

(JoNMC)

JOURNAL OF NOBEL MEDICAL COLLEGE

VOLUME 3

2014 MAY-OCT.

NUMBER 1

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Journal of NOBEL MEDICAL COLLEGE



ISSN: 2091-2331 (Print) 2091-234X (Online)
(JoNMC) - A Peer Reviewed And Indexed Journal



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(JoNMC)

JOURNAL OF NOBEL MEDICAL COLLEGE

VOLUME 3, NUMBER 1

**VOL. 03
NO. 01
ISSUE 6**



Regd. No.
25161/060/61

MAY-OCT., 2014

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Published by:

The Journal of Nobel Medical College (JoNMC) is published biannually by the Research and Publication Unit of Nobel Medical College, Biratnagar. The JoNMC publishes original articles in the field of Medicine and allied sciences. Contributions are accepted for publication on the condition that their substance has not been published or submitted for publication elsewhere.

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Published by:

Research and Publication Unit
NOBEL MEDICAL COLLEGE
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ALFRED BERNHARD NOBEL

Alfred Bernhard Nobel was a Swedish chemist, engineer, innovator, and armaments manufacturer. He was the inventor of dynamite.

Born: October 21, 1833, [Stockholm](#)

Died: December 10, 1896, [Sanremo](#)

PREVALENCE OF HYPERURICEMIA AMONG PEOPLE OF MORANG DISTRICT OF NEPAL

Shrawan Kumar Yadav, Niraj Nepal and Dilli Ram Niroula

Abstract

Hyperuricemia refers to an elevation in the serum uric acid concentration. The blood levels of uric acid are a function of the balance between the breakdown of purines & the rate of uric acid excretion. Theoretically, alterations in this balance many account for hyperuricemia. Prolonged hyperuricemia often associated with gout, is an important risk factor for damaged joints. The present study is undertaken with the aim to find out the prevalence of hyperuricemia by age & sex, to establish the statistically significant correlation between serum creatinine & triglyceride concentration with uric acid concentration & to study the relation between alcohol drinking & hyperuricemia in Morang District, by routine health examinations in the out Patients Department (OPD) of Nobel Medical College, Biratnagar from January 2012 to January 2013. The study reveals that 28.57% (male – 30.06%., female -26.61%) of patients have been suffering from hyperuricemia. It indirectly indicates hyperuricemia is very frequent in developing country like Nepal. The present study denoted that hyperuricemia is directly related to alcohol consumption in both male & female.

Key words: Hyperuricemia, Gout

Introduction

Hippocrates, in the fifth century B.C, recognized the distinctive clinical features of gouty arthritis, which he inscribed in the oldest recorded medical text¹. The term gout was given by de Vielehardouin in the 13th century.² Uric acid was first isolated from urine by Karl Wilhelem Scheele in 1776³. In 1907, Emil Fisher established uric acid to be a purine compound.⁴ The British physician Alfred Baring Garrod demonstrated by the murexide test in increased amount of uric acid in the blood of gouty subjects.⁵ He also recognized asymptomatic hyperuricemia, the cause and effect relationship of urate deposition and gouty inflammation, the implication of impaired renal function in gout, the relation of hyperuricemia to gout and treatment changes in urate levels preceding gouty attacks.

Uric acid is the final product of purine metabolism in human beings. Unlike allantoin, the more soluble end product found in lower animals, uric acid is a poorly soluble, end product of purine metabolism in humans. Humans have higher levels of uric acid because of a deficiency of the hepatic enzyme, uricase, and a lower fractional excretion of uric acid. Approximately, two thirds of total body urate is produced endogenously, while the remaining one third is accounted for by dietary purines. About 70% of the urate produced daily is excreted by kidneys, while the rest is eliminated by the intestines.

Hyperuricemia refers to an elevation in the serum uric acid concentration. The blood levels of uric acid are a function of the balance between the breakdown of purines and the rate of uric acid excretion. Theoretically, alterations in this balance may account for hyperuricemia, although clinically

defective elimination accounts for most cases of hyperuricemia.

Prolonged hyperuricemia often associated with gout, is an important risk factor for damaged joints.⁶ Hyperuricemia has been shown to be associated with several components of metabolic syndrome (Mets) and investigators have postulated that increased concentrations of uric acid may be another important component of the syndrome.⁷ In some epidemiologic studies, a close relationship between hyperuricemia and hypertension, insulin resistance and cardiovascular disease risk factors (such as obesity and smoking) has been reported.⁸⁻¹¹ Hyperuricemia is diagnosed in 5-30% of the general population, although the prevalence is higher among some ethnic groups (e.g, Japanese) and appears to be increasing worldwide.¹² Serum uric acid concentrations are known to increase with age and are further increased after menopause in women.¹³ Considering current increases in the incidence and prevalence of obesity and Mets worldwide, as well as emerging evidence documenting associations between hyperuricemia and cardiovascular complications further investigations are required.

Acheson and Chan¹⁴ have expressed the situation well by stating. "The associates of a high uric acid are the associates of plenty." On the other hands, with rapid economic development, possibility of improved nutrition and promotion of successful health, life expectancy has been prolonged and the elderly population has increased this has true in Morang, a district of Nepal also. Among common disorders of elderly, high serum uric acid levels are found to be directly correlated to hypertension, heart disease, diabetes, kidney disease, dietary habits and nutrition.

Traditionally, they eat foods that are high in purine such as red meat, beans, cabbage, cauliflower, alcohol and so on.

Little information however exists concerning the prevalence and epidemiological characteristics of hyperuricemia in Nepal. Therefore, the present study is to find out the prevalence of hyperuricemia among Nepali community by routine health examinations in the out patients Department (OPD) of Nobel Medical College, Biratnagar.

Material & Methods

This study was conducted from January 2012 to January 2013 in Nobel Medical College, Biratnagar, Nepal. In course of study, 287 patients were sent for the investigation of serum uric acid from different. Out Patients Department (OPD) of this Hospital. These patients were selected for the study. History and clinical examination records of selected patients were collected. Selected patients were called on next morning in order to collect fasting blood samples. Median cubital vein of the forearm was used for venipuncture.

The age, sex, alcohol habit and all the biochemical parameters were recorded in pre-designed close end Proforma. Later on all the information was entered in a computer programmed. Mean & standard deviation was calculated by excel programmed.

The following tests were carried out in the clinical biochemistry laboratory. All the necessary quality control measures were applied. Measurement of these parameters has been done on Semi-autoanalyzer.

1. Serum uric acid – by uricase/POD method
2. Blood sugar – by GOD – POD method.
3. Serum creatinine – by Jaffe's method
4. Serum triglycerides – by Glycerol -3-phosphate – oxidase (GPO).

Results

The study was carried out at Department of Biochemistry, Nobel Medical College, Biratnagar. The subjects were taken from Out Patients Department (OPD) of this hospital.

The study was carried out among the patient attending from January 2012 to January 2013. The total no. of case was 287.

Table No. 4.1 Distribution of Patients according to Sex.

Sex	No. of patients	Percentage
Male	163	56.79%
Female	124	43.21%
Total	287	100%

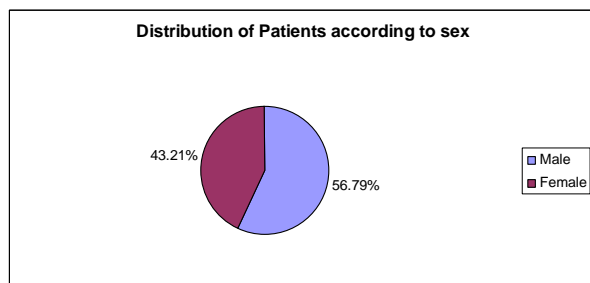


Chart No. 4.1

The majority of the patients in the study were males (56.79%) compared to the females (43.21%).

Table No. 4.2 Distribution of Patients according to Age

Age Group (Years)	No. of patients	Percentage
20-34	96	33.45%
35-49	96	33.45%
50-64	63	21.95%
≥65	32	11.15%

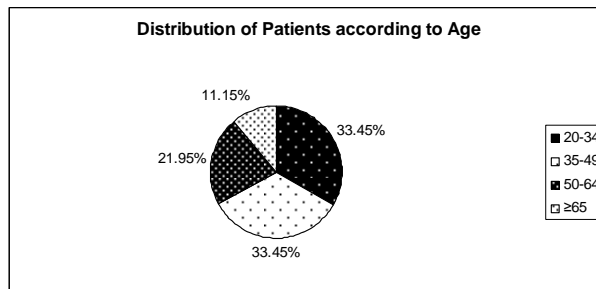


Chart No. 4.2

Above table shows that majority of patients were those who belonged to 20-34 age group and 35-49 (33.45%). However, 50-64 group was 21.95% and ≥65 group was 11.15%.

Table No. 4.3 Prevalence of Hyperuricemia by Sex

Sex	No.	Average age in Years Mean (SD)	Average Uric acid (mg/dl) Mean (SD)	Prevalence of Hyperuricemia
Male	163	43.58(15.56)	6.37(1.58)	30.06%
Female	124	43.10(15.75)	5.39(1.53)	26.61%
Both	287	43.37(15.64)	5.95(1.63)	28.57%

SD = Standard Deviation

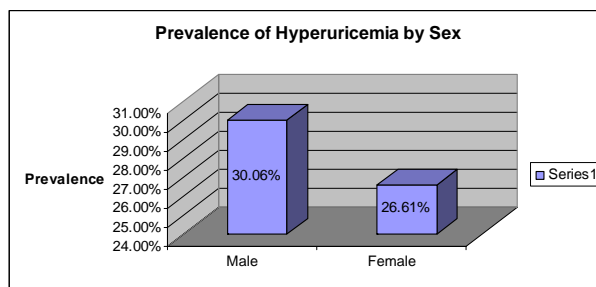


Chart No. 4.3

Above table shows that an average uric acid level in male was 6.67 ± 1.58 and for the female was 5.39 ± 1.53 . The prevalence rate of Hyperuricemia for male was 30.06% and for the female 26.61%.

Table No. 4.4 Prevalence of Hyperuricemia by Age.

Years	No.	Average Uric acid (Mg/dl) Mean (SD)	Prevalence of Hyperuricemia
20-34	96	5.63 (1.36)	22.92%
35-49	96	5.73(1.33)	25.00%
50-64	63	5.91(1.43)	28.57%
≥65	32	7.61(2.39)	56.25%

SD = Standard Deviation

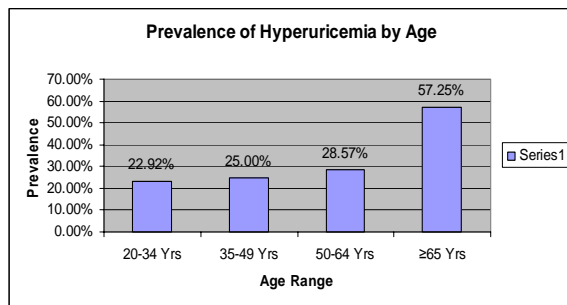


Chart No. 4.4

In above table – highest average uric acid value (7.61± 2.39) was found to be in the age group of ≥65. The prevalence rate of Hyperuricemia was highest in more than ≥65 years group (56.25%).

Table No. 4.5 Single Variable Analysis of Hyperuricemia and Measurements

Measurements	Hyperuricemia (n=82)	Normal uric acid (n=205)	P-value
Uric acid value (mg/dl) Mean (SD)	7.82(1.50)	5.19(0.90)	<0.0001
Age(years) Mean (SD)	48.04(18.18)	41.39(14.11)	0.0029
Creatinine(mg/dl) Mean (SD)	1.08(0.26)	0.90(0.17)	<0.0001
Fasting blood sugar (mg/dl) Mean(SD)	91.24(22.00)	90.01(23.30)	NS
Triglyceride(mg/dl) Mean (SD)	218.20(99.24)	151.98(59.60)	<0.0001

NS = no statistical significance
SD= Standard Deviation

This table showed that hyperuricemia is related to increased age, Creatinine and Triglyceride and it is not related to blood sugar.

Table No. 4.6 Single Variable Analysis of Hyperuricemia and Drinking Alcohol.

Drinking Alcohol	Uric acid		χ^2	P-Value
	High	Normal		
Yes	48	67	16.30	0.0001
No	34	138		

χ^2 = chi square

This table showed that hyperuricemia is related to the intake of alcohol.

Discussion

Serum uric acid has been shown to be related to risk of hypertension, cardiovascular diseases and type 2 diabetes in clinical and epidemiological studies, in addition to gout, which is specific disease caused by high uric acid¹³⁰⁻¹³³. This study has tried to know the prevalence of hyperuricemia, Morang District and also to know the important risk factors that elevate the serum uric acid levels.

The main observations of the present study are the followings:-

- Firstly the prevalence of the hyperuricemia was high in Male.
- Secondly, a particularly strong association was found between serum uric acid levels and triglycerides.
- Thirdly, a significant relationship between serum uric acid and creatinine was found.

The present study has revealed that the prevalence of hyperuricemia among the patients, attending Nobel Medical College

was 28.33% (male 30.06%, female 26.61%). This value is quite higher than reported for several other populations earlier. The 10.6% prevalence of hyperuricemia was noted among the men and women,⁵⁶ while Nagahama and colleagues⁵⁵ reported that 24.4% were diagnosed hyperuricemia in Japan. In Saudi men and women, hyperuricemia is estimated to 8.4%.⁵⁸ In European countries and United States; hyperuricemia is estimated to 2 to 18% of the total population¹³⁴.

According to my studies, it was found that serum uric acid levels were higher in men (6.37±1.58mg/dl) than in women (5.39±1.53mg/dl) which is similar to other observations. Studies in Europe and the United states have shown that average uric acid value in male is around 5.0 to 5.7 mg/dl and slightly lower in female at 3.7 to 5.0 mg/dl¹³⁵.

The prevalence of hyperuricemia is age dependent. In the present study, hyperuricemia was relatively less common among younger subjects (22.92% in the 20-34 years age group) but increased considerably to 25% in the 35-49 years and 56.25% was found in ≥65 years age group. Similar patterns of increase prevalence of hyperuricemia with increasing age have been reported by several other investigators.^{133, 136}

In present study serum uric acid concentration was statistically significant and positively correlated with serum triglyceride concentration (p<0.0001) and serum creatinine concentration (p<0.0001). These associations were generally similar to those reported by other investigators.^{91, 92, 134, 135} The potential mechanisms related hyperuricemia to fasting hypertriglyceridemia are unknown. It has been speculated to be due to an increase in NADPH requirement for de novo fatty acid synthesis in obese men. With

increased NADPH, uric acid production is enhanced, and this might increase serum uric acid level¹³⁷.

My observation showed that alcohol drinking was found to be closely related to hyperuricemia. Alcohol is useful for excretion of uric acid and that the excretion rate of uric acid by the kidney does not decline because of drinking. Alcohol consumption causes accelerated hepatic break down of ATP and increase urate production and also may cause hyperlacticacidemia which competitively blocks the uric acid secretion.¹²¹ The higher purine content in some alcoholic beverage such as beer may be a factor that increases the uric acid level in blood.¹²²

In present study it was not found statically significant relationship between fasting blood sugar and hyperuricemia. Many studies showed similar patterns of finding.^{138,139}

Age appeared to be related to hyperuricemia in present study, which was consistent and adjacent with other studies. As the present study showed average age for hyperuricemia was 48.04 ±18.18 with respect to average age of normal uric acid patients 41.39±14.11. However, some Asian studies age was reported as risk factors for hyperuricemia in women but in men hyperuricemia was found to decrease with age.^{57,140} This study also emphasized the prevalence of hyperuricemia increased with age (table no. 4.4). Increasing patterns of serum uric acid level with age might be due to impaired renal function, use of diuretics, hypertension as common in elderly patients^{34,117,118}.

Although many risks factors that could affect the level of uric acid; unfortunately I did not collect detailed information of other determinations of hyperuricemia.

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BRIDGE PLATING OF COMMUNATED SHAFT OF FEMUR FRACTURES

Mohammad Abul kalam, Pradeep Kumar, Mohammad Afzal Hussain and Iqbal Ahmad

Abstract

A prospective study of forty comminuted femoral shaft fractures, open and close, treated with a relatively minimally invasive technique termed as bridge plate osteosynthesis or biological fixation. Less invasive procedure, Short operative time and less blood loss was seen during surgical procedure. This prospective study was conducted at Nobel Medical College, Biratnagar from 2010 to 2011. This study was done because most of the femoral shaft fractures treated under C-arm mobile image intensifier but bridge plating system does not require such advanced costly equipment. Almost all cases were free from long term complications. All fractures healed within 6 months. Bone grafting was done for 2 cases as a secondary procedure. The complication of infections was seen in two of open fractures. This procedure can easily be carried out in general operating table by appropriate surgeons.

Key words: *Comminuted femoral shaft fractures, Broad DCP, Interlocking plate.*

Introduction

Shaft of femoral fractures are very common. Fixation of fractures is necessary to achieve function of limb as soon as early. Common problems of shortening of the limb, malalignment and contracture of knee can be prevented by reliable anatomic fixation and early mobilization. The treatment method selected should not cause increased systemic or local complications in an attempt to achieve these goals. Comminution and instability of this fracture makes the management more complex and open fractures of the femoral shaft also represent the extreme end of the spectrum of femoral shaft injuries. Comminuted fractures has high propensity to heal with shortening of malrotation if their degree of instability is not recognized appropriately.

