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# PREVALENCE OF SUICIDE IDEATION AND ITS ASSOCIATED RISK FACTORS AMONG UNDERGRADUATE STUDENTS OF THE UNIVERSITY FOR DEVELOPMENT STUDIES- TAMALE CAMPUS

BY

SALIFU, LATIF DABOO

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(UDS/MPH/0001/18)

THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH AND FAMILY MEDICINE, SCHOOL OF MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY FOR DEVELOPMENT STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE

MARCH, 2021.

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## DECLARATION

Student

I declare that the thesis is the product of my original work and no part of it has been presented for another degree in this university or elsewhere.

Candidate`s signature……..….. Date: ……..

SALIFU, LATIF DABOO

Supervisor

I hereby declare that the preparation and presentation of the thesis was supervised in the accordance with the guidelines on supervision of thesis laid down by the University for Development Studies.

Supervisor`s signature…… Date: ……

Name: ADADOW YIDANA (PhD)

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Last but not the least; I thank my colleagues in Master of Public Health, especially the epidemiology class that gave the necessary academic stimulation to make this project a success.

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## DEDICATION

I would love to dedicate this work to my elder brother (Dr. Seidu Salifu), who has always been my support, role model and encouragement throughout my academic endeavours. I would also like to thank my fiancée (Connie Agyarkwa Appenteng), my other siblings, and my mother (Fatima Ibrahim), for giving birth to me in the first place and supporting me spiritually throughout my life.

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## ABSTRACT

Suicide and its risk factors form important global and local public health problems. Majority of undergraduate university students' fall within the most affected age group. Empirical research in this crucial area of public health is generally lacking, especially among undergraduate university students in Ghana. This study aimed to determine the prevalence of suicide ideation, its associated risk factors and risk factors that statistically predict suicide ideation among undergraduate students in UDS Tamale Campus. A cross-sectional quantitative survey was done, using a structured online questionnaire to measure the prevalence of suicide ideation and its correlates among a 400 randomly sampled undergraduate students of the UDS Tamale Campus. Data was analysed with SPSS v26 and results were presented in charts, tables and cross-tabulations. A regression analysis was also done to model suicide ideation with socio-demographic variables. The prevalence of suicide ideation among the undergraduate students of the UDS Tamale Campus was 24.5%. Significant risk factors of suicide ideation found in the study were relationship problems, academic stress, victimization, substance use and the presence of mental health disorders. Suicide ideation was predicted with statistical significance by the presence of mental health disorder (OR = 11), victimization (OR = 3), academic stress (OR = 2), and relationship problems (OR = 2). Combined efforts involving University faculties, Counselling unit and administration are necessary in averting suicide ideation and its dreaded squeal of completed suicide.

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## ACRONYMS / ABBREVIATIONS

**APA-** American Psychiatric Association

**CDC-** Centres for Disease Control

**CI –** Confidence Interval

**Df -** degree of freedom

**EMCDDA** - European Monitoring Centre for Drugs and Drug Addiction

**GDHS -** Ghana Demographic Health Survey

**GSS -** Ghana Statistical Service

**OR –** Odds ratio

**P -** Probability value

**SPSS –** Statistical Package for Social Sciences

**STBs -** Suicidal Thoughts and Behaviours

**TTFPP -** Third Trimester Field Practical Programme

**UDS -** University for Development Studies

**UNODC -** United Nations Office on Drugs and Crime

**WENDU -** West African Epidemiology Network on Drug Use

**WHO -** World Health Organisation

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## OPERATIONAL DEFINITIONS

**Active suicidal ideation-** is defined as "desire to make an active suicide attempt.

**Dummy variable** - is a numeric value that is used to represent categorical data.

**Non-suicidal self-directed violence-** is behaviour that is self-directed and deliberately results in injury or the potential for injury to oneself. There is absence of implicit or explicit evidence of suicidal ideation.

**Passive suicidal ideation-** is defined as a desire to be dead without any intention of taking steps to end one's life, for example, wishing to be dead.

**Religiosity** – State of being religious, that is, service and worship of God or a Supernatural.

**Risk factors for suicide ideation** refer to qualities that are associated with suicide.

**Self-harm** – the various methods by which individuals cause injury to themselves, such as self- mutilation, self-battering, taking overdoses or displaying intentional carelessness.

**Social bullying-** involves isolating individuals, making offensive gestures, excluding from activities, and manipulation.

**Non-suicidal self-directed violence is** behaviour that is self-directed and deliberately results in injury or the potential for injury to oneself. There is evidence, whether implicit or explicit, of suicidal intent.

**Suicidality** – a term that encompasses suicidal ideation, plans, attempts and completed suicide.

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**Suicide attempt-**is any non-fatal, self-directed behaviour with intent to die as a result. A suicide attempt may or may not result in injury.

**Suicide behaviour** – includes suicide ideation, suicide attempt and completed suicide.

**Suicide Contagion-** is a phenomenon whereby vulnerable individuals are tipped towards suicidal behaviour as a result of having knowledge of other peoples' suicidal acts.

**Suicide Ideation-** is defined as thoughts of engaging in suicide-related behaviour.

**Suicide** is defined as death caused by self-directed injurious behaviour with intent to die as a result of the behaviour.

**Suicide Plan-** is a thought regarding a self-initiated action that facilitates self-harm behaviour or a suicide attempt that will often include a systematically ordered way of engaging in suicidal behaviour such as a detailed description of a time frame and method.

**Undetermined self-directed-** violence is behaviour that is self-directed and deliberately results in injury or the potential for injury to oneself. Suicidal intent is unclear based on the available evidence

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# CHAPTER ONE

# INTRODUCTION

## 1.0 Introduction

Chapter one brings the reader to the environment of this study. It provides the background and problem statement of the study. It also poses the research questions to be answered as well the objectives to be achieved. Furthermore, chapter one argues for the relevance and justification of the work and provides a framework upon which the study is founded.

Suicide has been an issue of public health importance to the World Health Organisation since 1950 World Health Organization (WHO, 2014b). The prevalence of suicide mortality, as a problem of public health concern, has in the last 45 years risen by 60% in some countries (WHO, 2020a). Suicide ideation precedes suicide (Pereira & Cardoso, 2015) and thus, its prevention is an important intervention in curbing the menace of suicide.

This chapter would introduce the reader to the background of suicide ideation in the context of the age population between 15 and 29. This age group generally includes the ages of most undergraduate university students in the country. The chapter also shows why suicide ideation should be studied in this group, pose the research questions and outlines the objectives to be achieved in the study. The foundation of this study would be based on the interpersonal theory of suicide, which would also be explained in this chapter.

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## 1.1 Background

Suicide ideation is an important precursor to suicide (Pereira & Cardoso, 2015). It is impossible to complete suicide without previous suicide ideation (CDC, 2020). Therefore, regarding suicide ideation as a forerunner to the suicide attempt, then to completed suicide, it is necessary to prevent it as long as reducing suicide mortality is desirable. Suicide being the second most common cause of death among persons aged 15-29 years, accounts for nearly 800, 000 deaths annually (W.H.O, 2019b). An increasing subgroup of this young population is University students. Organization for Economic Co-operation and Development (as cited in Mortier et al., 2017).

The University period posse several adjustment challenges to students with the potential to tip them into suicide ideation and possible death from suicide. Such mortality adversely affects the family and friends, community, and the nation as a whole. Suicide ideation sets off a cascade of harmful events which have an enormous potential of causing suicide death.

Not only does student suicide mortality thwarts University efforts in preparing young people intellectually, verbally and behaviourally to contribute meaningfully to society, it also robs the country of precious human capital and invested educational resources. University students are a vital group of people to gauge a country's economic development and progress (Auerbach et al., 2018). This, emphasizes the need to study preceding events of suicide among University students. Also, there is the phenomenon of suicide contagion, copycatting, or the Werther effect, where exposure to suicides results in people attempting suicide. The impact of suicide contagion is more grounded among

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young people (CDC, 1994). This means preventing one suicide death in a young person, indirectly prevents more suicide deaths among his or her contemporaries.

Suicide ideation is an indicator of major mental health problems and is more common than attempted or completed suicide, it is the most important precursor to planning, attempting and completing suicide (Adelino & Francisco, 2015).

Suicide ideation is associated with both fatal and non-fatal self-injury (Posner et al., 2011), and serves as a means to forecast poor future mental health (Barrios et al., 2000). Suicide ideation among university students could result in risky sexual behaviour, aggressive or violent behaviour (Burge, Felts & Chenier,1995) and university dropout (Daniel, Walsh, Goldston, Arnold &Reboussin, 2006).

Suicide ideation includes 'passive thoughts about wanting to be dead or active thoughts about killing one's self, that is not accompanied by preparatory behaviour' (O'Connor, Gaynes, Burda, Williams, & Whitlock, 2013). Suicide ideation has a strong relationship with individual and social stress (Burnout and Suicide ideation among U.S medical students, 2008). Data on suicide ideation phenomenon is, therefore, vital in ascertaining its magnitude, forecasting suicide mortality in individuals, identifying mental health disorders and developing appropriate intervention strategies.

Researchers often study suicide ideation as a substitute for suicide because of the difficulty in studying suicide as an outcome, the strong association of suicide ideation with suicide and the ease with which ideation can be studied (Klonsky, May, & Saffer, 2016). It is, therefore, not surprising that the best interventions for suicide prevention is targeting ideation since suicide itself is not treatable (Subedi et al., 2015).

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In 2010, a twelve-month prevalence of suicide ideation in the general global population was 2.1% and 2.0% in developed and developing countries respectively (Borges et al., 2010). Other studies by Nock et al. (2008a) estimate the prevalence of suicide ideation in a cross-national study to be 9.2%. In the United States of America, there has been an increase in the twelve-month prevalence of suicidal ideation among young adults from 6.1% in 2009 to 8.3% in 2015 (Han et al., 2018). Europe in 2006 had a lifetime prevalence of suicide ideation of 7.8% in the general population (Bernal et al., 2007).

More recent data suggest a clear increase in the suicide ideation prevalence in Europe. For example, in thirty-two low-income and middle-income European countries, the prevalence of suicide ideation in the general population varied from 15% in Armenia to 31.5% in Hungary (Adolescent suicidal behaviours in 32 low- and middle-income countries, 2016), all of which is testament to an increase in the phenomenon.

The global twelve-month prevalence of suicide ideation among adolescents and children is 18% (Lim et al., 2019). For fifty-nine low-income and middle-income countries particularly in Africa and the Western Pacific, Uddin et al. (2019) made a close estimate of 16.9% of the prevalence of suicide ideation among adolescents. The estimate of suicide ideation among adolescents in the Eastern Mediterranean also ranged between 16.15% in the United Arab Emirates to 24.72% (Khalid, 2012).

In Africa, less than ten per cent of countries report suicide data to the World Health Organisation (Mars et al., 2014), however, Sub-Saharan Africa has suicide ideation prevalence rates as high as 31.9% in Zambia, 27.9% in Kenya, 23.1 % in Botswana, 19.6% in Uganda and 11.2 % in Tanzania among adolescents (Palmier, 2011).

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The prevalence of lifetime suicide ideation among college students worldwide is 22.3% (Mortier et al., 2017), which is greater than the estimates in the general global population (Borges et al., 2010) and other population estimates (Han et al., 2018; Nock et al., 2008b). These estimates are generally higher for females than for males (Mortier et al., 2017) even though completed suicides are three times as many in men than women (W.H.O, 2014). This phenomenon is known as the suicide paradox. In India, the lifetime prevalence of suicide ideation among college youth was 11.7% (Nath et al., 2012) which is less than the reported prevalence (17.9%) in China (Sun et al., 2017).

One in five students in the University of Gondar, northwest Ethiopia reported suicide ideation (Dachew et al., 2018). Van Niekerk et al. (2012) found a high prevalence of suicidal ideation (32.3%) and suicidal attempt (6.9%) among medical students, which is three times higher than the general age-appropriate South African population.

The lifetime prevalence of suicidal behaviours among adolescents in Ghana was 18.2%, 22.5% and 22.2% for suicidal ideation, suicidal plan and suicidal attempt respectively (Oppong Asante et al., 2017a). The time from suicide ideation to a planned suicide attempt is approximately one year (Joe et al., 2008). Therefore, there is enough time to halt suicides when suicide ideation is identified.

Since suicide ideation strongly predicts mortality by suicide (Brown, Beck, & Steer, 2000), which is a significant cause of overall global mortality (1.4%) (Varnik, 2012). These high prevalence rates of suicide ideation raise indirect concerns about achieving the third sustainable development goal which is ‘to ensure healthy lives and promote wellbeing for all at all ages’, especially target 4 which is to ‘reduce by one-third

premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being'.

Given the W.H.O's plan to prevent suicides (WHO, 2014a), the paucity of data estimating suicide ideation, a precursor of suicide, is a serious impediment to the effective planning of locally-based and socially acceptable prevention strategies. Because suicide in its self is an end event and can only truly be prevented by preventing its risk factors and preceding processes like suicide ideation.

This study aims to contribute to the first goal of the World Health Organisation in suicide prevention by providing data on the prevalence of suicide ideation among the most vulnerable group; that is, young adults.

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### 1.2 Problem statement

Suicide is a major public health problem (W.H.O, 2019c). Suicide has a ripple effect on society. Affecting immediate family members, friends, classmates, teachers and other staff. Even those not closely related to the victim like the clergy and law enforcement are all affected. Approximately 115 people are affected with one completed suicide, with one in five reporting an experience of a major life disruption (Sandler, 2018).

Data on prevalence and suicide-related factors, particularly in Ghana, are generally limited (Oppong Asante et al., 2017b). There are several anecdotal reports of suicide among students in the Ghanaian Universities (Choicism, 2019; Ghanaweb, 2019, 2020; Myjoyonline, 2017,2020) . In January 2019, a final year student in the Wa Campus of the University for Development Studies committed Suicide over poor grades (MyNewsGH, 2019). Another of such tragic events was a news report of that of a third-year medical

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student of the University of Ghana that also completed suicide after posting several items indicative of suicidal ideation on social media (Now I put the phone down to do some actual studying; Some days I feel like a King; other days I wish for death, Need a new life, this one is broken, sometimes I feel like I'm fading away). This started after he had failed courses and was billed to repeat (Ghanaweb, 2019). The list of similar unfortunate events such as these is increasing (Abdulai, 2020).

Students in the Korle Bu, Nurses and Midwifery training college reported a prevalence of 15.4% for suicidal ideation, 6.6% for plans and 2.3% for attempted suicides (Quarshie et al., 2019).

The counsellor of the Tamale Campus of the University for Development Studies also recorded two cases of students with suicidal ideation in the one month (March 2020) which may just be a tip of the ice burg.

To the best of my knowledge and extensive internet searches, there is a dearth of published studies on the prevalence of suicide ideation among University students in Ghana and the University for Development Studies is not an exception. Neither a national suicide prevention strategy or official suicide statistics exists in Ghana (Andoh-Arthur et al., 2020). Because of the lack of information on suicidal behaviour in Ghana, suicidal scientists and other stakeholders exploit opportunities to gather information on suicidal behaviour, motivated by the premise that additional knowledge of the nature and patterns of suicidal behaviour will increase understanding of the issue and lead to the design and implementation of culturally appropriate and effective predictions (Adinkrah, 2014). I share this vision.

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As the absence of data in suicide ideation is a great obstruction to the designing, developing and implementing preventative strategies, the study seeks to find out the prevalence of suicide ideation among undergraduate students of UDS Tamale-Campus and to potentially inform University authorities, the Community as well as the country as a whole on intervention and preventive programmes. Establishing the magnitude of suicide ideation, therefore, is primordial to designing prevention strategies.

The study will also bring to light the socio-demographic risk factors that correlate with suicide ideation, the absence of which cripples our ability to identify and timely intervene to avoid unnecessary loss of human life and capital to the nation. As such, this study attempts to form the foundation for developing mitigation strategies.

### 1.3 Research questions

1. What is the prevalence of suicide ideation among undergraduate students of UDS Tamale-Campus?
2. What socio-demographic factors constitute significant risk for suicide ideation among undergraduate students of UDS Tamale-Campus?
3. Which socio-demographic characteristics significantly predict suicide ideation among undergraduate students of UDS Tamale-Campus?

### 1.4 Objectives of the study

#### 1.4.1 General Research objective

To determine the prevalence of suicide ideation and its associated risk factors among undergraduate students in UDS Tamale Campus.

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### 1.4.2 Specific research objectives

1. To estimate the prevalence of suicide ideation among undergraduate students of UDS Tamale-Campus.
2. To identify socio-demographic factors that constitutes significant risk for suicide ideation among undergraduate students of UDS Tamale-Campus.
3. To predict suicide ideation with significance based on the socio-demographic characteristics among undergraduate students of UDS Tamale- Campus.

## 1.5 Relevance of the Study

To inform preventive and socially appropriate intervention programme for suicide, there is the need to have locally based studies on the factors the prelude suicidal attempts, the primordial of which is suicidal ideation. Interventions developed to impact suicide ideation would therefore automatically reduce planning and attempt of suicide. Within the context of the W.H.O Mental Health Action plan 2013-2020 which aims to reduce suicides by 10% across countries, it has been proposed to direct interventions on the entire spectrum of suicidal phenomena including suicide ideation (W.H.O, 2013), thus this study is an effort to support W.H.O with quality data to achieve a worthwhile goal. Furthermore, this study would provide a basis for the University authorities and the country in general to design well-suited suicide prevention and intervention strategy. Findings of this work would add to our understanding of the interplay of socio-demographic factors associated with suicide risk.

## 1.6 Conceptual Framework

This study adopts Thomas Joiner's interpersonal theory of suicide to conceptualize suicide ideation and its risk factors. The theory is the first of the ideation-to-action

framework of theories and perhaps has led to the development of a new wave of theories based on the ideation-to-action framework (Klonsky & May, 2015). This theory assumes that 'people die by suicide because the can and because they want to' (Van Orden et al., 2010). It has three central constructs. Two constructs; 'thwarted belongingness' and 'perceived burdensomeness' are fundamentally associated with the desire for suicide and one construct; 'acquired capability for suicide' is associated with capability (Van Orden et al., 2010).

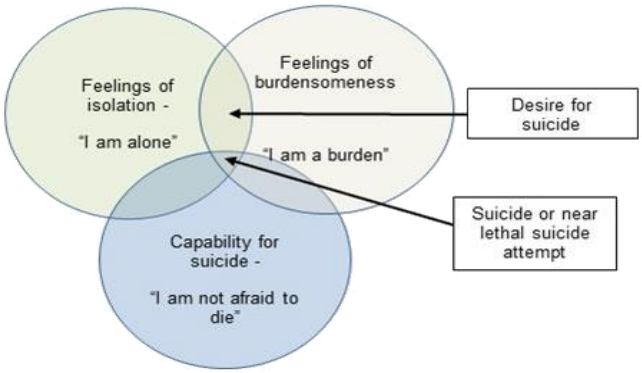


**Figure 1.1: Assumptions of the Interpersonal Theory of Suicide (Van Orden et al., 2005).**

The need to belong is basic to all people (Government of Canada, 2018). The theory, therefore, posits recognition by others and a social structure as a basic human need and as an essential component of mental well-being. Risk factors such as academic stress, relationship problems, and living alone university students could create sentiments of 'being alone'.

