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**| RESEARCH ARTICLE**

## **Social Demographics and Effective Management of Suicidal Thoughts among Adolescent Learners in Malawi: A Quasi Experimental Study, Southern Malawi**

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**| ABSTRACT**

The high percentage of psycho-social challenges like suicidal thoughts among adolescents is a global health threat. The main purpose of this study was to explore an effective way of managing suicidal thoughts among adolescents in Zomba, Malawi. A non-equivalent group quasi-experimental study design guided the study. 317 adolescent learners from two secondary schools were targeted, and a quantitative method was utilized. The study observed psycho-social service deficiencies within the secondary schools. The prevalence of suicidal thoughts was 26%. The intervention at the study site was able to reduce the prevalence of suicidal thoughts by 1.7% [26% (before intervention) to 24% (after intervention)]. Control Site: the prevalence increased by 6% [8% (before intervention) to 14% (after intervention)]. The study observed suicidal thoughts are prevalent among adolescent learners, and there are psycho-social service gaps. The study findings will help relevant stakeholders to be aware of the suicidal thoughts that adolescent learners are experiencing in secondary schools and how to manage them.

**| KEYWORDS**

Management, Suicidal thoughts, adolescents, Zomba, Malawi.

**| ARTICLE INFORMATION**

**ACCEPTED:** 15 February 2024

**PUBLISHED:** 03 March 2024

**DOI:** 10.32996/jhsss.2024.6.3.5

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**1. Introduction**

According to WHO (2014), common psycho-social problems in the general population, including adolescents, are depression, suicidal thoughts and the use of psychoactive substances. Psycho-social problems are defined as maladaptive, unwanted, unhealthy intrapersonal, emotional, and behavioral states (Bista et al., 2016). Suicide is a sign of severe depression and is the second leading cause of death among older adolescent girls globally and third for boys (Voss et al., 2019; WHO, 2016). Further, common psycho-social problems such as depression, suicide and psychoactive substance use problems cause a huge global burden that leads to premature death and affects day to day life operations and quality of life in general. This results in years of life lost instead of someone being a productive citizen (Berhane et al., 2020; Dick et al., 2019). The WHO defines an adolescent as any person who is aged between 10 and 19 years old (WHO, 2015). The prevalence of suicidal thoughts among adolescents varies from 11.5% to 36.6% (Donath et al., 2019; Voss et al., 2019). The prevalence of suicidal thoughts among adolescents tends to increase with age (Voss et al., 2019) and is associated with depression and substance use (Guedria-Tekari et al., 2019), food insecurity (Pandey et al., 2019), anxiety (Pandey et al., 2019; Seidu et al., 2020), loneliness (Pandey et al., 2019) and gender (Pandey et al., 2019). Further, it has been found that psychological interventions such as psycho-education and group counselling approaches can be effective in managing depression, suicidal thoughts, psychoactive substance use, knowledge gap and poor attitudes towards mental health problems in different populations, including adolescent learners (Gates et al., 2016; Hetrick et al., 2016). Psychoeducation (PE) is defined as a knowledge transfer intervention for a psycho-social problem and its management that integrates emotional and motivational aspects to help clients cope with the psycho-social problem and improve intervention adherence and efficacy (Ekhtiari et al., 2017). Also, Group counseling is defined as face-to-face contact in which a counselor treats

two or more clients at the same time, focusing on the needs of the clients served (Berg et al., 2017). While combined approach of psycho-education and group counselling is defined as the simultaneous provision of psychoeducation and group counselling services to the same clients. The literature review also shows that the efficacy of group counseling and psycho-education as a single approach in the management of psycho-social problems among adolescents and in the general population varies from 0.2% - 48.2% (Ahlen et al., 2019; Bass et al., 2006; Donker et al., 2009; Muriungi & Ndeti, 2013; Thimm & Antonsen, 2014). Therefore, this study intended to see if a combined approach of group counseling and psycho-education could be more effective in reducing psycho-social challenges than a single approach of group counseling and psycho-education among adolescent learners in Malawi. The choice of a combined approach of psycho-education and group counselling was based on the idea that the use of a single approach could be good, but the efficacy of solitary approach intervention seemed to be not more statistically significant as observed in the reviewed literature from both developed and low and middle-income countries (Ahlen et al., 2019; Arora et al., 2019). Suicide is difficult to predict and prevent because people who consider killing themselves are often unwilling or unable to disclose their intentions. The cognition measurements provide an opportunity to test whether someone has the intention to kill themselves or not. Also, suicidal thoughts remain a main challenge in the general population, including adolescent learners. This was reported in countries like the USA, Uganda, Zambia, Kenya, Botswana, Ghana, and Ethiopia (Amare et al., 2018; Kinyanda, 2011; Rudatsikira, 2007; Nalugya-Sserunjogi, 2016; Swahn, 2012). Further, the prevalence of suicidal thoughts among adolescents tends to increase with age (Voss et al., 2019). The reviewed literature shows that suicidal thoughts remain high among adolescents. Therefore, there was a need to create ways how to manage these psychosocial problems among adolescents. In Malawi, the prevalence is at 12.9% (Shaikh, Lloyd & Acquah, 2016). However, the knowledge of the management of suicidal thoughts among adolescent learners remains scanty. Hence, this study aimed to address this gap in knowledge. Studies reveal that psycho-social challenges among adolescent learners can be well managed by doing psychotherapies like cognitive behavioural therapy, individual counselling, psycho-education and group counselling (Adegbolagun et al., 2020; Bass et al., 2006; Bella-Awusah et al., 2016; Bolton et al., 2011; Thimm & Antonsen, 2014). The following are some of the validated instruments used when measuring suicidal thoughts among adolescents in community settings: the Center for Epidemiologic Studies Depression Scale (CESD-10) and the Patient Health Questionnaire for Depression (PHQ-9). CESD-10 is a ten-item questionnaire used to assess depression and suicidal thoughts (Błachnio et al., 2015). Despite all this evidence from other countries about management and factors associated with the use of suicidal thoughts among adolescent learners in secondary schools, to date, little was known about the effective management of suicidal thoughts and factors associated with these psycho-social problems among adolescent learners in Malawi. In view of the above gaps in knowledge, practice, and policy, this study intended to investigate an effective way of managing psycho-social problems among adolescent learners in southern Malawi. Therefore, the findings of this study will be relevant in enhancing the implementation of interventions meant to reduce suicidal thoughts among adolescents in Malawi.

## **2. Theoretical application**

In order to have a better understanding of the management of psycho-social problems, this study was guided by the following two theoretical models: Model of Behaviour Change by Prochaska, DiClemente, and Norcross (1992) and the Ecological systems model by Urie Bronfenbrenner's (1980).

### **2.1 Model One - Model of Behaviour Change**

A model of behaviour change which was developed by Prochaska, DiClemente, and Norcross (1992) provides a useful framework for understanding the process by which people change their behaviour and for considering how ready they are to change their lifestyle behaviors (Prochaska et al., 1992). In this study, adolescent learners with suicidal thoughts may be able to change their feelings of depression; those with a poor attitude towards mental health problems and knowledge gaps about mental health problems may be able to improve and be managed by psycho-education and counseling intervention (Yang et al., 2018; Young et al., 2010).

