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## PREVALENCE OF DEPRESSION AND SUICIDAL THOUGHTS AMONG UNDERGRADUATE MEDICAL STUDENTS OF MEDICAL COLLEGE BIRGUNJ

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### INTRODUCTION

#### 1.1 Background

Medical students are known to be the sufferer of tremendous mental stress. Yet it's often hard for all to see the sad faces behind the white aprons. In transformation from young unconfident students to an efficient physician, medical students experience multiple psychological changes. Studies have shown fairly high levels of distress, such as symptoms of depressive disorder among undergraduate medical students (Basnet, Jaiswal, Adhikari, & Shyangwa, 2012)

Depression is a significant contributor to the global burden diseases that have an impact upon people of communities all over the world. Because of high level of demands in academics and psychosocial pressure, medical students tends to become depressed, leading to problems later in professional life and compromising patient care (Ngasa, & et al, 2017)

“Depressive disorders are syndromes of depressed mood, pessimistic thinking

(exact the worst outcome), lack of enjoyment, reduced energy and slowness” (New oxford textbook of psychiatry, 2012)

Exact cause of depression is unknown but different factors have been proposed. There is no single cause of depression. It likely results from a combination of genetic factors, biochemical factors, environmental factors (stressful life events, difficulty relationship help in precipitating depression), some medicines like beta-blockers, corticosteroids, methyldopa, oral contraceptives etc, medical condition such as infection (hepatitis), degenerative neurological disorder such as Alzheimer's disease, strokes (Subedi, 2015).

A typical depressive episode is characterized by some clinical features, which should last for at least two weeks in order to make a diagnosis. The clinical features are as follows:

Depressed Mood: sadness, loss of interest and loss of pleasure in almost all activities, Depressive Cognitions: hopelessness, helplessness and worthlessness, Suicidal Thoughts, Psychomotor Activity:

psychomotor retardation is frequent. The retarded patient thinks, walks and acts slowly. Slowing of thought is often reflected in patient Speech, Psychotic Features: Delusion and hallucinations (Subedi, 2015).

Suicide is the willful act of ending one's life. Suicide is the ultimate act of self destruction. The human act of self inflicted, self intentioned cessation of life is called suicide (Subedi, 2015).

Some of the common causes of suicide are: in Psychiatric disorders comprises depression, anxiety disorder, post traumatic disorder, substance abuse and schizophrenia, in Physical disorders cancer, renal failure, HIV/AIDS, severe disabilities etc. In Psychosocial factors loss of job, failure in examination, dowry difficulties, family dispute etc. (Subedi, 2015).

Suicide, the worst complication of depression. It is the second most common cause of death among individuals aged 15 to 29 years. According to Association of American Medical Colleges (AAMC), it was recorded that the average age suicide is 24 years old applicants in medical colleges (Onyishi, Sanchez, Olaleye, & Medavarapu, 2016).

Medical students are more susceptible to depression than the general population. It is because of the stress and pressure of getting good grades, the lack of sleep, extreme conditions of residency and home sick. Many sectors have an intense amount of competition, but medical school is especially competitive. Everyone is trying hard to achieve the highest grades

possible in order to get the best career possible, and it can be overwhelming. This fierce competition can lead to feeling down about oneself (American Medical Student Association, 2018).

Medical students are more likely to commit suicide than the rest of the general population in their age range. One of the main reasons is that medical students are afraid to admit that they need help. The stigma of getting mental health treatment is one of the most common discouragement for getting help due to fear of it affecting their academic standard (American Medical Student Association, 2017).

## 1.2 Need for the Study

Depression occurs globally and affects an estimated 350 million people. It is a serious health issue and is responsible for 800,000 suicides per year (World Health Organization, 2018).

Depression is a significant contributor to the global burden of disease and affects people in all countries across the world with a global prevalence of depressive episode of 3.2% worldwide, it has been evidenced that 25- 90% of medical students have stress, that is an important determinant of depression that leads to a higher prevalence of depression among medical students than general population (Ngasa & et al., 2017)

Almost 30% of medical students suffer from depressive symptoms. Additionally, 1 out of 10 medical students report experiencing

suicidal ideation which means that the medical students are five times more susceptible to depression than the general population (American Medical Student Association, 2016).

In the context of Nepal, a study was conducted at B.P. Koirala Institute of Health Sciences, Dharan, Nepal in the year 2009. It was found that the prevalence of depression among the medical students was 29.78%. Among female students, the prevalence of depression was 32.43% and 28.07% in male students. All students gave high ratings to academic stress and hectic lifestyle as the main stress causing factors (Basnet, Jaiswal, Adhikari, & Shyangwa, 2012).

According to a cross-sectional study conducted in Nepal it is found that the overall prevalence of depression among medical students was 29.9% and it was associated with living condition (living in hostel or rented house) (Kunwar, Risal, & Koirala, 2016).

Close to 800,000 people die due to suicide every year. Suicide is the second leading cause of death in 15-29 years old (World Health Organization, 2018)

In a study conducted among 206 medical students in Nepal. It was found that suicidal ideation in the past year was present in 10.7% of students lifetime suicidal ideation was present in 18.4% of students (Marahatta, Samuel, Sharma, Dixit, & Shrestha, 2017).

Currently, depression and suicidal thoughts among medical students is an important health issue at the global level. According to previous studies, the prevalence of depression and suicidal thoughts among medical students is higher compared to general population. Prevalence of depression among medical students may affect their academic standard and it may cause severe consequences on health. So, the researcher felt need for assessing the prevalence of depression and suicidal thoughts among undergraduate medical students.

### 1.3 Objectives of the Study

#### 1.3.1 General Objective

The general objective of the study was to find out the prevalence of depression and suicidal thoughts among undergraduate medical students of a Medical College.

#### 1.3.2 Specific Objectives

The specific objectives of the study were:

To find out the prevalence of depression among undergraduate medical students of a Medical College.

To find out the prevalence of suicidal thoughts among undergraduate medical students of a Medical College.

To measure the association between prevalence of depression among undergraduate medical students with selected socio-demographic variables.

To measure the association between prevalence of suicidal thoughts among

undergraduate medical students with selected socio- demographic variables.

#### 1.4 Significance of the Study

The findings of the study might help to estimate the rate of prevalence of depression and suicidal thoughts among undergraduate medical students.

The findings of the study might help in early nursing diagnosis and intervention of depressive disorder and suicidal thoughts.

The findings of the study might be helpful to prevent progression of the depression and suicide among medical students directly and indirectly.

The findings of the study might help future researcher to conduct research of similar topics.