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Another crucial human prerequisite is the need to feel esteemed and valuable (Government of Canada, 2018). Individuals with substance abuse problems, mental health disorders, physical illness or different mixes of various issues may have a conviction that they are a 'burden' and can prompt deluded observation that those close to them "would be better off without him/her."

Fear of death regardless of its origin is a strong human emotion (Starkstein, 2018). Individuals with repeated exposure to traumatic/painful events, previous suicide attempts have lowered fear of death and therefore would acquire the capability of suicide (Van Orden et al., 2010).

The interpersonal theory of suicide, therefore, provides the framework that can be used to understand the risk factors for suicide ideation.

### 1.7 Justification of the study

The World Health Organisation aims to reduce suicide and suicide-related behaviours through (1) improving availability and quality of data from vital registration, hospital-based systems and surveys for effective suicide prevention, (2) restricting access to the means of suicide such as limiting access to pesticides and firearms or putting barriers on bridges through an understanding of the different methods preferred by different groups in society and through cooperation and collaboration of multiple sectors (W.H.O, 2014b). This study is, therefore, justified as it would contribute to the first aim by providing quality data on the prevalence and socio-demographic risk factors of an empirically established prerequisite (suicide ideation) to death by suicide.

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### 1.8 Chapter outline

This thesis is structured into six chapters. Chapter one has presented the introduction and the background to of study, the problem statement, the research questions, the study objectives (general and specific), the relevance of the study, the conceptual framework of the study and definitions of terms. In chapter two, I reviewed as much as possible the relevant and most up-to-date literature in relation to the study which provides the 'giant shoulders' on which my study stand. Chapter three presents the research methodology employed to rigorously assess statistically, the prevalence of suicide ideation and its associated socio-demographic risk factors. The chapter includes a brief profile of the University for Development Studies, a geographical description of the study area, the study type and design, the study population and unit, the sampling technique and method, as well as the primary data collection tool and ethical considerations. Chapter four displays the results whilst the discussion of the results is presented in chapter five. Chapter six contains the conclusion, limitations and recommendation of the study.

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# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

Chapter two presents the literature reviewed in accordance with the study objectives. The literature is organized under various headings but aims to present to the reader a holistic picture of the literature in this area of research. The chapter begins by introducing the literature on the burden of suicide globally and proceeds to review literature some socio-demographic characteristics, university-related correlates as well as mental and substance use disorder that are associated with suicide ideation and mortality among undergraduate students.

## 2.1 Literature search strategy

The literature for the study was derived from the online database PubMed. PubMed contains more than 30 million citations from MEDLINE, life science journals, and online books for biomedical literature. Citations can provide links from PubMed Central and publisher websites to the full-text material (PubMed - NCBI, n.d.). The advanced search option using the search terms ‘suicide ideation’, ‘prevalence of suicide’, ‘university students’, ‘college students’, ‘socio-demographic risk factors’, et cetera with the appropriated Boolean operators were used to arrive at the articles. The abstracts of these articles were read and assessed for relevance before they were included in this study. Other sources of literature for this study included, articles on Google scholar books, accepted theses on University of Ghana space, Hinari, and University for Development Studies space, Kwame Nkrumah University of Science and Technology space and reports, these are duly referenced in the APA style seventh edition. Most of the literature

reviewed from the search engines was filtered to include studies in the last ten years and the references were managed with Mendeley desktop Reference Manager (version 1.19.4).

**2.2 Global, regional and national burden of suicide**

Suicide occurs worldwide and is a problem of public health concern at such a magnitude (Weizman, 2010). Claiming a life somewhere in the World every 40 seconds, it results in a mortality of nearly 800,000 people (W.H.O, 2020b). This accounts for 1.4% of overall mortality worldwide (Värnik, 2012). The standardized global rate of suicide in 2016 was 10.5 per 100,000 people (W.H.O, 2020b). The true prevalence of suicide, however, may be underestimated due to its sensitive nature and possible misclassification of deaths by suicide (W.H.O, 2014). The suicide problem in the last 45 years has increased by 60% in some countries (W.H.O, 2020a). Suicide mortality rates are unevenly distributed in various regions globally. The age-adjusted years of life lost due to suicide mortality globally, is approximately 458.4 per 100, 000 in 2016. This is a 34.2% decrease from the 1990 estimate of adjusted years of life loss of 696.6 per 100, 000 (Naghavi, 2019). Considering the prevailing trends suicide mortality is estimated to reach 1.5 million by 2020 (Dhingra et al., 2015). In terms of absolute numbers, Russia, the United States, Japan, South Korea, China and India are the biggest contributors to suicide. China and India together account for nearly 50% of all suicide deaths (Värnik, 2012).

Standardized age mortality rate due to suicide (27.5 per 100, 000 persons) ranks the fourth cause of death in Eastern Europe and is the fourth cause of years of life lost in Western Europe (384.1 per 100, 000) (Naghavi, 2019). The regional average of suicide mortality rate in Europe is 15.4 per 100, 000 people which is the highest in the world

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(Global Health Observatory (GHO), 2020). Lithuania has the leading rate of suicide mortality in Europe and globally at 31.9 per 100 000 citizens followed by Russia with 31 per 100,000 citizens (W.H.O, 2019c) with the least rate (2.5 per 100, 000) occurring in Tajikistan (GHO, 2020).

The average regional mortality rate of suicide in the Americas is 9.8 per 100, 000 people. According to Naghavi (2019), the standardized age mortality of suicide is 10$^{th}$ in standardized death rates in the high-income North America region. The United States of America has a suicide mortality rate of 15 per 100, 000 (GHO, 2020) while further north in Canada, the suicide mortality rate is 12 per 100, 000 with eleven people dying of suicide every day (GHO, 2020). Guyana has the highest mortality rate of suicide (29.2 per 100, 000 people) in South America while suicide is almost unheard of in other South American countries of the Caribbean, with countries like Barbados and Antigua and Barbuda recording rates of 0.5 and 0.8 per 100,000 respectively (World Population Review, 2019).

Majority of suicide deaths occur in low and middle-income countries in the World. These countries accounted for 79% of all suicide deaths in 2016 (GHO, 2020). In the South-East Asia region, the average suicide mortality rate is 13.2 per 100, 000 people. India has the highest suicide mortality rate in this region with 16.3 per 100, 000 people while Maldives has the lowest suicide mortality rate (2.3 per 100, 000 people) (GHO, 2020). The age-standardized years of life lost is 276.1 per 100, 000 people in South-East Asia (Naghavi, 2019). The W.H.O Western Pacific region has an average suicide mortality rate of 10.2 per 100, 000 people, making it third in terms of suicide mortality behind South-East Asia and Europe. The Republic of Korea has the highest rate of suicides in this region at 26.9

per 100, 000 people with the lowest rate in the region being 3.2 per 100, 000 people in the Philippines.

Australia, suffer a burden of 477.2 per 100, 000 people age-standardized years of life lost to suicide (Naghavi, 2019), with a mortality rate of 10.2 per 100, 000 people, it is well above the average rate for the region (GHO, 2020).

The Eastern Mediterranean region has the lowest average suicide mortality rate (3.9 per 100, 000) in World (GHO, 2020). The suicide mortality rates are as low as 1.9 per 100, 000 people in the Syria Arab Republic with the highest rate reported in Yemen at 8.5 per 100, 000 people.

In Africa, less than ten per cent of countries report suicide data to the World Health Organisation (Mars et al., 2014). Nevertheless, the crude suicide mortality rate in the Africa region is 7.4 per 100,000 people (WHO, 2019c). Lesotho leads the suicide mortality rate in Southern Africa and Africa at 21.2 per 100, 000 people, the Republic of Equatorial Guinea has the highest suicide mortality in Central Africa at 16.4 per 100, 000 people and Cote'dIvore has the highest suicide mortality rates in West Africa at 14.5 deaths per 100,000 in 2016. (GHO, 2020). Other Ghanaian neighbours had suicide mortality rates greater than Ghana in 2016. Togo and Burkina Faso had suicide mortality rates of 9.6 and 7.7 per 100, 000 people respectively in 2016. In all of Africa, Sao Tome and the Principe have the lowest rates of suicide mortality at 3.2 per 100, 000 population (GHO, 2020).

Figure 2.1 presents the WHO's global age-standardized suicide rates in both sexes in 2016.

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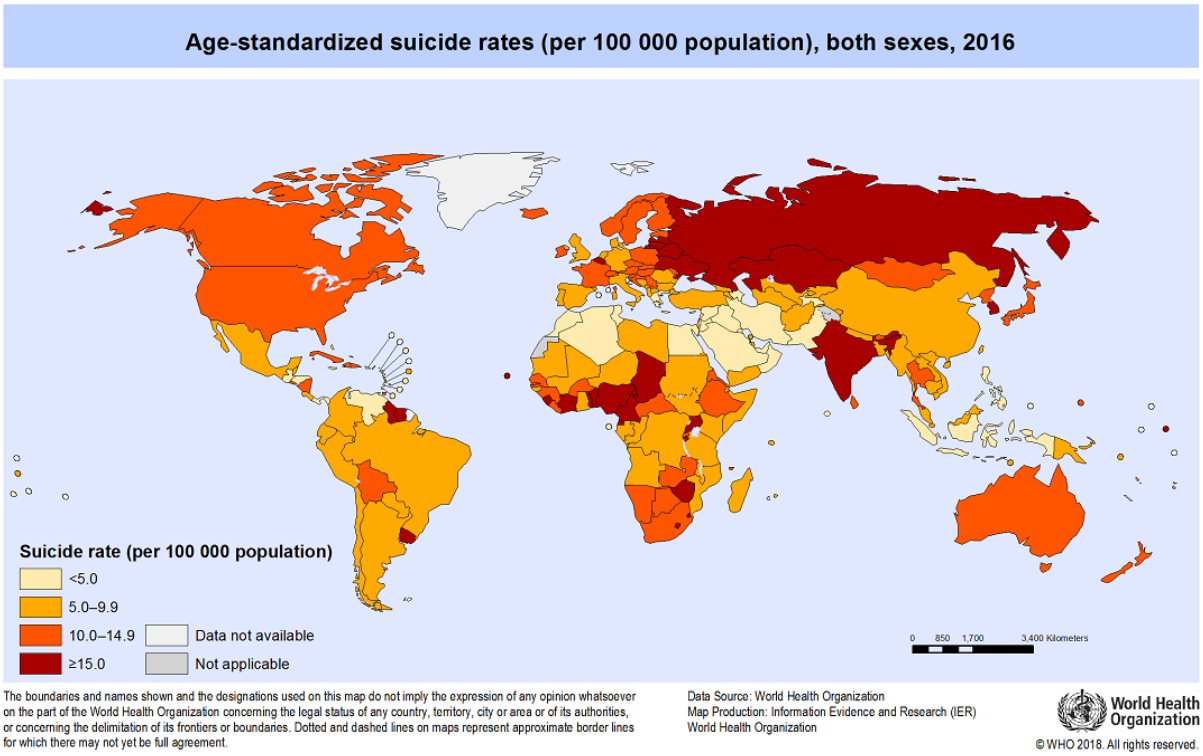


**Figure 2.1 Global suicide mortality rates**

Source; WHO, 2020

From examining the world and regional prevalence of suicide burden, it is in place to speculate that Ghana as well, would not be spared of this burden. The suicide mortality rate in Ghana is 5.4 per 100, 000 people (GHO, 2020). This places Ghana two points below the average mortality rate of 7.4 per 100, 000 people and 14$^{th}$ in the WHO Africa region. Ghana recorded 1500 suicide cases in 2015 (Nyav, 2015). However, due to the stigmatization and misclassification of suicide deaths, Nyav (2015) drew attention to the fact that for every case of suicide reported, four cases are not reported totalling the number of suicide cases to about 6000 cases annually. This cast a dout on the overall

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reliability of the suicide data in the Country and perhaps the actual suicide mortality rate is woefully underestimated.

The global suicide mortality rates have raised concerns on the reality of achieving the third sustainable development goal which is 'to ensure healthy lives and promote wellbeing for all at all ages'. Especially target 4 which is to 'reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being'. These appalling statistics also undermine the efforts of the WHO member states to decrease the global suicide mortality rate by 10% by the year 2020. The global burden of suicide is undoubtedly enormous, but should not bring despair because suicide mortality is preventable.

**2.3 Suicide rates in universities**

The primary goal of University is to bring forth the full innate potential of students so that they can contribute meaningfully to society. This goal is unfortunately hindered by suicide behaviour, as invested resources become a waste once a student completes suicide. Estimates of the prevalence of suicidal behaviour in the college or university student population are notably higher than general adult population rates (O'Neill et al., 2018). The transition of students to higher education involves adapting to the new learning environment, establishing new relationships, colleagues and growing into this new role as a student of higher education that leads to high-stress levels and depression (Izadinia et al., 2010). In India, a student completes suicide every hour, with a total of 8,934 completed student suicides in the year 2015 alone (Devanik, 2017). The suicide rate among university students in Wales and England was 4.7 per 100,000 in 2017 (BBC, 2018). Over 30 years at Oxford University in England, 48 students died by suicide while

602 students reported to the hospital on account of deliberate self-harm (Hawton et al., 2012). In the United States of America, a total of 622 suicides were documented in 645 different college campuses between the years 2004 and 2005 representing a suicide mortality rate of 7 per 100, 000 students (Schwartz, 2011). Gender differences in suicide rates exist in the universities and colleges as well. Males have statistically higher rates compared to females (Office for National Statistics (ONS), 2020). For example, of the 72 students that completed suicide in Eskisehir University Turkey between 2004 and 2015, 54.7% were male students while 45.3% were female students (Karbeyaz et al., 2016).

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### 2.4 Prevalence of suicide ideation

Suicide ideation is defined as thoughts of engaging in suicide-related behaviour (CDC, 2011). Suicide ideation plays a seminal role in attempting and possibly completing suicide and it is seen by many authors as the first step in the continuum in the suicidal process. Though people with suicide ideation are distinct from people who attempt suicide, research has not differentiated the difference in risk factors between suicide ideation and suicide attempt, in even a meta-analysis study (May & Klonsky, 2016), thus, the new generation of theories of suicide have their foundation on the 'ideation-to-action' frame. These new theories are better at predicting suicides as they address both the development of suicide ideation to a suicide attempt (Klonsky et al., 2018). It is one of such theories; the interpersonal theory of suicide, that this study drives its framework.

Researchers often study suicide ideation as a substitute for suicide because of the difficulty in studying suicide as an outcome, the strong association of suicide ideation with suicide and the ease with which ideation can be studied (Klonsky, May, & Saffer, 2016). It is therefore not surprising that the best option for suicide prevention is targeting

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ideation since suicide itself is not treatable (A study of suicidal deaths in central Nepal, 2015). The universal consensus, therefore, puts suicide ideation on a position of high regard and its importance cannot be overrated in the effort to decrease suicide mortality.

Commonly considered the first step in the suicidal process, the World Health Organizations' survey of over 100 000 people in 21 countries established a 12-month prevalence of suicide ideation of 2% and 2.1% in developed and developing countries respectively (Borges et al., 2010). Torres (2016), concludes that the lifetime prevalence of suicide ideation in the general population varies between 2.6% to 25.4% according to region, age group and gender. Other research in suicide ideation corroborates this as Nock et al. (2008) found the lifetime prevalence of suicide ideation to be 9.2% in a cross-national study involving 17 countries worldwide. In terms of absolute numbers, 9.4 million adults in the United States of America aged 18years and older had serious suicide ideation in a national survey on drug use and health (Lipari, et al., 2014). In Canada, the lifetime prevalence of suicide ideation in the general population of 11.8%.

Suicide ideation is prevalent in universities. The presence of suicide ideation serves as a source of worry in universities (Pereira & Cardoso, 2015). For instance, the prevalence of lifetime suicide ideation among college students worldwide is 22.3% (Mortier et al., 2017), while a transnational study of suicidal thoughts and behaviours among university students across 19 colleges and 8 countries in Africa, Europe and the Americas, the lifetime prevalence of suicide ideation was 32.7% (Mortier et al., 2018). These findings are also supported by O'Neill et al. (2018), as they found the lifetime prevalence of suicide ideation among college students in Northern Ireland to be 31%, with a breakdown of 24.3% among male students and 36.9% among female students. Studies finding lower

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lifetime prevalence of suicide ideation among college students include a North-Eastern Chinese study, where college students had a prevalence rate of suicide ideation of 13.2% with positive correlations to a family history of psychiatric illness, depression and quality of life (Gao et al., 2018). Also, a pooled study on prevalence rates of suicide ideation in college students in all of China is 10.7% with suicide ideation ranging from 1.3% to 26% found in the studies selected (Li et al., 2014).

The first large empirical study of suicide behaviours in university students in the Moslem world revealed the lifetime prevalence of suicide ideation to be 22.1% (Eskin et al., 2019) which is similar to the lifetime prevalence of 25% among university students in Iran (Rohani & Esmaeili, 2020). In a cross-national, cross-sectional study of gender inequality and adolescent suicide ideation across 37 countries in Asia, the South Pacific, Latin America and Africa including Ghana, that was based on the Global School Health Survey (GSHS), the overall prevalence of suicide ideation was about 15% with Ghana's prevalence almost at 19% (Assarsson et al., 2019). The prevalence of suicide ideation in this age group is higher than community samples in low-middle income countries, which is between 3.5% to 11% (Kigozi et al., 2019).

One in every five students in the University of Gondar, North-western Ethiopia reported suicide ideation (Dachew et al., 2018). Niekerk, Scribante and Raubenheimer (2012), found that the lifetime prevalence of suicidal ideation (32.3%) and suicidal attempt (6.9%) among medical students, was three times higher than the general age-appropriate South African population.

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The lifetime prevalence of suicide ideation ranged from 16.15% in the United Arab Emirates to 24.72% among adolescents in the Eastern Mediterranean region (Khalid, 2012), while in sub-Saharan Africa, Suicide ideation was as high as 31.9% in Zambia among adolescent students (Palmier, 2011). The prevalence of suicide ideation among Nigerian youth was, however, 20% with physical fights and psychological factors being significant predictors (Omigbodun et al., 2008).

In Botswana, the prevalence of undergraduate university student suicide ideation was 28.7% which correlated strongly with depression, that was also 47.5% prevalent (Korb & Plattner, 2014b). Undergraduate university students in a South African University reported a lifetime suicide ideation prevalence of 24.6% (Bantjes et al., 2016).