The Behaviour Change Model comprises the following stages of behavioural change: *Pre-contemplation, Contemplation, Preparation, Action and Maintenance*. This model offers a useful framework for understanding the process by which adolescent learners change their behaviour and perhaps how behaviour change of psychoactive substance use and change of feelings of depression occur. The model proposes how adolescent learners go through different stages of behavioural change; the change can be secondary to the intervention of psycho-education and group counseling or no intervention in the control group. The following are the stages of the behaviour change model.

**Pre-contemplation:** adolescent learners who have just started having suicidal thoughts are likely to be in this stage. Adolescents in this stage are not necessarily thinking about changing their suicidal thoughts/negative attitudes towards mental health problems because they are focused on the positive aspects of their suicidal thoughts and are unlikely to have any concerns about their suicidal thoughts/negative attitudes towards mental health problems yet, may show some problems to talking about their suicidal thoughts but are unlikely to know or accept that their suicidal thoughts are a problem. Adolescents use substances as coping mechanisms for their psychological challenges (Fothergill et al., 2008). At this stage, they are unlikely to respond to direct advice

to change their behaviour but may be receptive to information about the bad effects associated with suicidal thoughts/negative attitudes towards mental health problems.

**Contemplation:** some adolescent learners who are having suicidal thoughts/negative attitudes towards mental health problems may be in this stage of behavioural change. Adolescents in this stage are thinking about seeking intervention for suicidal thoughts/negative attitudes towards mental health problems, unsure about their feelings of depression when they may be able to see both the good things and the 'less good things' about their substance use due to lack of knowledge (Alhyas et al., 2015). This could be secondary to psycho-education from experts or just knowledge from friends/parents (Alhyas et al., 2015). A certain percentage of adolescents in the contemplation stage may be willing to make a change, but they may not know how to make a change and may not be confident that they are able to change. At this stage, an adolescent just needs psycho-education or counseling that can help to change their behaviours.

**Preparation/Determination:** it involves an adolescent planning to take action in the near future and making the final preparations before (behaviour change), stopping suicidal thoughts/negative attitudes towards mental health problems and moving out of a depressive state. Adolescents at this stage are committed to action and are ready to change but may still have some level of doubt. Adolescents in the preparation stage are: intending to take action may share their intentions with others, making small changes in their depressive behaviour, re-considering their current behaviour, and considering what different behaviour could offer them; they are becoming more confident and ready to change their behaviour; counseling and psycho-education can help adolescents to make a decision to stop substance use or move out of depressive state (Tshitangano & Tosin, 2016a).

**Action:** some adolescents are likely to be in the action stage. Adolescents in the action stage have made the decision that their suicidal thoughts/negative attitudes towards mental health problems need to change, and depressed adolescents may want to seek help from someone like an expert or family members who can help them to manage their psychological problems (Tshitangano & Tosin, 2016b).

**Maintenance:** long-term success of an adolescent is no suicidal thoughts. This means remaining in this stage of maintenance. Adolescents in the maintenance stage are; trying to maintain the behaviour changes that have been made and working to prevent relapse. Adolescents are more likely to remain abstinent if they receive psycho-education and counseling about the effects of substance use and depression (Whitesell et al., 2013).

**Relapse:** some adolescents who try to make changes in their depression, positive attitudes towards mental health problems and knowledge of mental health problems may relapse, at least for a time. This should be expected and viewed as a learning process rather than a failure. Hence, they have to be psycho-educated and counseled about this. Adolescents have to review and examine timeframes, what strategies actually worked or did not work, and perhaps they had unrealistic plans. However, they need relationship support to maintain their status (Whitesell et al., 2013).

## 2.2 Urie Bronfenbrenner's ecological systems theory

The main assumption of Bronfenbrenner's (1980) ecological systems model is that the adolescent's biological and psychological makeup is based on individual and genetic developmental history. This composition continues to be influenced by the adolescent's immediate physical and social environment (Micro-system) as well as the interactions among the systems within the environment (meso-systems). Other broader social, political and economic conditions (exo-system) influence the structure and availability of micro-systems and the manner in which they affect the adolescent. Finally, social, political, and economic conditions are themselves influenced by the general beliefs and attitudes (macro-systems) shared by members of the society. Therefore, this theory guided the explanation of community, family and individual social demographic factors associated with depression, suicidal thoughts, attitudes towards mental health problems and knowledge of mental health problems among adolescents in school settings.

**Microsystem:** The microsystem is the first level of Bronfenbrenner's theory, and it explains things that have direct contact with the adolescent in their immediate environment, such as parents, siblings, teachers and school peers. Relationships in a microsystem are bi-directional, meaning the adolescent can be influenced by other people in their environment and is also capable of changing the beliefs and actions of other people. Furthermore, the reactions of the adolescent to individuals in their microsystem can influence how they treat them in return. The interactions within microsystems are often very personal and are crucial for fostering and supporting the adolescent's development. If an adolescent has a strong nurturing relationship with their parents, this is said to have a positive effect on the adolescent. Whereas, distant and unaffectionate parents will have a negative effect on the adolescent's life. Therefore, at the Microsystem level, if parents, peers and teachers do not provide the right psycho-social support to adolescents, they are likely to have suicidal thoughts, stigma towards mental health problems and a knowledge gap of psycho-social problem management (Cheng et al., 2020; Crabb et al., 2012; Lubman et al., 2017; Shih et al., 2015; Yang et al., 2018).

**Mesosystem:** the mesosystem encompasses the interactions between the adolescent's microsystems, such as the interactions between the adolescent's parents and teachers or between school peers and siblings. The mesosystem is where a person's

individual microsystems do not function independently but are interconnected and assert influence upon one another. For example, if an adolescent's parents communicate with the adolescent's teachers, this interaction may influence the adolescent's development. Fundamentally, a mesosystem is a system of microsystems. According to the ecological systems theory, if the adolescent's parents and teachers get along and have a good relationship, this should have positive effects on the adolescent's development, compared to negative effects on development if the teachers and parents do not get along. Therefore, the relationship between the parents and teachers can help to improve the adolescent's understanding of the effects of depression, suicidal thoughts, stigma towards mental health problems and the knowledge gap of mental health problems (Carney et al., 2019; Skeen et al., 2019; Sloboda et al., 2009).

**Exosystem:** The exosystem incorporates other formal and informal social structures, which do not contain the adolescents but indirectly influence them as they affect one of the microsystems. Relevant examples of exosystems include the neighborhood, parents' workplaces, parents' friends and the mass media. These are environments in which the adolescent is not involved and are external to their experience but nonetheless affect them anyway. An example of exosystems affecting the adolescent's development could be if one of the parents had a dispute with their boss at work. The parent may come home and have a short temper with the adolescent as a result of something which happened in the workplace, resulting in a negative effect on the adolescent's development. Therefore, parental management of the workplace or any other emotions have an impact on adolescent's development, and this has to be managed well in order to protect the adolescents from psychological harm (Botvin et al., 1998; Hodder et al., 2016; Ramaswamy et al., 2009).