#### 1.5 Theoretical Framework

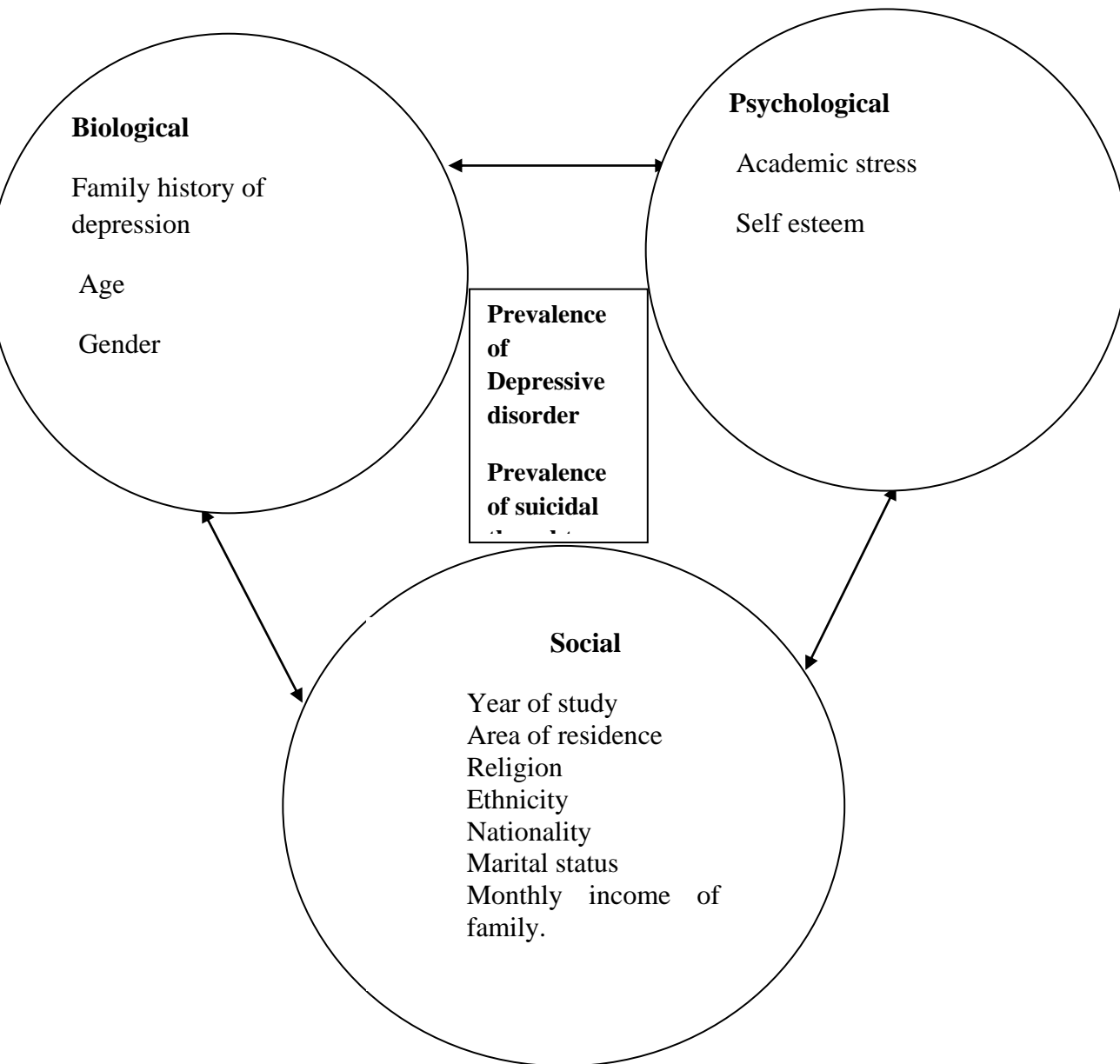
Concepts are often called the building block of theories. Conceptual framework refers to the interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. Theoretical and conceptual frameworks provide an important context for scientific investigations.

The conceptual framework for this study is based on Biopsychosocial model (1977). The selected model was proposed by George L. Engel in 1977 to better reflect the development of illness through the complex interaction of biological factors, psychological factors, and social factors. The model provides a blueprint for research, a framework for teaching, and a design for action in the real world of health care. It is based on the perspective that "humans are inherently biopsychosocial organisms in which the biological, psychological, and social dimensions are inextricably intertwined" (Melchert, 2007).

**The 'Bio' component:** The 'bio' component in this study examines aspects of biology that influence health. These might include things like age, gender, family history of depression.

**The 'Psycho' Component:** the 'psycho' component in this study examines psychological components, things like academic stress, self esteem.

**The 'social' component:** the 'social' component of the biopsychosocial model in this study examines social factors that might influence the health of an individual, things like parental income, academic year, religion, marital status, nationality, ethnicity and area of residence.



Note: Dotted line (.....) is not measured in this study

Figure 1: Theoretical Framework on Prevalence of Depression and Suicidal Thoughts among Undergraduate Medical Students (First, Second and Third Year) of a Medical College Based on Bio- psychosocial Theory.

**1.6 Research Question**

What was the prevalence of depression and suicidal thoughts among

undergraduate medical students of Medical College Birgunj?

**1.7 Research Variables**

### 1.7.1 Dependent Variable

Prevalence of depression among undergraduate medical students of medical college Birgunj

Prevalence of suicidal thoughts among undergraduate medical students of medical college Birgunj

### 1.7.2 Independent Variables

Age

Gender

Year of study

Area of residence

Academic stress

Self- esteem

Marital status

Income of the family

Religion

Ethnicity

Nationality

Family history of depression

### 1.8 Operational Definitions

**Depression:** In this study depression among respondents was measured by using Zung Self- Rating Depression Scale (ZSDS)

Depression was scored and characterized as:

20- 44 Normal Range

45- 59 Mildly Depressed

60- 69 Moderately Depressed

70 and above severely depressed.

**Suicidal Thoughts:** In this study it referred to thinking about or planning of ending one's own life by medical students which was measured by using Modified Scale for Suicidal Ideation (MSSI).

Suicidal thoughts was scored and characterized as:

0-8 = Low Suicidal Ideation

9- 20 = Mild- Moderate Suicidal Ideation

21+ = Severe Suicidal Ideation

**Medical Students:** In this study it referred to all students who were studying MBBS at National Medical College and Teaching Hospital.

### LITERATURE REVIEW

A review of literature is a description and analysis of the literature relevant to a particular field or topic. It provides an overview of what work already had been carried out, who are the key researchers, who did that work, which of the questions

are already answered regarding a particular area of research interest, which methods and methodology were used to answer the particular questions and what are the prevailing theories and hypothesis (Sharma, 2015).

This chapter deals with collection of information regarding prevalence of depression and suicidal thoughts among undergraduate medical students by utilizing different resources such as PubMed, books, magazine, journals, reports, articles, abstracts and various websites. The extensive review helps to determine and explore the sufficient idea and concept about the topics. By utilizing the reviews researcher explored research variables, conceptual framework, sampling technique, background information, etc.

## **2.1 Review of Literature**

The reviewed literatures were organized into three parts as follows:

2.1.1 Literature Related to Depression among Medical Students

2.1.2 Literature Related to Suicidal Thoughts among Medical Students

2.1.3 Literature Related to Depression and Suicidal Thoughts among Medical Student

### 2.1.1 Literature Related to Depression

Quince, Wood, Parker and Benson (2018) conducted a longitudinal study to assess Prevalence and Persistence of Depression among Undergraduate Medical Students at one UK Medical School. Prevalence of Depression was assessed using the Depression Subscale of the Hospital Anxiety and Depression Scale (HADS- D). 725 Core Science and 364 Clinical students participated. The findings of the study reveals that mean HADS-D scores ranged between 3.34 and 3.49 among all Core Science students and between 2.16 and 2.91 among all Clinical students. There was no difference between men and women in median HADS-D scores. Prevalence of depression ranged between 5.7% and 10.6% among all Core Science students and between 2.7% and 8.2% among all Clinical students. Over time Core Science students displayed no increase in mean HADS-D score. Among Clinical students only men displayed a small increase (time coefficient 0.33 (95% CI 0.11 to 0.55)). Prevalence did not increase over time. 220 Core Science and 150 Clinical students participated throughout the study. Of these, 18.2% and 10.6%, respectively, recorded HADS-D scores indicating depression on at least one occasion. Of 56 students recording depression at some point, 37 did so only once. The study concluded that the prevalence of depression among participant was similar to that of comparable groups. In all years a minority of students found to be depressed. Mechanisms are needed to identify and support students with

depressive symptoms, particularly when persistent.

Alshehri, Alaskar and Albahili (2018) conducted a cross-sectional study to evaluate stress, depression and anxiety among Medical Students of Imam Mohammed Iron Saud Islamic University, KSA. The sample consisted of 50 male medical students. The data was collected using the Higher Education Stress Inventory (HESI). The findings of the study shows that 24% of the students were with minimal depression, 18% of students was with mild depression, 8% of student was with moderate depression, 2% of student was with moderately severe depression and none (0%) student was reported with severe depression. The study indicated that medical students are extra sensitive to deal with the environmental occupational atmosphere which stress factors could prevail, so, depressive disorder and anxiety are common among medical students. The study findings had highlighted the need of psychiatric counseling and preventive mental health services to be an integral part of the routine clinical facilities caring for medical students.