Bridge plating of femoral shaft fractures are regarded as the best technique for comminuted fracture because without opening the fracture area stabilizes the fractures with a

plate. It provides tissue conservation and does not disturb the vascularity of fracture sites.

Materials and Methods

In this prospective study, 40 comminuted femoral fractures were managed by bridge plating during the years April 2010 to June 2011.

Type III and IV comminuted¹ fractures and type I open comminuted² fractures were included while type I and II comminuted femoral shafts fractures and open Type II and Type III femoral shaft fractures and segmental femoral shaft fractures were excluded.

Surgical technique

All patients were operated by placing them in supine position. Two separate incisions were made to expose proximal and distal fragments, in straight line joining the greater trochanter and lateral femoral condyl.

Fracture area remained untouched. The plate was threaded under the vastus lateralis from one incision to emerge through the other bridging the fracture sites then it was fixed with screw. After closing wounds and antiseptic dressing, postoperative management was started.

Operated limb for all patients were kept with knee flexed from 45 to 90 degree. Intravenous antibiotics were started to all patients. According to patient's improvement on first post operative day, gentle range of motion exercises of the knee and hip were started. Quadriceps exercises were soon encouraged. Touchdown ambulation was started on third or forth postoperative day (depending upon the pain) with the help of crutches. Partial weight bearing was allowed when early callus formation was seen and full weight bearing when bridging callus was seen weaning the use of crutches. All cases were followed up for at least six months to be included in the study.

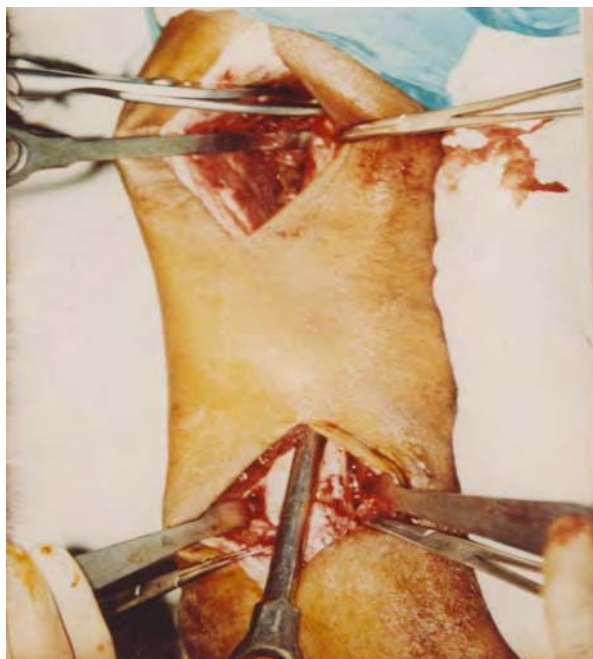


Photo 1: Bone segments exposed, tunnel being made beneath the vastus lateralis

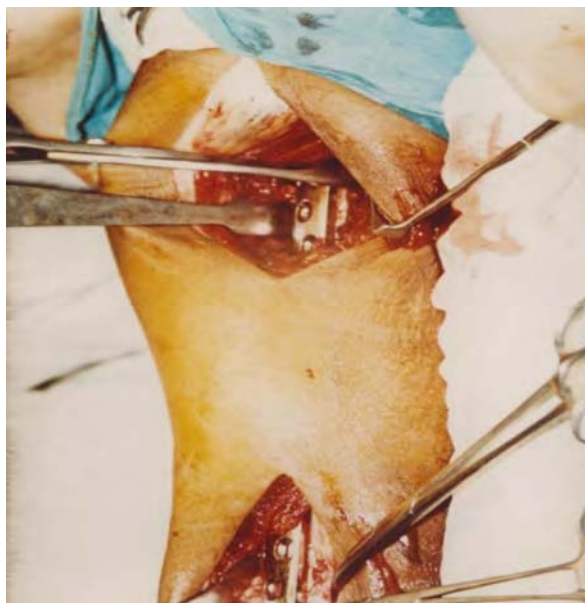


Photo 2: Plate having been inserted from proximal to distal segment

Results

We had 40 cases of bridge plating. There were 34 male and 6 female patients with male to female ratio 5.6:1. The major patient population is of age group between 20-29 yrs. (table 1)

Table 1 : Age and sex distribution

Age group	Male	Female
20-29	24	0
30-39	4	4
40-49	2	2
50-59	4	0

Table 2: open and close fractures

Open and close	number	percentage
Close	24	60%
open	16	40%

There were equal numbers of patients each in grade III and IV comminution. In 12 (30%) patients there were other concomitant injuries (table 3) and associated medical illness of

hypertension or diabetes mellitus was found in 10(25%) patients. These were fairly controlled before operative procedure was carried out.

Table 3. Concomittant injuries

Injury	number	percentage
Head injury	2	16.6%
Chest injury	2	16.6%
Upper limb	2	16.6%
Ipsilateral lower limb	4	33.3%
contralateral lower limb	2	16.6%
total	12	

All the fractures were healed by 24 weeks after surgical procedure (Table 4)

Table 4. Fractures healing time

Time in weeks	No of fractures healed	percentage
12	0	0
14	2	5
16	2	5
18	8	20
20	22	55
22	2	5
24	4	10
total	40	

There were four (10%) wound infections. All of these were open fractures. The same patients got knee stiffness and range of motion in 90 to 120 degree. There was also shortening of 1 to 3 cm in 3 cases (7.5%) of grade IV comminuted fractures.

Discussion

Almost all fractures shaft of femur need procedure with help of image intensifier, special instrumentation and orthopaedic traction table. So such expensive equipment which can't be afford by many hospitals in

developing countries. It therefore seems necessary to make an attempt to explore an alternative cheap method for managing these types of fractures. At the same time, bridge plating of comminuted femoral shaft fractures is safe, easy, versatile and superior method of internal fixation of these difficult fractures. This does not require such elaborate instrumentation³.

The advantages obtained by bridge plating are that the vascularization of the fragments is optimally preserved. The new concept aims at minimal surgical damage to the blood supply, maintenance of optimal bone structure near the implant, improved healing in the critical zone in contact with the plate, minimal damage to the bone lining at plate removal with reduced risk of refracture and optimal tissue tolerance of the implant by selection of pure titanium as implant material⁴. The conflict between the need for absolute anatomical reduction and the desire for soft tissue preservation in analogues to the saying 'wash me but don't get me wet,' the slow progress towards improved soft tissue handling is evidenced by the way plating techniques are taught.

Heitemeyer et al⁵ developed the bridge plate fixed proximally and distally along the bone. Bridging plate technique decreases vascular disruption at the fracture site altering the load of the plate to provide pure tension forces on the plate.⁶

Kleining and Max⁷ developed the techniques of bridge plating osteosynthesis for severely comminuted femoral fractures and they stabilize the fractures with a plate, without opening the fractures area. The bridging plate osteosynthesis guarantees sufficient stability for early physiotherapy

In bridge plate technique above & below the fracture with the use of plates inserted deep to the muscles.⁸ Bridge plating is a technique of biological fixation as it does neither interfere with the fracture hematoma nor it causes

periosteal or soft tissue stripping from small fracture fragments. It aims at indirect reduction without further devascularization of bone pieces achieving perfect alignment rather than anatomical reduction of extra articular fractures, optimal rather than maximal internal fixation. This requires reduction and fixation techniques which do not cause additional damage to the vitality of the bone. The operative technique is comparatively easy and can perform within about one hour. The concept of biological osteosynthesis refers basically to the conservation of the vascularity of the bone during surgical intervention to ensure the continued vitality of the individual fragments and to achieve improved fracture healing. The main methods of treatment are indirect reduction and bridge plating.⁹

Bridge plating with its advantages in terms of vascularity and bone healing is a well established procedure today in the treatment of comminuted femoral fractures¹⁰

In our study fractures healing time was 19.6 weeks. This time varies in different studies from 16 to 23 weeks.

Table 5. Studies showing fracture healing

Studies	Time of healing
Heitemeyer et al (1987)	23 weeks
Wenda et al (1997)	16 weeks
Maini (1997)	17 weeks
Chrisovitsinos et al (1997) ¹¹	20 weeks
Present study	19.6 weeks

In our study there were some complications like wound infection, knee stiffness and shortening but there was no case of non-union or implant failure. There were 4 cases of wound infection both of the infections were in open fractures. At the end of 6 months, 4 patients could not flex their knees beyond 100 degrees. There were 6 cases with shortening of 1-3 cm.



Photo 3: X-ray showing pre-operative antero-posterior view



Photo-4 :X-ray showing immediate post-operative lateral view

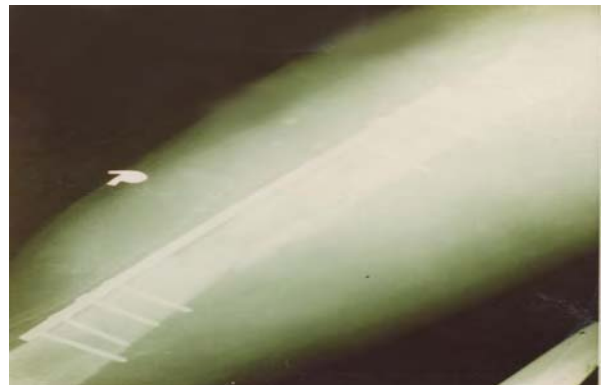


Photo5 : X-ray showing immediate post-operative antero-posterior view



Photo 6 : X-ray showing 12 weeks post-operative lateral view



Photo 7 : X-ray showing 12 weeks post-operative antero posterior view



Photo 8 : Postoperative X-ray showing (18 weeks) anticipated delayed union lateral view



Photo 9 : Postoperative X-ray showing (18 weeks) anticipated delayed union Antero posterior view

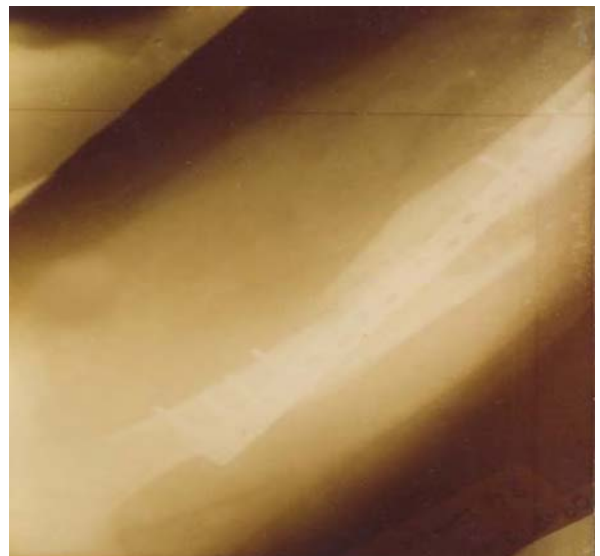


Photo 10: Postoperative X-ray showing (24 weeks) union after bone grafting lateral view



Photo 11: Postoperative X-ray showing (24 weeks) union after bone grafting antero posterior view.

Conclusion

Bridge plating of comminuted shaft of femur fracture is a very good procedure in our part of the world, where we have to work with the existing insufficient resources. This should be done even in teaching hospitals where all the facilities may be available.

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BURDEN OF TEENAGE PREGNANCIES IN HILLY AREA OF EASTERN REGION OF NEPAL

*Ram Bilakshan Sah, Kumar Gaurav, Dharani Dhar Baral,
Nilambar Jha and Paras Kumar Pokharel*

Abstract

Teenage pregnancy, which is detrimental to the health of mother and child, is a common public health problem worldwide. It is a problem that affects nearly every society- developed and developing alike. The objective of this study was to find out the prevalence of teenage pregnancy and its impact on birth outcome. The cross-sectional study was conducted among the residents of Dhankuta municipality where 246 households were taken as subjects. Chi-square test was applied to find out the significant difference between sociodemographic characteristics and outcome variable i.e. birth outcome & age of 1st pregnancy. About 34.6% of respondents were pregnant at below 20 years of age. The teenage pregnancies decrease as education level increases ($p < 0.001$). Furthermore, economic variable shows stronger association with teenage pregnancies ($p < 0.001$). Fetal complication was significantly higher among below 20 years of age (81%) than women with 20 years and above (19%). The proportion of low birth weight (< 2.5 kg) babies was also significantly higher in women with teenage pregnancy (78.3%) than women with 20 years and above (21.7%). We conclude that the problem of teenage pregnancy is common and has become a key public health concern for all. The teenage pregnancy was not favourable condition for baby outcome.

Keywords: Teenage pregnancies; Hilly area; Birth outcome; Nepal

Introduction

The adolescent period covers the age of 10-19 years.¹ Adolescent pregnancy continues to be a complex and challenging issue for families, health workers, educators, societies and governments, and adolescents themselves.² One of the important factors for the rapid population growth in the world is adolescent childbearing.³ United Nations also remarks that early child bearing is a high health risk for both mother and child.⁴

A significant and considerable number of women get married and bear child in their teenage in Nepal but they are not equally distributed across urban and rural areas and exact data are not available. Adolescents

comprise of 23% of 23 millions of Nepalese population.⁵ The median age at first marriage for ever married women in Nepal (age 15-49) is 16.6 years, which indicates that majority of newly married couples are adolescents.⁶

The children of teenage mothers are at greater risk of lower intellectual and academic achievement, health complications, social behavior problems and problems of self-control than are children of older mothers, primarily due to the effects of single parenthood, lower maternal education, and large family size. Teenage mothers have a higher incidence of low birth babies. These babies are usually associated with birth injuries, serious childhood illness and mental and physical disabilities. Birth weight is

strongly associated with infant mortality; mortality went on decreasing with better birth weight.⁷ Therefore, This study was designed to find out the prevalence of teenage pregnancy and its impact on birth outcome.

Material and methods

The cross-sectional study was conducted from 28th March to 10th April, 2013 among the residents of Dhankuta municipality in Eastern Nepal. Among 9 wards, the ward number 4 was randomly selected by lottery method in Dhankuta Municipality. To represent the women for 62% Teenage pregnancy (Alehagen SA et al in 2012) sample size calculated was 246. All the participants aged 15 to 49 years from the selected households were included in the study. Convenient purposive sampling technique was applied for data collection.

A written permission was taken from concerned authority and an informed verbal consent was taken from the participants of the study. Those families which were available after three visits and willing to give verbal consents were included in the study. Pretested semi-structured questionnaire was administered to the study subjects in the presence of investigator and face to face interview was conducted.

The collected data was entered in MS Excel 2000. The analysis was done by using statistical software SPSS (Statistical Package for Social Science) 17.0 version. Chi-square test was applied to find out the significant difference between sociodemographic characteristics and outcome variable i.e. birth outcome & age of 1st pregnancy. The probability of occurrence by chance is significant if $P < 0.05$ with 95% Confidence Interval.

Result

Table 1. Study population by different sociodemographic characteristics

Characteristics	Frequency	Percent
Age of 1 st pregnancy		
Below 20 years	85	34.6
20 years & above	161	65.4
Religion		
Hindu	227	92.3
Others (Buddhist, Christian)	19	7.7
Ethnicity		
Brahmin/ Chhetri	96	39.0
Janajati/ Kirati	125	50.8
Others (Dalit, Terai caste)	25	10.2
Education of wife		
Illiterate	39	15.9
Below SLC	99	40.2
SLC and above	108	43.9
Education of husband		
Illiterate	9	3.7
Below SLC	102	41.4
SLC and above	135	54.9
Economic status		
Below poverty line (< 1.25 US\$)	101	41.1
Above poverty line (\geq 1.25 US \$)	145	58.9
1 st pregnancy		
Planned	138	56.1
Unplanned	108	43.9
Total	246	100.0

About thirty five percent of women were pregnant at below 20 years of age (Teenage pregnancy) and nearly forty four percent were unplanned pregnancies. Study population showed high level of Janajati and Kirati ethnic group (50.8%) followed by Brahmin/Chhetri (39%), and Others including Dalit and Terai caste (10.2%). Regarding education of wife, almost forty four percent of the women had completed SLC and higher education, forty percent had below SLC and sixteen percent were still illiterate.