**Macrosystem:** The macrosystem focuses on how cultural elements, such as socioeconomic status, wealth, poverty, and ethnicity, affect adolescents' development. Thus, a culture that individuals are immersed within may influence their beliefs and perceptions about events that transpire in life. The macrosystem differs from the previous ecosystems as it does not refer to the specific environments of one developing adolescent but the already established society and culture in which the adolescent is developing. This can also include the socioeconomic status, ethnicity, geographic location and ideologies of the culture. For example, adolescents living in LMICs would experience a different development than adolescents living in HICs. Therefore, the communities where adolescents come from have an impact on how an adolescent responds to depression, suicidal thoughts, and mental health care seeking behaviours because of different cultures in their respective communities (Bendtsen et al., 2013; Högberg et al., 2008; Marti et al., 2010).

**Chronosystem:** A chronosystem consists of all of the environmental changes that occur over a lifetime that influence development, including major life transitions and historical events. These can include normal life transitions, such as starting school, but can also include non-normative life transitions, such as parents getting a divorce or having to move to a new house. Therefore, when handling adolescents' psycho-social challenges, they need to understand the historical aspects of the challenges they are experiencing and their family contexts the adolescent are found, in order to better understand adolescent behaviour because the family situation can influence adolescent behavior (Abbey et al., 2000; Grunbaum et al., 2000; Nursalam et al., 2019; Vermeulen-Smit et al., 2015).

2.3 Research Conceptualization

Figure 1 below shows a conceptual framework as guided by the two models.

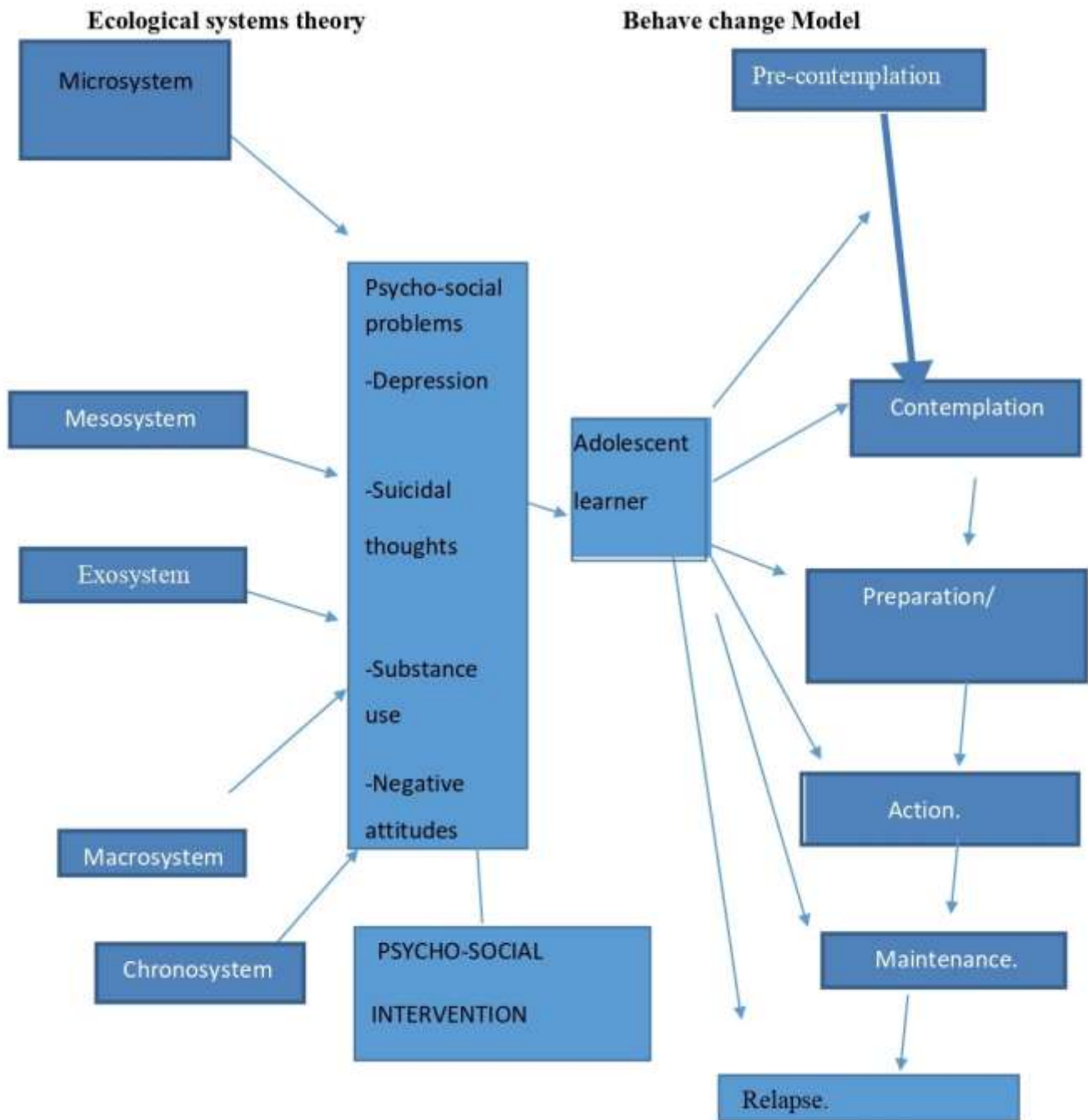


Figure 1: Conceptual Framework. Source: Kuyokwa(2022)

3. Methodology

The study was conducted in Zomba district, Southern Malawi. It was conducted between January and April 2021. The study utilized a quantitative methods approach. It employed a non-equivalent group's quasi-experimental study. The study aimed to test the efficacy of the combined approach of psycho-education and group counselling as a psycho-social intervention in managing suicidal thoughts among adolescent learners in Malawi.

### **3.1 Study Population**

Adolescents were targeted in this study. The participants were from 2 boarding secondary schools based in the urban area of the Southern region of Malawi, but the study participants came from both rural and urban areas of Malawi. 317 adolescent participants were targeted in this Non-equivalent group's quasi-experimental study.

### **3.2 Data Collection Procedure**

The University of Malawi's School of Education, Eastern Education Division management, District Assembly office, and School management all gave their approval to the study.

The following research question guided the study;

1. What is the effect of a combined psycho-education and group counselling approach in supporting adolescents with suicidal thoughts?