Raddadi, Aljabri, Kareem, Alattas, and Alkhalawi (2017) conducted a cross-sectional study to assess the prevalence of depression and anxiety among medical students in comparison with non- medical students in Taibah University, Al Madinah Al Munawwarah, Saudi Arabia among 238 final year medical and computer science students. Students. Prevalence of Depression was assessed using Beck Depression Inventory II (BDI- II). Data was



collected through an electric Questionnaire written in Arabic. For the sample distribution, 44% was medical student, and 56% was computer science students. Findings showed that of these percentages, 33% of medical students suffered moderately from depression, and only 4% of them underwent severe depression. On the other hand, results indicated that among the computer science students, 53% and 7% of them had higher rate of moderate depression and severe depression respectively. Computer science students 23% are also more susceptible to high anxiety than are medical students 14%. The significance relation between depression and specialty ( $p=0.001$ ) was found, including the non-significance relation between anxiety and specialty ( $p=0.007$ ). The study concluded that most of the medical students were not depressed, but they suffered moderately from anxiety. Moreover, both depressive symptoms and anxiety were prevalent among computer science students than among medical college students.

Kumar, Kattimani, Sarkar and Kar (2017) conducted a cross-sectional study to assess Prevalence of Depression and its Relation to Stress Level among Medical Students in Puducherry, India among 444 medical students. Beck Depression Scale was used for screening of depression and Cohen's Perceived Stress Scale to assess perceived stress level. The finding of the study shows that the overall prevalence of depression was found to be 48.4% (215/444). According to the cutoff scores, 229 (51.6%) students scored as normal (0–

9), 149 (33.6%) as mild (10–18), 60 (13.5%) as moderate (19–29), 3 (0.7%) as severe (30–40), and 3 (0.7%) students scored as very severe (>40) depression. Depression was significantly less among those with mild stress (adjusted odds ratio [OR] = 0.010) and moderate stress level (adjusted OR = 0.099) compared to severe stress level and those without interpersonal problems (adjusted OR = 0.448). The study concluded that depressive disorder is common among medical students. Stress coping mechanisms and improvement of interpersonal relationship may help to alleviate depressive symptoms among medical students.

Silva and et al. (2017) executed a prospective longitudinal study to evaluate Depression in Medical Students: Insights from a Longitudinal Study at the Medical School of the Minho, Portugal, between academic years 2009- 2010 to 2012- 2013. The prevalence of depression was assessed using Beck Depression Inventory (BDI). The findings of the study reveals that the response rate was 84, 92, 88 and 81% for academic years 2009–2010, 2010–2011, 2011-2012 and 2012/2013, respectively. Two hundred thirty-eight medical students were evaluated longitudinally. For depression the prevalence ranged from 21.5 to 12.7% (academic years 2009/2010 and 2012/2013). Beck Depression Inventory (BDI) scores decreased during medical school. 19.7% of students recorded sustained high BDI over time. These students had high levels of trait-anxiety and choose medicine for anticipated

income and prestige, reported more relationship issues, cynicism, and decreased satisfaction with social activities. Students with high BDI scores at initial evaluation with low levels of trait-anxiety and a primary interest in medicine as a career tended to improve their mood and reported reduced burnout, low perceived learning problems and increased satisfaction with social activities at last evaluation. No difference was detected between men and women in the median BDI score over time. The study concluded that the certain personal factors ( anxiety traits, medicine choice factors, relationship patterns and academic burnout) are pertinent for persistence of high levels of BDI during medical training. The study suggested that the medical schools need to identify students who experience depression and support them, as early as possible.

Kunwar, Risal and Koirala (2016) executed a cross-sectional study to assess depression, anxiety and stress among students in two medical colleges of Nepal at Kathmandu University school of Medical Sciences, Dhulikhel, Kavre, Nepal among 538 medical students using convenience method of sampling. Depression, Anxiety and Stress Scale (DASS) was used for data collection. The findings of the study shows that a total of 538 students participated in the study giving a response rate of 89.6%. Among them 56.5% were from age group 21-25 years, 42.2% were below 20 years and only 1.3% were above 25 years of age. Among them 52% were female and 48% were male. Their study found that the

overall prevalence of depression was 29.9%, anxiety was 41.1% and stress was 27% among all participated medical students. Depression was significantly associated (OR 2.23, 95% CI 1.43-3.47,  $p < 0.001$ ) with living condition (living in hostel or rented house). The study concluded that the higher level of depression 29.9% among medical students suggests need for strategic plan to alleviate depressive disorder and the stress for right from the time they join the medical school and has to be continued till the finishing of course.

Onyishi, Sanchez, Olaleye and Medavarapu (2016) executed a study to assess the prevalence of Clinical Depression among Medical Students and Medical Professionals: A systematic Review Study at Roseau, Dominica. The findings of the study reveals that The studies review therefore shows a higher trend of prevalence of depression. It is observed that it's quite common among most of the medical students. It involves increased levels of burnout and suicidal ideation which is not inevitable among resident and consultants. Level of psychological distress it quite common among medical students and professionals. It has consistently increased higher as compared to the regional general population. In general, the studies show that the psychological suffering is higher for female physicians and medical students as compared to males. The study concluded that the prevalence due to psychological distress among medical student and resident professionals around parts of the world is notable. The

study suggested that the future research should seek to identify and possibly eradicate unnecessary stressors.

Puthran, Zhang, Tam and Ho (2016) conducted online databases cross-sectional Study to Assess Prevalence of Depression amongst Medical Students globally. A total of 62728 medical students and 1845 non-medical students were pooled across 77 studies and examined. Studies were included only if they had used standardized and validated questionnaires to evaluate the prevalence of depression in a group of medical students. Our analyses demonstrated a global prevalence of depression amongst medical students of 28.0% (95% confidence interval [CI] 24.2-32.1%). Female, Year 1, postgraduate and Middle Eastern medical students were more likely to be depressed, but the differences were not statistically significant. By year of study, Year 1 students had the highest rates of depression at 33.5% (95% CI 25.2-43.1%); rates of depression then gradually decreased to reach 20.5% (95% CI 13.2-30.5%) at Year 5. This trend represented a significant decline ( $B = -0.324$ ,  $p = 0.005$ ). There was no significant difference in prevalences of depression between medical and non-medical students. The overall mean frequency of suicide ideation was 5.8% (95% CI 4.0-8.3%), but the mean proportion of depressed medical students who sought treatment was only 12.9% (95% CI 8.1-19.8%). The study concluded that in global scenario, the depression affects almost one-third of the medical students. The study findings had suggested that medical

schools and health authorities should offer early detection and prevention programmes, and interventions for depression among undergraduate medical students.

Basnet, Jaiswal, Adhikari and Shyangwa (2012) conducted a cross sectional study to evaluate the depression among undergraduate medical students at B.P Koirala Institute of Health Sciences. Dharan, Nepal among 50 students each from Bachelor of Medicine and Bachelor of Surgery (MBBS) first and third year students. The depression levels were assessed using Zung Depression Scale. The findings of the study reveals that the overall prevalence of depression among the students was 29.78 percent.

