed soon after delivery. Even babies born in health facilities may not be weighed due to lack of equipment or broken scales. Sometimes health workers also do not have the skills for weighing newborns. Causes of death were often unspecified in facility records. This problem was compounded by the fact that newborns can be referred to by their mothers' names in records and were not recognized or recorded as individuals (Ministry of Health Uganda, 2008).

It is therefore necessary to carry out this research in KIU-TH hospital in order to bring out the true burden of premature babies and to pave way for other researchers to do more research and come up with more solutions to this challenge.

## **1.3 JUSTIFICATION OF THE STUDY**

The findings of this research will contribute to the field of science by availing the statistics related with premature birth and motivate them to do more research on etiology and preventative measures. These research findings will also help to create awareness in the society at large by

demonstrating the gravity of premature birth and its impact on society both socially and economically. Therefore, the findings will open the eyes of the community and help them see the need to embrace antenatal care more vigorously in order to reduce the prevalence of premature births.

Furthermore, the local policy makers in various health centers and district hospitals will get to see the impact of premature births to infant mortality and probably put in more resources into further research on premature births or into improving neonatal care in many of the hospitals and health centers.

The research findings will cause the administrators of the Kampala International University - Teaching Hospital to see the need on ground and to put in more resources into neonatal care in the pediatric ward, such as pooling more resources to providing a neonatal intensive care unit which would be beneficial for neonates but specifically for premature babies.

#### **1.4 RESEARCH QUESTIONS**

- i) What is the proportion of premature babies admitted to the paediatric ward of KIU- TH?
- ii) What are the clinical features of premature babies admitted to the paediatric ward of KIU- TH?
- iii) What are the treatment outcomes of premature babies admitted to the paediatric ward of KIU- TH?

#### **1.5 OBJECTIVES OF THE STUDY**

##### **1.5.1 RESEARCH AIM / GENERAL OBJECTIVE**

To determine the prevalence and treatment outcomes of premature babies admitted in the pediatric ward in KIU –TH.

##### **1.5.2 SPECIFIC OBJECTIVES**

- i) To find out the proportion of premature babies admitted to the paediatric ward of KIU-TH.

ii) To determine the clinical features of premature babies admitted to the paediatric ward of KIU-TH.

iii) To find out the treatment outcomes of the premature babies admitted to the pediatric ward of KIU-TH.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

Preterm birth is a major cause of death and a significant cause of long-term loss of human potential amongst survivors all around the world. Complications of preterm birth are the single largest direct cause of neonatal deaths responsible for 35% of the world's 3.1 million deaths per year, and the second most common cause of under -5 deaths after pneumonia. In almost all high and middle income countries of the world, preterm birth is the leading cause of child death. Being born preterm also increases a baby's risk of dying due to other causes, especially from neonatal infections with preterm birth estimated to be a risk factor in at least 50% of all neonatal deaths ( Blencowe *et al.*, 2013).

### **2.2 PREVALENCE OF PRETERM BIRTHS**

It was found out that in 2010, an estimated 14.9 million babies were born preterm, 11.1 % of all live births worldwide, ranging from about 5% in several European countries to 18% in some African countries. More than 60% of preterm babies were born in South Asia and sub- Saharan Africa, where 52% of all live births occur (Blencowe *et al.*, 2012).

It was also estimated that 9.6 % of all births were preterm in 2005 in another study. This translated to about 12.9 million preterm births. Approximately 85% of this burden was concentrated in Africa and Asia, where 10.9 million births were preterm. About 0.5 million preterm births occurred in Europe and the same number in North America, while 0.9 million occurred in the Caribbean and in Latin America (WHO, 2010).

The number of premature babies has continued to grow in Uganda. Out of the 1.5 million babies born yearly, 210,000 are born before 37 weeks of pregnancy, according to Dr. Celsius Mukasa, chairperson of the National Steering Committee (Kagolo, 2014).

## 2.3 OUTCOMES OF PRETERM BIRTHS

(Onyaye *et al*; (2014) conducted a study done to determine the prevalence and outcomes of preterm admissions at a Tertiary Neonatal Health Unit in Nigeria. There were more preterm males than females in the present study compared to other studies which reported more preterm females. The commonest risk factor for prematurity was preterm rupture of fetal membranes, lack of antenatal care and multiple pregnancy. The commonest morbidity in the patients in the present study was respiratory problems, jaundice and sepsis respectively. The mortality rate in the present study was higher in the male preterm babies compared to their female counterparts. In the present study, the duration of hospital stay increased with reducing gestational age. The case fatality rate was highest in the patients with respiratory problems after necrotizing enterocolitis and seizures. The overall survival rate was 65.9% with the survival rate improving with increasing gestational age and only one (11.1%) of the nine patients born at less than 28 weeks gestational age survived. This is not surprising as the average age of viability in Nigeria is still 28 weeks. The survival rate of preterm babies born at less than 28 weeks gestation in developing countries like Nigeria tends to be low as a result of unavailability of exogenous surfactant and mechanical ventilation.