The interviews for adolescents were structured using validated questionnaires. All the potential participants were approached by the researcher in the collective waiting area of the targeted schools. The research study targeted 8 streams of classes. The streams of classes that were involved in the study were randomly sampled from all the streams of classes that were available at the targeted secondary schools. An ordinary, normal class (stream) had about 35-50 adolescents on their registry. In order to have 4 representative class streams at each targeted school, a random number generator in SPSS was used. Finally, 317 participants were randomly selected from form 1-4 (Year 1-4) at the two targeted boarding secondary schools. The distribution of the informed consent forms to teens and Parent Teacher Chairpersons who represent parents was done. Further, the school managers also gave consent for the adolescent learners to participate before the participants started to participate in the interviews. Form Teachers explained to the participants to go to the specific room (waiting room), where they were told about the study and whether to assent to participate in the study or not. At the first stage, they were informed of the study and what it entailed and the consent processes were also explained. The parental consent form (in either English or Chichewa – based on the participant's language preference) was sent to Chair persons of the Parents Teacher Association through the office of the Head Teacher, and after approval, participants were involved in the study. In order to reduce attrition due to lack of parental consent, follow-up calls were made to remind the Head Teachers. If the adolescents assented, then they were allowed to participate in the study. The contact phone numbers of legal guardians were available at the school, and the research team utilized them. Research assistants and researchers were together at every data collection visit. The research assistants were graduates with Bachelor of Nursing Mental Health degrees from the University of Malawi and were not involved in providing usual intervention services at the schools. They were fluent English and Chichewa speakers and were able to conduct the research study freely without language problems. The researcher was there only to supervise, and that researcher also doesn't work at the schools. After obtaining both parental consent and adolescent assent, research assistants administered the survey questionnaire, which took approximately 45 minutes. The study participants were divided into two: the control group and the study group. **Control group:** 1 boarding secondary school and **Study group:** 1 boarding secondary school. The 2 targeted secondary schools were selected from urban settings and had similar conditions, hence generalizable results in the Southern region of Malawi.

### **3.3 Training of Intervention Implementers**

The research assistants were trained by the principal researcher on how to collect the data from the study participants. A booklet was developed and used during the intervention phase. Information contained in the booklet was based on the research data collected and was analyzed as well as from other relevant literature sources. Four implementers were identified by the Head teacher at the target school and had covered an adolescent psychology module during undergraduate studies. After implementers had been identified, they were trained by the researcher and project officer on how to offer group counseling and psycho-education among adolescent learners. Implementers (Teachers) were trained on 2 March 2021. The project officer was a trained mental nurse with a Bachelor's degree in mental health nursing from the University of Malawi, was teaching at certain institutions of higher learning in Malawi, and had vast experience in similar adolescent mental health project management. The main role of the project officer was to supervise the implementers during group counselling and psycho-education sessions.

### **3.4 Adolescent student assessment**

Adolescent student base line and evaluation cross-sectional studies were done. Data were collected through structured questionnaires among adolescent study participants in order to establish their social demographics and the prevalence of suicidal thoughts.

### **3.5 Study group versus control group**

One boarding secondary school (study group) was given an intervention for two months. The sixteen sessions were conducted face-to-face with students by the implementers. Thus, two sessions per week, with a total of 8 sessions per month. In order to check fidelity, a checklist was developed, and all participants were recorded throughout the study period. While the control group was not given the intervention. In order to maintain internal validity and privacy, teachers (implementers) and participants were blinded from the diagnosis of suicidal thoughts. All sessions were audio recorded for the purposes of improving the next session.

### 3.6 Measures

Data were collected using the following measures: *Socio-demographics questionnaire*: Information to be collected was regarding participant's age (young/older adolescent), gender(male/female), and residence(rural/urban). The prevalence of suicidal thoughts was assessed using the Patient Health Questionnaire for Depression (PHQ-9), and it has been validated in Malawi(Udedi et al., 2019).

### 3.7 Data Analysis

For quantitative data, the SPSS version 26 software programme was used to analyze data. Descriptive statistics were conducted to explain the characteristics of the sample. Frequency distributions and categorical variables of demographics like gender(male/female), age (young/older adolescent), and residence (rural or urban) were also analysed, and the effect size was calculated.

Confidentiality and ethics were upheld at all times. On the questionnaire, participants' names were not utilized; instead, assigned numbers were used. The interviews were conducted in a confidential and calm environment. The information was kept secure, and the questionnaires were kept in a secure office within the college. To protect the privacy of the clients, the consent forms were kept separate from the completed questionnaires.

## 4. Results and Discussion

### 4.1 Prevalence of Suicidal Thoughts (pre & post-intervention).

The study found that the prevalence of suicidal thoughts among adolescents was 26% at the study site and 8% at the control site. Table 1 shows the details. Table 1 shows that the prevalence of suicidal thoughts was relatively high at the study site. Notably, it decreased with the intervention from 26% to 25%. However, at the control site, the prevalence of suicidal thoughts increased from 8% to 14%. This could be due to a lack of psycho-social support services in schools. However, the prevalence of suicidal thoughts among adolescents was slightly higher in this study as compared with other studies, as observed by other researchers who reported a prevalence of 17% of suicidal thoughts among adolescents in different countries (Uddin et al., 2019). The difference could be due to social contexts and the effects of Covid-19.

### 4.2 Suicidal thoughts and gender (pre & post-intervention).

In terms of suicidal thoughts and gender, the study found that there was a close association between gender and suicidal thoughts. Table 2 shows the average prevalence of suicidal thoughts among adolescents who were diagnosed with suicidal thoughts during the pretest and posttest assessment. It indicates that 43% of female adolescents had suicidal thoughts as compared to 57% of males at the study site, while at the control site, 51% of females had such suicidal thoughts experiences as compared to 49% of males. Table 2 shows that at the study site, the prevalence of suicidal thoughts among females was 37% before intervention and 49% after intervention. Among males, the prevalence was 63% before intervention and 51% after intervention. At the control site, the prevalence of suicidal thoughts before intervention was 62% among males, and after intervention, the prevalence was 36%. The decrease in the prevalence of suicidal thoughts among males at the control site could be attributed to secondary schools' existing psycho-social services for students. Among females, it was 38% before intervention and 64% after intervention. The study findings show that there were more males with suicidal thoughts than females, and the intervention was able to reduce the prevalence of suicidal thoughts among males and not among females at the study site. While at the control site, there was no change in the prevalence of suicidal thoughts among males, while among females, the prevalence increased. A similar study also found that being male was more likely to have suicidal thoughts than being female (Ibrahim et al., 2017). This could be due to a lack of psycho-social support services in schools.