The prevalence of depression in first and third year was 36.74 and 22.22 percent respectively. The prevalence of depression was 32.43 percent among female students versus 28.07 percent in male students. Both first and third year students gave high ratings to academic stress and hectic lifestyle as the main stress inducing factor. The study concluded that the prevalence of depression was noted especially in first year medical students. So, efforts should had been made to decrease the stressors right from the time they join medical school. Since, it is proved that academic stress is one of the major factors, attempts to make the academic curriculum more student- friendly were suggested. Suicidal behavior was higher in medical students who lived alone, students who had poor physical health, students who had a poor economic status, medical

students who are/were in psychopharmacology treatment and students who had high alcohol use, severe depressive disorder and high anxiety levels. The study suggested that the medical schools should implement programs that promote mental health wellness, physical health and economy economic status between other modifiable factors associated.

### 2.1.2 Literature Related to Suicide

Zivanovic, McMillan, Lovato and Roston (2018) conducted a study to assess Death by Suicide among Canadian Medical Students: A National Survey-Based Study at Canada. The findings of the study shows that the Responses were obtained from 16 of 17 (94%) MDUPs. Six suicides (50% female) were reported over the ten-year period from 2006 to 2016. The estimated cause-specific mortality rate was 5.9-8.7/100,000 medical students/year. There were seven (44%) MDUPs that kept statistics on student deaths including suicides and 10 (63%) reported having policies or guidelines regarding what to do in the event of a suicide. The study concluded that the estimated suicide rate had fallen within previously reported rates in medical students. While that may be lower than the national rate for Canadians between the ages of 20-30 years old, any suicide in the medical student community must be an impetus for national dialogue and further study. A strategy is needed to better define the prevalence, risk factors for and impact of medical student suicide in Canada.

Torres, Campos, Lima and Ramos (2018) executed a study to evaluate Suicidal Ideation among Medical Students: Prevalence and Predictors in Brazil. The findings of the study reveals that among 475 medical students of a public university, Suicidal ideation was present in 34 participants (7.2%). In the logistic regression, suicidal ideation remained associated with living alone, ideation of quitting the course, moderate or severe depressive symptoms, and probable obsessive- compulsive disorder. The study concluded that suicidal ideation is evident among medical students and special attention should be given to those students who are living alone, with thoughts of quitting the course, and relevant depressive and obsessive- compulsive symptom.

Osama and et al. (2014) conducted a study to assess Suicidal Ideation among Medical Students of Pakistan. The findings of the study shows that In the past one year, suicidal ideation was found in 118 (35.6%) students. Forty-six (13.9%) of all the students had made a plan in their life time to commit suicide while 16 (4.8%) of the 331 students tried to commit suicide at some point of time in their life. More females than males pondered suicide while first year medical students formed the majority of those with suicidal ideation. The single greatest risk factor predisposing to suicidal ideation was substance abuse. This was followed jointly by parental neglect and previous psychiatric disorder. The study concluded that in eradicating suicidal intent campaigns against

substance abuse and counseling of vulnerable students will help.

Jain, Jain, Menezes, Subba, Kotian and Nagesh (2012) conducted a study to assess Suicide Ideation among Medical Students in South India. The findings of the study shows that Out of 305 students who filled questionnaire completely (response rate 87%), 119 (39%) were males and 186 (61%) were females. Around 8.3% (n=25) admitted alcohol consumption, 4.3% (n=13) were smokers, 3% (n=9) admitted to having tried/done substance abuse. More than half (172; 56.39%) were dissatisfied with academic performance ( $p=0.002$ ), 34 (55.7%) students had broken up with their close friends ( $p=0.009$ ), and 20 (6.56%) felt neglected by the parents/family. One fifth of respondents (61; 20%) had reported suicide ideation, 24 (7.9%) have given serious thought to committing suicide, 28 students (9.5%) consider their life as a burden. The study concluded that suicidal ideation is significantly associated with dissatisfaction in academics, neglect by family and break up with close friends. These issues can be tackled by counseling. The awareness generated could be helpful in avoiding suicide.

Goyal, Kishore, Anand and Rathi (2012) conducted a cross-sectional study to assess suicidal ideation among medical students of Delhi among 265 undergraduate students of medical college. Data was collected using a self-administered validated scale to assess suicidal ideation. The findings of the study revealed that the prevalence of suicidal thoughts amongst medical students was

53.6%. Although everybody was aware of the meaning of suicide and the damage it could cause to the individual and family, still 4.9% students seriously contemplated suicide and 2.6% have attempted suicide at least once in their life. suicidal ideation was highest in first professional year medical students (64.4%) and lowest among the third year students (40.4%). Suicidal ideation was significantly associated with 'impulsive or reckless behavior in different situations', feeling of being 'better off dead' and 'its all too much to manage'. The study concluded that high prevalence of suicidal ideation amongst medical students suggests that there is an urgent need for a mental health program for medical students that provides counseling services and creates more opportunities for recreational activities.

Menezes and Shankar (2012) conducted a cross-sectional study to find out the prevalence of suicidal ideation and factors influencing suicidal ideation among 206 medical students. Students were selected using random sampling and suicidal ideation was measured using validated questionnaire. The findings of the study shows that suicidal ideation in last one year was present in nearly one tenth of the study population and in almost one fifth of them lifetime suicidal ideation was present. Factors that were associated with suicidal ideation were primarily dissatisfaction with academic performances, being in the clinical semesters, having history of drug abuse and feeling neglected by parents. The study concluded that understanding the magnitude of the problem and their

epidemiology via scientific study like this would be the first step in this process.

### 2.1.3 Literature Related to Depression and Suicidal Thoughts.

Coentre, Faravelli, and Figueira (2016) conducted a cross-sectional study to evaluate Depression and Suicidal Behavior among 456 native Medical Students in Portugal. Data was collected using a self-report survey including questions on demographic and clinical variables. The findings of the study shows that A total of 456 of the 459 surveyed medical students participated in this study (response rate: 99.3%). The total number of medical students enrolled in the 4<sup>th</sup> and 5<sup>th</sup> years of medical school was 767, approximately 50 students in each class. A total of 58 (12.7%) students had a psychiatric diagnosis, 36 (7.9%) had a depressive disorder, 13 (2.9%) had anxiety disorder, two (0.4%) had bipolar disorder, and seven (1.5%) had another psychiatric diagnosis (eating disorders, OCD, etc.). Seven (1.5%) participants had a previous psychiatric admission. Forty-nine (11%) of the medical students were or are in psychopharmacologic treatment. In the sample, 168 (37%) students had a psychiatric family history, and 51 (11.2%) had a suicide attempt in a close relation. Twelve (2.6%) medical students had a suicide attempt in parents, two (0.4%) in a sister/brother, four (0.9%) in a boy/girlfriend, five (1.1%) in a friend and 28 (6.1%) in another close relation. The study concluded that depression and suicidal thoughts are mental health problems that affects a significant proportion of medical

students, the rate was similar to the general Portuguese population. Depression was evident in female medical students, students who lived alone, medical students with poor physical health, students with a poor economic status, students having psychiatric diagnosis, medical students with a family history of psychiatric problems and students with high levels of anxiety. Depression was also higher in medical students with suicidal thoughts, plans or suicidal attempt.

Rotenstein and et al. (2016) conducted cross-sectionals and longitudinal studies study to assess Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation among Medical Students in 43 countries. Data was collected by using self-report instruments. The findings of the study reveals that Depression or depressive symptom prevalence data were extracted from 167 cross-sectional studies (n = 116628) and 16 longitudinal studies (n = 5728) from 43 countries The overall pooled crude prevalence of depression or depressive symptoms was 27.2% (37 933/122 356 individuals; 95% CI, 24.7% to 29.9%,  $I^2 = 98.9%$ ). Summary prevalence estimates ranged across assessment modalities from 9.3% to 55.9%. Depressive symptom prevalence remained relatively constant over the period studied (baseline survey year range of 1982–2015; slope, 0.2% increase per year [95% CI, -0.2% to 0.7%]). In the 9 longitudinal studies that assessed depressive symptoms before and during medical school (n = 2432), the median absolute increase in symptoms was 13.5% (range, 0.6% to 35.3%). Prevalence

estimates did not significantly differ between studies of only preclinical students and studies of only clinical students (23.7% [95% CI, 19.5% to 28.5%] vs 22.4% [95% CI, 17.6% to 28.2%];  $P = .72$ ). The percentage of medical students screening positive for depression who sought psychiatric treatment was 15.7% (110/954 individuals; 95% CI, 10.2% to 23.4%,  $I^2 = 70.1\%$ ). Suicidal ideation prevalence data were extracted from 24 cross-sectional studies ( $n = 21\ 002$ ) from 15 countries. All but 1 study used self-report instruments. The overall pooled crude prevalence of suicidal ideation was 11.1% (2043/21 002 individuals; 95% CI, 9.0% to 13.7%,  $I^2 = 95.8\%$ ). Summary prevalence estimates ranged across assessment modalities from 7.4% to 24.2%.