The lifetime prevalence of suicide ideation among adolescents in senior high schools in Ghana is 18.2% (Oppong Asante et al., 2017b) while in the College of Nursing and Midwifery school in Korle Bu, the reported lifetime prevalence was 15.4 (Quarshie et al., 2019). There are no official statistics of suicide behaviour in the UDS Tamale campus, however, the counsellor of the Tamale Campus of the University for Development Studies recorded two cases of undergraduate students with suicidal ideation in one month, that is, March 2020.

**2.5 Socio-demographic characteristics and risk factors for suicide ideation and suicide**

In most social research, socio-demographic characteristics are the independent variables and usually include gender, age, marital status, level of education, religion among others (Zlotnik, 2016). From the literature reviewed so far, it can be observed that suicidal

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behaviours are determined and distributed unevenly in populations based on the presence or absence of certain protective factors or risk factors. A risk factor is generally defined as, "anything that increases the probability of developing a pathology" and "is simply correlated with the development of pathology, and may not be causally implicated in the pathogenesis" (Blaney, Krueger, Robert & Millon, 2015). Therefore, anything that increases the chances of suicide behaviour can be considered a risk factor of suicide behaviour or simply; 'Risk factors for suicide refer to characteristics that are associated with suicide' (Suicide Prevention Resource Centre, 2012). The risk factors based on their temporal sequence to completed suicide behaviour can be distal or proximal. Distal risk factors occur years, months, or weeks before the development of suicidality (for example, relationship problems, academic stress), while proximal risk factors are sequentially close to suicidality, that is hours, minutes or seconds before the event (for example, binge drinking of alcohol). 'There is no single explanation of why people die by suicides'(World Health Organization, 2014a). Suicidal thoughts and behaviour have a complex and multifactorial pathway (Russell et al., 2019). Some risk factors act directly in the suicide ideation to suicide death spectrum, while other factors modify or moderate some factors in the suicide process. Some risk factors form a sinister loop, that fuel other factors which in turn fuel them. The prevalence of suicide ideation appears to be determined by a broad range of factors at the socio-demographic, psychological and behavioural level (Shilubane et al., 2013). Establishing longitudinal predictors or risk factors for suicide ideation is one of the first steps in creating a robust suicide prevention strategy. A wide scope of risk factors for suicide has been identified. However, no single list of risk factors is exhaustive. These risk factors can either act directly or in concert

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with other risk factors in the suicidal process and some risk factors can act as triggers to developing other risk factors (WHO, 2014a). Suicide risk factors can be broadly grouped into the individual, community, societal or barriers to health system factors (WHO, 2014a). However, this study approaches the discussion of the risk factors from the individual's socio-demographic risks including age, gender or sexual orientation (male/female, heterosexual/non-heterosexual), mental health or substance abuse disorders, sense of isolation or lack of support (not in a romantic relationship, living alone, relationships problems), religious beliefs, family history of suicide and traumatic events or abuse (academic stress, bullying/victimization).

**2.6 Age and suicide**

The age distribution of suicide mortality in the population is such that it is lowest in the extremes of age and concentrated in the middle. Thus, it assumes the shape of a normal distribution. Specifically, death by suicide is lowest in the population below 15 years, rises progressively thereafter until 70years or above and then declines (Värnik, 2012). Though historically, suicide deaths have been highest in elderly males, suicide deaths in the young have risen to the point that they are now the highest in terms of absolute numbers in both developing and developed countries (W.H.O, 2020a). To put the issue in perspective, suicide deaths are the second most common cause of death among people between 15 and 29 years globally (W.H.O, 2019). College students are a growing subgroup of this population. Organisation for Economic Co-operation and Development (as cited in Mortier et al., 2017). In Oxford University, all the students that died of suicide were aged 18-25 years while those that caused deliberate self-harm were aged 15-24 years (Hawton et al., 2012). Younger adults are clearly involved in suicidal behaviour

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in the Universities. Completed suicides have strong association with mental health disorders. Thus, the higher prevalence of suicidal behaviour among young people is ascribed to the higher prevalence of mental health disorders in this age group, that is, about half of all mental health disorders start before fourteen years of age (W.H.O, 2020a) and most cases of mental health disorders are diagnosed before 25 years of age ( Friedman, 2020). Other authors, Zhang et al. (2010), found the prevalence of suicide mortality in young people of rural China to be due being single, lower social support, having a recent and long-term adverse life events and mental health disorders yet again. Young adults are also likely to engage in high risk experimental behaviour such as substance abuse, a recognised risk factor in the suicidality spectrum. Also, substance use problems which are associated with suicide behaviour have been found to typically decline with advancing age (Vasilenko et al., 2017), supporting the lower prevalence of suicidality in the elderly.

**2.7 Gender, Sexual orientation, suicide behaviour**

The word gender is used to describe the features, roles and responsibilities of men and women, boys and girls, which are conferred socially. Gender is related to the perception and expectation to think and act as women and men because of the way society has constructed it, not because of our biological differences (W.H.O, 2020e). This study, however, uses gender to refer strictly to phenotypic features of either being male or female.

Suicide mortality prevalence across the globe varies remarkably in terms of gender. In most countries in the World, suicide mortality rates are generally higher in males than females. The estimated rates are 18 per 100,000 and 11 per 100,000 for males and

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females respectively (Suicide in Women, 2015). Males die 1.8 times more often by suicide than females (Suicide in the World, 2012). The suicide mortality gap between females and males is wide in Ghana and is estimated to 2.9 per 100, 000 females and 15.8 per 100, 000 males respectively in 2016 (GHO, 2020). This is consistent with media reported suicides in Ghana, that is, 85.93% of reported suicides are among males (Abdulai, 2020). However, this narrative is exactly the opposite in China, Cuba, El Salvador, and Sri Lanka with suicide rates being higher in females than males (Khalid, 2012). For countries with a population greater than one million, the highest age-standardized suicide mortality among males in the World is in Lithuania at 56.6 deaths per 100, 000 males and the lowest is in Lebanon at 3.4 deaths per 100, 000 males (Naghavi, 2019). Among females; Lesotho has the highest rate at 35.4 deaths per 100, 000 females with the lowest reported rate in Syria Arab Republic at 1.0 per 100, 000 females.

The twelve months prevalence of suicide ideation among adolescents across the globe varied from 1.15% in Myanmar to 31.43% in Zambia, with prevalence in boys ranging between 1.14%-31.43% and prevalence in girls ranging between 1.16%- 31.51% (Swahn et al., 2014). The difference in the prevalence of suicide ideation is present when considering suicide ideation rates among university students. Female students also generally have higher rates of suicide ideation in comparison to their male counterparts. This has been demonstrated in several studies involving undergraduate university students. Pereira & Cardoso (2015) for example found the lifetime prevalence of suicide ideation to be 12.4% among female students while male students reported 7.5 %. This is backed by a similar study (Miranda-Mendizabal et al., 2019) among university students

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in Spain that found higher suicide ideation rate among female students (10.5% vs. 9.2%). In neighbouring Portugal, the data is similar though it is lower. That is, among 1074 students of Polytechnic Institute of Viseu, the lifetime suicide ideation prevalence rate was 7.8 % with 6.9 % among males and 8.3% among females (Gonçalves et al., 2016). Again, Mortier et al. (2017) also found a higher risk ratio of suicide ideation among females compared to males in a pooled study to assess the prevalence of suicidal thoughts and behaviours among college students. Contrariwise, boys in some countries including Uganda, Morocco, Lebanon, Argentina, Guyana, the United States of America, and Trinidad and Tobago, demonstrated significantly less odds of having suicide ideation in comparison to girls (Swahn et al., 2014). Speculatively, the risk factors for suicide ideation may be distributed differently between males and females and thus, resulting in the differences prevalence between the genders. Female nursing students, scored higher on risk of suicide, depression, anxiety than their male colleagues (Melissa-Halikiopoulou, Tsiga, Khachatryan, & Papazisis, 2011). Even though, depression and alcohol-related problems are established risk factors for both male and female suicidal behaviour, Lamis & Lester (2013) found depression to be only significantly associated with female suicide ideation while alcohol-related problems were only significantly related to male suicide ideation. This shows that risk factors influence gender in unique pathways that subsequently results in suicide ideation. However, despite the multiple studies showing differences in the prevalence of suicide ideation between males and females, the exact factors influencing this difference is still unclear and the difference in suicide ideation between the genders was seen in only 7 0f 19 countries examined by Swahn et al.

(2014). This led them (Swahn et al., 2014) to conclude that boys and girls are alike in terms of suicide ideation.

### 2.8 Sexual orientation and suicide behaviour

'Sexual orientation is the progression of an individual's physical, romantic and or emotional attraction to persons of either the same sex, opposite and or both sexes or even more than one sex' Coleman et.al (2012) as cited in (Anku, 2015). Individuals may be heterosexual, homosexual, bisexual or asexual. However, this study classified sexual orientation into two broad groups; heterosexual and non-heterosexual for simplicity.

The rates of suicide among lesbian, gay, bisexual, transgender and questioning, are not known generally because suicide data does not generally include information about a person's sexual orientation or gender identity (MAP, 2020; Egale, 2020). It has, however, been established that suicide attempts and ideation are higher in this population. For example, the rate of suicide attempts is 7% in the general youth population while it is as high as 33% among lesbian, gay and bisexual youth (Saewyc, 2007), also in a systematic review and meta-analysis of suicide behaviour and sexual orientation among young adults and adolescents it was established by Miranda-Mendizábal et al. (2017), that gay and bisexual males were significantly more likely to report suicidal behaviour than their heterosexual counterparts. The lesbian and bisexual female participants in this same study (Miranda-Mendizábal et al., 2017), were also more likely to report suicide behaviour, however, this was not statistically significant.

Sexual minority groups in society tend to have higher suicide behaviour than the general population, for instance in the University of Minnesota Minneapolis, more than half of gay, lesbian and bisexual students had suicide thoughts (Eisenberg & Resnick, 2006). A



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recent study in the University of Minnesota Minneapolis (Przedworski et al., 2015) concluded that gay, lesbian and bisexual suffer more mental health disorders than their heterosexual peers. This study further strengthens the link between mental health disorders and suicidal behaviour. A study in China among sexual minority groups found that the suicidal ideation rate was as high as 56% (Chen et al., 2019) which is similar to the prevalence of 57.4% of the gay, lesbian and bisexual undergraduate college students in the United States of America (Liu et al., 2019a). An earlier study in 2016 of suicide behaviour in men who have sex with other men in China, however, found a lower lifetime prevalence of suicide ideation of 18.3% (Mu et al., 2016).

The high prevalence of suicide ideation among men who have sex with men was also found in South African to be much higher at 56% (Stoloff et al., 2013). Also, in South Africa, gay, lesbian, bisexual and transgender University students are typically labelled with all sort of derogatory and discriminatory names by their religious counterparts and this leads them to not attend class, terminate studies and even attempt suicide (Mavhandu-Mudzusi & Sandy, 2015). Men who have sex men in Togo, Burkina and the Gambia have an overall lifetime prevalence of suicide ideation of 13% and ranged between 6-17% in these countries (Stahlman et al., 2016). In Obafemi Awolowo University Nigeria, 16% of gay University students had depression which was 3.7 times higher than their heterosexual counterparts with significant correlation to suicide ideation (Oginni et al., 2018). However, there was a higher prevalence of suicide ideation among heterosexual students (14.1%) than non-heterosexual students (9.1%) in Korle bu' nursing and midwifery college in Ghana (Quarshie et al., 2019) which was probably due to the respondents being mostly heterosexual.

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### 2.9 Marital status, relationship problems, suicide ideation and suicide

Interpersonal relationships undoubtedly provide support for the maintenance of both physical and mental health, Whisman & Baucom (2012) as cited in Till et al. (2017). Furthermore, various states of marital status are related to different suicide risk rates and a change in marital status increases suicide risk significantly (Roškar et al., 2011). For example, Florida State University students in romantic relationships were less likely to abuse alcohol, had fewer sexual partners, and experienced significantly fewer mental problems than their single colleagues (Braithwaite et al., 2010). In Ghana, midwifery and nursing students that responded 'yes' to being in a romantic relationship also had a lower prevalence of suicide behaviour in comparison to those that responded 'no'(Quarshie et al., 2019). Furthermore, it is understood that happiness in a romantic relationship is a significant factor to the overall wellbeing and fulfilment of a person's life (Markey & Markey, 2007).

Suicide-related behaviour is determined by whether a person is presently living in a satisfying romantic relationship or not (Till et al., 2017). A romantic relationship may be defined as a 'dyadic relationship involving meeting for social interaction and joint activities with an explicit or implicit intention to continue the relationship until one or the other party bring to an end or until some other more committed relationship is established (e.g., cohabiting, engagement, or marriage)'(Straus et al., 2004). 'Romantic relationships are generally less stable than they use to be' (Røsand et al., 2014). A lot of reasons can result in problems in a romantic relationship. Some of these could include, intimate partner violence (including physical, sexual), poor communication, infidelity among others. The twelve months prevalence of physical and sexual violence from an intimate

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partner among university students worldwide was 30% and 20% respectively, with females being the victims in 17 of the 22 sites studied (Chan et al., 2008). Low satisfaction or unhappiness in a romantic relationship is a major source of stress, anxiety and depression (Leach et al., 2013), all of which form recognised risk factors for suicidal behaviour. Suicide risk was found to be significantly associated with being in a romantic relationship among female adolescent students in Australia (Delfabbro et al., 2013). These findings agree with findings of Anchuri et al. (2019) when they examined college athletes for non-suicide self-injury, suicide ideation and suicide attempts, and established that difficult romantic relationship were a significant risk to suicide behaviour. Furthermore, among university students worldwide, a lifetime prevalence of suicide ideation of 32% was associated with intimate partner violence with depression moderating the relationship (Chan et al., 2008). Using Emile Durkheim's marital status propositions, Kposowa et al. (2020) found that divorced and separated individuals were 88% more likely to have suicide risk than their married contemporaries in the United States of America. Furthermore, Lithuanians that were divorced and had no children were more likely to endorse suicide as a solution to their problems in life (Diržytė, 2014). Ending a romantic relationship can prognosticate suicidality through serving as a risk factor for depression (Love et al., 2017). Relationship problems have a toll on the academic performance of students, as it makes them unable to concentrate on academic work (Umana et al., 2014) and can result in academic stress and its sequel.

Among university students in Turkey, 38.8% of completed suicides were due to relationship problems (Karbeyaz et al., 2016). Similarly in Ghana, 44.44% of completed

suicides were attributed to marital or relationship problems among the general public (Abdulai, 2020).

### 2.10 Living arrangement, suicide ideation and suicide

Students in the Tamale campus of UDS generally reside in the University halls with other students, private hostels with roommates or alone, or at home with family. Living alone constitute a type of social isolation which is associated with mental health problems (Feng et al., 2020). Social isolation (objective; a measure of the number of contacts) is closely linked to loneliness (subjective; a measure of the quality of relationships) and either can lead to the other or can exist together (AgeUk, 2020). Nevertheless, both social isolation and loneliness are associated with mental health disorders and poor outcomes in people with physical illness (Leigh-Hunt et al., 2017; Mushtaq et al., 2014). In the general German population, loneliness is 10.5% and is associated with depression (OR = 1.91), general anxiety (OR = 1.21) and suicide ideation (OR = 1.35) (Beutel et al., 2017). Social isolation and loneliness are also associated with increased risk of harmful health behaviour such as alcohol abuse, smoking (Feng et al., 2020).

A meta-synthesis of the literature on social isolation and suicide behaviour by Calati et al. (2019) concluded that both loneliness had a strong effect on the suicide behaviour even cross-culturally and social isolation had a strong relationship with suicidality outcomes. Monirpoor et al. (2014), examined the vulnerability of substance use and suicide ideation with the living arrangement of 1053 undergraduate university students of Azad Islamic University in Iran, and found that students living alone were more vulnerable to having suicidal ideation and substance use problems than students that lived with other

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colleagues or with their family. Social isolation and loneliness thus, feed into the set of thwarted belongingness risk factors that potentially results in suicide behaviour.

### 2.11 Religiosity, suicide ideation and suicide

Empirical research shows systematically that suicide rates differ across religions (Gearing & Alonzo, 2018). Religion has a pivotal role in the Ghanaian context (Assimeng, 2010). Christianity, Islam, Traditional religions form the three major religions in Ghana. Most people in Ghana profess Christianity, accounting for 71.2% of the population, followed by Islam (17.6%) and Traditional (5.2%). The remaining 6% have no religious affiliations (Ghana Statistical Service, (GSS) 2012).

In a qualitative study of the roles of religious leaders in attitude and treatment regimens of suicide, the researcher found that there was a general abhorrence of suicide behaviour and a negative attitude towards the suicidal person in all the major religions in Ghana by the religious leaders (Pulampu, 2015). Religion, being deeply rooted in the Ghanaian socio-cultural context views suicide as sinful and mutually exclusive to beliefs of all the major religions (Osafo et al., 2011). Other studies involving psychology students (Osafo et al., 2011) and laypersons (Osafo et al., 2013) in Ghana reveal an equally negative attitude toward suicidal behaviour with religious beliefs and family harmony driving their interpretation of suicide behaviour. Religiosity is protective against suicidal behaviour (Fekih-Romdhane et al., 2020). Research suggests that when religious faith is perceived as a source of optimism and trust, it decreases the probability of developing depression in periods of growing difficulty, promotes healing and decreases the risk of suicide, however, when faith in religion is felt as a source of discomfort and apprehension, it has the reverse impact (Role of religion in suicide prevention - Oxford Medicine, n.d.). For

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example, female participants with religious beliefs and attendance had a low risk of suicide ideation in a study assessing parental religiosity and offspring suicidal ideation and attempt. This, however, was not the same for male participants (Svob et al., 2018). Contrariwise, increase religious importance among college gay/lesbian population is associated with higher lifetime suicide ideation and attempt in comparison to their heterosexual counterparts (Lytle et al., 2018).

### 2.12 Mental health disorders, suicide and suicide ideation

A mental health disorder is a cluster of signs and symptoms characterized by clinically significant disruption in a person's cognition, emotional regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental operations (Barrio, 2014). Mental health disorders commonly result in significant distress or disability in social, occupational, or other important activities. An expectable or culturally approved response to a common stressor or loss, such as the death of a loved one, is not a mental health disorder. Socially deviant behaviour (political, religious, or sexual) and conflicts that are primarily between the person and society are not mental health disorders, unless the deviance or conflict results from a dysfunction in the individual, as described above (Barrio, 2004).

Mental health disorders are numerous with considerable clinical variations and presentation. They are typically a blend of abnormalities of thoughts, behaviour, perceptions and emotions (W.H.O, 2020b). Nearly a billion people have a mental health disorder worldwide (James et al., 2018).