### 4.3 Suicidal thoughts and age (pre & post-intervention).

In terms of suicidal thoughts and age, the study found that there was a close association between age and suicidal thoughts. Table 3 shows the average prevalence of suicidal thoughts among adolescents who were diagnosed with suicidal thoughts during the pretest and posttest assessment. It indicates that 28% of young adolescents (10-15 years) had such suicidal thoughts experiences as compared to 72% of older adolescents (16-19 years) at the study site, while at the control site, 30% of young adolescents (10-15 years) had such suicidal thoughts experiences as compared to 70% of older adolescents. Table 3 also shows that at the study site, the prevalence of suicidal thoughts among young adolescents (10-15 years) before intervention was 14%, and after the intervention, it was 41%. This may imply that psychosocial intervention was ineffective in reducing the prevalence of suicidal thoughts among young adolescents (10-15 years), but it could also be due to other confounding factors, such as the effects of COVID-19 and the country's social-economic problems at the time. Among older adolescents (16-19 years), the prevalence was 86% before intervention and 59% after intervention. At the control site, the prevalence of suicidal thoughts before intervention was 31% among young adolescents (10-15 years), and after intervention, the prevalence was 29%. Among older adolescents (16-19 years), before intervention, it was 69%, and after intervention it was 71%. The study findings suggest that there was a high number of older adolescents with suicidal thoughts compared to young adolescents. Generally, psycho-social intervention was not able to reduce the prevalence of suicidal thoughts among young adolescents, as the prevalence of suicidal thoughts kept increasing despite the intervention. However, the intervention was able to reduce the prevalence of suicidal thoughts among older

adolescents (16-19 years) at the study site. The study findings agree with Prochaska et al.'s (1992) Model of Behaviour Change, which states that behaviour change goes through stages and human behaviour can be maintained and can also relapse. This happened both at the study and control site; some participants continued having suicidal thoughts despite interventions that were given in this project and the already available psycho-social interventions in schools. There was no reduction in the prevalence of suicidal thoughts despite a psycho-social intervention at the study site.

#### ***4.4 Residence and suicidal thoughts (pre & post-intervention).***

In terms of suicidal thoughts and residence, the study found that there was a close association between residence and suicidal thoughts. Table 4 shows the average prevalence of suicidal thoughts among adolescents who were diagnosed with suicidal thoughts during the pretest and posttest assessment. It indicates that 72% of adolescents from rural areas had such suicidal thoughts experiences as compared to 28% of adolescents from urban areas at the study site. At the control site, on the other hand, 71% of adolescents from rural areas had such suicidal thoughts experiences as compared to 29% of adolescents from urban areas. Table 4 also shows that at the study site, the prevalence of suicidal thoughts among adolescents from rural areas before intervention was 65%, and after the intervention, it was 79%. Among adolescents from urban areas, the prevalence was 35% before intervention and 21% after intervention. At the control site, the prevalence of suicidal thoughts before intervention was 77% among adolescents from rural areas, and after intervention, it was 64%. Among adolescents from urban areas, it was 23 before intervention % and 46% after intervention. The findings suggest that the generally prevalence of suicidal thoughts was high among adolescents from rural areas compared to adolescents from urban areas. The psycho-social intervention was not able to reduce the prevalence of suicidal thoughts among adolescents from rural areas but was able to reduce the prevalence of suicidal thoughts among adolescents from urban areas at the study site. The lack of improvement in suicidal thoughts among rural adolescents could be due to cultural factors. This is because, in some cultures, people believe that depression is not a problem and there is no need to seek help. While adolescents from urban areas could have been influenced by different forms of media that could have influenced their behavior change. Further, Bronfenbrenner's (1980) ecological systems model says that adolescent behaviour can be influenced by the culture where a person stays. However, available psychosocial interventions at the control site were not able to reduce the prevalence of suicidal thoughts among adolescents from both rural and urban areas. The study findings also agree with Prochaska et al.'s (1992) Model of Behaviour Change, which states that behaviour change goes through stages and human behaviour can be maintained. This happened both at study and control sites, where behaviour change was implemented and maintained. The model also states that human behaviour can also relapse. This happened both at study and control sites, where some participants continued having suicidal thoughts despite interventions that were given in this project and the already available psycho-social interventions in schools. This means that an adolescent from a rural area was more at risk of suicidal thoughts than someone from an urban area, based on the results at the study site.

#### ***4.5 Supporting Adolescents with Suicidal Thoughts at Study Site***

The study found that suicidal thoughts were still prevalent among adolescents despite intervention at the study site. The prevalence of suicidal thoughts among adolescents before intervention was 26.4%, while after intervention was 24.7%. Therefore, the prevalence was reduced by 1.7%. Table 5 shows the details. Table 5 shows that the prevalence of suicidal thoughts among adolescents decreased by 1.7% and that the effect of the intervention was not statistically significant. This is similar to what Brent et al. (1997) observed that there was a 1% reduction in the prevalence of suicidal thoughts among adolescents. The study also found that the difference in the prevalence of suicidal thoughts (1.7%) among adolescents between the baseline and end-line findings in the treatment group was not statistically significant, and the effect size of the intervention was small in the paired sample test ( $t=0.097$ ,  $df = 1$ ,  $p\text{-value}=0.939$ ,  $d=0.068$ ).

#### ***4.6 Supporting Adolescents with Suicidal Thoughts at Control Site***

The number of participants with suicidal thoughts among adolescents during the baseline study was 8.4%, while during the evaluation study, it was 13.6%. The prevalence increased by 5.2%. Table 6 shows the details. Table 6 shows that the number of participants with suicidal thoughts increased by 5.2% and that the effect of the intervention was statistically significant, but the effect size was small. This could be due to a lack of formal psychosocial interventions at a control site. In addition, according to the behaviour change model, the results show that behaviour can relapse (suicidal thoughts) and can even be worse. The study also found that the difference in the prevalence of suicidal thoughts (5.2%) among adolescents between the baseline and end-line findings in the control group was statistically significant, but the effect size of the other interventions was small in the paired sample test ( $t=1$ ,  $df = 1$ ,  $p\text{-value}=0.000$ , Cohen's  $d=0.000$ ).

#### ***4.7 Pre-intervention-effect Size Between the Treatment and Control Group***

The study found that the difference between the treatment group and control group was not statistically significant, and the effect size was small ( $t=0.000$ ,  $df = 2$ ,  $p\text{-value}=1$ , Cohen's  $d=0.000$ ). Table 7 shows the details. Table 7 shows that the effect of the intervention was not statistically significant.



#### 4.8 Post-intervention-effect Size Between the Treatment and Control Group

The study found that the difference between the treatment group and control group was not statistically significant, and the effect size was small ( $t=0.000$ ,  $df = 2$ ,  $p\text{-value}=1$ , Cohen's  $d=0.000$ ): Table 8 shows the details. Table 8 shows that the effect of the intervention was not statistically significant.

In conclusion, the study revealed that suicidal thoughts are prevalent among adolescent learners and tested the efficacy of the combined approach of group counselling and psycho-education in supporting learners with suicidal thoughts. In addition, these results could be due to various reasons and are not limited to the following: the time when the evaluation study was conducted. The study was conducted a week before the end of term test, and the researcher's suspicion is that either adolescents were anxious about the impending examinations or there was no continued psycho-social support among adolescents by relevant stakeholders. The study was conducted during a period when COVID-19 prevalence was very high in the country, and most people were hopeless about the future because it was not clear when the pandemic would come to an end. This could also have affected the adolescents. Further, this study was conducted during the period when there was a national wide secondary teachers strike while adolescents were kept in school. This could also have affected the results of the study. In addition, the duration of the psycho-social intervention was only two months. Therefore, the intervention period might not be sufficient, and hence, future studies should focus on increasing the duration of the psycho-social intervention among adolescent learners. In addition, future studies could consider individual counselling as an additional approach when conducting a similar study. It might be helpful to compliment the combined approach of group counselling and psycho-education psycho-social intervention. Furthermore, there is a need for teacher refresher training about psycho-social intervention during the intervention period. Also, the use of a peer intervention approach instead of using teachers as implementers of the psycho-social intervention among adolescent learners.