Table 2. Association between selected variables with age of 1st pregnancy

Characteristics	Below 20 years	20 years & above	Total	P- value
Religion				
Hindu	78 (34.4)	149 (65.6)	227	0.827
Others (Buddhist, Christian)	7 (36.8)	12 (63.2)	19	
Ethnicity				
Brahmin/ Chhetri	26 (27.1)	70 (72.9)	96	0.016
Janajati/Kirati	46 (36.8)	79 (63.2)	125	
Others (Dalit, Terai caste)	13 (52.0)	12 (48.0)	25	
Education of wife				
Illiterate	28 (71.8)	11 (28.2)	39	<0.001
Below SLC	34 (34.3)	65 (65.7)	99	
SLC and above	23 (21.3)	85 (78.7)	108	
Education of husband				
Illiterate	6 (66.7)	3 (33.3)	9	<0.001
Below SLC	49 (48.0)	53 (52.0)	102	
SLC and above	30 (22.2)	105 (77.8)	135	
Economic status				
Below poverty line (<1.25 US\$)	77 (76.2)	24 (23.8)	101	<0.001
Above poverty line (≥1.25 US \$)	8 (5.5)	137 (94.5)	145	
1 st pregnancy				
Planned	35 (25.4)	103 (74.6)	138	<0.001
Unplanned	50 (46.3)	58 (53.7)	108	
Use contraception before 1 st pregnancy				
Condom	4 (36.4)	7 (63.6)	11	0.848
Oral pills	3 (37.5)	5 (62.5)	8	
Depo	78 (34.4)	149 (65.6)	227	
Total	85 (34.6)	161 (65.4)	246	

Table 2 shows that women with Dalit and Terai caste are more likely to have teenage pregnancy compared to women with other ethnic groups (P<0.05). The relationship between teenage pregnancy and highest

education level of women shows that the teenage pregnancies decreases as education level increases (p<0.001). Furthermore, economic variable shows stronger association with teenage pregnancies (p<0.001).

Table 3. Association between birth outcome with age of 1st pregnancy (N=246)

Characteristics	Age of 1 st pregnancy		Total	P-value
	<20 years	≥20 years		
Outcome of 1 st pregnancy				
Live	68 (31.0)	151 (69.0)	219	<0.001
Others (Abortion, still birth)	3 (27.3)	8 (72.7)	11	
Presently pregnant	14 (87.5)	2 (12.5)	16	
Fetal complications				
Yes	17 (81.0)	4 (19.0)	21	<0.001
No	51 (25.8)	147 (74.2)	198	
Birth weight of 1 st baby				
<2.5 kg	18 (78.3)	5 (21.7)	23	<0.001
2.5-3.5 kg	46 (26.3)	129 (73.7)	175	
>3.5 kg	4 (19.0)	17 (81.0)	21	

Fetal complications including birth asphyxia, jaundice, febrile illness and congenital malformations was also higher among them with teenage pregnancy ($p < 0.001$). The proportion of low birth weight (< 2.5 kg) babies was higher in women with early age pregnancy ($p < 0.001$).

Discussion

Globally, 16 million adolescents give birth each year covering 11% of births worldwide. Ninety five percent of these births occur in low and middle income countries.⁸ The data from 51 countries (from mid 1990s to early 2000) indicated that 10% girls are already mothers by the age of 16.⁸ Teenage pregnancy is high risk situation for both mother and child because of their vulnerability to many health challenges.⁹ In Nepal, still births and preterm delivery was higher in teenage deliveries compared to births in mature mothers.¹⁰

This study showed the prevalence of teenage pregnancy (36.4%) which was similar finding reported in Bangladesh 35%.¹¹ But NDHS (2011) reported that only 17% of teenage girls had already given birth or were pregnant with their first child.¹² Similarly the prevalence of teenage pregnancy in Sri Lanka (8%)¹³, in India (21%)¹¹ which were lower than our study.

The relationship between teenage pregnancy and highest education level of women showed that the teenage pregnancies decreases as education level increases ($p < 0.001$). NDHS (2011) also showed that women with SLC or higher education on average begin sexual intercourse four years later than those with no education. Similarly, fertility is also inversely proportional to education level i.e. 3.7 births among those with no education and 1.7 births among women with SLC or higher.¹² Education plays crucial role in guiding and

bringing change in adolescents' behavior. Higher educational attainment, also results in the greater use of Sexual and Reproductive Health (SRH) services, awareness levels. It develops self confidence and decision making power in adolescent girls and helping to delay sexual activities and age of marriages. Educated women can plan for the future, use contraceptives properly, and develop self-esteem.¹⁴

In this study the economic variable showed stronger association with teenage pregnancies ($p < 0.001$). Evidence from Nepal showed that adolescents from the highest wealth quartile begin sexual intercourse at least two years later than lowest quartile (19.3yrs and 17.1yrs resp.).¹² Pregnant adolescents are more likely to interrupt education leading less job opportunities (WHO, 2008). The major reasons of interruption to education include the heavy responsibilities of motherhood, a lack of partner, and family support. Inadequate qualifications create difficulties of entering into labor markets and well-paid jobs. Therefore, teenage pregnancy can lead to economic vulnerability. Most of the adolescent mothers in Nepal are living with a high degree of dependence.¹⁵

Almost 90% of adolescent girls have an unwanted pregnancy (UN, 2011)¹⁶ which is higher than our study (46.3%) of adolescent girls have unplanned pregnancy. Evidences suggests that unwanted teenage pregnancy is associated with violence and sexual coercion.¹⁷ This is due to economical vulnerability and male reliance.¹⁸ It is estimated that one out of five pregnant adolescent is suffering from physical abuse worldwide.^{18,19}

This study showed 36.4% of adolescent girl use condom which is lower than the study conducted in the border area of Nepal in which 65% of adolescent girl used condom

(Ghubaju, 2002). Worldwide survey on 10,000 teenagers signified, many adolescent girls loosed their virginity in 15 years. Fifty two percent of surveyed teen girls reported they had unprotected sex, and 24% of adolescent having sexually transmitted infections reported of still having unprotected sex.²⁰ Similarly, adolescent do not choose to use a condom with the partners whom they perceive 'clean' because use of it implies a lack of trust and even they do not feel at risk. It could also be interpreted as a sign of having a disease.²¹ A study in young factory worker reported 95% of respondent not using condom. Not feeling pleasurable, unavailability or partners who are not willing to use them may be the main reasons for not using it.²²

This study showed fetal complications including birth asphyxia, jaundice, febrile illness and congenital malformations was also higher among them with teenage pregnancy ($p < 0.001$). Newborns from teenage pregnancy suffer from many independent adverse effects i.e. fetal distress, birth asphyxia, low birth weight (LBW).²³ These increase the likelihood of future health problems and the risk of death of baby.²⁴ Similarly, it is reported that every four hours, 11 newborn babies die in Nepal, and most of these deaths occur when the mother is an adolescent (DoHS, 2011). Babies born from adolescent mothers are at 50% higher risk of stillbirth, being premature, and dying during the first month compared to babies from mature mother.¹⁵

The proportion of low birth weight (< 2.5 kg) babies was higher in women with early age pregnancy ($p < 0.001$). The study conducted by Chen XK et al also showed that young maternal age is associated with increased risk of low birth weight.²⁵ Low birth weight makes a child vulnerable to many diseases (e.g. diabetes, heart disease in near future)

and more susceptible to death within one month. Additionally, it can lead to poor health in the future.²⁶ Evidence showed that babies from adolescent mothers surveyed later at age 14 showed disturbed psychological behavior, poor reading ability and school performance compared to mature mother children.²⁷

Conclusion

The problem of teenage pregnancy is common and has become a key public health concern for all. Lack of money and education level of men and women was found to be major problem for teenage pregnancy. The result of birth outcome showed that teenage pregnancy was not favourable condition for baby outcome. In order to reduce the teenage pregnancy; adolescents, their parents and community should be made more aware of the negative health, social and economic consequences of it. Such awareness could be created through social mobilization, information dissemination, sex education and communication campaigns. Each and every aspects of teenage pregnancy should ideally be dealt with carefully and sensibly to reduce the occurrence, complications and societal burden of this.

Acknowledgement

We would like to thank to MBBS (2010 Batch) students who helped us during study period. Our gratitude and sincere thank to participants of Dhankuta Municipality without their support study was not possible and the person who helped us in every way during study period.

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PRELIMINARY STUDY IN CHILDREN WITH AUTISTIC SAVANT SYNDROME

Vijay Kumar Sah

Abstract

Background: Savant syndrome, characterized by remarkable islands of mental ability in otherwise mentally handicapped persons, may occur in autistic as well as non autistic individuals. Overall, approximately 10% of autistic persons exhibit savant abilities. Savant skills are typically confined to five areas: art, music, calendar calculating, mathematics and mechanical/spatial skills.

Methods: Data taken from the third affiliated hospital of Sun Yat- Sen university from December 09, 2008 to September 08, 2009. We have analyzed 885 cases, among them 725 were with autistic disorder and 160 were of Mental retardation. Total subjects enrolled were altogether 48; Male 45, Female 3 with mean and SD of age 7.08 ± 2.31 years. Number of savant skills in children group includes 11 Autism, 10 HFA, 26 AS, 1 MR.

Results: Approximately one in thirteen (7%) of children with autistic disorder had savant skills in our study. Approximately less than 1% of children with developmental disability, mental retardation had savant skills in our study. Overall, many more males showed some form of savant skill. Artistic skill is one of the most common savant skills seen in autistic children. The socioeconomic status of the parents of autistic children was relatively high.

Conclusions: We thus conclude that autism (or autistic traits) and savant skills are inextricably linked and we should therefore look to autism in our quest to solve the puzzle of the savant syndrome.

Key words: *Autistic, Savant syndrome, talent, intelligence.*

Background

The term “idiot-savant” was first used by Down (1887) to describe intellectually impaired individuals with contrasting outstanding abilities¹. Savant syndrome, characterized by remarkable islands of mental ability in otherwise mentally handicapped persons, may occur in autistic as well as non autistic individuals. Autism spectrum disorders (ASD) are neurodevelopmental disorders defined by deficits in social reciprocity, communication, and by unusual restricted, repetitive behaviors. Overall,

approximately 10% of autistic persons exhibit savant abilities; roughly 50% of those with savant syndrome have autism, and the remaining 50% have other forms of developmental disability. Savant skills are typically confined to five areas: art, music, calendar calculating, mathematics and mechanical/spatial skills.

Methods

This is a Retrospective study of Savant skills in autistic children. Patients enrolled in this study include patients seen in outpatient department of child developmental and

behavioral division, the third affiliated hospital of Sun Yat- Sen university from December 09, 2008 to September 08, 2009. Of all the 885 cases, 725 patients were with autistic disorder whereas 160 had mental retardation. Of all those autistic and mental retarded children, 48 subjects had savant skills, with mean and SD of age 7.08 ± 2.31 years. Children with less than two and half years old were not included in our study.

The most common savant abilities are called *Splinter skills*: These include behaviors such as obsessive preoccupation with, and memorization of music and sports trivia, license plate number, map, historical facts etc.

Talented savants are those persons in whom musical, artistic, mathematical or other special skills are more prominent and highly honed, usually within an area of single expertise, and are very conspicuous when viewed against their overall handicap.

Prodigious savant is reserved for those very rare persons in this already uncommon condition where the special skills or ability is so outstanding.

Specific areas of Savant skill - only about **five** general areas of expertise: Music, Artistic talent, Lightning calculating or other mathematical skills, Mechanical ability, Calendar calculating, Other Skills:-unusual language (polyglot) skills, outstanding knowledge in specific fields such as statistics, map, traffic route map, history or navigation, to name a few.

The collected data were first recorded in Microsoft Excel 2007. With the help of Microsoft Excel 2007, different diagrams were drawn to give the picture of the proportion of autistic population, sex difference, and educational background, proportion of savant skills as well as

socioeconomic status of their parents. SPSS 16.0 (SPSS Inc., Chicago, IL) was used during the analysis. All the variables are expressed as mean± standard deviation.

Results:

1. Characteristics of autistic child

We have analyzed 885 cases, among them 725 were with autistic disorder (Autism 542, HFA 63, AS 120) and 160 were of Mental retardation. Number of savant skills in children group includes 11 Autism, 10 HFA, 26 AS, 1 MR; that is one in thirteen (7%) of children with autistic disorder had savant skills whereas less than 1% of children with developmental disability, mental retardation had those skills in our study as shown in fig 1 and table 1.

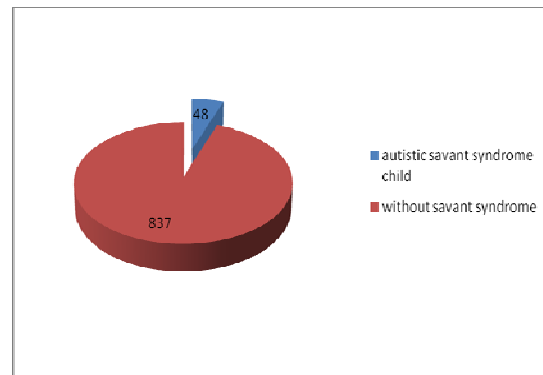


Fig.1 Pie chart showing the proportion of autistic savant skills children in our study

Disease of savant children	Number
Autism	11
HFA	10
AS	26
MR	1

Table 1: Number of savant skills children group

Out of total 48 cases; 45 were males and 3 females, with male: female ratio for cognitive skill was 15: 1

Education obtained by savant skills children group includes, 34 primary school (70.83%), 13 kindergarten (27.08%), 1 middle school (2.08%) as shown in fig 2.

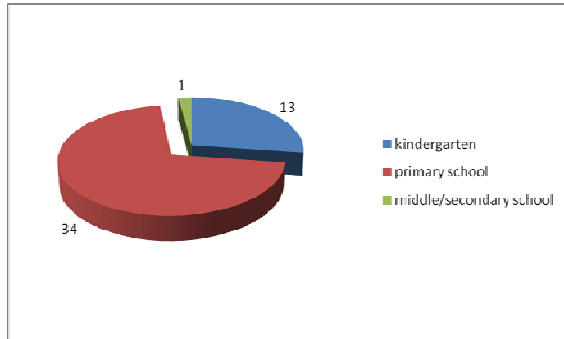


Fig.2: Education obtained by savant skills children in this study

2. Savant skills of children reported as by parents and teacher:

Of those 48 savant skilled child, parent reported 45 (93.75%) of their children has those skills compared to teacher who only reported 32 (66.66%) cases had savant skills

3. Number of Savant skills found in children in our study:

In total, 48 individual enrolled in this study were having one or more savant skills. There were 27 artistic, 20 mechanical abilities, 13 music, 12 lightning calculating, 12 mathematical skills, 2 calendar calculation skills and other skills(8 license plates number, 5 history, 1 sport, 16 map, 13 language skills) as shown in fig 3.

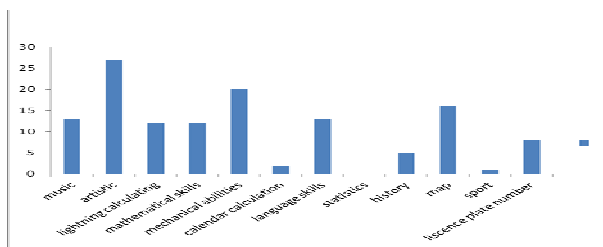


Fig. 3: Savant skills of the children in our study

Several individuals have multiple savant skills. Some common combinations of two different skills are artistic and mechanical abilities found in 10 cases, artistic and language skills in 8 cases, music and artistic in 7, music and mechanical abilities in 7, artistic and lightning calculation in 7, artistic and map in 7, mechanical abilities and language skills in 7 cases etc which is shown in fig 4.

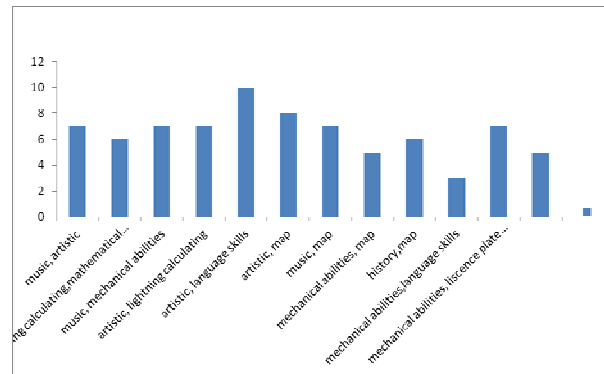


Fig.4: Diagram showing some common savant skills combination

4. The relation of autistic savant skills children with respect to their parents Socioeconomic Status (SES)

Parent educational status of university level or higher in autism children was 54.5% but in case of HFA children was 80% whereas 88.5% of AS children’s parent had studied university or more than that which is shown in fig 5.

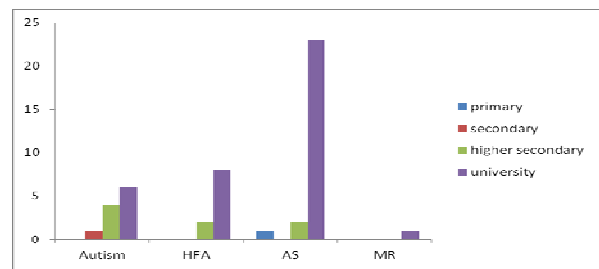


Fig. 5: Children group and their parent education

While concerning about the economic status; 81.8% of autism children, 90% of HFA children and 84.6% of AS children’s parents

had good or very good economy status as shown in fig 6.