Suicide behaviour is almost non-existent without mental health disorders (Rihmer, 2007). All mental health disorders except for mental retardation and dementia are associated

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with increased suicide risk (Harris & Barraclough, 1997). The University years mark a time of greater susceptibility to a wide variety of mental health problems (Liu et al., 2019b). University is a period characterized by a high level of volatility — shifts in sexual identity (including sexual orientation), social circles, choosing degree programs (e.g., major, focus) and career paths which can result in decrease external support and rising stress. These contribute majorly to the development of mental health disorders (Slavich & Auerbach, 2018). The rates of diagnosis of mental health illness is increasing in colleges internationally, major depression, mania or hypomania, alcohol or substance use disorders are leading specific mental illnesses diagnosed (Auerbach et al., 2018). University students also are within the age range when common mental health problems such as depression, anxiety disorder, obsessive-compulsive disorder and posttraumatic stress disorder are at their developmental peak (Huang et al., 2018). Mental health disorders and suicidal thoughts and behaviours are frequent as well as an albatross among university students (Bruffaerts et al., 2019). These mental health disorders are also linked collectively or separately to academic stress among university students (Bruffaerts et al., 2019). Liu et al. (2019) also found stress to be strongly associated with a diagnosis of a mental health disorder among university students. When considering the epidemiology of suicide mortality from a psychiatric perspective, depression, substance use and psychosis are the most common risk factors (Bachmann, 2018). Mental health conditions especially depression and drug abuse are linked with more than 90% of all cases of suicide. Furthermore, suicide mortality stems from multiple complicated socio-cultural factors and is, therefore, more likely to occur specifically during times of socio-economic, interpersonal and personal distress contexts such as loss of a loved one, work, or honour

(WHO, 2012). This study reviewed to some extent, the two most commonly associated mental health diagnosis with suicide behaviour, that is depression and schizophrenia (Bachmann, 2018).

### 2.12.1 Depression and suicidal behaviour

Depression is a mental state associated with emotions such as sadness, self-reproach, low self-esteem and feeling of loneliness that is often accompanied by loss of appetite, sleep difficulty (insomnia or hypersomnia) and withdrawal from social contact (Stedman Medical Dictionary). Depression affects 264 million people and results in a significant burden of disability across the globe (James et al., 2018). Depression can be categorized into mild, moderate and severe, depending on the severity of symptoms (American Psychological Association (APA), 2013). The cause of depression is largely idiopathic but has some associations with abuse, grief, genetic factors, severe physical illness, and substance abuse, to name a few (WebMD, 2020).

Depression, undoubtedly, is the principal factor that leads young people to completing suicide (Aradilla-Herrero et al., 2014). For instance, 48.9% of nursing students with suicide ideation were depressed (Melissa-Halikiopoulou, Tsiga, Khachatryan, & Papazisis, 2011). Also, the prevalence of depressive or anxiety disorders among US university students was estimated by Eisenberg et al. (2007) to be 15.6 per cent for undergraduates. Again, a meta-analysis of Chinese university students demonstrated a moderate relationship between depression and suicide ideation (Wang et al., 2017). However, a Pakistani study that compared the rates of various mental health problems did not show variations in rates of suicide ideation among University students of different programmes of study (Naseem & Munaf, 2017). A transnational study assessing the

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prevalence of mental health disorders in college students in eight countries revealed a lifetime and a 12-month prevalence of 48.3- 43.3 % in Australia to 22.4-19.1% in Belgium (Auerbach et al., 2018). In post-apartheid South Africa, college students have a lifetime prevalence of common mental health disorders of 38.5% with most, 24.7% being major depression (Bantjes et al., 2019). Similar findings (moderate-severe lifetime depression prevalence of 25.2%) were found in Western Nigeria by (Peltzer, Pengpid, Olowu, & Matthew, 2013).

In Virginia commonwealth dental school, the overall prevalence of moderate or severe depression was 12% among dental and dental hygiene students with an associated suicide ideation rate of 9% (Deeb et al., 2018). This prevalence is low when compared to nursing students in Baccalaureate Hong Kong, that reported an overall prevalence of depression of almost 40% (Cheung et al., 2016). In a systematic review and meta-analysis of one hundred ninety-five studies involving a total of 129,123 medical students in 47 countries, the overall pooled crude prevalence of suicide ideation and depression are 11.1% and 27.2% respectively (Rotenstein et al., 2016).

In six sub-Saharan African countries (Ghana, Nigeria, Burkina Faso, Tanzania, Ethiopia, and Uganda), the 12-month prevalence of suicide behaviour among 7,662 adolescents ranged between 1.2 to 12.4%, with depression being associated strongly with an increased risk of suicide behaviour (Nyundo et al., 2020).

The actual prevalence of mental health disorders in Ghana is not well established (Read & Doku, 2012). This is because there is very little research in mental health in Ghana as it is generally a neglected area (Read & Doku, 2012). However, an estimated 2.4 million Ghanaians had mental health problems in 2011 (Roberts et al., 2014), with a more recent

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estimate being 13% of the Ghanaian population having one form of mental health disorder (Oppong et al., 2016). Mental health disorders were associated with 18.06% of suicides reported in Ghanaian news media (Abdulai, 2020). In a study that assessed the prevalence and determinants of depressive symptoms among university of Ghana students, a prevalence of depression of 39.2% with 31.1% having mild to moderate depression and 8.1% having symptoms of severe depression was revealed by Oppong & Andoh-Arthur (2015). Asante et al. (2017) demonstrated an association of depression and suicide ideation among adolescent students in Ghana.

### 2.12.2 Schizophrenia and suicide behaviour

Schizophrenia is a common mental disorder that is defined by anomalies in perception, thought content and process, with extensive withdrawal of interest from other individuals and the external environment (Stedman Medical Dictionary). Schizophrenia is a long term and severe mental health disorder with significant disability and mortality that affects almost 20 million people internationally (James et al., 2018) and occurs in 1% of the population of every community (Ministry of Health, 2010). Schizophrenia has multifactorial aetiology and is, as a result of the interplay of genetic and environmental factors (W.H.O, 2020c). Relative to the general public, individuals with schizophrenia have an 8.5 fold greater risk of suicide and a lifetime suicide risk of 5%, Harris & Barraclough, (1997) as cited in (Kasckow et al., 2011). In the general Turkish population, the prevalence of psychotic disorders was higher in the university student subgroup among others (Binbay et al., 2011). Among 2,963 Kenyan university students, 23% reported psychotic-like experience, with 19% of these experiences occurring free of drugs or sleep (Ndetei et al., 2012).

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### 2.13 Substance-related disorders, suicide ideation and suicide

Substance-related disorders and suicide outcomes are closely linked (Poorolajal et al., 2016). Substance-related disorders include ten separate but indistinct classes of drugs, alcohol, caffeine, cannabis, hallucinogens, inhalants, opioids, hypnotics, anxiolytics, stimulants and other substances (APA, 2013). It is well noted that some of these substances are often used in combination (West African Epidemiology Network on Drug Use (WENDU), 2018). Some of these commonly used substances are prohibited by international law. Substance-related disorders account for 18% of suicide mortality and any kind of substance-related disorder pose an increase in suicide risk (Bertolote et al., 2004). For most ages between 18 and 90 years, males generally have a higher prevalence of substance use problems than females (Vasilenko et al., 2017). This is also true for young people who completed suicides, as autopsies revealed 73.3% of males and 26.7% of females had prescribed and non-prescribed substances in their blood (Green et al., 2020). Osama et al. (2014) found that substance abuse was the single most important risk factor for medical students who had suicidal ideation in Pakistan. Aside from the biological adverse effects of smoking tobacco, it is also associated with poor academic work, high-risk drinking behaviour, use of other illicit drugs, and high-risk sexual behaviours (Mana & Todd, 2017). In low and middle-income countries in East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Sub-Saharan Africa, Middle East and North Africa, and South Asia, a systematic review of the literature revealed a clear positive association between substance use and suicide ideation across all substances (alcohol, tobacco, marijuana, opioids, etc.) (Breet et al., 2018). In four Pacific Island Oceanic countries, adolescents that used alcohol, tobacco and other drugs also had

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a significantly positive correlation with suicide ideation compared to adolescents who did not use these substances (Peltzer & Pengpid, 2015). In South Africa, 37% of cases of self-harm reporting at the emergency department is associated with chronic substance use (Breet et al., 2018) while post-mortem toxicology results revealed 41% of cases contained alcohol in their blood, 61% tested positive for one other substance and 49% tested positive for more than one other substance (Auckloo & Davies, 2019). Amankwaa (2019), also concluded that substance use amongst students resulted in absenteeism, school dropout, decrease the ability to concentrate and poor academic performance. All of these are potential distal risk factors, or are capable of mediating other pre-existing risks factors and subsequently result in suicide ideation, or worse; suicide.

Students use of substances stem from numerous and constitutionally diverse reasons. Some of these reasons include the pressure to fit in, the need to feel good, availability, experimenting, self-medication among others. In Lagos Nigeria, secondary school students use substances for relief from stress, self-medication, and staying awake to study (Oshodi et al., 2010) and similar reasons (use among family members, poor parental supervision, family conflict, peer pressure, availability and accessibility of illicit drugs) were found among senior high school students in Sunyani Ghana (Amankwaa, 2019). Adu-Mireku (2003) assessed the prevalence of illicit drug and alcohol use among senior high school students in Ghana and found the overall lifetime alcohol use was 25.1%; lifetime cigarette use was 7.5%, and lifetime marijuana use was 2.6%. Among lifetime users, prevailing alcohol use was 46.2%; prevailing cigarette use was 44.6%, and prevailing marijuana use was 58.3%. Amankwaa (2019), found a prevalence of marijuana use to be 14% in 418 senior high school respondents. This same study (Amankwaa,

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2019), found the overall use of substances to be 38% with commonly used substances being alcohol (42%), tramadol (31%) and cocaine (3%). More recent data found the prevalence of marijuana use to be 5.3% among school-going adolescents in Ghana and amphetamine to even be greater at 7.2%. These were associated with suicide ideation of 12.1% and 14.1% respectively (Oppong, 2019). Similarly, among homeless adolescents in Ghana, the prevalence of suicide ideation was found to be 26.4% which had a significant association with alcohol and marijuana use (Oppong & Meyer-Weitz, 2017). Kwofie (2018) also found that, of the four hundred and three second cycle students in Ghana surveyed, alcohol was the most abused substance (29.7%) followed by marijuana (7%), tobacco (6%) and tramadol (6.3%).

### 2.13.1 Alcohol and suicide behaviour

Five per cent of global disease burden and injury including suicide is due to alcohol consumption (WHO, 2020). In 2017, alcohol use was the most commonly reported substance used among people reporting for treatment for drug use disorders (WENDU, 2018). All forms of alcohol use, acute and chronic are a significant risk for suicide (Schilling et al., 2009). People consume alcohol for a myriad of reasons. Among Nigerian University students that consume alcohol, the reasons to develop the confidence to initiate sexual advances, and for prolonged and satisfying sexual experience (Dumbili, 2016). In a meta-analysis of 31 published articles on alcohol use disorders involving over 400,000 participants, a significant association was found between alcohol use disorders and suicide ideation, suicide attempt as well as completed suicides (Darvishi et al., 2015). Alcohol, the most commonly abused substance worldwide has a sinister relationship with suicide and forms a vicious cycle with suicide ideation. That is, people

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with suicide thoughts turn to drink alcohol which in turn results in more suicidal thoughts (Smith & Hampton, 2019). Alcohol dependence commonly results in the breakdown of intimate relationships and loss of ties with family. There is, therefore, the risk of suicide ideation and suicide from a thwarted belongingness perspective. Again, people who abuse alcohol tend to have low self-esteem that subsequently results in depression; a mood disorder that predisposes to suicidal behaviour. Furthermore, when people are intoxicated with alcohol, they become impulsive and disinhibited; thus, they indulge in risky behaviours like suicide. Besides, students with alcohol use in the year were more likely to express suicide ideation within the same year (Zhang & Wu, 2014). People who have problems with alcoholism are 120 times more likely to die by suicide. It is, therefore, not surprising that 29% of suicide victims in the United States of America had alcohol in their blood (Smith & Hampton, 2019) while 44% of suicide cases had alcohol in their blood in Cork, Ireland (Arensman et al., 2019). Conclusively, alcohol use disorder is a major predictor of suicide ideation, suicide attempt and completed suicide, and thus, a significant cause of premature mortality from suicide (Darvishi et al., 2015).

### 2.13.2 Marijuana and suicide behaviour

Marijuana also is known as cannabis, Indian hemp, hashish oil, or wee is undoubtedly the most widely grown, used and illegally transported illicit drug (WHO, 2010). About 3.8% of the world's population has used marijuana in the past year (Merz, 2018). In Europe alone, there are approximately 87.6 million adults aged 15-64 years that have tried marijuana sometime in their lives (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 2018). Six per cent of Canadians use marijuana daily, and 20.6% of young adults aged 15-19years have used marijuana sometime in their lives (Statistics

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Canada, 2018). In West Africa, an estimated 370 million people sort medical treatment for marijuana use in 2017 (WENDU, 2018). Ghana accounted for the highest number of persons on treatment for marijuana use in 2014 in West Africa (WENDU, 2018). The consequences of marijuana use can be short-term or long-term. The short-term adverse effects include; difficulty in learning and retaining information, loss of short-term memory, poor judgement and risky sexual behaviour. The long-term effects include; addition, cognitive impairment, poor educational outcomes and increase risk of schizophrenia (Volkow et al., 2014). All of these can have disastrous consequences and the potential of tipping an individual into suicide ideation through any of the several pathways. For example, poor educational outcomes (failing an exam, struggling in course work, or academic suspension) can result in the sense of thwarted belongingness especially when the students' friends have good outcomes. There is compelling evidence of a strong relationship between suicidal behaviour and marijuana use (Green et al., 2020). King et al. (2001), found a significant relationship between marijuana use and suicidal behaviour in Connecticut, Georgia, New York, and Puerto Rico. Also, Wong et al. (2013) demonstrated that students with marijuana use had 2.2 times higher odds of suicide ideation. In Spain, patients reporting for treatment of substance addiction also had a lifetime prevalence of suicide ideation to be 43.7% (López-Goñi et al., 2018). A systematic review with meta-analysis of several longitudinal studies which is the peak of research evidence, also endorses the significant association between marijuana and suicide ideation (Gobbi et al., 2019).

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### 2.13.3 Tobacco use and suicide behaviour

Tobacco is one of the world's most serious public health problems, as it has resulted in the death of 100 million people in the 20th century and is likely going to cause a billion deaths in this century if trends stay as they are (Amaral et al., 2013). An overwhelming 80% and more of all the worlds 1.3 billion users of tobacco are in low- and middle-income countries (W.H.O, 2020d). In Ghana, the reported rate of tobacco use is more common among men. The general prevalence of tobacco use in Ghana is 1% among men between 15-19 years and 11% among men between 45-49 years with the prevalence decreasing as individuals attain higher educational status (Ghana Demographic Health Survey (GDHS), 2014). Not only is tobacco associated with preventable premature deaths from many non-communicable diseases (example, cardiovascular, malignant neoplasia, cerebrovascular) but it is also associated with suicidal behaviour. For example, Evins et al. (2017) concluded that adults who smoke tobacco are more likely to die by suicide. A study consistent to this is a large National Surveys on Drug Use and Health in the United States of America, where the authors concluded that tobacco use was associated with a 12-month prevalence of suicidality (Han et al., 2017). Other authors (Yaworski et al., 2011), have even shown independently the relationship between suicide ideation and tobacco use after adjusting for mental health disorders. Furthermore, a meta-analysis of studies that estimated suicide behaviour and smoking, involving over 8 million participants showed that participants with a smoking history had 2 times the odds of suicide ideation (Poorolajal & Darvishi, 2016). Also, adolescents of all racial groups that reported tobacco use, had significant adjusted odds ratios (AOR 1.5-2.0, $p<0.05$) of having suicide ideation (Subica & Wu, 2018). This finding is also true for French and

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American adolescents (Swahn et al., 2012). In Sub-Saharan Africa, tobacco use and suicide ideation were strongly associated with a relative risk ratio of 2.41 among students in Seychelles (Wilson et al., 2012). Lin et al. (2017), also demonstrated from findings in six countries (Ghana, South Africa, Russia, China, Mexico and India) that tobacco smoking can also contribute indirectly to suicide ideation by being associated with depression. Tobacco smoking can, therefore, result in suicide behaviour directly (Yaworski et al., 2011) or indirectly by feeding into other risk factor pathways (Lin et al., 2017).

### 2.13.4 Other drugs and suicide behaviours

An estimated 53.4 million people had used opioids globally in 2017 (United Nations Office on Drugs and Crime (UNODC), 2019). The standard mortality ratio of suicide death is 25.9 among nonfatal opioid overdose use in the United States of America (Olfson et al., 2018). The non-medical use of pharmaceutical opioid including tramadol is an alarming phenomenon in West Africa (WENDU, 2018). Among numerous physiological adverse effects of opioid misuse, prior research has shown an association with suicide behaviour (Bohnert et al., 2017; Kuramoto et al., 2012). Samples et al. (2019) also showed increased suicide ideation among participants with opioid misuse. Baiden et al. (2019) examined 8830 adolescents in the United States of America for the association between prescription opioid misuse and suicidal behaviours and found that 13.3% had misused prescription opioids with an associated 17.7% of suicidal ideation. In the United State of America again, prescription drugs are the third commonly misused substances (Forsyth & Copes, 2014) with a prevalence of nearly 25% among adolescents (Lipari & Hughes, 2013). Adolescents that misuse prescription opioids are 1.5 times

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more likely to have suicide ideation (Green et al., 2020). Baiden et al. (2019) also found that suicidal behaviour among high school students in the United States of America was significantly predicted by cigarette smoking and illicit drug use, being a sexual minority, having a history of sexual assault, being a victim of traditional or cyber-bullying and feeling of being sad or being hopeless. These findings are consistent with findings among Chinese middle school students (aged 10-18) who are 4.2 times more likely to endorse suicide ideation with prescription drug misuse than students without a history of drug misuse (Guo et al., 2016). In Ghana, the commonly used opioid among students in Kwahu Senior High School was tramadol with a prevalence of 9.4% among male students and 1.3% among female students (Kwofie, 2018).