#### 5. Study Limitations

This study only targeted adolescents attending boarding secondary schools and not community day secondary schools.

#### 5.1 Suggestions for Future Research

Future studies may consider studying adolescents attending community day secondary schools.

**Statements and Declarations.** This was an original research work which aimed to test the efficacy of the combined approach of psycho-education and group counselling as a psycho-social intervention in managing suicidal thoughts among adolescent learners in Malawi. This research received no external funding. The authors declare no conflict of interest. I would like to thank my supervisors Dixe Maluwa Banda, Symon Chiziwa and Nertha Semphere Mgala.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

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#### References

- [1] Abbey, A., Pilgrim, C., Hendrickson, P., & Buresh, S. (2000). Evaluation of a family-based substance abuse prevention program targeted for the middle school years. *J Drug Educ*, 30(2), 213-228. doi:10.2190/gt8c-elwh-hy94-ecg9
- [2] Adegbolagun, A., Ani, C., Adejumo, O., James, B., & Omigbodun, O. (2020). Effect of a group-based cognitive behavioural therapy program on the psychological wellbeing, quality of life and coping of students with sickle cell disease in Nigeria. *International Journal of Disability, Development and Education*, 1-10. doi:10.1080/1034912x.2020.1755422
- [3] Ahlen, J., Lenhard, F., & Ghaderi, A. (2019). Long-Term Outcome of a Cluster-Randomized Universal Prevention Trial Targeting Anxiety and Depression in School Children. *Behav Ther*, 50(1), 200-213. doi:10.1016/j.beth.2018.05.003
- [4] Alhyas, L., Ozaibi, N., Elarabi, H., El-Kashef, A., Wanigaratne, S., Almarzouqi, A., . . . Ghaferi, H. (2015). Adolescents' perception of substance use and factors influencing its use: a qualitative study in Abu Dhabi. *JRSM open*, 6, 2054270414567167. doi:10.1177/2054270414567167
- [5] Arora, P. G., Baker, C. N., Marchette, L. K., & Stark, K. D. (2019). Components Analyses of a School-Based Cognitive Behavioral Treatment for Youth Depression. *Journal of clinical child and adolescent psychology the official journal for the Society of Clinical Child and Adolescent Psychology*, American Psychological Association, Division 53(48)(sup1), S180-S193. <http://doi.org/10.1080/15374416.2017.1280800>.
- [6] Amare, T., Woldeyhanes, S.M., Haile, K., and Yeneabat, T., (2018) "Prevalence and Associated Factors of Suicide Ideation and Attempt among Adolescent High School Students in Dangila Town, Northwest Ethiopia", *Psychiatry Journal*, 2018, Article ID 7631453, 9 pages, 2018. <https://doi.org/10.1155/2018/7631453>
- [7] Bolton, D., Williams, T., Perrin, S., Atkinson, L., Gallop, C., Waite, P., & Salkovskis, P. (2011). Randomized controlled trial of full and brief cognitive-behaviour therapy and wait-list for paediatric obsessive-compulsive disorder. *Journal of Child Psychology and Psychiatry*, 52(12), 1269-1278.
- [8] Berg, R. C., Landreth, G. L., & Fall, K. A. (2017). Group counseling: Concepts and procedures. Routledge.