Mackenzie and et al. (2012) executed a systematic cross-sectional survey to assess Depression and Suicidal Ideation among 1,622 college students Accessing Campus Healthcare at Midwest, Northwest and Canada. The data was collected using Beck Depression Inventory and other measures related to exercise patterns, alcohol use, sensation seeking, and violence. The findings of the study reveals that of the 1,626 currently enrolled students completing the survey, 1,102 (68%) were female and 520 (32%) were male. The respondents were predominantly White (78% females, 76% males), with Asians comprising the largest minority racial group (13% females, 15% males). Sixty-seven percent of the students were undergraduates (same for male and female respondents) and 31–32% lived on

campus. Approximately 80% of respondents were non-smokers (81% female, 74% male). Overall, 26.4% of female and 24.7% of male study participants screened positive for depression (BDI-PC  $\geq 4$ ). Females who screened positive for depression were more likely to be non-White, use tobacco, and exercise less than once a week. They were more likely to score high on the sensation-seeking scale and to report a history of emotional abuse, physical violence, and unwanted sexual encounters. Males who screened positive for depression were more likely to use tobacco, exercise less than three times per week, and report emotional abuse and unwanted sexual encounters. Thirty-two percent of students reported seeing a counselor for mental health concerns one or more times. Among students with a BPI score of less than four, only 13.5% had been to a counselor. Among students with a BPI score of four or more, 63.2% had seen a counselor. The difference was significant ( $p < 0.001$ ). The relationship appears to be independent of gender. Overall, 10% of females and 13% of males had thoughts of killing.

Thompson, Goebert and Takeshita (2010) executed a study to assess A Program for Reducing Depressive Symptoms and Suicidal Ideation in Medical Students, the University of Hawaii John A. the findings of the study reveals that Before the intervention, 26 medical students (59.1%) had reported depressive symptoms, and 13 (30.2%) reported suicidal ideation. After the intervention, 14 medical students

(24.1%) reported depressive symptoms ( $\chi^2 = 12.84$ ,  $df = 2$ ,  $P < .01$ ), and 1 (3%) reported suicidal ideation ( $\chi^2 = 13.05$ ,  $df = 1$ ,  $P < .001$ ). the study concluded that the programs that provide specific mental health support for medical students may significantly decrease the reported rates of depressive symptoms and suicidal ideation.

## 2.2 Summary of Reviewed Literature

For conducting a study on topic Prevalence of Depression and Suicidal Thoughts among Undergraduate Medical Students, researcher had been through many literature related with this topic and reviewed it thoroughly. Different types of study has been conducted on the topic Prevalence of Depression and Suicidal Thoughts among Undergraduate Medical Students. Among them majority of the research study were cross-sectional research design. In those studies majority of methodology used was structured questionnaire. Majority of the study include the dependent variable as age, gender, academic year and ethnicity. The literature review reveals most of the medical students moderate to severe depression and mild to moderate suicidal thoughts. The above related reviewed literature revealed that researches on similar study have been conducted in other countries. In Nepal very few researches has been conducted related to this topic. Thus, this gap was fulfilled by conducting this research among medical students.

The research methodology is the logical and systematic process to find research problem and exploring the framework to conduct the research. This chapter detailed the research design, sample population, setting of the research, sampling technique, research instrument, method of data collection, ethical consideration and method of data analysis.

## 3.1 Research Design

A descriptive cross-sectional research design was used to find out the prevalence of depression and suicidal thoughts among undergraduate medical students of Medical College.

## 3.2 Research Setting and Population

This study was conducted at National Medical college and Teaching Hospital (NMCTH) which is situated in Birgunj, a metropolitan city of Terai belt and

connected with the north boarder of India. National medical college is the only medical college of Birgunj . Along with MBBS, many others programmes are being run over here.

The study population was first year, second year and third year undergraduate medical students of NMCTH.

## 3.3 Sampling

### 3.3.1 Sampling Technique

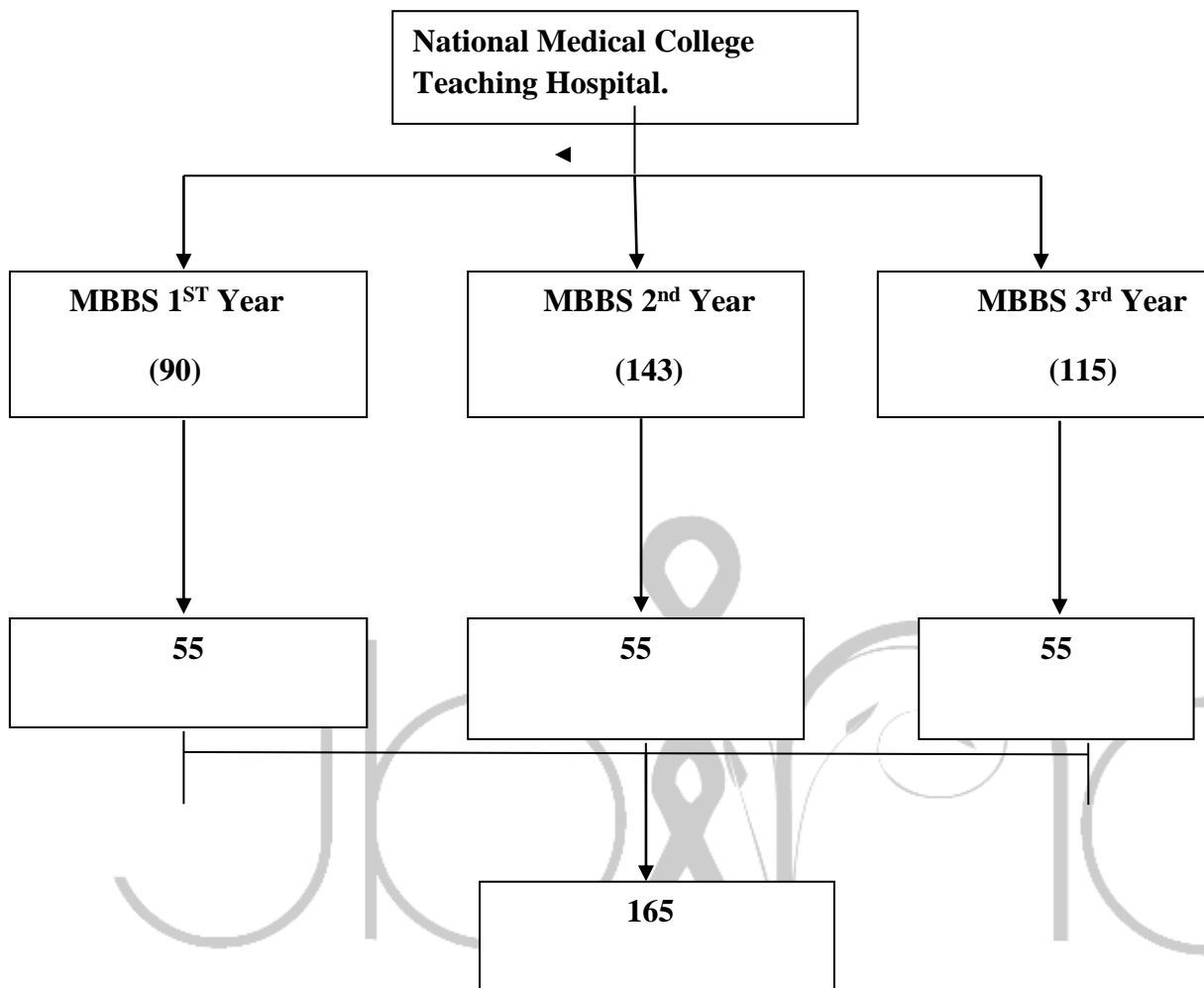
The Probability sampling technique (Stratified random sampling technique-disproportionate method) was adopted for

## METHODOLOGY



selecting medical students. Considering academic year as strata, 55 medical students were selected randomly (lottery

method) from each year (first, second and third year).