### 2.14 University-related risk factors

#### 2.14.1 Academic stress, suicide ideation and suicide

Academic achievement is seen as one of the most significant factors in the field of education and can be an indicator of the accomplishment of an individual's aims and goals and the performance of an educational system in the future (Ranjbar et al., 2017) and so it is desirable to be successful academically as it comes with pleasing societal implications. Pursuits of academic laurels can, therefore, influence students to try to be a perfectionist which may be accompanied by negative outcomes (Hamilton & Schweitzer, 2000) such as stress. Stress is defined as 'perceiving oneself as unable to meet the demands or expectations of the environment' (Lazarus & Folkman, 1984). Academic stress relates to the students' school-related difficulties and their desire to resolve those difficulties (Esia-Donkoh et al., 2011). 'Academic stress is a pervasive issue for students across all cultures and all levels of education'(Friedman, 2020). Furthermore, university

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students face many stressful situations and transformative events (Huang et al., 2018). Stress can result in a significant disturbance in cognition, emotional regulation, or behaviour accompanied by psychological, biological, or developmental processes dysfunction (Dachew et al., 2019). Stress is the main risk factor of suicidal ideation and ultimately contributes to depression (Osama et al., 2014). Students' stress may stem from both curricular and non-curricular factors (Osama et al., 2014). Thus, stressors for academic stress may originate from external pressures such as; examinations, assignments, meeting deadlines, understanding work content, and parental and teacher pressure or expectation (Friedman, 2020). Other factors that result in student's academic stress are related to student's self-perception about their academic ability. Students' academic stress is correlated with cases of mental health disorder such as; depression, anxiety, insomnia, unhealthy eating and lifestyle patterns, drug misuse and suicidal ideation (Friedman, 2020). In Ghana, the causes of academic stress originate from the influence of colonialism, limited resources, instructional issues and language barriers (Nonterah et al., 2015). The lifetime prevalence of mental distress is as high as 53.2% among university students in Ethiopia (Dachew et al., 2019). The most important risk factor for suicide ideation is stress, which is moderated by depression in the suicide process (Osama et al., 2014).

Depression plays an intermediary role in the relationship between academic stress and suicide ideation, for example among Singaporean adolescents Ang & Huan (2006), found that depression played a partial mediating role in linking academic stress and suicide ideation. Also, De Luca et al., (2016) demonstrated that college students with suicide ideation performed poorly in academic work than students without suicide

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ideation. This again is another situation where a self-propagating vicious cycle is created with suicide ideation fuelling, poor academic work, and poor academic work fuelling more suicide ideation. Also, there is evidence of an increase in student suicidality during main exams (Hawton et al., 2012). Again, 17.6% of suicide deaths among students in Bangladeshi have an association with failure in academic work (Mamun et al., 2020). Student self -reported academic stress regressed positively with suicidal ideation and depression, both of which were positively correlated to each other as well (Ang & Huan, 2006). Also, students with a higher score on the perfectionism scale had significantly more suicide ideation and psychological distress than students that did not (Hamilton & Schweitzer, 2000). Furthermore, Guney et al. (2010) concluded that stress, anxiety and depression among university students in Ankara Turkey, were negatively correlated with general satisfaction in life and academics. Students faced with academic stress may resort to negative coping mechanisms such as the use of substances, which in itself, is an established risk of suicide ideation.

In Ghana, a study that assessed the association between academic stress and psychological symptoms among 431 undergraduate students of the University of Ghana concluded that students with academic stress had depression and anxiety, a relationship that was partially mediated by fear of negative evaluation of their academic performance by professors, peers as well as employers that make funds available to support their academic endeavours (Nonterah et al., 2015). It is worth noting, however, that challenging stressful situations such as starting a new school can promote psychological maturity regardless of the negative physiological effects on the body especially when

individuals adopt a problem-focused approach to the stressful situation (Esia-Donkoh et al., 2011).

### 2.14.2 Programme of study and suicide behaviour

There is generally no significant difference in the prevalence of suicide ideation between students studying different programmes in the University. For example, when Alexandrino-Silva et al. (2009), examined students enrolled in health care training programmes, that is, students in pharmacy, nursing and medicine in the Medical School of Fundação in Brazil, they did not find any significant difference in suicide ideation between programmes of study. Also, Curran et al. (2009) found no difference in suicide ideation between medical students and business students in Trinity College and University College in Dublin. Lack of differences in suicide ideation and depression between years or between programmes of the study was also established by (Deeb et al., 2018). However, depression was found to be more prevalent among medical students than students in the social sciences (Bunevicius et al., 2008) and thus may predispose medical students more to suicide ideation. There is a wealth of literature of studies of suicide ideation among medical students globally (Goyal et al., 2012; Jain et al., 2012; Naseem & Munaf, 2017; Osama et al., 2014). Studies measuring suicide ideation among medical students in India vary between the prevalence of 7.9% to 53.6% with reported rates being associated with dissatisfaction with academics and broken relationships among others (Goyal et al., 2012; Jain et al., 2012). The prevalence of suicide ideation is similarly that high in neighbouring Pakistan where 35.6% of medical students reported suicide ideation (Osama et al., 2014). Depression is prevalent in one-third of medical students globally (Puthran et al., 2016) and could potentially explain the high prevalence

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of suicide ideation in this population. However, a systematic review (Blacker et al., 2019), concluded that the reporting of suicide rates among medical students was infrequent and gaps still exist in the knowledge of risk factors and thus, targets for intervention.

Nursing students in Northern Greece had a prevalence of suicide ideation of 12% of the total sample (Melissa-Halikiopoulou, Tsiga, Khachatryan, & Papazisis, 2011), similarly, Aradilla-Herrero et al. (2014) found a lifetime prevalence of 14% among undergraduate nursing students in a university in Catalonia Spain.

Among pharmacy students in the University of Ghana, the overall stress level was 18.24 % which was largely due to the enormous amount of coursework (88.2%), writing of laboratory reports (78.2%), relentless desire to hold good grades (66.4%) and the absence of leisure time (46.4%). The stress from these factors affected students' quality of life negatively with some resorting to alcohol and substance abuse (1.9%) (Opoku-Acheampong et al., 2017a). Amponsah & Owolabi (2011) also found that the majority (70%) and 3.5% of students at the University of Cape Coast Ghana, had moderate and high-stress levels respectively. Reported cases of suicide among students in Universities in Ghana have been associated with failing in courses (Ghanaweb, 2017, 2019; Choicism, 2019; Myjoyonline, 2017, 2019). The very last case reported the University for Development Studies was also attributed to failing in exams (MyNewsGH, 2019). It is, therefore, evident that academic stress can lead to suicide ideation through multiple pathways which in turn lead to more academic stress.

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### 2.14.3 Victimization or bullying, suicide ideation and suicide

Victimization/bullying is 'abuse or mistreatment of someone vulnerable by someone stronger, more powerful etc.' (Merriam Webster Dictionary).When students are victimized or bullied on university grounds, classrooms, or riding the school bus, it is termed school-victimization (Daigle, 2018). This could take one of many forms. It may be physical, sexual, social, cyber or verbal. It can be one of these five forms or a combination of these forms but it leads to similar effects on individuals (Antiri, 2016). Social bullying includes actions such as isolating individuals, making obscene gestures, excluding them from activities and manipulation (Daigle, 2018) while physical bullying could be slapping, tripping, or shoving someone. Cyber-bullying is on a whole different dimension that involves the use of digital technology including mobile phone to threaten, harass or insult through scary text messages, hurtful comments and more (Daigle, 2018). Victimologists are not sure why some students are victimized and others are not, but reasons could be ascribed to structural (location of the school in a bad neighbourhood, lack of guardianship) or individual forces including low self-control (Daigle, 2018). A lifetime diagnosis of several mental health disorders was shown to have a significant statistical relationship with sexual abuse (Chen et al., 2010). There is also empirical evidence that forcible rape is associated with significant suicide ideation and suicide in both college women and household residing women (Gilmore et al., 2018). Students who are either bullied or bully others have a higher risk of suicide ideation and depression (Kaltiala-Heino et al., 1999; Klomek et al., 2011; Mack, 2011) also, in two cohorts in two countries, there was an increase in risk for the overall mental health problems (depression and anxiety) among study participants who are victims of bullying (Lereya et al., 2015).

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Furthermore, both perpetrators and victims of bullying suffer consequences that increase their risk for suicide. For example, Carlyle & Steinman (2007) found that substance use was strongly associated with bullies while depression was strongly associated with victims of bullying. Again, among college students in India, interpersonal violence victimization was shown to be a significant predictor of suicide ideation (Chang et al., 2018). The association between participation in bullying and suicide risk is facilitated by adverse styles of coping, depressive symptoms, and often influenced maliciously by negative styles of coping and depressive symptoms. Similar results were reported for direct as well as indirect participation in bullying ( Wang et al., 2020).

Bullying or victimization have been previously thought to exist in the primary and secondary school context but recent evidence shows that bullying or victimization persist into the University level (Chen & Huang, 2015; Hughes, 2001; Pontzer, 2010). Marraccini et al. (2018) identified two distinct latent groups of bully-victims in college including; Peer bully-victims and Peer-bully victims/Instructor victims. Marraccini et al. (2018) also found that '18 per cent of students reported being bullied by a professor in college, 50% reported witnessing professor bullying during college, 32% reported being bullied by their college peers, 61% reported witnessing their college peers bully another student, and 14% admitted to bullying other students during college'.

Ironically, females tend to be bullied or victimized more than males, except for sexual victimization (Daigle, 2018). School-based victimization is significantly associated with suicidal behaviour. Respondents reporting gender-based victimization were four times more likely to endorse suicide attempt than those who did not (Goldblum et al., 2012).

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In Africa, countries that participated in the World Health Organizations' Global School-based Student Health Survey (GSHS) in 2007 showed variation in the prevalence of bullying or victimization. The prevalence rates for the participating countries were; Ghana 59%, Zambia 65%, Kenya 57%, Botswana 52%, Namibia 52%, Uganda 46%, Mauritius 40%, and Tanzania 28%. A different study in Tanzania also found a similar bullying rate of 27% among in-school adolescents that was associated with 1.9 times the odds of having suicide ideation (Shayo & Lawala, 2019). In South Africa, 36% of students surveyed in Durban and Cape Town were involved in bullying or victimization; 8.2% as bullies, 19.3% as victims and 8.7% as bully-victims (Liang et al., 2007).

In Ghana, there is a dearth of studies on bullying or victimization in the Universities, however, studies in senior high schools in Ghana by Owusu et al. (2011) showed a prevalence of 40.1% with associated odds ratios of 1.97 and 1.72 of depression and suicide risk respectively. This finding is similar to Kuuire, et al. (2019), who also found the prevalence of bullying of 43.4% among the 1633 adolescents surveyed in Ghanaian high schools with associated suicide ideation of 17%. Other factors that were positively associated with suicidal behaviour included; loneliness, anxiety and illicit substance use. Another study that recruited participants in six high schools, two each from Ashanti, Central and Northern Regions, found physical bullying to be (47.5%); verbal bullying (37.2%) and social bullying (8.1%), psychological bullying (4.1%) and cyber-bullying (3.1%) (Antiri, 2016). The findings of these studies have rates lower than those found in the WHO study (GSHS, 2007). Contrary to these findings, is a study in Greater Accra region, that included eight hundred and forty-four student participants from all regions in Ghana at various levels of formal education (Junior High School, Senior High School and

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University) that found that victims of cyber-bullying did not differ in psychological wellbeing from non-victims (Sam et al., 2019).

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# CHAPTER THREE

# METHODOLOGY

## 3.0 Study area

This study was carried out on the Tamale campus in the University for Development Studies. The area is between Latitude: 9° 24', 2.84" N, Longitude: 0° 50', 21.48" E in Tamale, the Northern region of Ghana. The University for Development Studies (UDS) is the first public university in the North of Ghana. It was established in May 1992 by the Government of Ghana (PNDC Law 279) to mix academic work with that of the community in order to provide constructive relationship between the two for the overall development of Northern Ghana, in particular, and the country as a whole (UDS, 2020). The University started academic work in September 1993 with the admission of forty (40) students into the Faculty of Agriculture (FoA), Nyankpala and currently has a student population of 19,720 (UDS, 2020).

The University for Development Studies is ranked one of the top public universities in the country, thus admission is highly competitive. The Tamale Campus of the University for Development offers health-related programmes and education programmes in three faculties; School of Medicine and Health Sciences (SMHS), School of Allied Health Sciences (SAHS) and Faculty of Education (FoE). Programmes typically require coursework, Third Trimester Field Practical Programme (TTFPP) and a thesis in the final year.

## 3.1 Study type and Study design

A quantitative study was carried out to measure the level of suicidal ideation using a descriptive cross-sectional study design to assess the prevalence of suicidal ideation and

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the associated socio-demographic risk factors. An inherent advantage of this study design is its ability to provide prevalence information on health events. It is also relatively easy and cheap to perform despite its inherent property of not being able to draw causal relationships (Gordis, 2014). The study was carried out between March 2020 and July 2020.

### 3.2 Study population

The study population consists of all undergraduate (both regular and fee-paying) students of the University for Development Studies in the Tamale Campus.

### 3.3 Study unit

The study unit is any undergraduate student of the University for Development Studies in Tamale campus within the ages of 18 and 30. The students come from all other regions of Ghana and Abroad. The average age of entry into the university in Ghana is 18 years, though there are no age limits to acceptance into the University (Africanews, 2017). All students admitted for most programmes have at least a minimum grade of C6 in at least three West Africa Senior high School Certificate Examination (WASSCE) core subjects, and in three elective WASSCE subjects. The programmes studied by the students include Bachelor of Medicine and Surgery (MBCHB), Bachelor of Science in Community Nutrition, Bachelor of Science in Nursing, Bachelor of Science in Midwifery, Bachelor of Science in Medical Laboratory Sciences, Bachelor of Science in Education, Doctor of Pharmacy, Doctor of Medical Laboratory Sciences.

The programmes are mostly 4 years in duration except for Bachelor of Medicine Bachelor of surgery, doctor of pharmacy and medical laboratory sciences that have students up to level 600. Exclusion criteria for participating in the study were;

postgraduate students, undergraduate students older than 30 years or from other campuses of the University.

### 3.4 Sampling size and technique

The sample size was determined using Yamane's formula (Yamane, 1967).

$$n=\frac{N}{1+Ne^2}$$

Where n= corrected sample size

N=total population (population of undergraduate students)

e=the margin of error (0.05)

Thus, for a finite population of 6183, the sample size (n)$=\frac{6183}{1+6183X0.05^2}$

=375 participants. However, to account for incomplete forms and forms with missing responses, 10% of this of 375 was added to make a sample of 412 students for the study. The formula assumes knowledge of population size (6183), 95% confidence interval, and margin of error of 0.05.

### 3.5 Sampling method and technique

A systematic random sampling method was used to select participants. The student lists with phone numbers were obtained from the course representatives after contacting them via phone to explain the purpose of the study. The proportion of students required to make a representative sample was calculated for each class based on each class size. The participants were then randomly selected from the class list (the sampling frame) using a sampling interval based on the number of students in the class. The students were informed about the study through their WhatsApp platforms by their course



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representatives. A link to the questionnaire was shared with participants via 'WhatsApp'. Students that did not respond were given a gentle reminder through a phone call. Participants that did not respond after two days following a reminder were replaced with other members of their class. This approach was adopted mainly because the University had been closed down as a precautionary measure against the Covid-19 pandemic and to provide the basis for statistical inference.

However, web-based surveys have their intrinsic benefits. On its own, web-surveys as a mode of data collection is particularly attractive due to the fast speed of data collection at a low cost. This method was also effective because 32% of University students in Ghana spends up to 7 hours on their mobile devices with 46% of them spending this time on social media (Quist, 2016).

### 3.6 Data collection technique and tools

A sample survey was carried out to collect the primary data using an online questionnaire created with Google forms. The questionnaire contains the measures described below.

### 3.7 Measures

An epidemiological study of student's suicide ideation should consider their socio-demographic differences, as this would undoubtedly contextualize the nature of the suicidal process (Torres, 2016). Therefore, the suicide ideation questionnaire revised (Osman et al., 2005) was adapted to reveal the socio-demographic context of the study population as per the objectives of the study. The questionnaire contained two parts. The first part measured socio-demographic characteristics and university-related risk factors. The second part measured suicide ideation.

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### 3.7.1 Suicide ideation

The dependent variable; lifetime suicide ideation was measured by the question; 'Have you ever thought about killing yourself?' coded Yes/Never

### 3.7.2 Socio-demographic characteristics

These form the independent variables of the study and serve to categorise respondents. The study contained just a set of crucial socio-demographic variables. Respondents' age was classified in two groups (18years -24years, and 25years to 30years). Gender was evaluated by asking respondents whether they identify as male or female. Respondents' religious background was assessed by asking which religious faith they professed (Christianity, Islam, Traditional and Other). Sexual orientation was classified into heterosexual, and non-heterosexual. Also, the participants, romantic relationship status was assessed with these categories (Single, married, divorced, in a relationship).

### 3.7.3 University-correlates

With regards to specific risks behaviours including living situation (living alone or with others), a programme of study (Medicine, Nursing, midwifery, pharmacy, Community Nutrition, Biomedical laboratory Sciences, and Education studies), academic stress, and bullying or victimization by colleagues or lecturers. Academic stress was measured by asking respondents to choose a description of their academic situation (satisfactory, failing courses, failing to meet personal academic goals, struggling to keep up with courses) Any response apart from satisfactory academic progress, that is failing courses, failing to meet personal academic goals, and struggling to keep up with courses was be considered academic stress. Respondents were asked to state the kind of bullying or

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victimization by a lecturer or colleague (No bullying or victimization, physically, sexually, and verbally).

### 3.7.4 Mental health disorders and substance use

The history of psychiatric diagnosis presented options on schizophrenia and depression since

they are most commonly present in suicide ideation (Bachmann, 2018), the other psychiatric

Conditions were grouped into others. Substance use was categorized into alcohol, tobacco, marijuana and other drugs.

## 3.8 Data analysis

The data was coded into and analysed using Statistical Package for Social Science v 26. The results are presented in frequency tables, bar graphs, pie charts and cross-tabulation of explanatory variables with suicide behaviour. Binary logistic regression analysis was used to determine how well the explanatory variables (risk factors) predicted the dependent variable (suicide ideation). Only explanatory variables with statistically significant association were used in the regression analysis. Since both suicide ideation (dependent variable) and socio-demographic characteristics (independent variables) are categorical data, the cross tabulation with frequency counts and chi-square test was used to determine significant relationship between the independent variables and the dependent variable in the study. The chi-square test of independence was done with a null hypothesis assuming ‘no association between the dependent variable and the categorical explanatory variables respectively that is, suicide ideation and socio-demographic



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variables. Along with the chi-square value, SPSS calculates a probability value (usually p=0.05), such that probability values less than 0.05 are significant; that is the relationship between suicide ideation and a socio-demographic variable is unlikely to be due to random chance.

The dependent variable (suicide ideation) is dichotomous; that is students either have suicidal ideation or not, this was coded as 1 and 0 respectively. 'Logistic regression is useful for studying associations of binary outcome with categorical explanatory variables'(Kazmi & Khan, 2015). Thus, to assess how the socio-demographic variables predict suicide ideation, a binary logistic regression analysis was also run by SPSS for this purpose. The socio-demographic characteristics and university-related factors were 'dummy coded' to quantitative variables to allow for the binary logistic regression analysis in SPSS. Example, for the socio-demographic variable 'religion' it would be coded as 1(for Christian and Moslem) and 0 (for other). Also, for the university-related factor 'victimization,' it was coded as 1 (for physical, emotional or verbal victimization) and 0 (for no victimization).