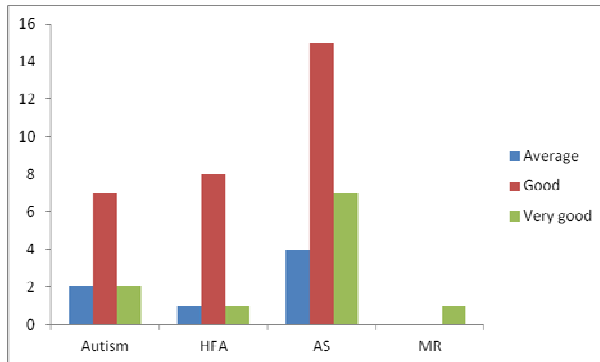


Fig. 6: Family economy in different children groups

5.1 Distribution of Savant skills children in Autistic population

Approximately, one in thirteen (7%) of children with autistic disorder had savant skills and less than 1% of children with developmental disability, mental retardation had savant skills in our study. Whereas similar study done outside China showed that approximately one in ten (10%) of persons with autistic disorder (i.e., Autism, HFA, AS) have some savant skills. In other forms of developmental disability, mental retardation or brain injury, savant skills occur in less than 1% of such persons (approximately 1: 2000 in persons with mental retardation)^{2,3}. It can also not be neglected that as the study is carried out in different geographic regions and in different races, there can be difference in development of these skills.

SEX DIFFERENCES: Greater number of autistic males had savant skills compared to female in our study, male: female ratio being 15: 1. Similar study done outside China also showed four to six times increased ratio in males than females. Research by Geschwind and Galaburda, demonstrated in the developing human fetus the left hemisphere of the brain always completes its development later than the right hemisphere resulting in

longer duration of exposure of left hemisphere compared to the right for any kind of brain insult or injury. Such damage can be caused by circulating testosterone, which in male fetus, reaches very high levels, and can be neurotoxic too. This testosterone mediated developmental injury, causing left hemisphere brain damage before birth in males may account in some other forms of CNS injury such as stuttering, dyslexia, hyperactivity, other learning disabilities and autistic disorder itself².

5.2 Savant skills found in children in our study

In our study, 48(6.62%) individual enrolled were having one or more savant skills. Of those with reported skills, the most common were 27 artistic(56.26%), 20 mechanical abilities(41.66%), 13 music(27.08%), 12 lightning calculating (25%), 12 mathematical skills (25%), 2 calendar calculation skills (4.16%) and other skills (8 license plates number, 5 history, 1 sport, 16 map, 13 language skills). Higher proportion of artistic skills seen may be due to the intense focus on and ability to remember visual detail in these children. Anatomic substrate for artistic savant syndrome may involve loss of function in the left temporal lobe with enhanced function of the posterior neocortex⁴.

5.2.1 Neurologically mediated multi- factor model of Savant skills

Brain-based factors include compensatory right-hemisphere functioning after left-hemisphere damage and reliance upon lower level procedural memory due to damage to higher level (e.g., semantic) memory circuitry³.

Brink notes that the left brain generally governs the use of language, mathematical computation and other orderly conceptual. The right brain is generally superior in tasks involving spatial relationships, activities

involving visualization and movement and skills such as mechanical ability⁵. Mechanical abilities seen may be due to the right brain is generally superior in tasks involving spatial relationships, activities involving visualization and movement⁵. He notes that in the case of Mr. A., performance on test of language skills was very low, whereas scores in testing of mechanical ability- right brain function- were very high⁶. Musical ability was the most frequently reported skill followed by memory. More recent data further address the question of unexploited musical potential in children with autism. In this study (Heaton et al. 2008a), high- and low-functioning children with autism completed tests of pitch discrimination and memory⁷. Miller et al. (1998) conclude that 'loss of function in the left anterior temporal lobe may lead to "paradoxical functional facilitation" of musical skills⁸.

5.3 Savant skills of children reported by parents and teachers

Among 48 savant skills child, 45(93.75%) were informed as savant skills by parents and only 32(66.66%) were informed as savant skills by teachers. The higher proportion reported by the parents can be due to the fact that parents spend more time with their children compared to the teachers. Teachers look the children in mass and they can often neglect those talents shown by the child during the specific period in the school whereas parents often take care of any important actions taken by their child.

5.4 Study of autistic savant skills children with respect to their parents Socioeconomic Status (SES)

Parent Educational Status: Education status of the parents with university level in autism children was 54.5%. In case of HFA children, parent education with university level was 80%. But in case of AS children,

parent education with university level was even higher (88.5%). It may be due to environmental components that do play a factor, genetic components, and opportunities etc.

Parent Economy Status: 81.8% of parents of autism children had good or very good economy status. In case of HFA children, 90% of their parents had good or very good economy status. Whereas, 84.6% of parents of AS had good or very good economy status.

Maenner M, Arneson CL, Durkin Ms has reported that ,using educational attainment as an indicator of socioeconomic status, autism spectrum disorder prevalence increased from 2.6 per 1000 in the lowest to 6.8 per 1000 in the highest education quintile. The prevalence ratio for the highest to lowest education quintile was 2.6:1 (95% confidence interval: 1.6, 4.5). Using median household income as an indicator of socioeconomic status produced similar results. Autism spectrum disorder prevalence is positively associated with socioeconomic status based on population-based surveillance in Wisconsin. (Maenner M, Arneson CL, Durkin Ms). Department of Population Health Sciences, University of Wisconsin School of Medicine and Public Health, Madison, WI 53726, USA.”⁹. Second, it has been suggested that the tendency for an association between higher SES and autism might be the result of professional perception as it relates to the disability. For instance, in a study conducted by Cuccaro et al. (1996), it was found that children from families of higher SES were associated with a greater likelihood of a diagnosis of autistic disorder while children from families of lower SES were having their developmental and behavioral abnormalities characterized as cultural deprivation¹⁰.

Conclusion

The socioeconomic status of the parents of autistic children was found to be relatively high and autistic savant skills are more frequently seen in male gender, with artistic skill being one of the most common savant skills seen in autistic children. These skilled children need as much training and encouragement as is given to any individual with other groups so that autistic population can help in detailed processing, mathematics, engineering, design and so on.

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STUDY ON RISK TAKING BEHAVIOR TO HIV/AIDS AMONG INJECTING DRUG USER'S IN A EASTER REGION OF NEPAL

Bimala Bhatta, Sashi DevShah, Nabaraj Koirala

Abstract

Introduction: Drug abuse is the Universal Problem and Nepal is not the exception. Different study and report have reported high prevalence of HIV/AIDS among the IDUs in Nepal. According to the estimated data, there are eighty thousands drug addicts in Nepal and 50 % of them inject drugs through syringe. In Morang district, there are 1316 reported IDUs and 5000 to 7000 estimated IDUs.

Objectives: To assess the risk taking behavior among IDUs with respect to needle syringe exchange and unprotected sex.

Methodology: Cross sectional study design was applied to study the risk taking behavior among IDUs users in eastern region of Nepal. A non-probability, snowballing sampling technique was adopted. SPSS and Epi-Info was used to analyze the data of the study.

Results: Majority of injecting drug users in eastern region were from the age group 21-30 years (62.7 %), unmarried (64.9 %) and living in nuclear family (80 %). Despite of the fact that most of the IDUs were unmarried most of them were sexually active (72.7 %). The study revealed that condom use during sexual intercourse was high (87.5 %) the consistent and regular use was low (57.5%). Sharing of syringe and reuse of needle was high among the IDUs i.e. 40 % of the respondent. In general the study had revealed that the harm reduction approaches among IDUs were low.

Conclusion: The findings suggest that the majority of injecting drug users in eastern region were from the age group 21-30 years, unmarried and living in nuclear family. The study had further highlight that unsafe sex, sharing of syringe and needle and improper cleaning of needle and syringes before sharing is indication of unsafe behavior practices by IDUs. Finally, the study highlighted statistically significant relationship between HIV/AIDS knowledge and uses of condom during sexual intercourse and high rate of syringe sharing among married respondents.

Key Words: IDUs, Unsafe, HIV & AIDS, Needle/Syringe, Risk Behavior, Drugs etc.

INTRODUCTION

Drug abuse is the universal problem affecting all of the developed and developing countries. Since 1980, there has been a major changes in trends and patterns of drug use globally, i.e. global increase in the population, types of use

and way of taking drugs. The injecting drug has become a major transmission route of Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) ¹. There is no country in the world without the problem of drug abuse. The drug talking route has been changed dramatically.

Parental route is replacing the traditional way of talking drug in Nepal as in the rest of the world. Later the drug use problem has been intensified by the additional hazard of condition such as Sexually Transmitted Diseases (STD) and HIV/AIDS ¹.

World drug report 2008 estimates 200 million (3 % of the global population) & 5 % of the population aged 15-64 years are drug addicts ². Worldwide, 11 % of AIDS cases are estimated to be due to drug injecting with dirty needles- particularly heroin addicts. By 2008, in injection of illicit drug has been reported from 121 countries and by 2006 HIV infection among drug injectors had been reported in 82 different countries worldwide ². According to the estimated data, there are eighty thousands drug addicts in Nepal and 50 % of them inject drugs through syringe ³. In Morang district, there are 1316 reported IDUs and 5000 to 7000 estimated IDUs ⁴. The estimated numbers of drug users in Nepal reflect an steep increased i.e. 1987 cases in 1978, 25000 cases in 2005, 60000 cases in 2007 and 80000 cases in 2009 ⁵.

Transmission of HIV among IDUs occurs primarily through behavior like needle/syringe exchange/sharing and practices of unsafe sex. Frequency and magnitude of exposure to infected blood increases the risk of HIV transmission. The frequency of needle sharing, the number of partners with whom needles are shared, the probability that those partners are HIV- infected and the manner in which sharing occurs, all influence HIV risk.

OBJECTIVES: To assess the risk talking behavior among IDUs with respect to needle syringe exchange and unprotected sex.

METHODOLOGY: Cross sectional study design was applied to study the risk talking behavior among IDUs users in eastern region of Nepal during the period of Sept, 2009 to Feb, 2010. A non-probability, snowball sampling technique was adopted where the

firstcontact points being the key workers. The sample were approached from a variety of settings, like drop in center, local tea shops, bhatti (small alcohol shop), corner of quite areas, under the chautara, back of the street and interviewees homes. Considering a total of 1316 reported cases in Morang district (transit), 34.4 % HIV prevalence among IDUs and 8 % desired precision and 95 % confidence interval a total of 135 IDUs were selected as total sample size.

The collected data were edited; coded and categorized, then master chart was prepared in the electronic data sheet in Microsoft Excel 2007. Then the excel data file was transferred to SPSS 11.5 version and Epi-Info for analysis. Microsoft word 2007 was used for tabulation and graphical representation of the data.

Results

The majority of the respondents were male i.e. 97.8 % and the majority (62.7 %) were from the age group 21-30 years. Only one in ten of the respondents were illiterate (10.4 %) and 58.4 % of the respondents were with secondary or higher education.

Characteristics	Frequency (n=135)	Percentage
Sex		
Male	132	97.8
Female	3	2.2
Age		
11-20 years	15	10.4
21-30 years	84	62.7
31-40 years	35	26.1
40+ years	1	0.7
Education		
Illiterate	8	5.9
Literate	6	4.4
Primary	42	31.1
Secondary and above	79	58.4
Marital Status		
Single	87	64.9
Married	39	29.1
Divorced	9	6

Table 1 : Socio demographic characteristics of respondents

Similarly the table 1 revealed that the majority of the respondents were single or unmarried followed by 29.1 % married and 6 % being divorced.

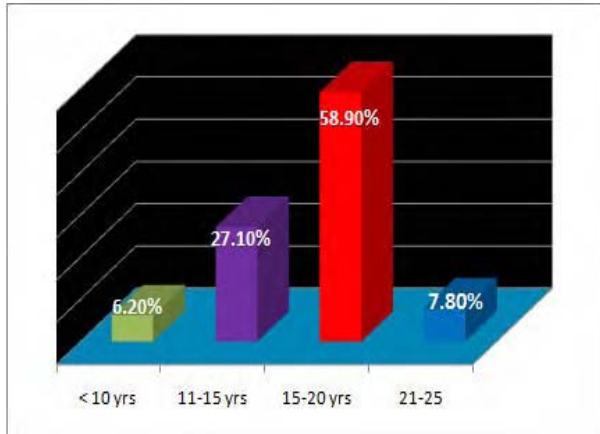


Figure 1 Age at first start of drugs

The figure 1 revealed that the most of the respondents were started talking drug at teenage i.e. 59 % of them started talking drug at the age of 15-20 years. Very surprisingly, 6.2 % of the respondents were started talking drugs as early as less than 10 years of age. In response to another question asked regarding the first contact with drug almost all (93.8 %) said those friends are the first contact. Similarly the study revealed that more than 50 % of the IDUs first started talking drug as curiosity and almost 25 % as peer pressure to take drug.

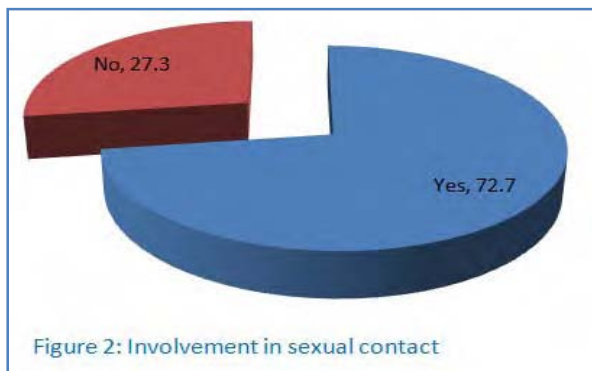


Figure 2: Involvement in sexual contact

The figure 2 illustrates the sexual behavior of the respondents. It is clear that most of the respondents (72.7 %) were involved in sexual contact. Among them 56.5 % were sometime

involved in sex where as 43.5 % of the respondent were regularly involved in sex.

In response to the question asked on the frequency of sexual contact during last seven days majority of the respondents (63.4 %) had made sexual contact 1-5 times. Similarly 16.9 %, 8.5 %, 7.0 % and 4.2 % replied more than 20 times, 6-10 times, 11-15 times and 15-20 times respectively during the last week. Ever condom use during sexual contact was found to be among 87.5 % of respondent, however and consistence and regular use of condom was only in 57.5 % of respondent.

Almost one fifth (21.1 %) of the respondent were reported to share syringe while talking drug. Similarly almost 19 % of the respondents were reusing the used needle while taking drugs. Unexpectedly, almost 40 % of the respondents were found reusing needle and syringe while talking drug.

In response to the question asked on why they were sharing syringe, almost 17 % of respondents replied due to lack of time and money. Similarly, the reason behind the reuse of needle was to prevent diseases among 18.5 % of the respondents. Among those who share/reuse syringe and needle 86.8 % of the respondent found cleaning them before sharing/reuse. Notable, only 38.5 % of them who clean the syringe and needle before reuse/sharing found to be used perfect

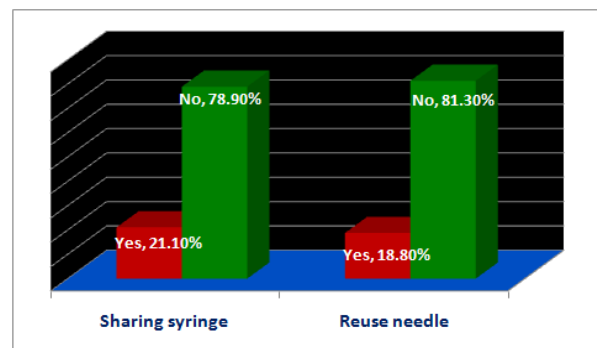


Figure 3: Practice of sharing syringe & needle

cleaning agents (either bleaching or spirit).

The table 2 revealed the association between risk behavior and knowledge of HIV/AIDS among the respondents. It is clear that the

knowledge of HIV/AIDS was higher (78.3 %) among those who share syringe which is statistically insignificant ($p=0.453$).

Similarly the knowledge of HIV/AIDS was

RISK BEHAVIOR	KNOWLEDGE OF HIV/AIDS (%)	TOTAL	P-VALUE
Sharing of Syringe			
No	21.7	28	0.453
Yes	78.3	107	
Use of condom			
No	4.9	14	0.01
Yes	95.1	121	
Sexual contact			
No	29.2	15	0.457
Yes	70.8	120	

Table 2: Association between risk behavior and knowledge of HIV/AIDS

high (95 %) among the respondent who use condom during sex and the result is statistically significant ($p= 0.01$). Similarly table 3 revealed that neither family stress nor peer pressure is strongly associated with sharing of syringe. Notable the sharing of syringe was high (70.8%) among those respondent who are married and the association seems statistically significant with p value 0.025.

CONDITION	SHARE SYRINGE %	TOTAL	P-VALUE
Family Stress			
No	82.1	106	0.453
Yes	17.9	29	
Peer pressure			
No	71.4	100	0.72
Yes	28.6	35	
Marital Status			
Single	29.2	15	0.025
Married	70.8	120	
Divorced	10.7	8	

Table 3: Association between family and social condition with risk behavior

Discussion

The study revealed that most of the IDUs in eastern region of Nepal are male and only 2.2 % of them were female, this might be due to socio-cultural setting in Nepal that the female IDUs are hidden in the community. Different study done in Nepal had revealed that there are almost 5 % of the IDUs were female. Similarly the high prevalence (62.7 %) of IDUs in the age group 21-30 years suggests that the problem of IDUs is in the economically active population in the country. The majorities of the respondent were literate and hence demand IDUs education in the formal curriculum to develop healthy lifestyle without drugs⁶.