- [9] Bella-Awusah, T., Ani, C., Ajuwon, A., & Omigbodun, O. (2016). Effectiveness of brief school-based, group cognitive behavioural therapy for depressed adolescents in south west Nigeria. *Child and Adolescent Mental Health*, 21(1), 44-50.
- [10] Bendtsen, P., Damsgaard, M. T., Tolstrup, J. S., Ersbøll, A. K., & Holstein, B. E. (2013). Adolescent alcohol use reflects community-level alcohol consumption irrespective of parental drinking. *J Adolesc Health*, 53(3), 368-373. doi:10.1016/j.jadohealth.2013.04.021
- [11] Berhane, Y., Canavan, C. R., Darling, A. M., Sudfeld, C. R., Vuai, S., Adanu, R., . . . Fawzi, W. W. (2020). The age of opportunity: prevalence of key risk factors among adolescents 10-19 years of age in nine communities in sub-Saharan Africa. *Trop Med Int Health*, 25(1), 15-32. doi:10.1111/tmi.13339
- [12] Brent, D. A., Holder, D., Kolko, D., Birmaher, B., Baugher, M., Roth, C., ... & Johnson, B. A. (1997). A clinical psychotherapy trial for adolescent depression comparing cognitive, family, and supportive therapy. *Archives of general psychiatry*, 54(9), 877-885.
- [13] Bista, B., Thapa, P., Sapkota, D., Singh, S.B., and Pokhare, P, K (2016) Psychosocial Problems among Adolescent Students: An Exploratory Study in the Central Region of Nepal
- [14] Błachnio, A., Przepiórka, A., & Pantic, I. (2015). Internet use, Facebook intrusion, and depression: Results of a cross-sectional study. *Eur Psychiatry*, 30(6), 681-684. doi:10.1016/j.eurpsy.2015.04.002
- [15] Botvin, G. J., Malgady, R. G., Griffin, K. W., Scheier, L. M., & Epstein, J. A. (1998). Alcohol and marijuana use among rural youth: interaction of social and intrapersonal influences. *Addict Behav*, 23(3), 379-387. doi:10.1016/s0306-4603(98)00006-9
- [16] Bronfenbrenner, U. (2005). Ecological systems theory (1992). In U. Bronfenbrenner (Ed.), *Making human beings human: Bioecological perspectives on human development* (106-173). Sage Publications Ltd.
- [17] Carney, T., Chimbambo, V., Johnson, K., Louw, J., & Myers, B. (2019). The adaptation of an evidence-based brief intervention for substance-using adolescents and their caregivers. *Psychother Res*, 1-11. doi:10.1080/10503307.2019.1656352
- [18] Donker, T., Griffiths, K. M., Cuijpers, P., & Christensen, H. (2009). Psychoeducation for depression, anxiety and psychological distress: a meta-analysis. *BMC medicine*, 7(1), 1-9.
- [19] Dick, S., Whelan, E., Davoren, M. P., Dockray, S., Heavin, C., Linehan, C., & Byrne, M. (2019). A systematic review of the effectiveness of digital interventions for illicit substance misuse harm reduction in third-level students. *BMC Public Health*, 19(1), 1244. <http://doi.org/10.1186/s12889-019-7583-6>.
- [20] Donath, C., Bergmann, M. C., Kliem, S., Hillemacher, T., & Baier, D. (2019). Epidemiology of suicidal ideation, suicide attempts, and direct self-injurious behavior in adolescents with a migration background: a representative study. *BMC Pediatr*, 19(1), 45. doi:10.1186/s12887-019-1404-z
- [21] Ekhtiari H., Tara R., Robin L.A., and Martin P.P.(2017). Neuroscience-informed psychoeducation for addiction medicine: A neurocognitive perspective. *ProgBrainRes*. 2017; 235: 239-264. doi:10.1016/bs.pbr.2017.08.013.
- [22] Fothergill, K. E., Ensminger, M. E., Green, K. M., Crum, R. M., Robertson, J., & Juon, H.-S. (2008). The impact of early school behavior and educational achievement on adult drug use disorders: a prospective study. *Drug and alcohol dependence*, 92(1-3), 191-199. doi:10.1016/j.drugalcdep.2007.08.001
- [23] Gates, P. J., Sabioni, P., Copeland, J., Le Foll, B., & Gowing, L. (2016). Psychosocial interventions for cannabis use disorder. *Cochrane Database Syst Rev*(5), Cd005336. doi:10.1002/14651858.CD005336.pub4
- [24] Guedria-Tekari, A., Missaoui, S., Kalai, W., Gaddour, N., & Gaha, L. (2019). Suicidal ideation and suicide attempts among Tunisian adolescents: prevalence and associated factors. *Pan Afr Med J*, 34, 105. doi:10.11604/pamj.2019.34.105.19920
- [25] Grunbaum, J. A., Tortolero, S., Weller, N., & Gingiss, P. (2000). Cultural, social, and intrapersonal factors associated with substance use among alternative high school students. *Addict Behav*, 25(1), 145-151. doi:10.1016/s0306-4603(99)00006-4
- [26] Hetrick, S. E., Cox, G. R., Witt, K. G., Bir, J. J., & Merry, S. N. (2016). Cognitive behavioural therapy (CBT), third-wave CBT and interpersonal therapy (IPT) based interventions for preventing depression in children and adolescents. <http://doi.org/10.1002/14651858.CD003380.pub4>.
- [27] Hodder, R. K., Freund, M., Bowman, J., Wolfenden, L., Gillham, K., Dray, J., & Wiggers, J. (2016). Association between adolescent tobacco, alcohol and illicit drug use and individual and environmental resilience protective factors. *BMJ Open*, 6(11), e012688-e012688. doi:10.1136/bmjopen-2016-012688
- [28] Högberg, T., Magnusson, A., Ewertzon, M., & Lützn, K. (2008). Attitudes towards mental illness in Sweden: adaptation and development of the Community Attitudes towards Mental Illness questionnaire. *Int J Ment Health Nurs*, 17(5), 302-310. doi:10.1111/j.1447-0349.2008.00552.x
- [29] Ibrahim, N., Amit, N., Che Din, N., & Ong, H. C. (2017). Gender differences and psychological factors associated with suicidal ideation among youth in Malaysia. *Psychology research and behavior management*, 129-135.
- [30] Kinyanda, E., Kizza, E., Levin, J., Ndyabangi, S., and Abbo, C.,(2011). Adolescent Suicidality as Seen in Rural Northeastern Uganda. <https://doi.org/10.1027/0227-5910/a000059>.
- [31] Pandey, A. R., Bista, B., Dhungana, R. R., Aryal, K. K., Chalise, B., & Dhimal, M. (2019). Factors associated with suicidal ideation and suicidal attempts among adolescent students in Nepal: Findings from Global School-based Students Health Survey. *PLoS one*, 14(4), e0210383. doi:10.1371/journal.pone.0210383
- [32] Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change. Applications to addictive behaviors. *The American psychologist*, 47(9), 1102-1114. doi:10.1037//0003-066x.47.9.1102
- [33] Marti, C. N., Stice, E., & Springer, D. W. (2010). Substance use and abuse trajectories across adolescence: a latent trajectory analysis of a community-recruited sample of girls. *J Adolesc*, 33(3), 449-461. doi:10.1016/j.adolescence.2009.06.005
- [34] Muriungi, S. K., & Ndeti, D. M. (2013). Effectiveness of psycho-education on depression, hopelessness, suicidality, anxiety and substance use among basic diploma students at Kenya Medical Training College. *South African Journal of Psychiatry*, 19(2), 41-50.

- [35] Nalugya-Sserunjogi, J., Rukundo, G. Z., Ovuga, E., Kiwuwa, S. M., Musisi, S., & Nakimuli-Mpungu, E. (2016). Prevalence and factors associated with depression symptoms among school-going adolescents in Central Uganda. *Child and adolescent psychiatry and mental health*, 10, 1-8.
- [36] Nursalam, N., Octavia, M., Tristiana, R. D., & Efendi, F. (2019). Association between insomnia and social network site use in Indonesian adolescents. *Nurs Forum*, 54(2), 149-156. doi:10.1111/nuf.12308
- [37] Ramaswamy, V., Aroian, K. J., & Templin, T. (2009). Adaptation and psychometric evaluation of the multidimensional scale of perceived social support for Arab American adolescents. *American journal of community psychology*, 43(1-2), 49-56. doi:10.1007/s10464-008-9220-x
- [38] Rudatsikira, E., Muula, A.S., Siziya, S. et al (2007). Suicidal ideation and associated factors among school-going adolescents in rural Uganda. <https://doi.org/10.1186/1471-244X-7-67>.
- [39] Seidu, A. A., Amu, H., Dadzie, L. K., Amoah, A., Ahinkorah, B. O., Ameyaw, E. K., Kissah-Korsah, K. (2020). Suicidal behaviours among in-school adolescents in Mozambique: Cross-sectional evidence of the prevalence and predictors using the Global School-Based Health Survey data. *PLoS one*, 15(7), e0236448. <http://doi.org/10.1371/journal.pone.0236448>.
- [40] Sloboda, Z., Stephens, R. C., Stephens, P. C., Grey, S. F., Teasdale, B., Hawthorne, R. D., . . . Marquette, J. F. (2009). The Adolescent Substance Abuse Prevention Study: A randomized field trial of a universal substance abuse prevention program. *Drug Alcohol Depend*, 102(1-3), 1-10. doi:10.1016/j.drugalcdep.2009.01.015
- [41] Skeen, S., Laurenzi, C. A., Gordon, S. L., du Toit, S., Tomlinson, M., Dua, T., ... & Melendez-Torres, G. J. (2019). Adolescent mental health program components and behavior risk reduction: a meta-analysis. *Pediatrics*, 144(2).
- [42] Shaikh, M.A., Lloyd, J., Acquah, E. et al.(2016). Suicide attempts and behavioral correlates among a nationally representative sample of school-attending adolescents in the Republic of Malawi. *BMC Public Health* 16, 843. <https://doi.org/10.1186/s12889-016-3509-8>
- [43] Thimm, J. C., & Antonsen, L. (2014). Effectiveness of cognitive behavioral group therapy for depression in routine practice. *BMC psychiatry*, 14(1), 1-9.
- [44] Tshitangano, T. G., & Tosin, O. H. (2016). Substance use amongst secondary school students in a rural setting in South Africa: Prevalence and possible contributing factors. *African journal of primary health care & family medicine*, 8(2), e1-6. doi:10.4102/phcfm.v8i2.934
- [45] Vermeulen-Smit, E., Verdurmen, J. E., & Engels, R. C. (2015). The Effectiveness of Family Interventions in Preventing Adolescent Illicit Drug Use: A Systematic Review and Meta-analysis of Randomized Controlled Trials. *Clin Child Fam Psychol Rev*, 18(3), 218-239. doi:10.1007/s10567-015-0185-7
- [46] Voss, C., Ollmann, T. M., Miché, M., Venz, J., Hoyer, J., Pieper, L., . . . Beesdo-Baum, K. (2019). Prevalence, Onset, and Course of Suicidal Behavior Among Adolescents and Young Adults in Germany. *JAMA Netw Open*, 2(10), e1914386. doi:10.1001/jamanetworkopen.2019.14386
- [47] Uddin, R., Burton, N. W., Maple, M., Khan, S. R., & Khan, A. (2019). Suicidal ideation, suicide planning, and suicide attempts among adolescents in 59 low-income and middle-income countries: a population-based study. *The Lancet Child & Adolescent Health*, 3(4), 223-233.
- [48] Udedi, M., Muula, A. S., Stewart, R. C., & Pence, B. W. (2019). The validity of the patient health Questionnaire-9 to screen for depression in patients with type-2 diabetes mellitus in non-communicable diseases clinics in Malawi. *BMC psychiatry*, 19, 1-7.
- [49] Whitesell, M., Bachand, A., Peel, J., & Brown, M. (2013). Familial, social, and individual factors contributing to risk for adolescent substance use. *Journal of addiction*, 2013, 579310-579310. doi:10.1155/2013/579310
- [50] WHO. (2013). WHO methods and data sources for global burden of disease estimates 2000-2011. *World Health Organization*. 2013. [http://www.who.int/healthinfo/statistics/GlobalDALYmethods\\_2000\\_2011.pdf?ua=1](http://www.who.int/healthinfo/statistics/GlobalDALYmethods_2000_2011.pdf?ua=1). Accessed 13 Aug 2020.
- [51] WHO. (2014). WHO(2014).World Health Organization. Global Status Report on Alcohol and Health. Geneva: WHO; 2014. pdf.
- [52] WHO. (2015). <Health for the world's adolescents: a second chance in the second decade. >. Geneva: World Health Organization; 2014 (<http://www.who.int/adolescent/seconddecade>, accessed 25 August 2015).pdf.
- [53] WHO. (2016). *mhGAP intervention guide for mental, neurological and substance use disorders in non-specialized health settings: mental health Gap Action Programme* ((mhGAP (version 2.0 ed.). Geneva: World Health Organization.
- [54] Yang, J., Lopez Cervera, R., Tye, S. J., Ekker, S. C., & Pierret, C. (2018). Adolescent mental health education InSciEd Out: a case study of an alternative middle school population. *J Transl Med*, 16(1), 84. doi:10.1186/s12967-018-1459-x
- [55] Young, J. F., Mufson, L., & Gallop, R. (2010). Preventing depression: A randomized trial of interpersonal psychotherapy-adolescent skills training. *Depression and anxiety*, 27(5), 426-433.