For a binary logistic regression model, the antilog for every coefficient of each independent variable (B) represent a unit change in the odds of having suicide ideation, the null hypothesis in logistic regression, therefore, states that the odds of having suicide ideation is 1 for all the independent variables. The forward method on SPSS would be selected to run the regression analysis. This method will enter variables one at a time, based on the designated significance value that is 0.05 in this case. The process ceases when there are no additional variables that explain a significant portion of the additional variance.

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### 3.9 Ethical consideration

The study obtained ethical clearance from the University for Development Studies Ethical Review after the proposal was reviewed to ensure both local and international study protocols that protect human rights and safety among research participants were adhered to.

Participation in this study was purely voluntary and the questionnaire was designed deliberately to omit personal details of participants. Thus, the confidentiality of the participants was guaranteed in the study.

### 3.10 Plan for dissemination of results

As improved public debate/understanding on suicide mortality and its associated risk factors is important knowledge for those contemplating suicides (Pridmore et al., 2018), and to those at the forefront of suicide prevention, it is woefully unethical to not make accessible the results to the participants of the study, the community and the academic world as a whole. I, therefore, intend to make access to this work to the participant by providing hard copies for the school library, making the soft copies available for online posting on UDSspace (the University for Development Studies' Digital Repository) and other health-related websites, and hosting seminars on the University campus to discuss results. A copy of the study would be made available to the University's counselling unit to assist in their efforts. A copy would also be made available to the UDS library. It is also my plan to distribute a summary document to the local public health directorate and policymakers. Finally, I would publish the results in a renowned journal of public health or psychiatry.

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# CHAPTER FOUR

# RESULTS

## 4.1 Introduction

I studied the prevalence of suicide ideation and its associated risk factors among participants; the results are presented as follows; first the socio-demographic characteristics, the prevalence of suicide ideation, the risk factors and then the regression analysis of significant socio-demographic characteristic and risk factors with suicide ideation. These findings are presented below.

## 4.2 Socio-demographic characteristics

A total of 416 undergraduate students of the University for Development Studies in Tamale Campus responded to the online survey, however, 400 of the most complete forms were selected for the data analysis. Participant responses that were excluded from analyses included: (1) missing response on Age and Gender (n = 12), (2) did not respond to a programme of study, (3) missing information on lifetime suicide ideation. The respondents were aged 18 to 30 years.

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**Table 4.1 Socio-demographic characteristics**

| Characteristic | Frequency | Per cent (%) |
|---|---|---|
| **Age** | | |
| 18-24 | 341 | 85.3 |
| 25-30 | 59 | 14.8 |
| Total | 400 | 100 |
| **Gender** | | |
| Male | 213 | 53.3 |
| Female | 187 | 46.8 |
| Total | 400 | 100 |
| **Marital status** | | |
| Single | 373 | 93.5 |
| Married | 10 | 2.5 |
| Other | 16 | 4.0 |
| Total | 400 | 100 |
| **Religion** | | |
| Christianity | 248 | 62.0 |
| Islam | 147 | 36.8 |
| Traditional | 0 | 0 |
| Other | 5 | 1.3 |
| Total | 400 | 100 |
| **Programme** | | |
| Medicine | 157 | 39.3 |
| Biomedical Lab Sciences | 81 | 20.3 |
| Pharmacy | 23 | 5.3 |
| Community Nutrition | 69 | 17.3 |
| Education Studies | 29 | 7.2 |
| Nursing | 19 | 4.8 |
| Midwifery | 22 | 5.5 |
| Total | 400 | 100 |

Source: Survey data, 2020

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Table 4.1 shows a summary of the socio-demographic characteristics of the respondents in the study. Most of the respondents were between the age of 18 and 24 years. The rest of the respondents were between 25-30 years of age. Majority of the respondents were male and single with very few married respondents; the remainder was accounted for by others. More of the respondents were Christians, followed by Moslems, and then others. More of respondents were medical students since there are more medical students in the University, this was followed by biomedical science students and the least number of respondents were nursing students. Most of the respondents were heterosexual.

### 4.3 Year of study of participants

Figure 4.3; the pie chart shows the share of respondents from each of the levels of undergraduate study at the University. The level 200 students had the largest piece of the pie with 128 responses, followed by level 100 with 90 responses, the number of the responses then decreased as the level of study advanced and the least responses were from level 600 with 11 responses.

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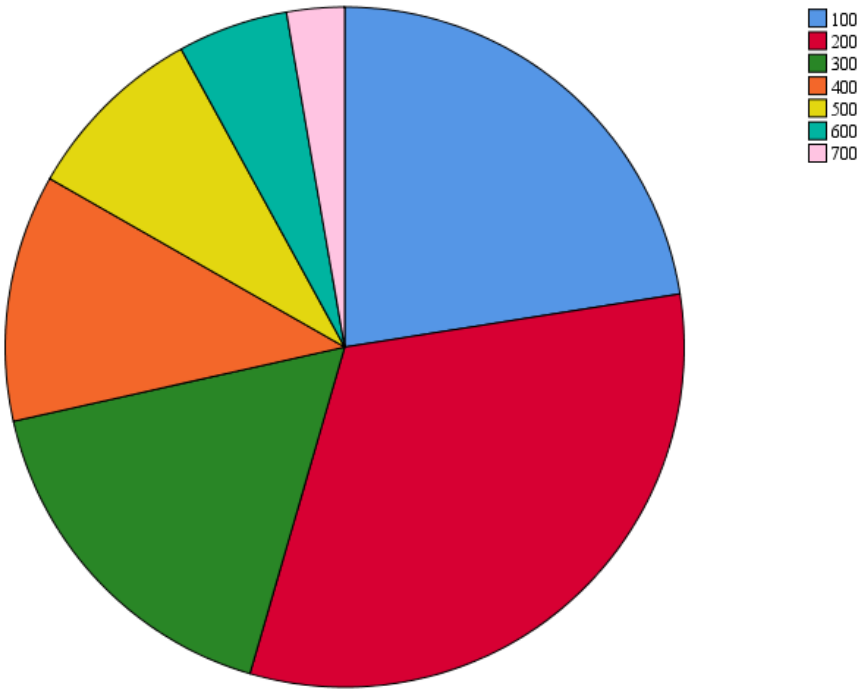


**Figure 4.3: Year of study**

Source: Survey data, 2020

**4.4 Lifetime suicide ideation**

Figure 4.4 is a pie chart showing the lifetime prevalence of suicide ideation among undergraduate students of the University for Development Studies in Tamale Campus. 98 respondents representing 24.5% had thoughts about completing suicide at some point in their lives.

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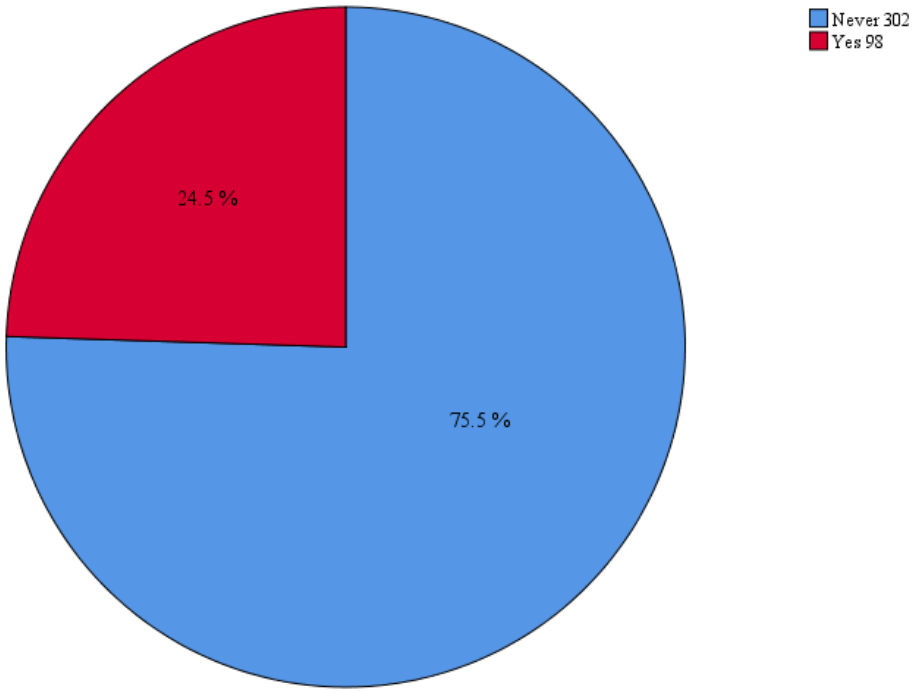


**Figure 4.4: Lifetime suicide ideation**

Source: Survey data, 2020

### 4.5 Gender and lifetime suicide ideation

Figure 4.5 displays in a bar chart, the gender distribution of respondents and suicide ideation frequency. Majority of the students responding are male, while the majority of students reporting suicide ideation are females.

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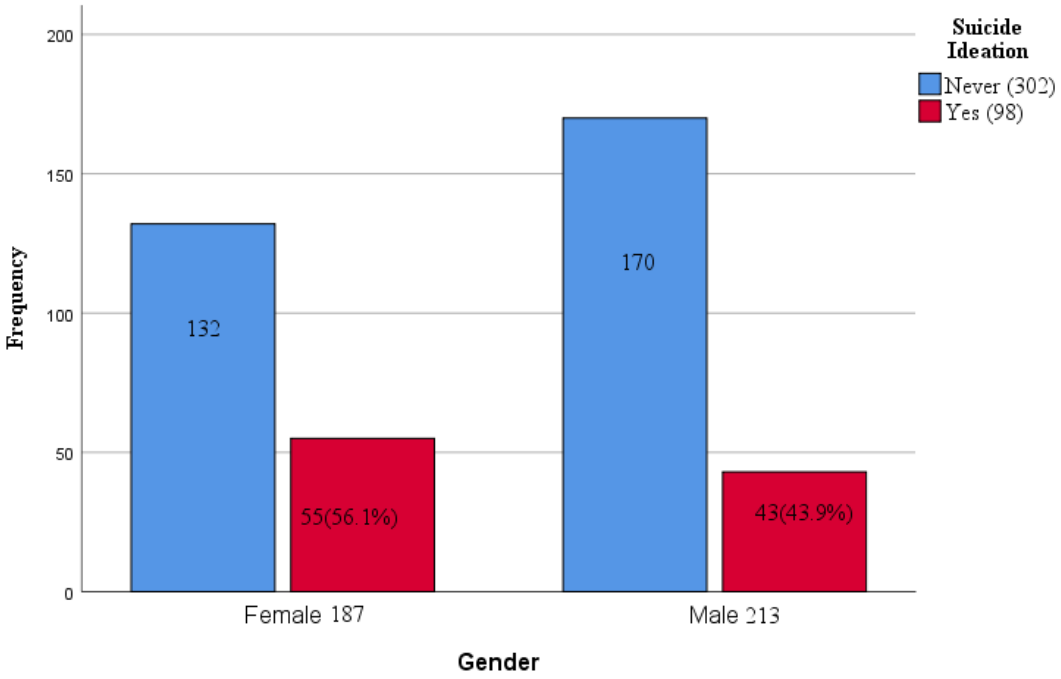


**Figure 4.5 A bar graph of gender and suicide ideation**

Source: Survey data, 2020

### 4.6 Living arrangement and lifetime suicide ideation

Figure 4.6 is a bar graph of respondents living arrangement and the prevalence of suicide ideation. Majority of the respondents lived with others and thus, majority of those with suicide ideation also lived with others.

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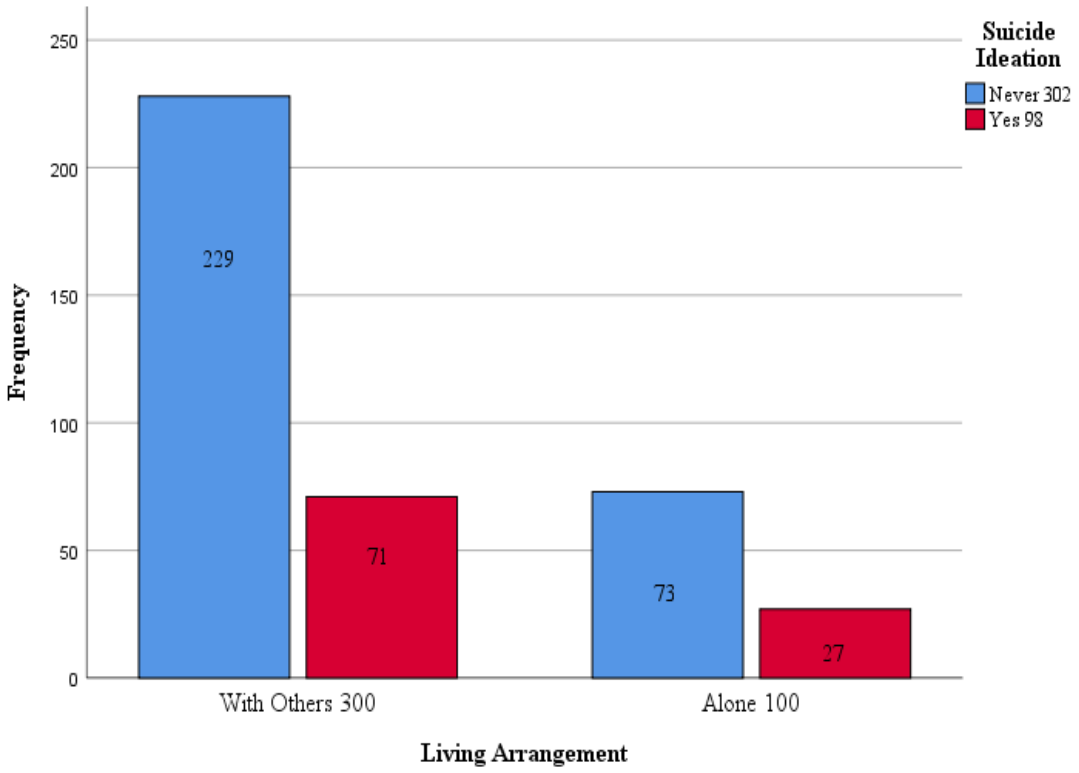


**Figure 4.6: Living arrangement and suicide ideation**

Source; Survey data, 2020

### 4.7 Relationship status and suicide ideation

Figure 4.7 is a bar graph displaying the frequencies of students' romantic relationship status and suicide ideation, the majority of students (252) are not in a romantic relationship and they account for 53 of the 98 students reporting suicide ideation.

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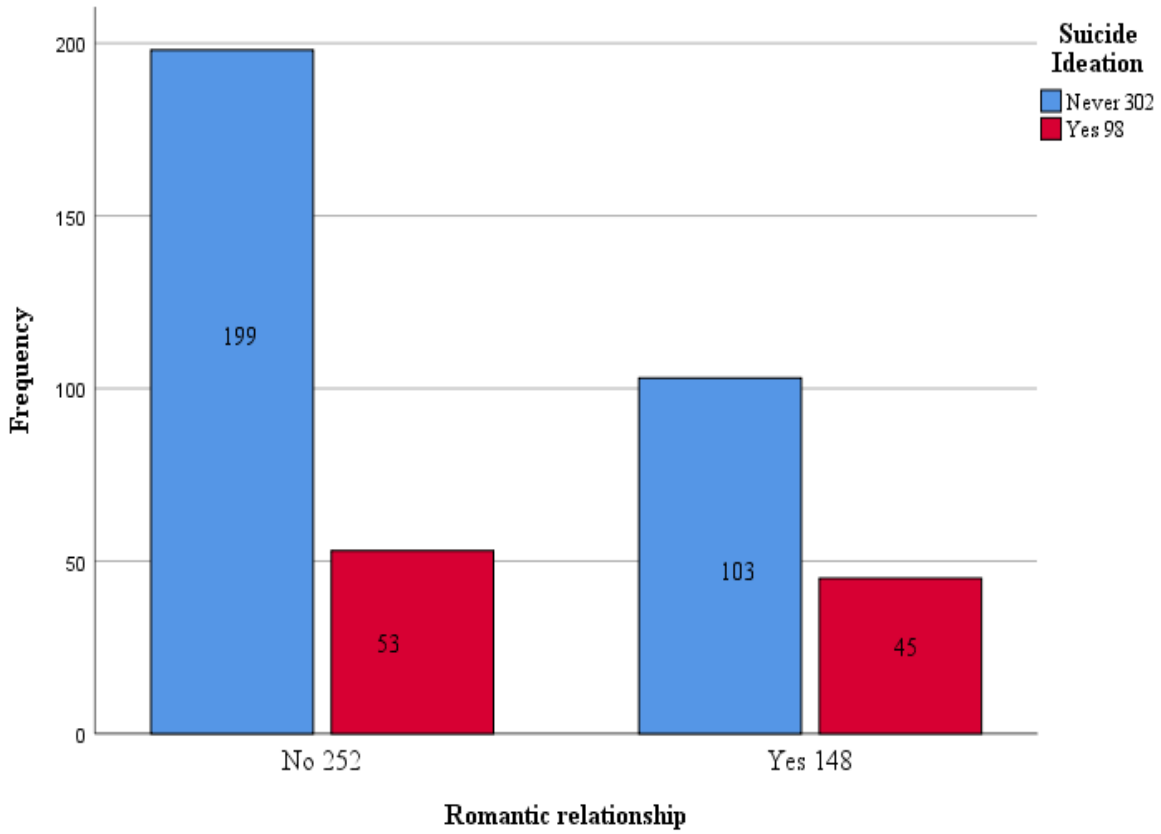


**Figure 4.7: Romantic Relationship and prevalence of suicide ideation**

Source: Survey data, 2020

### 4.8 Religion and suicide ideation

Table 4.8 shows the socio-demographic characteristic 'religious status as a predictor of suicide ideation among participants. Nearly half of students that profess 'other' religion have suicide ideation. However, more Christian students had suicide ideation among all students with suicide ideation.



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**Table 4. 8 Cross tabulation of religion and suicide ideation**

| Pearson's Chi-square for religion<br>Value 7.397, df-2, sig. 0.25<br>Cut-off -0.05 | | | Suicide Ideation | | |
|---|---|---|---|---|---|
| | | | Yes | Never | Total |
| Religion | Christianity | Frequency | 71 | 177 | 248 |
| | | % within Religion | 28.6% | 71.4% | 100.0% |
| | | % within Suicide Ideation | 72.4% | 58.6% | 62.0% |
| | Islam | Frequency | 25 | 122 | 147 |
| | | % within Religion | 17.0% | 83.0% | 100.0% |
| | | % within Suicide Ideation | 25.5% | 40.4% | 36.8% |
| | other | Frequency | 2 | 3 | 5 |
| | | % within Religion | 40.0% | 60.0% | 100.0% |
| | | % within Suicide Ideation | 2.0% | 1.0% | 1.3% |

Source: Survey data, 2020

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### 4.9 Programme of study and suicide ideation

Figure 4.9 displays a bar graph of respondents' programme of study with the frequency of suicide ideation. Medical students have the highest frequency of respondents with suicide ideation, followed by Biomedical Laboratory Science students, then Community Nutrition and Midwifery, Education and Pharmacy students, and least frequency reported by nursing students.