**Figure 2: Flow Chart Showing the Sampling Technique**

**3.3.2 Sample Size**

The sample size was calculated based on the prevalence of depression that was 29.9% (Kunwar, Risal, & Koirala, 2016). By considering operational definition and inclusion criteria sample population was drawn.

The Cochran formula was used to calculate the sample size.

$$n_0 = \frac{Z\alpha^2 pq}{d^2} \text{ (Cochran, 1977)}$$

where,  $Z\alpha$  is the tabulated value of  $Z$ - score at a level of significance, at 95%, its value is 1.96.

$P$  is prevalence previous study i.e. 29.9% (Kunwar, Risal, & Koirala, 2016).

$$Q = 1 - p \text{ hence } q = 1 - 0.299 = 0.701$$

$d$  is the degree of precision set at  $\pm 7\%$  or 0.07

Hence, substituting the formula:

$$n_0 = \frac{1.96 \times 1.96 \times 0.299 \times 0.701}{0.07 \times 0.07}$$

$n_0 = 164.32$

$n_0 = 165$

From the calculation sample size was 165.

### 3.3.3 Inclusion Criteria

The medical students studying first year, second year and third year MBBS at Medical College of Birgunj.

Those who were willing to participate in study

Those who were available at the time of data collection.

### 3.4 Research Instrument

After reviewing the related literature, consultation with thesis guide and subject expertise in the related field, the standardized research instrument for the assessment of prevalence of depression and suicidal thoughts among medical students was used.

#### Section A

This section consisted of socio-demographic variables which was prepared by the researcher herself. It consists of age, gender, religion, nationality, marital status, area of residence, type of family, monthly income of family, type of course and year of study.

#### Section B

This section comprised of Zung self-rating Depression scale which was used to assess the prevalence of depression among undergraduate medical students.

The Zung Self-Rating Depression Scale (ZSDS) was a 20-item self-report questionnaire that was designed by Duke University Psychiatrist William W.K. Zung MD in 1965 to assess the level of depression. Each item was scored on a Likert scale ranging from 1 to 4. A total score is derived by summing the individual item scores, and ranges from 20 to 80.

ZSDS was scored and characterized as:

20- 44 Normal Range

45- 59 Mildly Depressed

60- 69 Moderately Depressed

70 and above severely depressed.

#### Validity and Reliability

ZSDS was a standard valid tool.

Among 10% of population of similar setting i.e. among 16 students of fourth year medical students of National Medical College pre-testing was done.

Reliability of ZSDS was 0.73 checked by using Cronbach's alpha reliability test.

#### Section C

This section comprise of the Modified Scale for Suicidal Ideation (MSSI) which was used to assess the prevalence of suicidal thoughts among undergraduate medical students. The Modified Scale for Suicidal Ideation (MSSI) was an 18-item clinical research instrument designed to assess the presence or absence of suicide ideation and the degree of severity of suicidal ideas which was developed by Ivan W. Miller, William H. Norman, Stephen B. Bishop, Michael G. Dow.

MSSI was scored and characterized as:

0- 8 = Low Suicidal Ideation

9- 20 = Mid- Moderate Suicidal ideation

21+ = Severe suicidal ideation

#### Validity and Reliability

MSSI was a standard valid tool.

Among 10% of population of similar setting i.e. among 16 students of fourth year medical students of National Medical College pre-testing was done.

Reliability of MSSI was 0.71 checked by using Cronbach's alpha reliability test.

### 3.5 Data Collection Procedure

Formal administrative approval was obtained from the principal of National Medical College and Teaching Hospital before conducting the study. Data was collected after getting ethical clearance from Institutional Review Committee of National Medical College.

Self introduction and purpose of data collection was explained to all respondents. Written informed consent was taken from each respondent. Each student was assured for privacy and confidentiality of information given by them. Data were collected

by the researcher herself from 2075/05/31 to 2075/06/13. Self administered standard tools Zung depression scale and Modified Scale for Suicidal Ideation (MSSI) were used to assess the prevalence of depression and suicidal thoughts among undergraduate medical students respectively.

### 3.6 Ethical Considerations

Formal approval was obtained by the researcher from the concerned authorities i.e. Institutional Review Committee of NMCTH. Formal permission was taken from the principal of NMCTH. Written informed consent was taken from the medical students to ensure their privacy, anonymity and confidentiality. Human dignity was maintained by allowing the respondent to quit the research whenever they want to leave and Principle of justice was maintained by not judging and discriminating the respondents on the basis of their age, cast, religion, background and so on. Researcher maintained the risk-benefit ratio. Researcher ensured that there is no harm from the study to the respondents.

### 3.7 Data Analysis Procedure

After completion of data collection, the collected data was checked for completeness and accuracy. Data was organized in order for editing, classifying, coding and tabulating the information. Data processing was done manually and also with the use of computer. Statistical package for social sciences (SPSS) version 20 was used for data analysis. Data was analyzed by using descriptive statistical method (frequency, percentage, mean, median, mode and standard deviation) and inferential statistical method as applicable.

## CHAPTER IV

### FINDINGS OF THE STUDY

This chapter deals with the findings, analysis and interpretation of the data. This study is focused on prevalence of Depression and Suicidal Thoughts among Undergraduate medical students of Medical College Birgunj.

The responses of 165 medical students had been analyzed according to the objectives of the research study. Results were presented based on the descriptive analysis (frequency, percentage, mean) and inferential statistics (chi-square test).

The data were organized and presented in various table in order to facilitate their interpretation. The major findings of the study are presented in the following sections:

Section A: Demographic characteristics of the respondents which is presented in Table 1

Section B: Prevalence of depression among the respondents which is presented in Table 2, and 3

Section C: Prevalence of suicidal thoughts among respondents which is presented in Table 4 and 5.

Section D: Association between prevalence of depression among respondents with selected demographic variables presented in Table 6.

Section E: Association between prevalence of Suicidal Thoughts among respondents with selected demographic variables presented in Table 7.

## Section A: Demographic characteristics of Respondents

This section deals with the demographic characteristics of the medical students. The data pertaining to the demographic variables of medical students included age, gender, religion, nationality, marital status, area of residency, year of study, type of family and monthly income of the family.