The healthy family kinship and socio-cultural tie up in contest to Nepal had shown positive influence on developing safe behavior and practices among the adolescent and youth. This study had also found that the drug use was high in nuclear family (59.7%) and for unmarried (64.9 %) ⁷.

A study done by NCASC (1997) showed that the 40.5 % of IDUs had their first sexual experience with FSWs. This study had also reflected that the 17.9 % of IDUs had sexual experience with FSWs .Similar to the above study, this study had revealed that 72.7 % of IDUs were sexually active and among them 43.5 % of the respondent do have regular sexual contact while 56.5 % of the respondent do have occasional sexual contact and most of the respondent had 1-5 times sexual contact within the last one week preceding the survey. In this study among those who were sexual active 87.5 % of the respondent had ever used condom during sexual intercourse, however regular use of condom among those sexually active IDUs was poor i.e. 57.5 % ^{8,9}.

Similarly this study revealed that 21.1 % of the respondents had shared syringe for taking drugs while 18.8 % of the respondents were reusing the used needle while talking drugs. The study done by NCASC in 2003 found 24 % of the IDUs in Pokhara reported sharing the used needles/syringe which is higher than finding of this study. This didn't rollout the needs of public health intervention on harm reduction. The reason behind sharing syringe/needle as identified by this study was lack of money (6.7 %), lack of time (10.4%) and unavailability (3.7 %) ^{10,11}.

A report of NCASC (2007) suggests that most of the IDUs clean needles/syringe before use was not satisfactory, uses of bleach and water was 30.7 %. Significant numbers of IDUs (37.5 %) were using their own methods i.e. saliva and urine as cleaning agents. Similar to the above finding this study had found that 31.1 % of the respondent who share and reuse syringe and needle uses bleaching while

majority of the respondent uses own method like hot water (10.4%) and urine (5.2%) etc¹². The cross tabulation of knowledge of HIV/AIDS and the risk behavior to HIV/AIDS revealed that the knowledge of HIV/AIDS was high among those who share syringe (78.3 %), who are sexually active (70.8%) and who uses condom during sexual intercourse (95.1%). However, knowledge of HIV/AIDS and sharing of syringe and sexual contact was statistically insignificant and knowledge of HIV/AIDS and use of condom was statistically significant¹³. Similarly the associations of sharing of syringe with the condition of stress in the family and peer pressure were statistically insignificant. Notably the association of sharing of syringe and marital status was statistically significant ($p=0.025$) with 70.8 % of the married respondents sharing syringe while talking drug¹⁴.

Conclusion

Based on the objectives of the study, the derived finding suggest that the majority of injecting drug users in eastern region were from the age group 21-30 years, unmarried and living in nuclear family. Even though most of the respondents were literate the dropout rate from school after the lower secondary and secondary level was high. Despite of the fact that most of the IDUs were unmarried most of them were sexually active. Although the condom use during sexual intercourse was high the consistent and regular use was notable low. The study had further highlight that unsafe sex, sharing of syringe and needle and improper cleaning of needle and syringes before sharing is indication of unsafe behavior practices by

IDUs in eastern region of Nepal in spite of notably good awareness level. Furthermore, the study highlighted statistically significant relationship between HIV/AIDS knowledge and uses of condom during sexual intercourse and high rate of syringe sharing among married respondents.

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CLINICAL PROFILE OF PATIENTS WITH EPILEPSY

Dilli Ram Kafle and Krishna Kumar Oli

Abstract

Epilepsy is a common and diverse disorder with many different causes. Outcomes are varied with 60—70% of newly diagnosed people rapidly entering remission after starting treatment and 20—30% developing a drug-resistant epilepsy with consequent clinical and psychosocial distress. It is a Descriptive Cross-sectional study which was conducted in Tribhuvan University Teaching Hospital from January 2013 to January 2014. A total of 150 patients participated in the study. There was statistically significant association between number of seizures before starting medication and the frequency of seizure after starting medication ($p < 0.001$).

Key words: *Neurocysticercosis, Epilepsy*

Introduction

Epilepsy is a common and diverse disorder with many different causes. Outcomes are varied with 60—70% of newly diagnosed people rapidly entering remission after starting treatment, and 20—30% developing a drug-resistant epilepsy with consequent clinical and psychosocial distress.¹

About one third of patients with a first unprovoked seizure will have further seizures within five years, and about three quarters of those with two or three unprovoked seizures have further seizures within four years.²

Among 50 million people with epilepsy worldwide, 90% of them are found in developing Countries³ and 90% of these patients are not receiving adequate treatment. They could live normal lives if treated. This huge treatment gap may be due to the limited knowledge, poverty, cultural beliefs, stigma, poor health delivery infrastructure like inadequate supplies of antiepileptic drugs, and shortage of trained health care workers. The prevalence and incidence of epilepsy in Asia is similar to the West but reversible etiologies such as head trauma, infections, stroke, obstetric care are probably more important in Asia.⁴ Epilepsy knows no geographic, social,

or racial boundaries and occurs in men and women and affects all ages, but is more frequently diagnosed in infancy, adolescence, and old age. Nepal is one of the poorest countries in the world and it is not uncommon to see huge untreated epilepsy patients in our country. The prevalence rate of epilepsy in Nepal is 7.3 per 1000 population with the treatment gap of over 80%.⁵ People with low socioeconomic status mostly living in the rural areas are found to be more affected.⁶ Studies have shown that neurocysticercosis and calcified lesions are the commonest radiological findings.^{7, 8} People suffering from epilepsy in our country do not have good quality of life because of their poor epilepsy control.

The present study was undertaken to study clinical profile of patients with epilepsy.

Methodology

It is a Descriptive Cross-sectional study which was conducted in Tribhuvan University Teaching Hospital from January 2013 to January 2014.

Inclusion Criteria

All the patients attending to neurology outpatient department and those patients

admitted to neurology ward and ICU with recurrent seizure.

Exclusion Criteria

Patients presenting with a history of single seizure ,Patients presenting with a history of multiple seizures within 24 hours without past history of seizure and those who refused to participate in the study.

Statistical Analysis

Data were entered on the computer by using the SPSS Statistical Software (Version 16; SPSS; Chicago, IL) and were analyzed on the same software. Wherever applicable, the data were presented using both the tabular method and descriptive statistics. The strength of associations had been estimated by linear regression analysis and t- test which were used as appropriate. P value of less than 0.05 was considered statistically significant.

Result

The demographic profile of the patients and the clinical characteristics of their seizure are presented in the following table 1.

Table 1. Demographic profile of the study population Baseline Data (n=150)

Men	76 (50.7%)
Women	74 (49.3%)
Age of patients(Year)	30±15.36
Seizure type (Focal+ secondarily generalized)	44
Generalized	106
Age at first seizure (Year)	47±17
Frequency of seizure(Per Year)	80.34±162
Duration of seizure before starting treatment(Year)	2.26±3.5 year
Number of seizures before starting treatment	24±32.92
Family history of epilepsy	14 (9.3%)
History of status epilepticus	24 (15.7%)
History of febrile	12 (7.8%)

convulsion	
History of neurological illness	36 (24%)
History of aura	32 (21.3%)
Documented precipitant for seizure	15 (9.8%)
Medication Monotherapy:	131 (87.3%)
Polytherapy	19 (12.7%)
Compliance with medication	130 (87 %)
Regular	20 (13%)
Irregular	
EEG Normal	79 (52.7%)
Abnormal	70 (47.3%)
Neuroimaging (CT or MRI) Normal	63 (42%)
Abnormal	87 (58%)

A total of 150 patients were included in the study. There were 76 (50.7%) male and 74(49.3%) female patients included in the study.

Table 2: Age distribution of study population (years)

Age distribution of study population(years)	Number
≤20	40(26.7%)
21-40	80(53.3%)
41-60	21(14%)
>60	9(6 %)

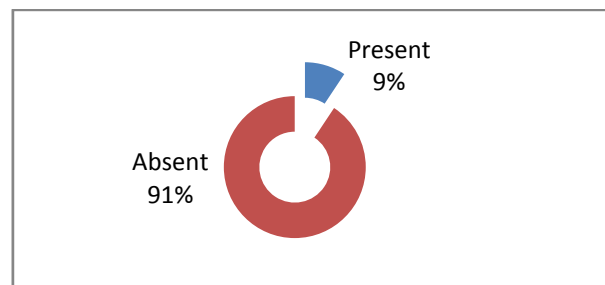


Fig 1. Family history of seizure

14 (9.3%) patients reported having a family history of seizure while 136 (89.7%) patients did not have a family history of epilepsy.

Table 3: Precipitants of seizure

Precipitants	Seizure type	Number of patients
Sleep deprivation	GTCS	6
	Myoclonic seizure	4
	Absence seizure	4
Alcohol intake	GTCS	6
	Partial seizure	6
Emotional stress	Tonic seizure	2
Fatigue	Atonic seizure	1
Hunger	Myoclonic seizure	1

30(20%) patients reported having one or more precipitants for their seizure. The precipitants in decreasing order were sleep deprivation, alcohol intake, emotional stress, fatigue and hunger. The presence of precipitants was significantly associated with seizure frequency ($p=0.004$)

The mean duration of seizure before treatment in years was 2.26 ± 3.5 . The mean number of seizures before treatment was 24.11 ± 32.92 . Mean frequency of seizures after treatment per year was 80.34 ± 162 .

Discussion

In our study, 30(20%) patients reported having one or more precipitants for their seizure. The precipitants in decreasing order were sleep deprivation, Alcohol intake, emotional stress, fatigue and hunger. The presence of precipitant was significantly associated with seizure frequency ($p=0.004$). E Balamurugan et al also found missing medication, sleep deprivation, fatigue, and emotional stress to be important triggers for seizure onset.¹

131(87.3%) patients were on monotherapy. 17(11.3%) patients were taking 2 drugs while 2(1.3%) patients were taking 3 drugs. A study conducted in India showed 75.5% of patients maintained on monotherapy while 24.5% percent on polytherapy.⁹

While 130(87%) patients reported taking their medications regularly, only 20(13%) patients were taking medicine irregularly. Patients who were noncompliant to medication had significantly higher seizure frequency than those patients who were compliant to their medication. ($P<0.001$) 3(2%) patients reported rash with carbamazepine. 2(1.3%) patients developed Stevens Johnson syndrome with phenytoin. 1(0.67%) patient developed hepatitis while on valproic acid. The overall major adverse effect leading to change in current medication was observed in 6 (4%) of patients.

14(9.3%) patients reported having a family history of epilepsy in first degree relative. Family history of epilepsy in Nepalese epileptic patients were found to be higher than that found in India (8.4%) as shown in the study done by Joseph et al.² 116(77.3%) patients had seizure onset before age 30 in our study. In India Joseph et al.² found 68.9% of patient to be having seizure onset before age 25.

History of febrile convulsion was given by 12(7.8%) patients. History of febrile convulsion was statistically associated with seizure frequency ($p=0.041$).

There was no statistically significant correlation between the duration of epilepsy before starting medication and the frequency of seizure ($p=0.9$) in our study.

30(20%) patients reported having one or more precipitants for their seizure. The precipitants in decreasing order were sleep deprivation,

Alcohol intake, emotional stress, fatigue and hunger. The presence of precipitant was significantly associated with seizure frequency ($p=0.004$). E Balamurugan et al also found missing medication, sleep deprivation, fatigue, and emotional stress to be important triggers for seizure onset.¹⁰ Aura was reported by 32(21.3%) of patients. The common aura reported by them was: fear, anger, dizziness, flashes of light, hallucination, tingling sensation and heaviness in head.

131(87.3%) patients were on monotherapy. 17(11.3%) patients were taking 2 drugs while 2(1.3%) patients were taking 3 drugs. While 130(87%) patients reported taking their medications regularly, only 20(13%) patients were taking medicine irregularly. Patients who were noncompliant to medication had significantly higher seizure frequency than those patients who were compliant to their medication. ($P<0.001$)

Nicolas Carpentier et al¹¹ found in their study that the the rate of nonadherence was 40.9%. Most of the patients in our study were prescribed phenytoin or carbamazepine or valproic acid for their seizures. Some patients were maintained on lamotrigine, oxcarbamazepine or levetiracetam.

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A HOUSEHOLD SURVEY ON AWARENESS OF HIV/AIDS AMONG RURAL PEOPLE OF CHANDBELA VDC OF EASTERN NEPAL

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Abstract:

Background: In the past 20 years HIV/AIDS has become an increasing global phenomenon. The rising trend of morbidity and mortality has not only changed the demography but also poses a huge socio-economic burden on well-being of households, communities and country. In Nepal as the epidemic is maturing. However, the epidemic has never been maintained in the general population through heterosexual transmission in Nepal, rather it is driven by the infections among higher risk populations and their sexual partners. **Objectives:** To assess the knowledge about HIV/AIDS among household level. **Material and Methods:** A household based survey was conducted in all the nine wards of Chandbela VDC. Interview was conducted using pre-tested semi structured questionnaire which included socio demographic profile and characteristics to assess awareness on HIV/AIDS. The data was analyzed to calculate percentages and proportions. **Results:** Out of total population (7034), 50.39% were male and 49.60% were female. Majority of the males and females were literate i.e. 73.58% and 51.37% respectively. Out of 1274 households, 946(74.25%) households were below poverty line, where 19.34% of people did agriculture for living and 3.3% were migrant worker. Most of the people 73.2% were aware and had heard about HIV/AIDS from various medium like 24.53% from radio, 15.19% from friends however, 16.8% of the people never heard of HIV/AIDS. According to 33% of people unsafe sexual practice could transmit HIV/AIDS and 28.83% of people thought avoiding unsafe sexual practice can prevent from acquiring HIV/AIDS. Of the total respondents, 61.6% of the people believed that even a healthy looking person can have HIV/AIDS. Attitude towards HIV/AIDS patients of majority of population (55.93%) was to avoid any kind of relation or contact with patient. **Conclusion:** Although majority of the population were literate, were aware of and had heard about HIV/AIDS, the attitude towards the patient was not positive.

Key words: HIV/AIDS, Survey, Awareness, Nepal

Introduction:

Globally, an estimated 33 million (30-36 million) people were living with human Immunodeficiency virus (HIV) in 2007^[1]. In scaling up response over the past decade, the HIV pandemic remains the most serious infectious disease challenge to global public health^[2] consequently, calls have been made for a more pragmatic approach toward containing the disease^[3].

In Nepal, the first-ever AIDS case was reported in 1988. Ever since, the nature of the

HIV epidemic in the country has gradually evolved from being a “low-prevalence” to “concentrated” epidemic.[4] Over 80 per cent of the HIV infections are transmitted through heterosexual transmission. People who inject drugs (PWIDs), men who have sex with men (MSM) and female sex workers (FSWs) are the key populations at higher risk spreading this epidemic^[5]. Male labour migrants (who particularly migrate to high HIV prevalence areas in India, where they often visit FSWs) and clients of FSWs in Nepal are playing the

role of bridging population groups that transmit infections from the key populations at higher risk to the low-risk general population. The NCASC report also states that 42 percent of all HIV infections in the country is among Nepali labor migrants to India^[4].

It is estimated that about 55,626 people are living with HIV in Nepal in 2010. Majority of infections are occurred among adult (15-49) male (58%) women of reproductive age group (28%) populations, while 8% of infections are occurred among children under 15 years of age^[5]. HIV is related to behavior that exposes individuals to the virus and increases the risk of infection. Information about HIV and the type and frequency of risk behaviors related to the transmission of HIV is important for identifying and better understanding populations at higher risk for contracting HIV^[1].

Thus this study was carried out to assess the level of awareness among the general public about HIV/AIDS, along with their attitude toward PLWHA. Based on the findings, we needed to come up with suitable strategies to correct the misconceptions by Information, Education, and Communication (IEC) activities

Methodology:

A household based survey was conducted in all the nine wards of Chandbela village of Sunsari district of eastern Nepal. Head of each household of the VDC was interviewed using pre-tested semi structured questionnaire including background characteristics and knowledge regarding Disease transmission and prevention. In the absence or serious illness of the head of household, adult male or female present were interviewed. Three attempts of visits were organised for the house where no one was available in the first visit. Assurance of anonymity and confidentiality of information was

maintained. Verbal consent was taken from the respondent. The raw data was edited on the same day of data collection to detect errors and omissions. The data was analyzed to calculate percentages and proportions.

Results:

Total of 1274 households were surveyed in nine wards of Chandbela village of Sunsari District. Total of 7034 people (51.76% male and 48.24% female) were found to be inhabit the area. Almost 51.37 % were illiterate. About 37.9% households constituted more than three members in a family. Hindus (90.21%) predominates over other religions. Around 37.5% were from tharu ethnicity followed by muslim 9% and mushahar 5%. Around 62% of the families were nuclear and 28.89% households did not possess any land of their own. 19.34% of people did agriculture for living and 3.3% were migrant worker. The most common house (71%) was of Kachha type. Only 52% of families had the nearest health facility in walking distance of less than 30 minutes.