Each year 15 million babies are born preterm and their survival chances vary dramatically around the world (Blencowe *et al.*, 2012). For the 1.2 million babies born in high income countries, increasing complexity of neonatal intensive care the last quarter of the 20<sup>th</sup> century has changed the chances of survival at lower gestational ages. Middle-income and emerging economies have around 3.8 million preterm babies each year, while South Asia and Sub-Saharan Africa account for almost two-thirds of the world's preterm babies, and over three-quarters of the world's newborn deaths due to preterm birth complications. Worldwide, almost half of preterm babies are born at home, and even for those born in facilities, essential newborn care is often lacking. Most premature babies (>80%) are born between 32 and 37 weeks of gestation (moderate/late preterm), and die needlessly for lack of simple, essential care such as warmth and feeding support. About 10% of preterm babies are born 28 to <32 weeks gestation, and in low income countries more than half of those will die but many could be saved with feasible care, not including intensive care such as ventilation.



## **CHAPTER THREE: METHODOLOGY**

### **3.1 STUDY DESIGN**

The study done was a retrospective study using medical records of previous admissions of premature babies in a period of one year preceding the study (July 2013 to July 2014).

### **3.2 STUDY SITE**

The study was done in Kampala International University- Teaching hospital located in the Western region of Uganda, Bushenyi District at Ishaka Town. KIU – TH is about 500 kilometers from Kampala, on the Mbarara – Kasese road and 59 kilometers from Mbarara town. KIU – TH has a bed capacity of 400 beds with up to 412 staff. Out of the 412 staff, 182 are clinicians. The hospital currently employs 32 senior consultants, 9 Medical officers and 11 Clinical officers.

The pediatric ward has a total of 4 paediatricians, 3 senior health officers, 5 intern doctors, 2 senior nursing officers and nursing officers.

### **3.3 STUDY POPULATION**

The study population consisted of premature babies admitted in the paediatric ward of KIU- TH.

### **3.4 SAMPLE SIZE**

These were all the premature babies that had been admitted in the paediatric ward within a period of one year (from July 2013- July 2014).

### **3.5 INCLUSION AND EXCLUSION CRITERIA**

The premature babies (babies born below 37 completed weeks) that were admitted in the paediatric ward of KIU- TH were to be included while those that were not admitted in the pediatric ward of KIU- TH were to be excluded.

### **3.6 STUDY TOOLS AND PROCEDURE**

The data was to be collected from past medical records of previous admissions of premature babies in a period of one year (July 2013 to July 2014). The in- patient numbers of the premature babies that were admitted in the specified period above were obtained from the ward from the admissions book. The in- patient numbers were submitted to the records office and the respective files were obtained and a check list was used to gather information from these files.

### **3.7 ANALYSIS OF DATA**

The proportion of premature babies admitted in the pediatric ward of KIU –TH was calculated as a percentage over the total number of babies admitted within a period of one year (from July 2013 to July 2014) and multiplied by 100.

The treatment outcomes and clinical features of premature babies were also identified and given in percentages. Information was represented in tables.

### **3.8 LIMITATIONS TO THE STUDY**

There was poor documentation as some in patient numbers of the premature babies were not recorded and some files were missing from the records office even though others that were missing from the admissions book were found in the records office.

### **3.9 ETHICAL CONSIDERATIONS**

Confidentiality was upheld as any information obtained from the medical records was not disseminated to others.

## **CHAPTER FOUR: RESULTS**

### **4.1 INTRODUCTION**

The number of premature babies identified from the admissions book were 27. Out of these, 23 of the cases were premature babies while 4 cases were different cases entirely and so were not evaluated. From the records office, 2 out of these case files of the premature babies were missing. However, 12 other premature baby file cases were retrieved from the records office making the total number of premature babies identified and evaluated from the records office between the periods of July 2013 to July 2014 to be 33.

### **4.2 DEMOGRAPHIC CHARACTERISTICS**

Out of the 33 premature babies, 18 (55%) were male while 15 (45%) were female.