TABLE 1  
Distribution of Respondents as Per Demographic Variables

n=165

Variables	Frequency	Percentage
<b>Age</b>		
≤20 years	82	49.7
>20 years	83	<b>50.3</b>
<b>Mean±SD; 20.71±1.344, Min 18 Years, Max 29 Years</b>		
<b>Gender</b>		
Male	63	38.2
Female	102	<b>61.8</b>
<b>Religion</b>		
Hindu	141	<b>85.5</b>
Buddhist	5	3.0
Christian	2	1.2
Muslim	17	10.3
<b>Nationality</b>		
Nepalese	127	<b>77.0</b>
Indian	38	23.0
<b>Marital Status</b>		
Married	1	0.6
Unmarried	164	<b>99.4</b>
<b>Area of residency</b>		
Own home	5	3.0
Hostel	160	<b>97.0</b>
<b>Year of study</b>		
First year	55	33.3
Second year	55	33.3
Third year	55	33.3
<b>Type of Family</b>		
Nuclear family	122	<b>73.9</b>
Joint family	43	26.1
<b>Monthly income of the family</b>		
<10,000	3	1.8
10,001- 20,000	10	6.1
20,001- 30,000	31	18.8
>30,000	121	<b>73.3</b>

Table 1 depicts the demographic characteristics of the undergraduate medical students, among 165, 50.3 % were in age group more than 20 years with mean and standard deviation; 20.71±1.344 where minimum age of medical student was 18 years and maximum 29 years. Regarding Gender, 61.8% of medical students were female. Among all, 85.5% belongs to Hindu religion. In the context of Nationality, 77.0% of the medical

students belong from Nepal. In concern of marital status and residence, 99.4% and 97.0% were unmarried and reside in hostel respectively. Regarding type of family, 73.9% belongs to nuclear family and in concern of income, 73.3% medical students had monthly family income more than 30,000.

### Section B: Depression among Respondents.

This section deals with the findings related to depression among the medical students which included various items related to depression and level of depression. It has been presented in Table 2 and 3.

**TABLE 2**  
**Prevalence of Depression among Respondents**

Statements	n=165			
	A little of the time No (%)	Some of the time No (%)	Good part of the time No (%)	Most of the time No (%)
Down- hearted and blue	116 (70.3)	44 (26.7)	1 (0.6)	4 (2.4)
Morning feel the best	8 (4.8)	17 (10.3)	27 (16.4)	113 (68.5)
Crying spells or feel like it	117 (70.9)	35 (21.2)	6 (3.6)	7 (4.2)
trouble sleeping at night	107 (64.8)	29 (17.6)	5 (3.0)	24 (14.5)
eat as much as I used to	100 (60.6)	25 (15.2)	16 (9.7)	24 (14.5)
still enjoy sex	138 (83.6)	11 (6.7)	3 (1.8)	13 (7.9)
losing weight	106 (64.2)	36 (21.8)	2 (1.2)	21 (12.7)
Constipation	116 (70.3)	32 (19.4)	5 (3.0)	12 (7.3)
heart beats faster than usual	102 (61.8)	45 (27.3)	11 (6.7)	7 (4.2)
get tired for no reason	85 (51.5)	46 (27.9)	10 (6.1)	24 (14.5)
mind is as clear as it used to be	27 (16.4)	21 (12.7)	30 (18.2)	87 (52.7)
easy to do the things I used to do	17 (10.3)	33 (20.0)	31 (18.8)	84 (50.9)
restless and can't keep still	95 (57.6)	47 (28.5)	14 (8.5)	9 (5.5)
hopeful about the future	18 (10.9)	18 (10.9)	25 (15.2)	104 (63.0)
more irritable than usual	99 (60.0)	47 (28.5)	10 (6.1)	9 (5.5)
easy to make decisions	26 (15.8)	29 (17.6)	42 (25.5)	68 (41.2)
I am useful and needed	12 (7.3)	21 (12.7)	32 (19.4)	100 (60.6)
My life is pretty full	11 (6.7)	26 (15.8)	34 (20.6)	94 (57.0)
others would be better off if I were dead.	133 (80.6)	16 (9.7)	9 (5.5)	7 (4.2)
enjoy the things I used to do	10 (6.1)	11 (6.7)	25 (15.2)	119 (72.1)

Table 2 represents prevalence of depression among respondents and their respond to depression statements where, 83.6% respondents responded to the statement “still enjoy sex” a little of the time and 0.6% student responded to the statement “feels down- hearted and blue” good part of the time.

**TABLE 3**  
**Level of Depression among Respondents**

Level of Depression	n=165	
	Frequency	Percentage
Normal range (20-44)	138	83.6
Mildly depressed (45-59)	26	15.8
Moderately depressed (60-69)	1	0.6

Table 3 illustrates among respondents, 83.6% were within normal range, 15.8% were mildly depressed and 0.6% was moderately depressed.

### Section C: Suicidal Thoughts among Respondents

This section deals with the findings related to suicidal thoughts among respondents which include various items related to suicidal thoughts and level of suicidal thoughts among respondents.

TABLE 4

#### Prevalence of Suicidal Thoughts among Respondents

Statements	0 Score	1 score	2 score	3 score
Wish to die	136 (82.4)	25 (15.2)	1 (0.6)	3 (1.8)
Wish to live	148 (89.7)	15 (9.1)	1 (0.6)	1 (0.6)
Desire to make an active suicidal attempt	147 (89.1)	13 (7.9)	4 (2.4)	1 (0.6)
passive suicidal attempt	138 (83.6)	18 (10.9)	6 (3.6)	3 (1.8)
Duration of Thoughts	114 (69.1)	47 (28.5)	2 (1.2)	2 (1.2)
Frequency of Ideation	155 (93.9)	8 (4.8)	1 (0.6)	1 (0.6)
Intensity of thoughts	142 (86.1)	13 (7.9)	6 (3.6)	4 (2.4)
Deterrent to active attempt	89 (53.9)	5 (3.0)	15 (9.1)	56(33.9)
Reasons for Living and Dying	121 (73.3)	30 (18.2)	17 (7.3)	2 (1.2)
Degree of specificity/ planning	110 (66.7)	12 (7.3)	32(19.4)	11 (6.7)
Method: availability/opportunity	139 (84.2)	18 (10.9)	5 (3.0)	3 (1.8)
Sense of courage to carry out attempt	142 (86.1)	12 (7.3)	6 (3.6)	5 (3.0)
Competence	125 (75.8)	36 (21.8)	1 (0.6)	3 (1.8)
Expectancy of actual attempt	138 (83.6)	23 (13.9)	3 (1.8)	1 (0.6)
Talk about death/ suicide	143 (86.7)	18 (10.9)	3 (1.8)	1 (0.6)
Writing about death/ suicide	152 (92.1)	11 (6.7)	2 (1.2)	0 (0.0)
Suicide note	154 (93.3)	9 (5.5)	2 (1.2)	0 (0.0)
Actual Preparation	160 (97.0)	2 (1.2)	2 (1.2)	1 (0.6)

Table 2 represents suicidal thoughts among respondents and their respond to suicidal thoughts statements where, 97.0% respond to “actual preparation” 0 score and 0.6% respond to “wish to die” 2 score.

TABLE 5

## Level of Suicidal Thoughts among Respondents

			n=165
Level of Suicidal Thoughts	Frequency	Percentage	
Low suicidal ideation	130	78.8	
Mild – moderate suicidal ideation	32	19.4	
Severe suicidal ideation	3	1.8	
<b>Total</b>	<b>165</b>	<b>100.0</b>	

Table 6 illustrates among respondents, 78.8% had low suicidal ideation, 19.4% had mild- moderate suicidal ideation and 1.8% had severe suicidal ideation.

#### Section D: Association between prevalence of depression among respondents with selected socio-demographic variables.

This section deals with Association between prevalence of depression among respondents with selected socio-demographic variables.