Table:1 Awareness about HIV at household level [N=1274]

Characteristics	Frequency	Percentage
Aware about theHIV/AIDS	932	73.22
Unaware about HIV/AIDS	342	26.78

About73.22% of the people had heard about HIV/AIDS while almost 26.78 % had never heard about it.

Table: 2 Sources of Information about Disease [n=932]

Characteristics	Frequency	[%]
Radio	229	24.53
Television	199	21.43
Health Worker	138	14.76
Community Gathering	138	14.77

Friends/Relatives	90	9.79
School Teacher	63	6.79
Broucher/Pamphlet	42	4.5
Newspaper	33	3.5

The people had heard about HIV/AIDS from various sources, the chief sources being Radio (24.09%), TV (21.43%), Friends/relative (15.39%) and community gathering (14.77%)

Table :3 Assessment to HIV/AIDS knowledge [N=932]

Knowledge items	Number[N]	Percentage[%]
Mode of transmission		
Sexual route	344	37
Blood and blood products	186	20
Contaminated needle and syringe	158	17
Mother to child transmission	121	13
Methods of protection		
Being faithful to one partner	197	21.2
Use of sterile needle and syringe	223	24
Transfusion of blood tested for hiv	46	5
Use of condoms	191	20.6
Myths		
Exchange of underwear can cause AIDS	26	2.75
Using public toilets can cause HIV/AIDS	30	3.25

Avoid public toilets can prevent AIDS	41	4.4
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Table: 4 Perception toward Disease who had heard about this [n=932]

Can healthy person suffer from HIV/AIDS	frequency	[%]
Yes	574	61.6
Don't Know	196	21
NO	162	17.4

To know the perception about the HIV/AIDS among the household level we ask the simple question can healthy person suffer from HIV/AIDS. About sixty two percent of responded yes while eighteen percent still don not know what to say.

Table: 5 Attitude towards the disease person [n=932]

Characteristics	frequency	[%]
Buy vegetables from people living with HIV/AIDS (PLWHA)	521	56
Do not buy vegetable from PLWHA	291	31
Hesitate to say	120	13

From above table 5 shows that almost fifty six percent of people were positive towards disease person while thirty one percent of respondent responded negatively and still 13% were hesitate to answer.

Discussion

This community-based household survey results provide insight into knowledge, attitudes and perceptions towards HIV/ AIDS. Data from our household survey suggest that despite of half of the population of chandbela VDC were illiterate seventy three percent of respondent were aware about the disease as

compare to Nepal demography health survey which shown that Eighty-six percent of women and 97 percent of men age 15-49 have heard of AIDS.[6] A community based cross-sectional study done in Jamnagar Gujrat shown that 60% of rural heard about HIV/AIDS.[7] also similar findings were reported from study done in our neighboring country India. [8]

Our survey shows that main source of information about the diseases among the respondent was radio(24.53%) and television(21.43%) followed by friends and relatives(15.39%) and health worker(14.74%) whereas study done by family health international with collaboration with NCASC in 2008 shown that main source of information about disease by friends followed by radio^[9]. From this study it has shown that overall knowledge regarding disease transmission was low which is slightly higher than study done in Tamil nadu,^[10] India where 31% possessed correct knowledge about its transmission. The poor knowledge of HIV prevention methods among rural inhabitants could be due to poor literacy among these groups and reduced access to HIV/AIDS education material.

Although in our study AIDS awareness was high, there were important misperceptions about risk of HIV by exchange of underwear, sharing public toilet seats and avoid it for prevention. Knowing how HIV is not transmitted is critical for preventing stigma and discrimination against PLWHA^[11].

Stigma and discrimination against PLWHA is a key obstacle to HIV/AIDS prevention and care. This study demonstrates that despite of high awareness regarding disease among rural people more than thirty percent of people had unfavorable attitude towards the disease. Study done by Meundi et al^[12] also shows the similar finding.

Conclusion:

In summary, the present study demonstrates relatively good knowledge among rural people of chandbela VDC regarding HIV/AIDS. Nevertheless, there is a more need for HIV/AIDS prevention campaigns targeted toward young men in Nepal to focus on public education, promotion of condom use, and risk-reduction behaviors in urban and rural communities. The negative perceptions of the public toward PLWHA warrant urgent and culturally appropriate multidimensional interventions to reduce HIV/AIDS-related stigmatization and discrimination.

Limitations:

Information on awareness of HIV/AIDS was limited to only an adult member presented in a household. The information of households remaining closed even after three attempts of Visits could not be known.

Acknowledgement

We would like to thank all the respondents from chandbela VDC who participated in this study and also students from MBBS, BDS, B.SC nursing Batch 2012 B.P.Koirala Institute of Health Sciences, Dharan

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DETERMINATION OF TOOTH LENGTH VARIATION OF MAXILLARY CANINE - AN ANALYTICAL STUDY

Deependra Naulakha, Manish Agrawal, Nootan Naulakha

Abstract:

Aim: The Aim of this study was to assess the variation in anatomical tooth length of maxillary canine, irrespective of sex, in patient's presenting at NMCTH, Biratnagar, Nepal.

Methodology: A total of 30 Endodontically treated maxillary canine were included in this study. Preoperative radiographs were taken initially for finding the canal length. Radiographic interpretation (IOPA X-rays) and mathematical calculation, proposed by Ingles and Messing, were used to observe and measure the length of individual root canal for tooth length. An endodontic access was prepared and pulp tissue was extirpated. A working length radiograph was taken with a file in the canal and the radiographic working length was established.

Results: This study revealed that the maximum, minimum and average tooth length of maxillary canine is 30mm, 18mm and 22.91 mm respectively.

Conclusion: The result indicates that the study previously performed by different researchers and those given in the different textbook of endodontics showed that the tooth length is shorter than the caucasoid counterpart.

Key Words: *IOPA Xrays, Apex Locator, Root Canal Therapy, Tooth Length,*

Introduction:

Root Canal Therapy is the treatment where there is the complete removal of the irreversibly damaged dental pulp followed by thorough cleaning, shaping and obturation of the root canal system so that the tooth may remain as a functional unit within the dental arch. Root Canal System anatomy plays a significant role in endodontic success and failure. These systems contain branches that communicate with the periodontal attachment apparatus furcally, laterally and often terminate apically into multiple portals of exits (1). However, even if 90% of all endodontic treatment is successful over time, the reciprocal failure rate is still 10%. Improvement in the diagnosis and treatment of lesion of endodontic origin occurs with recognition of the interrelationships that exist between pulpal disease flow and egress of

irritants along these anatomical pathways (2). Endodontic success and failure is related to the absence and presence of apical periodontitis (3). The etiology of apical periodontitis is primarily a bacterial infection of Root Canal System (4,5) consequently the technical and pharmacological aspect of prevention and treatment are mainly aimed at controlling infection. Biomechanical and chemomechanical preparation of the root canal system varies in several respects (6). Recent technological breakthroughs have been achieved in root canal procedures which have comparatively improved treatment results and feasibility of achieving success in the root canal therapy for patients with a range of 31%-100%. The root canal system becomes a privileged sanctuary for microorganisms and pulpal tissue. The root canal therapy involves removing

microorganisms from within the pulp space and the filling of the root canal system is done to prevent reinfection. The most challenging step in root canal therapy is determining working length. The accurate working length determination is a prerequisite for successful root canal therapy which reduces the chances of insufficient cleaning of the canal or damaging the periapical tissues from over instrumentation(7).

The ideal endpoint of endodontic instrumentation and obturation has been determined to be the cementodentinal junction. This anatomic landmark is called the minor diameter of the canal and represents the transition between pulpal and periodontal tissues, when instrumented and obturated to the minor diameter the contact between root canal filling material and the apical tissue is minimal. This is also the narrowest point in the canal and contains the smallest diameter of blood supply, thus creating the smallest wound site and the best condition for healing (8).

For the determination of the tooth length, root canal length has to be found out. The root canal length and apical foramen are still the tough task and the subject for several controversies but are basis for a successful Endodontic treatment. Radiographic interpretation still remains the best as every modern interpreter follows it (9, 10 & 11). Instruments shouldn't cross anatomic apex and should be confined in canal (12). The approximate tooth length is considered during diagnostic x-ray. The knowledge of tooth length beforehand hence is beneficial. Tooth length determination is the crucial step in Endodontic treatment since instrumentation should be up to the optimal depth; any error in the steps follows failure of root canal treatment.

Radiographic working length is the standard measure for endodontic instrumentation in the

dentinal portion of root canal. This measurement is difficult to achieve because the cementodentinal junction, the most apical portion of the dentinal canal, cannot be determined from a radiograph. Also, the cementodentinal junction can vary in relationship to major foramen. Variables in the radiographic technique, angulation, and exposure distort this image and lead to clinician error (13).

Although apex locators are a useful adjunct in locating the terminus of the root canal during endodontic therapy, they do not replace the need for radiograph. The ability of apex locators to accurately locate the apex varies from 55% - 95% (14, 15). Studies also indicate that false readings are often obtained from electronic apex locators indicating the need for radiographic check films (16).

The tooth length of individual in the same race will be more or less same but varies in different races as the tooth length in Mongolians is not same as in Caucasian. The variation in root canal type creates many problems in root canal therapy among the canines, mandibular canine have greater length variation. Usually maxillary canine has less variation. In 1957, Ingles used the pretreatment radiograph in mathematical procedure for determining length. In modern dentistry most of the dental practitioner follows the method proposed by Ingles. Here we also calculated the tooth length in pretreatment radiograph as proposed by Ingles.

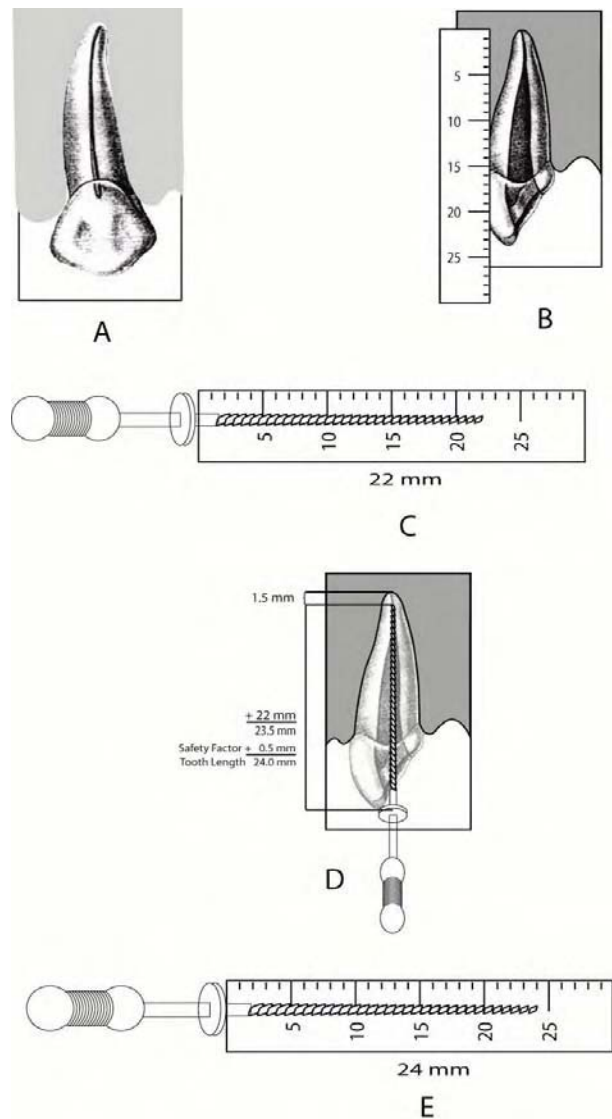
Methods and Materials:

The study was conducted at Nobel Medical College & Teaching Hospital, Biratnagar, Nepal from January 2013 to December 2013. A total of 30 Endodontically treated maxillary canine were included in this study. Teeth with sound cusp anatomy and complete root apex on radiographs were selected. Teeth with broken/fractured crown, severely attrited teeth

and patient under 16 years and over 55 years were excluded from the study. A detailed medical and dental history was taken. The selected patients were briefed about the procedure and the products. Their written consent was taken. Before starting any procedure a standardized periapical radiograph was taken for each tooth in buccolingual projection for finding the canal length and to exclude teeth with radiographically invisible canal, open apices, resorbed roots and root fracture. The radiolucent line of pulp canal on radiograph was studied with the help of magnifying glass. The purpose of magnifying glass was to enhance visualization of radiograph. After administration of local anaesthesia a conventional endodontic access was prepared. Pulp tissue was extirpated using barbed broaches. After pulp extirpation the canal was irrigated by copious amount of sodium hypochlorite solution. The absorbent paper points were used to dry the canal after irrigation of root canal. Then small numbered reamer/file (10/15) was selected, the selected reamer/file was introduced up to estimated length assuring that instrument did not cross the anatomical apex of the tooth. This is assured from preoperative radiograph, operator skill in tactile sensation, average tooth length proposed by various authors, clinician experience and digital apex locator (4,5,6). The diagnostic radiograph was then taken. Calculation was then done. As proposed by Kuttler, re-diagnostic radiograph was taken when reamer/file was long or short by more than 1.5 mm from minor diameter (apical constriction). If it was within 1-1.5 mm, interpolation was done. The selection of interpolation was within 0.5-1.5 mm. The favorable cusp was selected for coronal reference point and fixed by rubber stopper of reamer/file. After radiograph, the length was measured (RAL). Both reamer/file length and tooth length in radiograph was measured (XAL and XTL) respectively. As proposed by

Messing the mathematical calculation was done ($\text{Tooth Length} = \text{RAL} \times \text{XTL} / \text{XAL}$). Due to the reason of minor and major diameter as proposed by Kuttler, 0.5-2 mm is added according to the age of the patient. In this way the working length of the individual canal was calculated. Periapical radiograph was taken with careful inclination of the x-ray beam with the examined tooth.

Fig: Steps in establishing accurate length of tooth measurement



A. Maxillary canine.

- B. The length of the tooth is measured on diagnostic radiograph. Here the tooth appears to be 24mm long from apex of tooth to the tip of cusp.
- C. As safety precaution 2mm is reduced from the initial length and then it is transferred to a diagnostic instrument.
- D. The instrument is placed in the root canal and x-ray was taken. Then measurement is made from end of instrument to the end of root. Adding length of instrument in canal (here 22mm) to the length of instrument short of apex (here 1.5mm) will establish the accurate length of tooth (in this case 22+1.5mm).
- E. Root canal and working length measurement: working length of the tooth is 23.5-0.5 mm =23mm; is set in an endodontic measuring gauge 0.5mm is reduced as safety factor.

	NM CTH	Har ty's	Gross man	J. I. Ingle's	F.S.W eine
Maxillary Canine	22.91 mm	26.5 mm	26 mm	26 mm	27 mm

Results:

The maximum, average and minimum tooth length of maxillary canine is 30 mm, 22.91 mm and 18 mm respectively, found in the maximum number of teeth (mode) as shown in (Table I);

Table I: Tooth length of 30 maxillary canine

		Tooth Length (mm)
Maxillary Canine	Average	22.91
	Maximum	30.00
	Minimum	18.00
	Mode	24.00
	Standard Deviation	0.036

The tooth length that was calculated in this study is compared with the length proposed by various researchers. (Table II)

Table II: Comparative study between the tooth length between various researchers

Discussion:

With the advent of x-ray in dentistry by kells in 1899, it revolutionized the Endodontic dentistry and still use in routine to specialized works. Due to density of the tooth, it can be clearly viewed in x-ray and can assume the preoperative length (15). In 1900, it was proposed that cementodentinal junction is the ideal place to finish instrumentation and Endodontic obturation, since cementodentinal junction is the histological structure and not viewed by radiograph, it's difficult to find in x-ray. By the study of Palmar 50% extend 1 mm or more through apical foramen when instrument is in radiographic apex and thereafter the instrumentation is limited to short of radiographic apex (1, 2, and 3). In 1955 Kuttler proposed the minor and major diameter. He stated that the instrumentation should be up to the major diameter, apical constriction, short of radiographic apex. Goldman & co-worker found that interpretation of the dentist occur with 67% of cases. Nielson's study of radiograph interpretation showed that the examiners agreed on 65-75% of cases but the percentage increased when the same examiner reexamined the same radiograph. As Grossman stated that excellent radiograph might be difficult to read but poor radiograph is impossible to read. Angulations and distortion is greatly varied when many x-ray technician take the x-ray (3).

Apex locator is another device that can detect the apex of tooth. However, there are number of controversies, as it depends upon its electric charges and ionic phage of medial in the canal (13). However, saline should not be

used, as it is sensitive to apex locator (16). An apex locator can help in determining the working length during the root canal treatment, but it cannot replace periapical radiography. There is chance of missing the extra canal present in the tooth (17).

For this study, only one x-ray technician took x-rays, minimizing x-ray angulations hazards and only one clinician interpreted the x-ray. To enhance visualization the clinician usually used magnifying glass thus minimizing radiographic misinterpretation. The instrument was used after diagnostic x-ray was taken but the statistic of the tooth where use of this device was not recorded. The x-ray technician tried to take every radiograph in parallel technique.