In general, the gestational age was ranging from 24 weeks of gestation to 36 weeks of gestation. The extreme preterm was 1 (3%), the very preterm were 8 (24%) and the moderate preterm were 24 (73%) making up the majority.

The weight of the babies was between 0.7 kg to 2.5 kg. The weight of the premature babies varied. The highest weight was 2.5 kg while the lowest weight was 0.7 kg. There was 1 (3%) baby whose weight was not recorded, 1 (3%) baby whose weight was exactly 2.5 kg while the other 31 (93%) weighed less than 2.5 kg in general. The babies with extremely low birth weight were 3 (9%) while those with very low birth weight were 10 (30%).

**Table 1: Demographic data**

<b>CHARACTERISTICS</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>GENDER</b>		
Male	18	55%
Female	15	45%
<b>GESTATIONAL AGE</b>		
Extreme Preterm	1	3%
Very Preterm	8	24%
Moderate Preterm	24	73%
<b>WEIGHT</b>		
2.5 Kg	1	3%
< 2.5 Kg	31	93%
Unknown weight	1	3%
<b>LOW BIRTH WEIGHT</b>		
Extremely Low Birth Weight	3	9%
Very Low Birth Weight	10	30%

### **4.3 PREVALENCE OF PREMATURE BABIES ADMITTED IN KIU- TH**

Six hundred and eighty six babies were admitted in paediatric ward from July 2013 to July 2014 and out of this, 33 preterm babies were admitted making up 5%.

### **4.4 MEDICAL CONDITIONS OF THE PREMATURE BABIES**

There were several clinical features that the premature babies presented with. The premature babies presented with poor suckling reflex, 13 (39%) while those with respiratory distress syndrome were 9 (27%). The minority was 1 (3%) who presented with a congenital abnormality, 1 (3%) who presented with edema and 1 (3%) who presented with fever.

**Table 2: Medical Conditions of the Premature Babies**

<b>MEDICAL CONDITION</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
Poor sucking reflex	13	39%
Respiratory Distress Syndrome	9	27%
Peripheral Cyanosis	7	21%
Pallor	6	18%
Jaundice	6	18%
Tachypnoea	4	12%
Hypotonia / absent muscle tone	4	12%
Hypothermia	2	6%
Fever	1	3%
Edema	1	3%
Congenital Abnormality	1	3%

#### **4.5 THE CLINICAL DIAGNOSES**

These were the clinical diagnosis made, 1 (3%) – neonatal sepsis, 1(3%) – intrauterine growth retardation and 1 (3%) – neonatal jaundice while the rest of the premature babies had no other clinical diagnosis.

**Table 3: Clinical Diagnosis**

<b>CLINICAL DIAGNOSIS</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
Neonatal Sepsis	1	3%
Intrauterine Growth Retardation	1	3%
Neonatal Jaundice	1	3%

#### **4. 6 TREATMENT OUTCOMES**

Seventeen (52%) babies improved and were well at discharge, 9 (27%) died, 3 (9%) escaped before discharge / condition at discharge was not indicated, 2 (6%) were discharged against medical advice and 2 (3%) were referred to another hospital.

**Table 4: Treatment Outcomes**

<b>TREATMENT OUTCOMES</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
Improved	17	52%
Died	9	27%
Escaped/condition at discharge was not indicated	3	9%
Referred to another hospital	2	3%
Discharged against medical advice	2	3%







## **CHAPTER FIVE: DISCUSSION**

### **5.0 INTRODUCTION**

This chapter discusses the results of the research on the prevalence and treatment outcomes of premature babies admitted to KIU – TH between the months of July 2013 to July 2014.

### **5.1 PREVALENCE**

The findings from the study revealed that about 5% of premature babies were admitted at KIU – TH. These findings indicate that premature babies forms a significant portion of the babies admitted in KIU –TH. This varies with the findings of Kunle-olowu *et al.*, (2014) who found out that 24% of admissions in Special Care Baby Unit of the Niger Delta University Teaching Hospital were preterm. This variation could be due to the fact that the study covered a longer period of 2 years and also because the hospital covered a larger catchment area. Knowledge of a health-care facility's catchment area is important in assessing health service utilization, for calculating population-based rates of disease and for performing other important analyses (Kate Zinszer *et al.*, 2014).