**Apendixes**

**Table 1: Prevalence of suicidal thoughts**

Pre-intervention <b>(Prevalence)</b>	<b>Suicidal thoughts</b>	
	Study site. <b>Total</b> (N= 163)	Control Site. <b>Total</b> (N=154)
	N (%)	N (%)
	42 (26)	12 (8)
Post-intervention <b>(Prevalence)</b>	<b>Suicidal thoughts</b>	
	Study Site <b>Total</b> (N=158)	Control Site <b>Total</b> (N= 103)
	N (%)	N (%)
	40 (25)	14 (14)

Table 2: Suicidal Thoughts and Gender

Gender and suicidal thoughts Cross tabulation table							
Gender	Suicidal thoughts Pre-intervention (Study group)		Total	Gender	Suicidal thoughts Pre-intervention (Control group)		Total
	N (%)				N (%)		
	Yes	No			Yes	No	
Male	27(63)	70(58)	97	Male	8(62)	84(60)	92
Female	16(37)	50(42)	66	Female	5(38)	57(40)	62
Total	43	120	N=163	Total	13	141	N=154
Gender	Suicidal thoughts Post-intervention (Study group)		Total	Gender	Suicidal thoughts Post-intervention (Control group)		Total
	N (%)				N (%)		
	Yes	No			Yes	No	
Male	20(51)	65(55)	85	Male	5(36)	58(65)	63
Female	19(49)	54(45)	73	Female	9(64)	31(35)	40
Total	39	119	N=158	Total	14	88	N=103

**Table 3: Suicidal Thoughts and Age**

Age and suicidal thoughts Cross tabulation table.									
Age		Suicidal thoughts Pre-intervention (Study group)		Total	Age		Suicidal thoughts Pre-intervention (Control group)		Total
		N (%)					N (%)		
		Yes	No				Yes	No	
10-15		6(14)	45(38)	51	10-15	4(31)	43(30)		47
16-19		37(86)	75(62)	112	16-19	9(69)	98(70)		107
Total		43	120	N=163	Total	13	141		N=154
Age		Suicidal thoughts Post-intervention (Study group)		Total	Age		Suicidal thoughts Post-intervention (Control group)		Total
		N (%)					N (%)		
		Yes	No				Yes	No	
10-15		16(41)	33(28)	49	10-15	4(29)	35(39)		39
16-19		23(59)	86(72)	109	16-19	10(71)	54(61)		64
Total		39	119	N=158	Total	14	89		N=103

**Table 4: Suicidal Thoughts and Residence**

Residence and suicidal thoughts Cross tabulation table.									
Residence		Suicidal thoughts Pre-intervention (Study group)		Total	Residence		Suicidal thoughts Pre-intervention (Control group)		Total
		N (%)					N (%)		
		Yes	No				Yes	No	
Rural		28(65)	71(59)	99	Rural	10(77)	110(78)		120
Urban		15(35)	49(41)	64	Urban	3(23)	31(22)		34
Total		43	120	N=163	Total	13	141		N=154
Residence		Suicidal thoughts Post-intervention (Study group)		Total	Residence		Suicidal thoughts Post-intervention (Control group)		Total
		N (%)					N (%)		
		Yes	No				Yes	No	
Rural		31(79)	83(70)	114	Rural	9(64)	67(76)		76
Urban		8(21)	36(30)	44	Urban	5(46)	21(24)		26
Total		39	119	N=158	Total	14	88		N=103

Table 5: Effect of intervention on suicidal thoughts

Pre-intervention (%)	Post-intervention (%)	Difference (%)	t-statistic	df	p-value
26.4	24.7	1.7	0.097	1	0.939

Cohen's d = 0.068

Table 6: Effect of intervention on suicidal thoughts at control site

Pre-intervention (%)	Post-intervention (%)	Difference (%)	t-statistic	df	p-value
8.4	13.6	5.2	0.000	1	0.000

Cohen's d = 0.000

Table 7: Independent Samples Test of suicidal thoughts: pre-intervention

t-statistic	df	p-value
0.000	2	1

Cohen's d = 0.000

Table 8: Independent Samples Test of suicidal thoughts: post-intervention

t-statistic	df	p-value
0.000	2	1

Cohen's d = 0.000