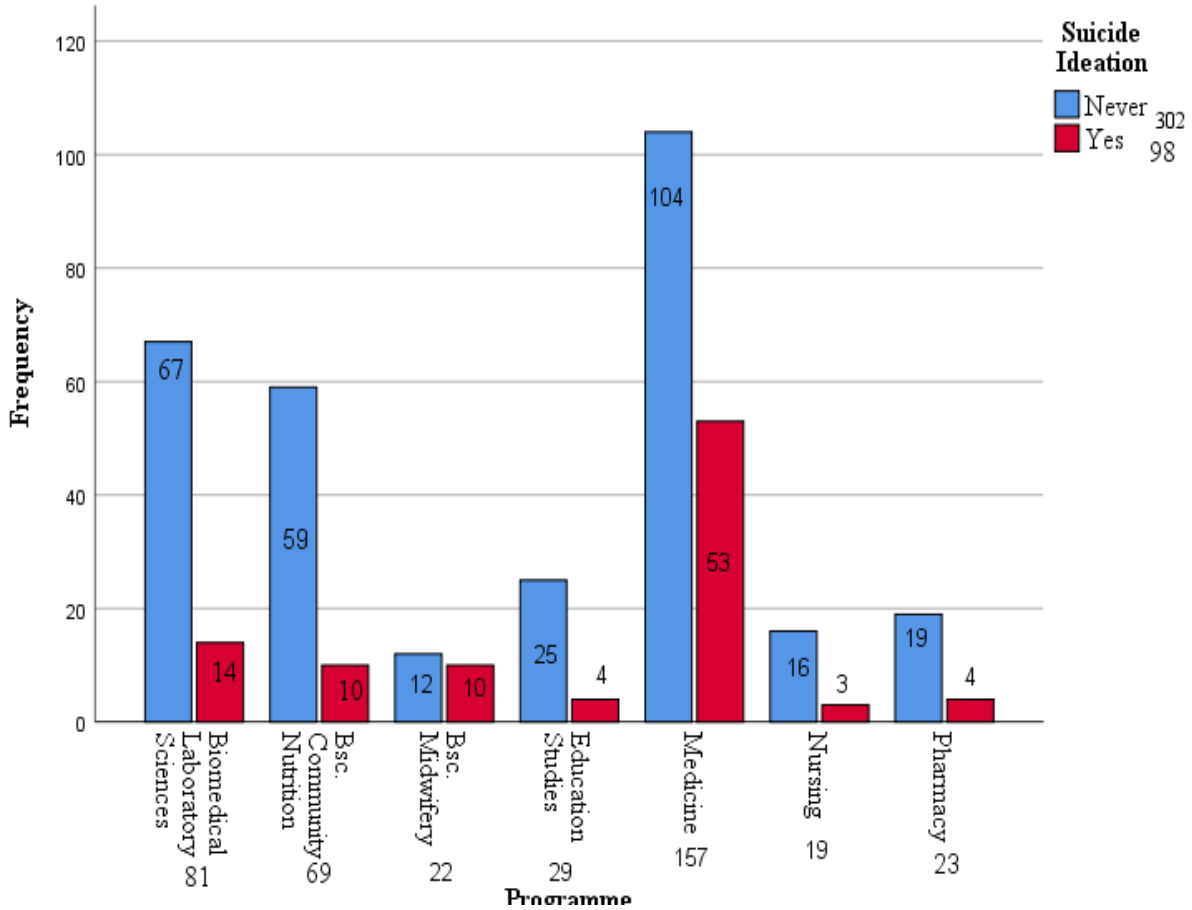


**Figure 4.9: Programme of study and suicide ideation**

Source: Survey data, 2020

### 4.10 Victimization or bullying and lifetime suicide ideation

Table 4.10 above displays peer victimization or bullying cross-tabulated with suicide ideation. Students that reported being victimized or bullied physically reported more suicide ideation, students that reported being victimized or bullied verbally came next, then students being victimized or bullied sexually, and the least being students that did not report any victimization or bullying.



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**Table 4.10 Victimization or bullying and prevalence of lifetime suicide ideation**

| Chi-square value=33.567 df=4 p=0.00 cutoff-0.05 | | | | Suicide Ideation | | |
|---|---|---|---|---|---|---|
| | | | | Yes | Never | Total |
| Victimization | No | | Frequency | 55 | 245 | 300 |
| | | | % within no victimization | 18.3 % | 81.6% | 100.0% |
| | | | % within Suicide Ideation | 56.1% | 81.1% | 75% |
| | Yes | Verbally | Frequency | 35 | 49 | 84 |
| | | | % within victimized verbally | 41.6% | 58.3% | 100.0% |
| | | | % within Suicide Ideation | 35.7% | 16.2% | 21.0% |
| | | Physically | Frequency | 7 | 5 | 12 |
| | | | % within victimized physically | 58.3% | 41.7% | 100.0% |
| | | | % within Suicide Ideation | 7.1% | 1.6% | 3.0% |
| | | Sexually | Frequency | 1 | 3 | 4 |
| | | | % within victimized sexually | 25.0% | 75.0% | 100.0% |
| | | | % within Suicide Ideation | 1.0% | 1.0% | 1.0% |
| Total | | | | 98 | 302 | 400 |

Source: Survey data, 2020

### 4.11 Sexual orientation, relationship problems and suicide ideation

Table 4.11 is a cross tabulation of sexual orientation and relationship problems with lifetime suicide ideation. Of the 81 non-heterosexual students, 12.3% have suicide ideation while 35.6% of the 90 students with relationship problems have suicide ideation. Overall, 10.2% of students with suicide ideation are non-heterosexual and 32.7% of them have relationship problems.

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**Table 4.11 Sexual orientation, Relationship problems and lifetime suicide ideation**

| Socio-demographic Characteristic | | | Suicide ideation | | |
|---|---|---|---|---|---|
| | | | Yes | Never | Total |
| Sexual orientation | Heterosexual | Frequency | 88 | 231 | 319 |
| | | % within sexual orientation | 27.6 | 72.4 | 100 |
| | | % within suicide ideation | 89.8 | 77.5 | 79.8 |
| | Non-heterosexual | Frequency | 10 | 71 | 81 |
| | | % within sexual orientation | 12.3 | 87.7 | 100 |
| | | % within suicide ideation | 10.2 | 23.5 | 20.2 |
| Total | | | 98 | 302 | 400 |
| Relationship Problems | No | Frequency | 66 | 244 | 310 |
| | | % within relationship problems | 21.3 | 78.7 | 100 |
| | | % within suicide ideation | 67.3 | 80.8 | 77.5 |
| | Yes | Frequency | 32 | 58 | 90 |
| | | % within relationship problems | 35.6 | 64.4 | 100 |
| | | % within suicide ideation | 32.7 | 19.2 | 22.5 |
| Total | | | 98 | 302 | 400 |

Source: Survey data, 2020

### 4.12 Substance use and suicide ideation

Table 4.12 is a cross tabulation of substance use and suicide ideation. Most students (94.5) did not use any of the substances presented in the questionnaire. Overall, 22 students use substances with alcohol being used more than the other substances. Four out



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of 5 students that use other drugs have suicide ideation, representing the category with the highest prevalence of suicide ideation among students that use substances.

**Table 4.12 Substance use and prevalence of suicide ideation**

| Substance use | | Chi-square value 18.987, df=6 p=0.01, cutoff-0.05 | Suicide ideation | | Total |
|---|---|---|---|---|---|
| | | | Yes | Never | |
| None | | Frequency | 87 | 291 | 378 |
| | | % within substance use | 23.0% | 77.0% | 100% |
| | | % within suicide ideation | 87.8% | 96.7% | 94.5% |
| Yes | Alcohol | Frequency | 5 | 6 | 11 |
| | | % within substance use | 45.5% | 54.5% | 100% |
| | | % within suicide ideation | 5.1% | 2.0% | 2.8% |
| | Tobacco | Frequency | 2 | 2 | 4 |
| | | % within substance use | 25% | 75% | 100% |
| | | % within suicide ideation | 1.0% | 0.7% | 1.0% |
| | Marijuana | Frequency | 0 | 2 | 2 |
| | | % within substance use | 0% | 100% | 100% |
| | | % within suicide ideation | 0% | 0.7% | 0.5% |
| | Other drugs | Frequency | 4 | 1 | 5 |
| | | % within substance use | 80.0% | 20.0% | 100% |
| | | % within suicide ideation | 4.1% | 0.3% | 1.25% |
| Total | | | 98 | 302 | 400 |

Source: Survey data, 2020

### 4.13 Mental disorders and suicide ideation

Table 4.13 above displays the presence of a mental health disorder in a student and suicide ideation. In total, 12 students reported having a mental health disorder. Almost all students with depression (8 out of 9) have suicide ideation followed by students with



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other mental health disorders (2 out of 3). No student reported having a diagnosis of schizophrenia which was made a stand-alone option in the online questionnaire.

**Table 4.13 Mental health disorders and suicide ideation**

| Mental disorder | | Chi-square value=30.125 df=3 p=0.000 cut-off=0.05 | Suicide ideation | | Total |
|---|---|---|---|---|---|
| | | | Yes | Never | |
| None | | Frequency | 88 | 300 | 388 |
| | | % within mental disorder | 22.7% | 77.3% | 100% |
| | | % within suicide ideation | 89.8% | 99.3% | 97.0% |
| Yes | Depression | Frequency | 8 | 1 | 9 |
| | | % within mental disorder | 88.9% | 11.1% | 100% |
| | | % within suicide ideation | 8.2% | 0.3% | 2.3% |
| | Other | Frequency | 2 | 1 | 3 |
| | | % within mental disorder | 66.7% | 33.3% | 100% |
| | | % within suicide ideation | 2.0% | 0.3% | 0.8% |
| Total | | | 98 | 302 | 400 |

Source: Survey data, 2020

### 4.14 Academic stress and suicide ideation

Table 4.14 displays a cross tabulation of reported the academic stress and suicide ideation. Most students (258) report being satisfied with their academic situation and are not stressed academically. Majority of students reporting academic stress (142) are failing to meet personal academic goals (80). Very few students have failed courses (5) and only one has been suspended academically. Students struggling to keep up with courses have

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the highest suicide ideation (42.9%) while students that are satisfied with their academic situation had the lowest suicide ideation (19.0%).

**Table 4.14 Academic stress and suicide ideation**

| Academic stress | | Chi-Square Value=16.581 df=5 p=0.005 cut-off=0.05 | Suicide ideation | | Total |
|---|---|---|---|---|---|
| | | | Yes | Never | |
| None | Satisfactory | Frequency | 49 | 209 | 258 |
| | | % within satisfactory | 19.0 % | 81.0 % | 100 % |
| | | % within Suicide ideation | 50 % | 69.2 % | 64.5 % |
| Yes | Failing courses | Frequency | 2 | 3 | 5 |
| | | % within failing courses | 40 % | 60 % | 100 % |
| | | % within suicide ideation | 2 % | 1% | 1.3 % |
| | Academic suspension | Frequency | 0 | 1 | 1 |
| | | % within academic suspension | 0 % | 100 % | 100 % |
| | | % within suicide ideation | 0 % | 0.3 % | 0.3 % |
| | Struggling to keep up with courses | Frequency | 24 | 32 | 56 |
| | | % within struggling to keep up with courses | 42.9% | 56.1 % | 100 % |
| | | % within suicide ideation | 24.5% | 10.6 % | 14 % |
| | Failing to meet personal goals | Frequency | 23 | 57 | 80 |
| | | % within failing to meet personal goals | 29 % | 71 % | 100 % |
| | | % within suicide ideation | 23.5 % | 18.9 % | 20 % |
| Total | | | 98 | 302 | 400 |

Source: survey data, 2020

**4.15 Binary logistic regression of statistically significant independent variables**

Table 4.15 displays the results of statistically significant predictor variables that are included in the regression equation of suicide ideation in this study. Intercept (B) are the values for the binary logistic regression equation for predicting suicide ideation from the independent variable. S.E. is the standard errors associated with the coefficients of the independent variables. Chi-square and Significance columns provide the Chi-square



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value and 2-tailed p-value used in testing the null hypothesis that the coefficient (parameter) is 1. Coefficients having p-values less than alpha (set at 0.05) are statistically significant. Df column lists the degrees of freedom for each of the tests of the coefficients. Values in the column Exp (B) are the odds ratios for the predictors. They are the exponentiation of the coefficients. Mental health disorders have the highest odds of predicting suicide ideation in the study while sexual orientation (non-heterosexual) is least likely to predict suicide ideation.

**Table 4.15 Binary Logistic regression for suicide ideation**

| Variable | Intercept(B) | Standard Error | Chi-square | Degree of Freedom | P-value (significance) | Exp (B) odds ratio | 95% Confidence Interval |
|---|---|---|---|---|---|---|---|
| Victimization (Yes) | 1.14 | 0.29 | 15.53 | 1 | 0.00 | 3.12 | 1.77-5.50 |
| Academic stress (Yes) | 0.74 | 0.28 | 6.87 | 1 | 0.01 | 2.10 | 1.25-3.64 |
| Relationship problems | 0.62 | 0.30 | 4.18 | 1 | 0.04 | 1.90 | 1.02-3.06 |
| Sexual orientation (Non-heterosexual) | -0.88 | 0.40 | 4.84 | 1 | 0.03 | 0.41 | 0.19-0.91 |
| Mental disorder (Yes) | 2.42 | 1.15 | 4.45 | 1 | 0.04 | 11.22 | 1.19-106.10 |
| Constant | -2.23 | 0.38 | 34.75 | 1 | 0.00 | 0.11 | |

Source: survey data, 2020

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# CHAPTER FIVE

# DISCUSSION

## 5.0 Introduction

This study represents the first empirical effort as yet to assess the prevalence of suicide ideation, and its associated risk factors among undergraduate students in the University for Development Studies- Tamale Campus. The results of this study are discussed with reference to the literature reviewed in chapter two of this work. The effort is to fill in the gap in the existing literature and to compare and contrast the findings of this study with the existing literature.

## 5.1 Lifetime prevalence of suicide ideation

The first objective was to assess the prevalence of suicide ideation among the undergraduate students of the University for Development Studies, Tamale- Campus. The lifetime prevalence of suicide ideation among students was found to be 24.5%. This prevalence is near the upper limit of the general population prevalence of suicide ideation which ranges between 2.6% to 25.4% globally (Torres, 2016). The lifetime prevalence of 24.5% is comparable to the worldwide college student lifetime prevalence of 22.3% (Mortier et al., 2017). Furthermore, the prevalence was also similar to other studies among undergraduate university students in twelve Moslem countries (22.1%) and Botswana (28.7%) (Eskin et al., 2019; Korb & Plattner, 2014a) respectively. This prevalence was, however, lower than the lifetime prevalence of 32.7% that was found among university students across 19 colleges in 8 countries in Africa, Europe and the Americas (Mortier et al., 2018; Palmier, 2011; Van Niekerk et al., 2012) that measured

suicide ideation prevalence rates among undergraduate university students at 32.3% and 31.9% respectively.

However, the lifetime prevalence of 24.5% was higher compared to Portuguese undergraduate university students (12.6%) (Pereira & Cardoso, 2015), and two other Ghanaian studies (Oppong-Asante & Meyer-Weitz, 2017; Quarshie et al., 2019), that found prevalence rates of 15.7% and 18.2%.

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## 5.2 Socio-demographic correlates

### 5.2.1 Age, Gender, sexual orientation, relationship problems, and lifetime prevalence of suicide ideation.

The ages of the respondents in the study ranged between 18 and 30 years. Death by suicide is the second most common cause of death within this age group globally. This study did not find any significant difference ($p = 0.257$) in the lifetime prevalence of suicide ideation based on the age groups (19-24, 25-30) students were classified into.

This study found that of the 98 students reporting suicide ideation, more than half of them were females (56.1%). Furthermore, being female attributes a 29.6% chance of having suicide ideation while being a male conferred a 20.2% chance of having suicidal ideation. This finding is generally consistent with other studies involving undergraduate students (Miranda-Mendizabal et al., 2019; Mortier, Auerbach, Alonso, Bantjes, et al., 2018a; Pereira & Cardoso, 2015) where the prevalence of lifetime suicide ideation was higher amongst female respondents. It is also in agreement with Assarsson et al. (2019) Osama et al. (2014) and Pereira & Cardoso (2015) where higher suicide ideation rate was found among females as compared to their male contemporaries. However, the lifetime prevalence among female students in this study (56.1%) is higher when compared with

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these studies. Females having a higher lifetime prevalence of suicide ideation than males contradicts (Hamilton & Schweitzer, 2000) and (Mackensie et al., 2011) as they found suicide ideation to be higher in males than female university students in Australia and the United States of America respectively. Also, Van Niekerk et al. (2012), did not find any difference in suicide ideation between the genders and Swahn et al. (2014) found the prevalence of suicide ideation to be higher among females. There was no statistical difference in lifetime suicide ideation between male and female undergraduate students ($p = 0.08$), and gender did not also significantly predict suicide ideation in the regression analysis. The implication, therefore, is that suicide prevention interventions should target both genders equally as differences do not truly exist between genders.

Being non-heterosexual did not significantly increase the risk of having suicide ideation as found in this study. Non-heterosexual orientation was negatively correlated with suicide ideation in the regression analysis with odds of having suicide ideation being 0.414 times less likely. This is in sharp contrast to the numerous studies that empirically demonstrated a positive correlation between suicide ideation and being non-heterosexual (Horwitz et al., 2020; Mu et al., 2016; Saewyc, 2007; Stoloff et al., 2013). The difference between the findings of this study and the numerous studies could have resulted from non-disclosure of respondents to be non-heterosexual. Most of the respondents being religious perceive being non-heterosexual as sinful as well as the general stigma by the Ghanaian society to being non-heterosexual could largely have resulted in non-disclosure. For instance, 96% of Ghanaians in a Pew Research Centre survey believe homosexuality should not be accepted (Bell, 2014).