The study also found out that 55% of the premature babies were boys while the rest 45% were girls. This is in line with findings of UNICEF which stated that boys were 14% more likely to be born preterm than girls (UNICEF, 2011). This was attributed to among other factors; that the mother who was pregnant with a boy was more likely to have placental problems, pre-eclampsia and high blood pressure. It further reported that girls had a biological advantage in that they matured more rapidly in the womb than the boys and so their lungs and other organs were more developed. Therefore, the boys had a higher risk of death and disability than the girls (UNICEF, 2011).

### **5.2 CLINICAL FEATURES**

The study found out the prevalence of the clinical features as follows, poor suckling reflex (39%), respiratory distress syndrome (27%), peripheral cyanosis(21%), jaundice(18%), pallor(18%), hypotonia or absent muscle tone(12%), tachypnoea(12%), hypothermia (6%) congenital abnormality(3%), edema (3%) and fever (3%) . The remaining 14 (42%) were of fair

general condition. The two main clinical features were poor suckling reflex and respiratory distress syndrome. These findings do not really coincide with the study done by Karachi in Pakistan which found out that the commonest morbidity in the patients in a study done was respiratory problems followed by jaundice and sepsis (Khan *et al.*, 2012). It is not really clear why this disparity exists. In another study done to determine the prevalence of respiratory diseases in late preterm babies, it was discovered that out of 5359 babies, 135(2.5%) term babies and 266(4.9%) preterm babies were found to have respiratory diseases. It is clear that preterm babies have a higher prevalence of developing respiratory diseases compared to term babies (Zhongguo Dang, 2012).

### **5.3 TREATMENT OUTCOMES**

There were 52% of the babies that improved on discharge, 27% died at discharge, 9% escaped before discharge / condition at discharge was not indicated, 6% were discharged against medical advice and 3% were referred to another hospital. Majority of the premature babies admitted had a positive treatment outcome in that they improved. However, the findings also indicate that quite a high percentage of the babies admitted died. It was noted that in Uganda, the prevalence of neonatal deaths due to preterm births is 25% which is similar to what prevails in Sub-Saharan Africa (Ministry of Health, UNICEF, WHO; 2008). This showed that there is a similarity in the prevalence of death outcomes even at a national level. This could be as a result of poor neonatal care facilities that would salvage many of the lives of the premature babies born or reduce morbidity in them. KIU-TH had only two incubators and had not neonatal intensive care unit and so preterm babies are exposed to infections and other adverse conditions.

### **5.4 CONCLUSION:**

From this research, the prevalence of premature babies admitted in KIU – TH was found to be about 5% while the most frequent clinical presentations were fair general condition (42%), poor sucking reflex (39%) and respiratory distress syndrome (27%) respectively. The treatment outcomes revealed that majority of the babies improved (52%) and were discharged while a high percentage died (27%). This was commendable putting into consideration the few resources that were available. These findings show that if more funds were allocated by the hospital management to creating a neonatal intensive care unit in KIU-TH there would be a great

reduction in the deaths resulting in premature births as well as reduced morbidity in the premature babies.

### **5.5 RECOMMENDATIONS:**

There is need for the hospital management to allocate funds in order to create a neonatal intensive care unit. This would be beneficial not only for preterm babies but also for other neonates that present with various critical conditions that would warrant special neonatal care. Awareness should be created in the community of the importance of pregnant mothers attending antenatal clinics in order to prevent premature births as much as possible.

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## **APPENDIX 1:**

### **CHECK LIST**

- a) Gestational Age of the baby
- b) Sex of the baby
- c) Weight of the baby
- d) Clinical Features of the baby
  - i) Hypothermia
  - ii) Respiratory Distress Syndrome
  - iii) Jaundice
  - iv) Fever
  - v) Others:
- e) Clinical Diagnosis
- f) State at discharge
  - i) Improved at discharge
  - ii) Referred at discharge
  - iii) Died at discharge
  - iv) Escaped before discharge / condition not indicated at discharge
  - v) Discharged against medical advice

**APPENDIX 2:**



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**OFFICE OF THE DEAN,  
FACULTY OF CLINICAL MEDICINE & DENTISTRY**

2/9/2014

**TO WHOM IT MAY CONCERN**

**RE: MWESELI ANNE DELILAH (BMS/0020/81/DF)**

The above named is a student of fifth year at Kampala International University pursuing a Bachelor of Medicine, Bachelor of Surgery (MBChB) programme.

She wishes to conduct her research project in your hospital.

**Topic:** The prevalence and treatment outcomes of premature babies admitted in KIU-TH.

Any assistance given will be appreciated.

Thank you

S-0  
Dr. Akib S. S. S.  
Asso. Dean, FCM & D

*"Exploring the Heights"*