There are different methods proposed by various authors to calculate and determine the accurate working length of the tooth like "Estimation by Direct Digital Radiography or Xeroradiography, Digital Tactile Sense, Apical Periodontal Sensitivity" but the method used in NMCTH was by plain Radiographs (IOPA X-rays) followed by apex locator known as Ingle's method and this method showed high percentage of success with smaller variability. Since this method is cost effective, it is ideally used in most of the regions worldwide and has been proved to be the ideal method to determine the accurate working length of the particular tooth by the clinician of NMCTH.

Recently a modern device has been proposed-Endometer ES-2. This was studied by Stare, Galic, Sutalo, Sagoric and Prshalo and was stated with 0.5-1 mm tolerance in precision of the Endometer ES-2 was 96.6% and within 2 mm tolerance it was 100%.

Conclusion:

The length of the tooth also varies within the race. Though there is no specific study in this topic but the practitioners treating Negroid and Mongoloid are aware that the length found in textbooks, which are related to teeth of Caucasoid origin does not coincide with

Negroes and Mongolians. We have performed this study to determine the average tooth length and working length of tooth irrespective of sex as we didn't find any types of dependence between sex and tooth length. Thus, this length will help most of the clinicians in the treatment procedure and will reduce the failure of treatment. The maximum, minimum and average tooth length of maxillary canine is 30mm, 18mm and 22.91 mm respectively.

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COMPARISON OF EXTRAPLEURAL ANTEROLATERAL DECOMPRESSION AND TRANSTHORACIC ANTERIOR DECOMPRESSION FOR TUBERCULOSIS OF THE DORSAL SPINE

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Abstract

Background: Spinal tuberculosis (TB) comprises 50% of all skeletal tuberculosis and it affects body of the vertebra in about 98% of the cases, hence surgical decompression when needed should be anterior. There are a number of studies describing transthoracic approach but very few describing extrapleural anterolateral approach and none were comparative trial. Therefore, the present study was conducted to compare extrapleural anterolateral decompression and transthoracic anterior decompression for tuberculosis of dorsal spine.

Aims and Objectives: To compare the duration of surgery, amount of blood loss, neurological recovery and complication rate.

Design: Prospective Randomised controlled Trial

Setting: The study was performed in Department of Orthopedics, NMCH, Biratnagar, Nepal

Material and methods: The patients with tuberculosis of dorsal spine those required surgical decompression were randomly allocated into two groups. For the first group we performed extrapleural anterolateral decompression and for the second group we performed transthoracic anterior decompression

We excluded patients with ischemic heart disease, end stage renal disease, immunocompromised stage. We did follow up for one year with comparing outcome in terms of duration of surgery, amount of blood loss neurological recovery and complication rate.

Results: 60 patients were left after exclusion. We found duration of surgery, amount of blood loss were significantly higher in transthoracic anterior decompression group. There was single case of wound infection (3.3%) in the transthoracic anterior decompression group. 3 cases of transthoracic anterior decompression had to convert into anterolateral decompression because of adhesion of pleura to lung. There was no significant difference in neurological recovery and development of kyphotic deformity.

Conclusion

We found anterolateral decompression did better than transthoracic anterior decompression in terms of duration of surgery, amount of blood loss, postoperative morbidity but similar neurological recovery rate.

Key words: *Anterolateral, transthoracic decompression, tuberculosis dorsal spine*

Introduction

Spinal tuberculosis (TB) comprises 50% of all skeletal tuberculosis and it affects body of the vertebra in about 98% of the cases, hence surgical decompression when needed should be anterior¹. Laminectomy is advocated with posterior complex disease and intraspinal tubercular granuloma presenting as spinal tumor syndrome². The common indications for surgical decompression are deterioration of neurological deficit during conservative treatment, the development of neurological deficit while patients are on antitubercular therapy, no neurological improvement on antitubercular therapy and complete paraplegia. In the dorsal spine, anterior decompression can be performed through either an extrapleural anterolateral approach or a transthoracic anterior approach. The transthoracic approach has been described by various authors³⁻⁵ and few studies are on extrapleural approach^{6,7}. All the studies have dealt on the surgical approaches but none have compared the two surgical approaches. Therefore, the present study was conducted to compare extrapleural anterolateral decompression and transthoracic anterior decompression for tuberculosis of dorsal.

Material and methods

In 2012, 64 patients with tuberculosis of dorsal spine that needed surgical intervention and giving informed consent to participate in trial were included in the study. The patients with ischemic heart disease, end stage renal disease, immunocompromised state were excluded from the study. This left 60 patients available for the study.

The patients were randomly selected for anterior decompression by extrapleural anterolateral approach and by transthoracic anterior approach. There were 30 patients in each group. All patients gave informed consent to participate in the study. The American Society of Anesthesiologist (ASA) scale was used to classify any co –

morbidities. In the extrapleural approach 12 patients were classified as ASA grade 2 and 18 patients as ASA grade 3, while in transpleural approach 10 patients were classified as ASA 2 and 20 patients as ASA 3. All the patients were given antitubercular therapy according to standard protocol. All patients received general anesthesia. For extrapleural anterolateral approach the patient to be taken for decompression on left side was placed in the right lateral position. A T-shaped incision started in the midline for about 14 to 15 cm with the apex of the kyphos as its centre. (Fig 1)



The transverse cut was made to about 8cm from the midline at the apex of kyphos on the left side. The skin, subcutaneous tissue and the deep fascia were incised in the same line. This created a full thickness fasciocutaneous flap. The trapezius, latissimus dorsi and periscapular muscles were divided in a T-shaped manner.

The ribs to be removed were identified and marked. The periosteum of each rib was incised in the long axis of the rib and elevated. Since the intercostal muscles are attached obliquely to the ribs, the dissection was performed in the axilla between the muscle fibres and the rib. Thick periosteum in the adolescent, facilitates its removal. The rib was divided lateral to its angle, about 8 cm

away from the tip of the transverse process using bone cutting forceps, and was freed to its head. The paraspinal muscles were divided transversely in the line of each rib. The cleavage was created between the transverse process and the head of the rib dividing costotransverse ligament. The transverse process was removed from its bed and rib including its head was detached.

After the removal of the middle rib, adjacent ribs were removed in a similar manner. The intercostals artery and the nerve, leading to intervertebral foramen were ligated and divided 2 inches away from spinal foramina. The lowermost intercostals nerve was spared when four of the lower six ribs were removed. The lateral and anterior surface of vertebral body was exposed and a blunt spatula was inserted anterior to the vertebral body. Any loose bony sequestra, sequestered disc tissue, pus and granulation tissue were removed. The vertebral body is breached at the junction of the pedicle and the transverse process and the bone was removed bit by bit until the lateral and anterior wall of the spinal canal is decompressed. The spinal cord was exposed for the whole length of three vertebra (i.e. 5cm×1cm). Patency of the spinal canal was confirmed by inserting an infant feeding tube proximally and distally. A slot was made in the proximal and the distal healthy vertebral body in order to put bone graft. The kyphos was corrected manually by applying pressure at its apex. Posterior fixation with Hartshill was done in four cases. Two ribs of appropriate length were fitted into the gap which was created. When the pressure on the back was released, the graft tends to locked in position. The lungs were inflated to check that no inadvertent pleural tear had been made before wound closure.

The transthoracic anterior decompression was done according to standard technique as described in Campbell's Operative Orthopedics⁵ and the chest tube was put in all the cases. (Fig No-2)



All patients were nursed in bed with regular turning at two hourly interval. Parental antibiotics to cover both gram positive and gram negative organisms were given for 48 hours after surgery. The chest tube was removed once the collection was less than 50 ml and noting the lung expansion in X ray chest. Post operatively X-ray dorsal spine was done to know the graft placement and decrease in the size of paravertebral shadow.

All the patients received uninterrupted multidrug anti-tubercular therapy for 12 months. Removal of the suture done at 2 weeks and patients followed up at 6 weeks than 3 monthly for one year. The neurological recovery and kyphos angle was noted in every follow up. All the patients who could not show the neurological recovery at 6 weeks of surgery underwent myelography in order to see the possible block.

This study had ethical approval.

Statistical analysis The data were entered using Microsoft EXCEL version 8 (Microsoft Corporation, Redmond, Washington). The success of randomization was tested by comparing descriptive variables such as age, gender, hematological parameters, neurological deficit etc. Any discrepancies were measured as the difference between the means in both groups. The significance of these differences was measured using parametric analysis of variance (ANOVA) or the non-parametric Kruskal-Wallis test

derived from the Epi Info computer program (Environmental System Research Inc., New Delhi, India)

Results

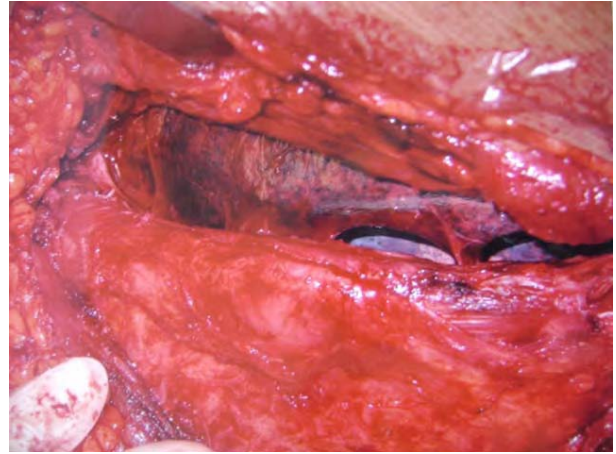
Both groups were comparable in terms of age, gender, hematological parameters etc ($p > 0.05$)

Table No.1 Patients Details(Testing Randomisation)

	ALD	AD	P-Value
Age in years	34.56	36.80	0.6385
Gender M:F	14:16	16:14	0.7962
Hematological Parameters			
Hemoglobin(gm %)	11.42 7.65	11.79 7.85	0.565 0.861
Serum Protein(mg%)			
Neurological deficiet			0.615
Yes	26	24	
No	4	6	
Level of involvement			0.641
Upper dorsal spine D1-D6	8	10	
Lower dorsal spine D6-D12	22	20	
No of vertebra involved upto3	22	26	0.6292
>3	8	4	
Preoperative Kyphosis	38.6	36.2	0.765
ASA+ grading			
1	0	0	
2	12	10	
3	18	20	

+ASA, American Society of Anaesthesiologists

(Table1).3 cases of transthoracic anterior decompression had to convert into anterolateral decompression because of adhesion of pleura to lung.(Fig-3)



The outcome measurement in both the groups is shown in Table 2.

Table No-2 Showing comparison of the outcomes in the two groups

	ALD	AD	p-value	Krusk all- Wallis
Duration of Surgery without instrumentat ion (hours)	2.17	3.02	0.001	0.001
Duration of Surgery with instrumentat ion (hours)	3.67	4.81	0.001	0.001
Blood loss without instrumentat ion	655.8	1039.9	0.014	0.010
Blood loss with instrumentat ion	955.8	1239.9	0.014	0.010
Wound dehiscence	0	1	0.06	0.066
Neurologica l recovery	24	22	0.860	0.800

Blood loss and duration of surgery were significantly higher in transthoracic group. 21 patients in extrapleural anterolateral group and 20 patients in transthoracic transpleural group showed neurological recovery within 6 weeks of the surgery. All the patients who could not show the neurological recovery at 6 weeks of surgery underwent myelography which revealed no block. This indicated that an adequate surgical decompression had been achieved. 3 patients in extrapleural anterolateral group and 2 patients in transthoracic anterior group showed first sign of neurological recovery at 3 months. 2 patients in anterolateral group and 2 patients in transthoracic group did not show neurological recovery. At the end of one year there was no significant change in kyphosis. One patient in transthoracic group had wound dehiscence for which debridement was done followed by secondary suturing.

Discussion

In osteoarticular tuberculosis the areas of the bone which are infiltrated with granulation tissue are ischaemic but not necrosed will recover and reconstitute under multidrug therapy only. Surgery, in addition to chemotherapy is essential for areas of necrosis that must be assumed to harbour tubercular bacilli, and for complications such as paraparesis and spinal deformity. While performing surgical debridement, all pus, caseous material and sequestra should be removed. Removal of unaffected and viable bone is restricted to that which is required in order to provide adequate access to the infective focus and to decompress the spinal canal¹. By contrast radical surgery (the Hong Kong procedure) is defined as excision of bone until healthy bleeding cancellous bone with suitable surfaces for reception of bone graft is exposed. The marginal correction of the kyphus and healing of the lesion was reported by Upadhyay et al⁷ in a comparative series of either radical or debridement surgery

in a total of 112 patients with a mean follow up of 15.3 years. Graft related complications such as displacement, breakage and late recurrence of a kyphus have been reported from 41% to 46.4%^{8,9}. When the graft spans two or more vertebral bodies, supplementary posterior instrumentation is recommended in order to prevent deterioration of the kyphosis¹⁰.

Patients with spinal TB are anaemic, often with evidence of healing pulmonary TB, have paretic or paralysed intercostal muscles with compromised pulmonary function and have moderate to severe kyphosis. Thoracotomy in such cases is a procedure of some magnitude and should not be undertaken lightly even the place where adequate surgical facilities exist. It certainly should not be undertaken where surgical facilities are poor. In a series of 91 patients treated by thoracotomy seven died with respiratory failure¹¹. In patients with co-existent pulmonary tuberculosis and compromised respiratory function, thoracotomy may aggravate the symptoms.

Surgical decompression is better tolerated in patients with TB of cervical spine and quadriplegia than those with TB of the dorsal spine with paraplegia. It seems that thoracotomy adds more morbidity to an already compromised pulmonary function, than does direct pressure on the cervical cord¹¹.

Adendorff et al³ have shown that mortality rate after thoracotomy was 6% when paraplegia is graded as moderate and 11% when it is graded as severe. We did not encounter any mortality in one year.

Tuli², Dott¹², Capner¹³, and Seddon¹⁴ all described a semicircular incision, concave medially, for decompression of the spinal cord. We modified incision to a T-shape to give adequate exposure for anterolateral decompression as described by Jain et al⁷ so that instrumentation became easier.

Anterolateral decompression is not free of problems. There is long learning curve and

one may find difficulty in graft placement. It is however basically simple and safe; by not opening the pleural cavity, pulmonary complications are few. Even a debilitated patient can be operated upon with little postoperative morbidity.

Conclusion

The determining factors for a particular approach are preference, the technical skill of the surgeon, the availability of surgical and intensive care facilities and the pulmonary reserve of the patient. We found anterolateral decompression did better than transthoracic anterior decompression in terms of duration of surgery, amount of blood loss, postoperative morbidity but similar neurological recovery rate.

Acknowledgement

The authors thank paramedics and operating room staff in NMCTH for their help in completion of this study.

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ROLE OF SOCIO-DEMOGRAPHIC FACTORS, STRESSFUL LIFE EVENTS, COLLEGE AND FAMILY ENVIRONMENT IN CAUSATION OF PSYCHIATRIC PROBLEMS IN ENGINEERING STUDENTS.

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Parashar Koirala, Madan Mohan Bhojak*

Abstract

Introduction: Professional college provides various opportunities for the all-round development of the students but they may also be subjected to various kinds of stressors. Engineering educational system is highly competitive and the students may face difficulties in both academic and personal life, sometime leading to psychiatric disorders.

Material and Methods: This is a cross-sectional descriptive study from Malviya National Institute of Technology (MNIT), Jaipur the premier engineering college of Rajasthan and India. 196 students (1st year 50, 2nd year 51, 3rd year 48 and final year 47) were the subject for this study. In first phase, socio-demographic data sheet and GHQ-60 hindi version to ascertain the extent of psychiatric illnesses was administered. False positive cases were dropped and then diagnosed students with psychiatric problems and control group were administered tests to find out the role of probable contributing factors. Results were analyzed and suitable statistical procedure was applied.

Result and Conclusion: Forty eight out of one hundred ninety six students i.e. 24.49% had some psychiatric disorders. Engineering students from lower income group, Hindi as their medium of study before entering Engineering College than students with English background, students from nuclear family than from joint family and students from urban background has higher rate of psychiatric illness in all the groups. Family and college environment was also a contributing factor.

Key words: *engineering students, stress, psychiatric problems, environment.*

Introduction

College life is full of opportunity for students to enter into new experiences, to explore new relationships, to feel new resources of inner strength and ability, reaching the prime of physical health and realizing with a feeling of pride of their sense of independence and to venture out into the world with great zeal to explore the world around them which hitherto they had only envisioned through their parents eyes. During the college period a number of challenges are to be faced which arise from increased social expectations,

biological maturation, peer pressure, family moves, parental fighting and divorce, parental substance abuse, sexual and physical maltreatment etc. Adolescents, those who cannot cope with stresses or for whom these stresses become too severe, have to make a lot of effort to cope up with these stressors. If the attempts to meet such challenges are maladaptive they can result in psychopathology, which ultimately plunges them in to the realm of emotional and behavioral disorder or they tend towards drug abuse. Some Indian studies have also

correlated the onset of life events and precipitation of psychiatric illness.^{1,2}

College are the institution which permit the study of comparable inner problem under demonstrable condition as the student are of nearly the same age, intellect and converging set of motivation, and who compete in studies and related other task chosen by them. Engineering educational system has a high competition and in the face of difficulties in both academic and personal life, the engineering student may be subjected to various stressors leading to maladjustment and even psychiatric problems.