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Romantic relationships and satisfaction in relationships are protective against suicide ideation and suicide (Braithwaite et al., 2010; Markey & Markey, 2007; Quarshie et al., 2019). The reverse is true. This study found that of the 90 students with relationship problems, 35.6% had suicide ideation. Also, midwifery students that reported the highest per cent (45.5) of suicide ideation within their stratum also had the highest per cent of students with relationship problems (31.8). Participants with relationship problems were almost two times (OR = 1.855) as likely to endorse suicide ideation with statistical significance (p = 0.041). This finding supports the existing evidence that relationship problems or dissatisfaction is associated positively with suicide ideation (Anchuri et al., 2019b; Till et al., 2017). Encouraging students with relationship problems to seek university counselling services could be of benefit in averting suicide ideation in students with this socio-demographic characteristic.

### 5.2.2 Living arrangement and lifetime prevalence of suicide ideation

From figure 4.6, it can be seen that of the 98 students with suicide ideation, majority 71 (72.4) % of students lived with others, while the remaining 27 (27.6) lived alone. This relationship when subjected to a Chi-square test for significance produced (p = 0.686) which is statistically insignificant. Living alone, therefore, did not predict suicide ideation with statistical significance. This finding contradicts with the literature reviewed (Beutel et al., 2017; Calati et al., 2019; Monirpoor et al., 2014). This result, however, is possible as 72% of the respondents lived with other people and that served as protection against the prediction of significant suicide ideation. A larger sample may resolve this paradox.

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### 5.2.3 Religion and lifetime prevalence of suicide ideation

A resounding majority (98.8%) of the respondents professed either Christianity or Islam. Christian students accounted for 62% of respondents while 36.8% were Moslems and the remaining 1.3% did not profess any religion. This distribution of religious subscriptions is consistent with the general Ghanaian population (GSS, 2012). The disproportionate number of responses does not permit accurate statistical inter-stratum comparison. However, within a stratum, the prevalence of suicide ideation was 40% among students without any religion, 28.6% among Christian students and 17% among Moslem students. This finding is consistent with the protective role that religion plays in preventing suicide (Fekih-Romdhane et al., 2020; Svob et al., 2018). Religion, however, did not significantly ($p = 0.417$) predict suicide ideation. Thus, not being religious did not decrease the odds of having suicidal ideation. Future studies with larger sample size would increase the statistical power of the statistical tests and help elucidate the true nature of this relationship.

### 5.2.4 Mental health disorders and lifetime prevalence of suicide ideation

The overall reported prevalence of a mental health disorder diagnosis among the respondents was 0.05%. This is infinitesimal when compared to the prevalence rates in the prevailing literature that measured mental health disorders among university students. To put this prevalence of mental health disorders in perspective, Auerbach et al.,(2018) found that the lifetime prevalence was 48.3% among Australian college students, Bantjes et al. (2019) found a prevalence of 38.5% among South African university students and Peltzer & Pengpid (2015) found a prevalence of 25.2% among Nigerian students. Locally, Asante & Andoh-Arthur (2015), found that the prevalence of depression among

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students of the University of Ghana was as high as 39.2%, which is huge when compared to the 3% found in this study. The lower reported rates of mental health conditions are largely due to under-diagnosis as mental health facilities and trained professionals as generally lacking in the country or worse, lack of knowledge on the part of respondents on their mental health state. Out of nine participants that reported to have had a diagnosis of depression, eight reported having suicidal ideation. The three students with the diagnosis of other mental health disorder had two reporting suicide ideations. These associations had a strong statistical significance (p=0.000). The relationship of mental health disorders and suicide ideation cannot be overemphasized as it has been shown in several studies (Aradilla-Herrero et al., 2014; Melissa-Halikiopoulou, Tsiga, Khachatryan, & Papazisis, 2011; Slavich & Auerbach, 2018) to be the major primordial reason for suicide ideation and suicide mortality. Thus, it is worthwhile to develop and implement strategies that would increase the overall awareness of mental health disorders, eliminate the stigma associated with mental health disorders, dispel myths surrounding suicide and create hope of favourable prognosis following treatment. As increased public debate and understanding of suicide phenomenon is desirable (Pridmore et al., 2018), as it has the potential to change treatment-seeking behaviour, and increase compliance to treatment. The burden of suicide ideation and subsequent mortality from completed suicides can be averted when its roots of mental health disorders are uprooted.

There was no self-reported diagnosis of schizophrenia in this study. This is very likely to be true because individuals with a diagnosis of schizophrenia have such an enormous disability that usually makes them unable to participate in an educational or occupational activity (W.H.O, 2020c). However, among university students in Japan, there is a

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reduction in symptom severity of schizophrenia, enabling students to continue their education (Fuse-Nagase et al., 2016). Schizophrenia is associated with considerable stigma, discrimination and human rights violation of the affected individual (WHO, 2020c). This, logically, would prevent participants with such a diagnosis from disclosure or worse, they may not even know they have a mental health disorder. As all mental health disorders (except for mental retardation and dementia) are significantly associated with suicide (Harris & Barraclough, 1997), 66.7% of participants that selected diagnosis of 'other mental health disorder' had suicide ideation. This (presence of mental health disorder) risk factor was found to be the single most important predictor of suicide at 11 times the odd with a significance of 0.035.

### 5.2.5 Substance use disorders and suicide ideation

The overall prevalence of all substance use problems in this study was 5.5% (alcohol (2.8%) tobacco (1.0%), marijuana (0.5%), other drugs (1.3%)). The low reported prevalence of substance use despite respondents being assured of confidentially and anonymity could be explained by the social abhorrence surrounding substance use in the country. However, this is consistent with the (GDHS, 2014), as it was found that persons with higher educational status had a lower prevalence of substance use. Nevertheless, of the five students reporting the use of other drugs, four of them had suicide ideation. The lifetime prevalence of suicide ideation among students reporting alcohol and tobacco use was 45.5% and 25% respectively. Overall, students reporting the use of a substance accounted for a lifetime prevalence of suicide ideation of 11.9% in this study. Also, substance use did not produce statistically significant odds of predicting suicide ideation. This is inconsistent with Osama et al. (2014), that found substance abuse to be the single

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most important predictor of suicide ideation among medical students with an odds ratio as high as 28. Although the rate of substance use disorders was found to be low in this study, larger samples in future studies could elucidate the real picture of substance use. As a consequence, incorporating, measures to eradicate substance use among students are desirable when developing suicide prevention strategies.

### 5.3 University-related Factors

#### 5.3.1 Programme of Study, level of study, Academic stress, and suicide ideation

Medical students accounted for the 54.1% of all students reporting suicide ideation. The variation in the lifetime prevalence is largely accounted for by the unequal response rate from the different programmes of study, besides, medical students account for the majority of undergraduate students and have up to level 600. Among medical students responding in the study, 33.8'% reported having thought of killing themselves. This prevalence is consistent with the 35.6% found amongst medical students in Pakistan (Osama et al., 2014) and also agrees with Goyal et al. (2012) that found the prevalence to be within the range of 7.9% to 53% among medical students. The level or year of the study did not produce a significant association with suicide ideation. Midwifery students had the highest intra-stratum lifetime prevalence of suicide ideation of 45.5%, which is high compared to the 12% found by Melissa-Halikiopoulou, Tsiga, Khachatryan, & Papazisis (2012) and the 14% found by Aradilla-Herrero et al. (2014) among nursing students in Greece and Catalonia Spain respectively. This lifetime prevalence of 45.5% is also high when compared to a local study which found a prevalence of 15.4%among nursing and midwifery students in Korle Bu Nursing and Midwifery College (Quarshie et al., 2019). However, further analysis revealed that this high prevalence was accounted for

by relationship problems within this group. That is, 31.8% of students that responded in midwifery had relationship problems.

### 5.3.2 Academic stress and suicide ideation

The prevalence of academic stress was found to be 35.5% in this study. This encompasses students failing in courses, struggling to keep up with courses, failing to meet personal goals, and students with academic suspension. This prevalence is less than the prevalence of 70% reported by (Amponsah & Owolabi, 2011) in the University of Cape Coast Ghana but higher than the reported prevalence of 18.24% among pharmacy students in the University of Ghana (Opoku-Acheampong et al., 2017). A majority (64%) of students in the study were satisfied with their academic situation and also had lower intra-stratum suicide ideation rate (19.0%) compared with the intra-stratum rate of failing courses (40%), failing to meet personal academic goals (29.0%) and struggling to keep up with course work (42.9%). Overall, students with academic stress (failing courses, failing to meet personal academic goals and struggling to keep up with course work) had a suicide ideation prevalence of 50%. The presence of academic stress predicted suicide ideation significantly ($p = 0.009$).

### 5.3.3 Victimization or Bullying, and suicide ideation

The prevalence of victimization or bullying by either a peer or lecturer in this study was found to be 25%. More students (84) reported being bullied or victimized verbally and only one student reported being bullied or victimized sexually. The prevalence found in this study is less than the rates in the preceding literature. To put into context, the prevalence of bullying or victimization among the college students by (Marraccini et al.,



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2018) was 18% and 32% for professor and colleagues respectively. Also, the World Health Organizations' Global School-based Student Health Survey (GSHS) in 2007 showed that the prevalence of bullying or victimization in Ghanaian schools was as high as 59%, which is supported by (Kuuire, et al., 2019; Owusu, Hart, Oliver & Kang, 2011) with the prevalence of 40% and 43% respectively among high school students. The prevalence of suicide ideation among students reporting being victimized was 43.9%. The students that reported being bullied physically by a peer were more likely to have suicide ideation (58.3%). Thus, this study adds to the wealth of literature that has found a positive association between suicide ideation and bullying or victimization (Antiri, 2016; Baiden et al., 2019), but contradicts Sam et al. (2019) that did not find any link between bullying or victimization and suicide ideation. There are 3 times the odds of having suicided ideation if you have been victimized in this study.

### 5.4 Predicting suicide ideation with socio-demographic characteristics

This study also aimed to model how the respondents' socio-demographic characteristics predict suicide ideation. The binary logistic regression results are by nature reflective of association but not causation. Ten socio-demographic and university related factors were regressed against suicide ideation. These factors include gender, sexual orientation, religion, relationship problems, presence of a mental health disorder, substance use, programme of study, victimization, relationship problems, and academic stress. From Table 4.15, the statistically significant independent variables that also predicted suicide ideation with statistical significance are, relationship problems (OR = 1.855, p = 0.041, 95% CI; 1.026 – 3.355), victimization (OR = 3.121, p = 0.000, 95% CI; 1.772 – 5.497), non-heterosexual orientation (OR = 0.414, p = 0.028, 95% CI; 0.189 – 0.908), mental

health disorder (OR = 11. 223, p = 0.035, 95% CI; 1.187 – 106.067) and academic stress (OR = 2.095, p = 0.009, 95% CI; 1.205 – 3.643). These mean that, the odds of having suicide ideation is 3 times if you have been victimized, 2.1 times if you have academic stress, by 1.9 times if you have relationship problems and by 11.2 times if you have a mental disorder. Ironically, you have 0.4 times less the odds of having suicide ideation if you are not heterosexual.

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# CHAPTER SIX

# CONCLUSION AND RECOMMENDATION

## 6.0 Introduction

This chapter includes the conclusion drawn from the findings of the study, shows awareness of the study limitations and makes recommendations based on the findings to relevant stakeholders and for future studies.

## 6.1 Conclusion

### 6.1.1 Lifetime prevalence of suicide ideation

This study sort to measure the lifetime prevalence of suicide ideation among undergraduate students of UDS Tamale Campus and it associated socio-demographic characteristics. The overall lifetime prevalence was 24.5% which is higher than the prevalence from other studies in Ghana.

### 6.1.2 Socio-demographic risk factors of suicide ideation

The prevalence of suicide ideation found was statistically associated with socio-demographic characteristics such as relationship problems, mental health disorders, university associated factors like as academic stress, and victimization. Although the prevalence of mental health disorders was low in this study, it should not be ignored, because having a diagnosis of a mental health disorder had the single most important predictive power of suicide ideation.

The study did not find any significant differences between the programme of study, level of study, living alone, being in a romantic relationship and suicide ideation. Thus, the study emphasizes the complex interacting pathways of risk factors for causing suicide

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behaviour. This study thus sets the stage for more studies in this important aspect of public health.

### 6.1.3 Significant predictors of lifetime suicide ideation

Relationship problems, victimization, non-heterosexual orientation, the presence of a mental health disorder and academic stress significantly predicted suicide ideation. The presence of a mental health disorder is the single most important predictor of lifetime suicide ideation.

## 6.2 Limitations of the study

The results of this research should not be considered without regard to the plausible limits of the study. Because the questionnaires were filled anonymously, students with suicide ideation could not be identified and given appropriate intervention. Also, because suicide behaviour in Ghana is highly stigmatized (Quarshie et al., 2015), participants are likely to have provided socially desirable responses as opposed to reality. Again, the knowledge of suicide as a crime in Ghana can be strong grounds for discouraging honest responses from participants.

This study was done among undergraduate University students; thus, the generalizability of its results is limited. For ease of responding to the questionnaire, the study did not measure the risk factors with standardized scales such as the Beck depression inventory, Perception of student-professor/instructor bullying questionnaire for assessing bullying or victimization by the lecturer, or the peer-victimization scale for assessing peer bullying, Student-Life Stress Inventory and Academic Self-Efficacy Scale for measuring student academic stress. This was due to the complexities, size of the sample and logistic challenges. These risks were measured with single questions in a structured online

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questionnaire in order to make the questionnaire less arduous to respond to, however, these are prone to overestimation of the prevalence of suicide ideation and the risk factors they sort to measure. Also, it is commonly argued to focus on strengthening protective factors rather than weakening of risk factors in preventive strategies. However, this study was more focussed on the elucidating risk factors.

This study focused on individual risk factors to the neglect of the administrative contextual factors which by themselves can affect suicide ideation through decreasing socially abhorred behaviours such as substance use and promoting other healthy behaviours such as physical exercise (Giordano & Lindstrom, 2010). Despite these limitations, the study can be the first domino to propagate a series of research in this vastly under-researched but critical area in universities and public health in general.

### 6.3 Recommendations

#### 6.3.1 A multidisciplinary approach to tackling suicide ideation

Multidisciplinary approaches with concerted efforts are required in the prevention of suicide ideation and thus, suicide. This would require forming an integrated unit comprising of all University faculties, administration, University Counselling Unit and medical team, and other players to combine efforts in curbing this menace.

#### 6.3.2 Adopting a biopsychosocial approach to suicide ideation

Despite the wealth of empirical evidence demonstrating significant linkages between depression and Suicide (Bantjes et al., 2016; Korb & Plattner, 2014b) as well the findings in this study that is strongly associating mental health disorders and suicide ideation, it should not lead us to focus only on the medical model in suicide prevention but rather to integrate this with the public health approach and, encourage the University to weave into

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the design of any suicide prevention strategy, a scheme of diagnosing mental health disorder through identifying and dealing swiftly with distal socio-demographic risks factors for mental health disorders and suicide ideation, as these two are almost inseparable. This can easily be done by adding mental status examination to the annual health screening form for freshmen. Students identified to be having ideation or significant risk factors such can be recommended to the counselling unit for the appropriate biopsychosocial interventions to be taken.

The study also recommends, a University instituted programme that enables periodic social check-ins by University staff and counsellors would help recognize, and assist high-risk students and promote a culture of help-seeking in the University for Development Studies.

De Luca et al. (2016), showed that extracurricular activities that increased the sense of belongingness such as cultural activities, fraternities or sororities, varsity athletics teams and social student government play a protective role in preventing suicide ideation by increasing social connectedness and was associated with better academic performance. University departments can, therefore, increase student participation in extra-curricular activities by incorporating such activities into the main curriculum which would require students to be part of at least one of such social groups.

Hughes (2001) provides good examples for practice in dealing with bullying or victimization in higher education using qualitative methodology. These examples could be adopted and practised by staff and students to alleviate the effects of bullying or victimization in the University. The examples of good practice are; establishing good communication, taking immediate action in bullying or victimization cases, putting

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complaints into writing, moving students to other teaching groups and making students aware of their actions and boundaries of acceptable behaviour.

Approaches in cognitive, behavioural, and mindfulness are beneficial in controlling stress in university students. Universities, therefore, are advised to make these services readily accessible to students. Future research, however, should also focus on developing stress management programs which attract students of all demographic characteristics and address their needs (Regehr et al., 2013). Also, university students could be assigned academic mentors to help coordinate regular stress reduction activities.

Universities should build ways to promote higher social integration and acceptance of students that have a lesbian, gay, bisexual and transgender background. Policies should also explicitly state the measures to be followed or measures to address the victimization of students by both lecturers and colleagues.

Larger sample size in future studies may likely show statistical significance in the independent variables that did not show any significance in this study, hence more studies with bigger sample sizes are encouraged. Suicide ideation is part of a continuum of the suicidal process that leads to suicide; so therefore, researchers conducting future studies could consider research into the other aspects of the suicide process such as suicide plans and attempts. I also recommend to future researchers to consider qualitative methods to probe into depth the phenomenon of suicidality.

It is my hope that this thesis will shed light on the suicide ideation problem and inform the university, community, and national responses. By working together and focusing attention and resources, we can help students get through the University with the services

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they need to avert suicide risk without discrimination, maintain the wealth of human capital the country needs as well as achieve the Sustainable Development Goals.

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# APPENDICES

## Appendix 1 Questionnaire

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**SCHOOL OF MEDICINE AND HEALTH SCIENCES**

**DEPARTMENT OF COMMUNITY HEALTH AND FAMILY MEDICINE**

Latif Daboo Salifu, is a second-year master of public health student in the University for Development Studies. I am studying suicide ideation and its associated risk factors among undergraduate students of Tamale campus, UDS. The responses to these questions are therefore being sought to obtain data for the study. As such, responses given would be used solely for academic work and will be treated with maximum confidentiality. Thank you for your cooperation.

What is your age bracket? [18-24] [25-30]

What is your gender? [Male] [Female]

What is your marital status? [Single] [Married] [Divorced] [Other]

What is your religion? [Christianity] [Islam] [Traditional] [Other]

What is your programme of study? [Community Nutrition] [Nursing] [Midwifery] [Medicine] [Education] [Laboratory Science] [Pharmacy]

What is your year of study? [100] [200] [300] [400] [500] [600] [700]

Are you in a romantic relationship? [Yes] [No]

Do you have relationship problems? [Yes] [No]



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Do you live alone? [Yes] [No]

What is your sexual orientation? [Heterosexual] [Non-heterosexual]

Do you use any addictive substances? [Alcohol] [Drugs] [Marijuana] [Tobacco] [No]

Have you been diagnosed of any mental disorder? [Depression] [Schizophrenia] [Other] [No]

How will you describe your academic progress?

[Satisfactory] [Failing to meet personal academic goals] [Struggling to keep up with courses] [Failing courses] [Academic probation] [Academic Suspension]

Have you been victimized by a peer? [Physically] [Verbally] [Sexually]

Have you been victimized by a lecturer? [Physically] [Verbally] [Sexually]

Have you ever thought about killing yourself? [Yes] [No]

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