TABLE 6  
Association between prevalence of depression with Selected Demographic Variables

Variables	Level of depression			$\chi^2$	P- value
	Normal range (No.)	Mildly depressed (No.)	Moderately depressed (No.)		
<b>Age</b>					
≤20 years	68	13	1	1.409	0.494*
>20 years	70	13	0		
<b>Gender</b>					
Male	50	13	0	2.680	0.262*
Female	88	13	1		
<b>Religion</b>					
Hindu	119	21	1	1.816	0.936*
Buddhist	4	1	0		
Christian	2	0	0		
Muslim	13	4	0		
<b>Nationality</b>					
Nepalese	107	19	1	0.763	0.683*
Indian	31	7	0		
<b>Marital Status</b>					
Married	1	0	0	0.359	0.836*

Unmarried	137	26	1			<i>Level of significance at &lt; 0.05</i>
<b>Area of residency</b>						
Own home	2	3	0			
Hostel	136	23	1	5.308	0.070*	
<b>Year of study</b>						
First year	39	16	0			
Second year	51	3	1	14.196	<b>0.007*</b>	
Third year	48	7	0			
<b>Type of Family</b>						<i>*Likelihood Ratio</i>
Nuclear family	103	19	0			
Joint family	35	7	1	2.735	0.255*	
<b>Monthly income of the family</b>						
<10,000	2	1	0 (0.0)			
10,001- 20,000	6	4	0			
20,001- 30,000	26	4	1	7.725	0.259*	
>30,000	104	17	0			

Table 8 reveals the association between level of depression with socio-demographic variables which reveals that there is significant association between prevalence of depression and year of study with P value (P= 0.007) and there is no significant association between level of depression and all the other demographic variables.

#### **Section E: Association between prevalence of suicidal thoughts among respondents with selected demographic variables.**

This section deals with Association between prevalence of suicidal thoughts among respondents with selected socio-demographic variables.



TABLE 7

## Association between Prevalence of Suicidal Thoughts with Selected Demographic Variables

n=165

Variables	Suicidal Thoughts			T	$\chi^2$	P- value
	Low suicidal ideation No.(%)	Mild – moderate suicidal ideation No.(%)	Severe suicidal ideation No.(%)			
<b>Age</b>						
≤20 years	68	13	1	1.742	0.418*	
>20 years	62	19	2			
<b>Gender</b>						
Male	47	14	2	1.636	0.441*	
Female	83	18	1			
<b>Religion</b>						
Hindu	112	26	3	2.084	0.912*	
Buddhist	4	1	0			
Christian	1	1	0			
Muslim	13	4	0			
<b>Nationality</b>						
Nepalese	100	25	2	0.189	0.910 *	
Indian	30	7	1			
<b>Marital Status</b>						
Married	1	0	0	0.478	0.787 *	
Unmarried	129	32	3			
<b>Area of residency</b>						
Own home	3	2	0	1.306	0.52*	
Hostel	127	30	3			
<b>Year of study</b>						
First year	38	15	2	19.678	<b>0.001*</b>	
Second year	53	2	0			
Third year	39	15	1			
<b>Type of Family</b>						
Nuclear family	96	23	3	1.882	0.390 *	
Joint family	34	9	0			
<b>Monthly income of the family</b>						
<10,000	1	1	1	9.215	0.162*	
10,001- 20,000	6	4	0			
20,001- 30,000	24	6	1			
>30,000	99	21	1			

Level of significance at &lt; 0.05

\*Likelihood Ratio

Table 9 shows association between level of suicidal thoughts with socio-demographic variables which reveals that there is significant association between prevalence of suicidal thoughts and year of study with P value (P= 0.001) and there is no significant association between all the other socio-demographic variables.

## **DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

This chapter deals with discussion, conclusion, limitations and recommendations of the study. Discussion section presents all the findings in comparison with those of other studies and conclusion are drawn from each of the findings. Recommendations give direction to future researcher and suggestions for improving present study for generalization.

This current study is an attempt to find out the prevalence of depression and suicidal thoughts among undergraduate medical students.

### **5.1 Discussion**

Concerning the prevalence of depression among undergraduate medical students, the present study revealed that among all, 83.6% were within normal range, 15.8% were mildly depressed and 0.6% was moderately depressed. The result is incongruent with the study conducted by (Ngasa, & et al, 2017) which reported that 34.6% medical students had mild depression, 26.4% had moderate depression and 3.4% and 0.80% of medical students had moderately severe and severe depression respectively. Also, the findings is inconsistent with the study conducted by (Singh, Singh, Lal, Amar, & Shekhar, 2011) which concluded that 49.1% students reported depressive

symptoms. The variation in the findings may be due to the difference in study setting, population and the sample size.

Regarding the prevalence of suicidal thoughts among undergraduate medical students, the present study revealed that among all, 78.8% had low suicidal ideation, 19.4% had mild- moderate suicidal ideation and 1.8% had severe suicidal ideation. The result is inconsistent with the study conducted by (Torres, Campos , Lima, & Ramos, 2018) which reported that among 475 medical students of a public university, suicidal ideation was present in 34 participants (7.2%). Also, the findings is incongruent with the study conducted by (Jain, Jain, Menezes, Subba, Kotian, & Nagesh, 2012) which concluded that 20% had reported suicidal ideation, 7.9% have given serious thought to committing suicide, 9.5% consider their life as a burden. The variation in the findings may be due to the difference in study setting, population and the sample size.

Concerning the association between prevalence of depression with socio-demographic variables, that there is significance association between prevalence of depression and year of study with P value ( $P= 0.007$ ). Prevalence of depression was found to be more (29.1%) among first year students than the second and third year students. The study is supported by the similar study conducted

by, Basnet, Jaiswal, Adhikari and Shyangwa, (2012) conducted a cross sectional study to evaluate the depression among undergraduate medical students at B.P Koirala Institute of Health Sciences, Dharan, Nepal among 50 students each from Bachelor of Medicine and Bachelor of Surgery (MBBS) first and third year students. . The findings of the study reveals that the overall prevalence of depression among the students was 29.78 percent. The prevalence of depression in first and third year was 36.74 and 22.22 percent respectively. Prevalence of depression was found to be more among the first year students than the third year students.

Regarding the association between prevalence of suicidal thoughts with selected socio-demographic variables, there is significance association between prevalence of suicidal thoughts and year of study with P value ( $P= 0.001$ ). Prevalence of suicidal thoughts was found to be more (29.1%) among first year and third year students than second year students. The study is supported by the similar study conducted by, Goyal, Kishore, Anand and Rathi (2012) conducted a cross sectional study to assess suicidal ideation among medical students of Delhi. The findings of the study revealed that the different stages of training (professional years) showed no statistically significant association with suicidal ideation although it was found to be highest in first professional year (64.4%) and lowest in third (40.4%).

## **5.2 Conclusion**

On the basis of findings of present study, it is concluded that, less than one fourth of medical students were mildly depressed and very few were moderately depressed and similarly less than one fourth of medical students had mild- moderate suicidal ideation and very few had severe suicidal ideation. It is found that there is a significant association exists between prevalence of depression and suicidal thoughts and year of study. By identifying the symptoms of depression, suicidal thoughts and stress inducing factors at an early stage hopefully the psychological morbidity and mortality among medical students can be prevented and the ones in morbid state can be helped to seek the professional.

## **5.3 Implication of the study**

Medical students are future doctors. It is clear from the findings that most of the medical students are within normal range of depression and have low suicidal ideation.

Depression is more prevalent in first year medical students and suicidal thoughts are more prevalent in first and third year medical students. There is need for student counseling units in the first year of schooling as they may be able to cope up with stress in the later years.

The study can serve as guidelines for the concerned authority for planning and conducting programs to reduce depression and suicidal thoughts.

As a part of nursing care, nurses can provide motivation to depressed medical students which is an important factor to help medical students maintain a healthy balance between study demand and personal well-being.

#### **5.4 Limitations**

Firstly, this study was carried out in undergraduate medical students of medical college, Birgunj and findings of this study cannot be generalized to all the medical students of Nepal. Secondly, the current study design was cross-sectional study that the data was collected one time. It would be worthy to investigate changes in results over time.

#### **5.5 Recommendations**

In the light of the findings of this study, the researcher recommends that:

Different counseling classes can be started to provide counseling to the depressed medical students and to those who have suicidal ideation.

The comparative study can be conducted between different level of medical students.

The explorative study can be conducted to assess the source and effects of depression and suicidal thoughts.