This study is to highlight the role of socio-demographic factors, effect of stressful life events, college and family environment of the engineering students in the causation of the psychiatric problems.

Methods

Sample Design and Procedure:

Two hundred students, fifty each from every year (Bachelor of engineering course is of four years duration) from the Malviya National Institute of Technology (MNIT), Jaipur, India were the subject for this study. Necessary permission to conduct the study and ethical clearance was obtained from the concerned authority. After getting the informed consent from participants, a battery of tests was administered. Socio-demographic data sheet was completed by participants and General health questionnaire (GHQ-60) hindi version (Gautam and Nijhawan, 1982)³ was administered to find the extent of psychiatric morbidity among engineering students. One hundred ninety six students completed the study (1st year 50, 2nd year 51, 3rd year 48 and 4th year 47). Students of whom, information was incomplete or were unwilling to participate were excluded from the study.

Probable risky cases (who scored 12 or above on GHQ-60) of psychiatric problems were detected and were personally interviewed by a consultant psychiatrist

according to the ICD-10 criteria to ascertain "Psychiatric Caseness" and false positive cases were dropped. The diagnosed students with psychiatric problems and 30 students randomly selected out of the healthy engineering students (GHQ score < 12) for the control group were individually administered Presumptive Stressful Life Events Scale (PSLES) by Gurmeet Singh et al. 1984⁴, a self-designed scale approved by department of psychiatry to assess the college campus environment and Hindi Version (Joshi, 1984) of family environment scale (Moos, 1994)⁵ revised. Findings were compared for each year of the students to determine the role of various factors in causation of psychiatric problems in engineering students. Scores obtained on different measures were arranged as per the requirement of research design and statistical analysis. All the protocols were scored as per the guidelines given in the manuals for the respective tests.

Results:

One hundred ninety six engineering students (1st year 50, 2nd year 51, 3rd year 48 and final year 47) data was finally available for the analysis. The parameters studied were family type, language of academic studies, domicile distribution, family income, Stressful Life Events, College campus environment and Family environment along with prevalence of psychiatric problems.

Forty eight out of one hundred ninety six students i.e. 24.49% had some psychiatric disorders. Prevalence of psychiatric disorder was highest i.e. 32.00% in 1st year, 17.65% in 2nd year students, 20.83% in 3rd year students and 27.66% in 4th year student's respectively. The prevalence of psychiatric disorders in male students was lower than the female students (1st year: 24.39% vs 66.67%; 2nd year: 17.50% vs 18.18%; 3rd year: 18.92% vs 27.27%; 4th year: 24.32% vs 40.00% and overall 21.29% vs 36.59%) as in table 1.

Table 1: Prevalence of psychiatric problems in Engineering College students.

Sl. No.	Groups		1 st Year	2 nd Year	3 rd Year	4 th Year	Total
1..	Number of Students with Psychiatric Problems (Based on GHQ \geq 12 and after deleting false positives cases based on psychiatric interview)	M	10	7	7	9	33
		F	6	2	3	4	15
		N	16	9	10	13	48
2.	Total number of students	M	41	40	37	37	155
		F	9	11	11	10	41
		N	50	51	48	47	196
3.	Rate of prevalence of psychiatric disorders in % in Engineering students	M	24.39	17.50	18.92	24.32	21.29
		F	66.67	18.18	27.27	40.00	36.59
		N	32.00	17.65	20.83	27.66	24.49

As shown in table no.2, it was found that 44.1% of the students of 1st year from nuclear family were mentally unhealthy in comparison of 6.25% from joint family. Similarly in 2nd year (22.2% vs. 6.7%); 3rd year (23.5% vs. 14.3%) and 4th year (35.5%

vs. 12.5%) was distribution of mentally unhealthy students in various years of study. In total 31.1% student from nuclear family were mentally unhealthy whereas 9.8% students from joint family were found to be mentally unhealthy.

Table2. Distribution of Family type of Mentally Healthy and Unhealthy Engineering Students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
1	Mentally Unhealthy Male Students	A	9	6	3	7	25	-
		B	1	1	4	2	8	-
		N	10	7	7	9	33	-
2	Mentally Unhealthy Female Students	A	6	2	2	4	14	-
		B	0	0	1	0	1	-
		N	6	2	3	4	15	-
3.	Total Mentally Unhealthy Students (%)	A	15(44.1)	8(22.2)	8(23.5)	11(35.5)	42(31.1)	-
		B	1 (6.25)	1 (6.7)	2 (14.3)	2 (12.5)	6 (9.8)	-
		N	16(32.0)	9(17.6)	10(20.8)	13(27.7)	48(24.5)	-
4.	Total Numbers of Students i.e. Grand Total	A	34	36	34	31	135	21
		B	16	15	14	16	61	9
		N	50	51	48	47	196	30

A=Students from Nuclear Family; B=Students from Joint Family; N=Students from Total No. of Family

On the basis of study language as shown in table 3, 31.3% of students studied

from Hindi medium were mentally unhealthy whereas 14.8% were mentally unhealthy coming from English medium school. When individual year of mentally unhealthy student were compared as from Hindi vs. English

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medium, in 1st year it was 35.3% vs. 25.0%. Similarly in 2nd year, 3rd year and 4th year the percentage were 30.4% vs. 7.1%, 21.6% vs. 18.2% and 42.8% vs. 15.4% respectively.

Table3. Language distribution of Mentally healthy and unhealthy Engineering students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
1	Mentally Unhealthy Male Students	A	2	2	2	3	9	-
		B	8	5	5	6	24	-
		N	10	7	7	9	33	-
2.	Mentally Unhealthy Female Students	A	2	0	0	1	3	-
		B	4	2	3	3	12	-
		N	6	2	3	4	15	-
3.	Total Mentally Unhealthy Students (%)	A	4 (25.0)	2(7.1)	2(18.2)	4 (15.4)	12(14.8)	-
		B	12(35.3)	7 (30.4)	8 (21.6)	9 (42.8)	36(31.3)	-
		N	16(32.0)	9(17.6)	10(20.8)	13 (27.7)	48(24.5)	-
4.	Total Numbers of Students i.e. Grand Total	A	16	28	11	26	81	14
		B	34	23	37	21	115	16
		N	50	51	48	47	196	30

A=Students from English medium; B=Students from hindi medium; N=Total Students

Domicile distribution was studied and 28.3% of student who were mentally unhealthy were from urban background whereas 11.3% were from rural background. In 1st year 34.2% were

mentally unhealthy coming from urban background in comparison of 25% from rural background. Similarly in 2nd year, 3rd year, 4th year (Urban vs. Rural were 20% vs. 9.1%; 23.8% vs. 00% and 37.5% vs. 6.7%) respectively were mentally unhealthy as shown in table 4.

Table 4. Domicile distribution of mentally healthy and unhealthy Engineering students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
2.	Mentally Unhealthy Male Students	A	8	6	7	8	29	-
		B	2	1	0	1	4	-
		N	10	7	7	9	33	-
4.	Mentally Unhealthy Female Students	A	5	2	3	4	14	-
		B	1	0	0	0	1	-
		N	6	2	3	4	15	-
6.	Total Mentally Unhealthy Students (%)	A	13(34.2)	8 (20.0)	10(23.8)	12(37.5)	43(28.3)	-
		B	3 (25.0)	1 (9.1)	0 (0.0)	1 (6.7)	5(11.3)	-
		N	16(32.0)	9 (17.6)	10(20.8)	13 (27.7)	48(24.5)	-
7.	Total Numbers of Students i.e. Grand Total	A	38	40	42	32	152	23
		B	12	11	6	15	44	7
		N	50	51	48	47	196	30

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A=Students from Urban back ground; B= Students from rural back ground; N=Total Students

Family income distribution is shown in table 5 and it was found to be related to the presence of unhealthy mental state in the students. Students, whose monthly family

income was less than Indian Rs 6000, 70.3 % were mentally unhealthy; in students, whose monthly family income was Rs 6000-Rs12000, 21.9% were mentally unhealthy and students whose monthly family income was more than Rs12000, 8.4% were mentally unhealthy.

Table 5. Family income distribution of mentally healthy and unhealthy Engineering students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
2.	Mentally Unhealthy Male Students	A	5	4	4	6	19	-
		B	3	2	2	2	9	-
		C	2	1	1	1	5	-
		N	10	7	7	9	33	
4.	Mentally Unhealthy Female Students	A	3	1	1	2	7	-
		B	2	1	1	1	5	-
		C	1	0	1	1	3	-
		N	6	2	3	4	15	
6.	Total Mentally Unhealthy Students (%)	A	8 (80.0)	5 (55.6)	5 (71.4)	8 (72.7)	26(70.3)	-
		B	5 (26.3)	3 (17.6)	3 (23.0)	3 (20.0)	14(21.9)	-
		C	3 (14.3)	1 (4.0)	2 (7.1)	2 (9.5)	8 (8.4)	-
		N	16 (32.0)	9 (17.6)	10 (20.8)	13 (27.7)	48(24.5)	
7.	Total Numbers of Students i.e. Grand Total	A	10	9	7	11	37	11
		B	19	17	13	15	64	10
		C	21	25	28	21	95	9
		N	50	51	48	47	196	30

A=Students with family with income < Rs. 6,000 per month; B= Students with family with income Rs. 6000- Rs. 12,000 per month; C=Students with family with income > Rs.12,000 per month ; N=Total Students

3rd year, 4th year and control were compared than the Scores were not statistically different on PSLES while score were significantly different among and within group on college environment scale as shown in table 6 .

When Groups of Mentally Unhealthy Engineering Students of 1st year; 2nd year;

Table 6. Comparison of Scores on different measures of Presumptive Stressful Life Event Scale (PSLES) and College Environment Scale (CES) (ANOVA)

Domain	Group	Sum of Squares	df	Mean Square	F	Sig.
PSLES	Between Group	11.818	4	2.954	2.211	.076
	Within Groups	97.529	73	1.336		
	Total	109.346	77	-		
CES	Between Group	101.551	4	25.388	9.563	.000
	Within Groups	193.796	73	2.655		
	Total	295.346	77	-		

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As shown in table 7, the scores were statistically significantly different among and within group on nine out of ten measure of FES i.e. except moral religious emphasis in

their family when the Groups of Mentally Unhealthy Engineering Students of 1st year; 2nd year; 3rd year, 4th year and control were compared .

Table 7. Comparison of scores on different measures of family environment scale (FES) (ANOVA)

Domain of FES	Group	Sum of Squares	df	Mean Square	F	Sig.
COHESION	Between Group	59.947	4	14.987	13.016	.000
	Within Groups	84.053	73	1.151		
	Total	144.00	77	-		
EXPRESSIVE	Between Group	9.876	4	2.469	2.775	.033
	Within Groups	64.957	73	.890		
	Total	74.833	77	-		
CONFLICT	Between Group	190.253	4	47.563	84.284	.000
	Within Groups	41.196	73	.564		
	Total	231.449	77	-		
INDEPENDENT	Between Group	149.063	4	37.266	35.306	.000
	Within Groups	77.052	73	1.056		
	Total	226.115	77	-		
ACHIEVEMENT	Between Group	139.899	4	34.975	59.413	.000
	Within Groups	42.973	73	.589		
	Total	182.872	77	-		
INTELLECTUAL	Between Group	17.310	4	4.327	5.829	.000
	Within Groups	54.190	73	.742		
	Total	71.500	77	-		
ACTIVE	Between Group	29.570	4	7.393	12.459	.000
	Within Groups	43.314	73	.593		
	Total	72.885	77	-		
MORAL	Between Group	5.396	4	1.349	1.626	.177
	Within Groups	60.566	73	.830		
	Total	65.962	77	-		
ORGANISATION	Between Group	36.984	4	9.246	16.518	.000
	Within Groups	40.862	73	.560		
	Total	77.846	77	-		
CONTROL	Between Group	55.599	4	13.900	24.608	.000
	Within Groups	41.234	73	.565		
	Total	96.833	77	-		

Discussion

This cross-sectional descriptive study was conducted to study prevalence of psychiatric disorders and determinants of mental health of engineering students. 196 students (1st year

50, 2nd year 51, 3rd year 48 and final year 47) were the subject for this study.

Overall prevalence rate of psychiatric problems in engineering students was found to be 24.49% and was highest i.e. 32% in

1st year students. This can be because of engineering educational environment being more competitive, more stressful and less cooperative one, fear of being ragged, personal critical comments by colleagues, interpersonal attraction towards opposite sex and fear of exhaustive curriculum etc. Other researchers have also found similar findings in their studies.^{6,7,8} Female students had higher prevalence rate of psychiatric problems in comparison to male students i.e. 36.59 % vs. 21.29 %. Previous studies also have revealed that stressors or professional school are more favorable for men than for women.^{9,10}

Family type of sample affected the mental status as prevalence rate of psychiatric problems was higher in students from nuclear family than from joint family in all the groups as 44.1% vs. 6.25% in 1st year, 22.2% vs. 6.7% in 2nd year, 23.5% vs. 14.3% in 3rd year, 35.5% vs. 12.5% in 4th year and 31.1% vs. 9.8% of total student's. These findings are in line with previous studies in which being from joint family was found to be protective against psychiatric morbidity.^{11,12}

Higher prevalence of Psychiatric problem was there in students with Hindi as their medium of study before entering Engineering college than students with English background as 35.3% vs. 25.0% in 1st year, 30.4% vs. 7.1% in 2nd year, 26.1% vs. 18.2% in 3rd year, 42.9% vs. 15.4% in 4th year and 31.3% vs. 14.8% of total student's. This can be because of difficulty in understanding the engineering curriculum which is entirely in English. They felt shy of mixing with other students and asking their problems from teacher in the class. They fared poorly in the examination because of difficulty in expressing themselves in spite of knowing the answers correctly; similar findings have been drawn by other researchers.¹³

Engineering students from urban background had higher prevalence of Psychiatric problem than students from rural background as 34.2% vs. 25.0% in 1st year,

20.0% vs. 9.1% in 2nd year, 23.8% vs. 0% in 3rd year, 37.5% vs. 6.7% in 4th year and 28.3% vs. 11.3% of total student's. This can be attributed to short comings of nuclear family and urban upbringing featuring lack of support from extended family member difficulty in mixing, remaining self centered more stresses and high expectation from each other etc. Similar findings have been drawn in past studies also.^{13,14}

Engineering students from lower income group had highest rate of illness, middle income group has intermediate and higher income group has lowest prevalence of Psychiatric problems i.e. 70.3% vs. 21.9% vs. 8.4% of total student's. Family income played a vital role as it was observed that students from families with low and middle income were more prone to develop mental illnesses than those who belonged to high income group. Frustration and disappointment resulting because of unfulfilled needs as of less available money may lead to emotional disturbances and may be the reason for it.¹³ Because of the homogeneity of the socio-economic status of professional students in the west; we have no comparable studies pointing out significance of such variables from the west.

As regards to contribution of psychological determinants in the development of emotional problems in engineering professional students at various levels, different trends have emerged. Life events were studied using presumptive stressful life event scale (PSLE by Gurmeet Singh et al. 1984) and no significant difference between the groups were observed on this scale using ANOVA but using 't' test significant difference was observed between 3rd year vs. control and 4th year vs. control group hence finding were not as meaningful as that of the variable of family environment in this context. This is in line with what has been reported in the past by some researchers.^{15,16}

As regards to Engineering College Environment mentally unhealthy students perceived engineering college environment as significantly more disturbing than their normal counterparts, suggesting it is not the environment or situation per-se but it would depend mainly as how one perceives it. Usually mentally unhealthy student will take it in a negative manner because of several conflicts, self concept, family background etc. he or she entertains with. There have been several studies indicating college environment stress in terms of type of syllabus, practical training, peer group, competition, teacher expectation all these contributes in the development of mental health problems in vulnerable person.^{15,16,17}

The family environment scale (FES) assesses the social climates of all types of families. It focuses on the measurement and description among family members, on the directions of personal growth which are emphasized in the family, and on the basis organizational structure of the family. Scores were significantly different on 9 out of 10 measures (except moral religious emphasis in the family) viz Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual Cultural Orientation, Active Recreational Orientation, Organization and Control; this is in line with common belief that family environment contributes in the developments of emotional problems.^{17,18}

Conclusion

It can be concluded from the findings of this study that prevalence of psychiatric disorders is common in engineering students. Socio demographic factors like gender, family income and type, medium of instruction at the school level and domicile were found to be associated with these disorders. It was also found that those students whose family environment was healthy, attitude to college environment was positive and ability to handle the stressful life events was better were less affected by psychiatric

disorders. Appropriate measures should be taken to correct the modifiable factors to help engineering students to fare better in their studies and to help them become better professional and asset to the Mankind.

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