Effectiveness of BëST social support model on mental health outcomes among university students in western Kenya: A quasi-experimental design

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https://doi.org/10.51867/ajernet.6.3.4

ABSTRACT

Intimate partner violence (IPV) is a form of abusive behaviour that can occur in marriage, cohabitation, or any other type of partnership and includes physical, sexual, or psychological abuse. Numerous studies have established the detrimental effects of intimate partner violence on mental health. There is growing evidence that social support may help alleviate these negative effects; thus, this study examined the BeST (Belongingness, Evaluation/Appraisal, Self-esteem, and Tangible) support model derived from the social support theory in alleviating the effects of mental health. This study aimed at evaluating the effectiveness of the BëST support model and factors that influence its effectiveness among victims of intimate partner violence in universities in Western Kenya. This study adopted a quasi-experimental design that recruited university students from the four public institutions in Western Kenya who had experienced any form of IPV since admission to the university. The study enrolled 426 participants: 210 in the treatment group and 216 in the control group. Two universities with the highest prevalence rates were recruited into the intervention group, while those with lower prevalence rates were recruited into the control group. The participants were recruited through snowball sampling, and data was collected at baseline and one and three months post-intervention using a self-administered questionnaire that had screening tools for anxiety, depression, and post-traumatic stress disorders (PTSD). The control group went through unstructured group counselling, while the treatment group underwent the BëST model twice weekly for a period of four weeks; in addition, a counsellor was present during the study period. Data was analysed by use of Statistical Analysis Software, where an Analysis of Variance was used to assess mental health outcomes at baseline, one- and three-months post-intervention, and multiple regression was done to identify factors that affect the model's effectiveness in improving mental health outcomes. There was a significant decrease in mean scores in all the mental health outcomes from baseline to 3 months post-intervention. The average scores for depression went down from 9.90 to 3.41, anxiety from 7.84 to 2.68, and PTSD from 1.6 to 1.1 in the treatment group, with both the treatment and control groups showing a significant change over time in anxiety and depression ($p<0.0001$), but not in PTSD. There was a lower likelihood of depression among those who never used illegal drugs, while PTSD was low among participants who never consumed alcohol. This study found that the BëST support model was effective in alleviating anxiety and depression; however, it was not effective in alleviating PTSD. In addition, the use of illegal substances and alcohol affected the model's effectiveness. Recommendations: This study recommends adoption of the model and identification of complementary interventions for IPV victims with PTSD.

Keywords: BëST Support Model, Intimate Partner Violence, Mental Health Outcomes, University Students, Kenya

I. INTRODUCTION

Intimate partner violence (IPV) is a global public health issue due to its high prevalence and the effects on physical, mental, and psychological health, as well as the morbidity and mortality rates associated with suicide or homicide (Gulati & Kelly, 2020). It encompasses physical, sexual, and psychological abuse perpetrated within the context of marriage, cohabitation, or other forms of partnership, in addition to controlling and abusive behaviour related to financial and emotional aspects (Gulati & Kelly, 2020; Sardinha et al., 2022). There is growing scientific evidence showing an increase in IPV among the younger population. This information is based on the majority of epidemiological

studies done among the general population that examine the causes and effects of IPV (Sanz-Barbero et al., 2019). Thus, it is important to address violence among students in tertiary institutions and develop policies on screening and managing violence among this population.

Numerous researchers have connected the negative impacts of IPV on physical, emotional, and social aspects of health. On physical health, it has been linked to conditions such as sexually transmitted infections, chronic pain, and gynaecological problems. While mental health, IPV has been linked to one of the key factors influencing disability-adjusted life years (DALYs) in adults (25–49) and young people (10–24). Though family history, socioeconomic level, and stigma are among the several multi-level risk factors that affect mental health, global research and clinical experience have revealed that interpersonal violence and mental health have a particularly complex relationship (Stark et al., 2023).

The World Health Organisation (WHO) regards domestic violence, which includes intimate partner violence (IPV), as a severe global public health issue and has incorporated it into the International Classification of Diseases (Clemente-Teixeira et al., 2022). Due to its great incidence and serious negative effects, IPV has been designated by the World Health Organisation, the World Psychiatric Association, and the U.S. Centres for Disease Control (CDC) as a major priority for prevention and intervention. When these issues are not addressed, the students may exhibit a risk of delinquency, truancy, and dropouts and may experience difficulties in their own relationships as they transfer violent behaviours and emotional dependency as they imitate behaviours they witnessed (Breiding, 2015; Stewart, 2006). As a result, they end up being abusive by perceiving violence as normal; moreover, it can lead to an increase in dropout rates due to a lack of finances when they withdraw financial support from the student (Lin et al., 2023; Zharima et al., 2024).

Social support is a multifaceted concept that encompasses a variety of forms of support (informational, instrumental, emotional, and appraisal) provided by partners, family members, friends, helping professionals, coworkers, or members of the community (Richardson et al., 2022). According to House (1981), social support refers to the perception and reality of being part of an encouraging social network. Social support functions as a protective barrier in the connection between stress and health outcomes by improving coping mechanisms that can be used to curb the effects of IPV on mental health. However, its effectiveness among this population has been underexplored; thus, this study assessed the effectiveness of the social support model structured from the functions of social support (BëST) on mental health outcomes and factors influencing its effectiveness among university student victims in Western Kenya.

1.1 Statement of the Problem

IPV, the most prevalent form of violence worldwide, significantly contributes to the global burden of mental health. Research suggests that IPV victims are more likely to report mental health conditions, such as post-traumatic stress disorder (PTSD), depression, anxiety, and suicidal ideation. IPV in universities is a huge, silent problem that affects the majority of students. According to the National Intimate Partner and Sexual Violence Survey, during a 12-month period, 14.8% of women and 9.8% of men between the ages of 18 and 24 experienced significantly greater rates of IPV victimisation, indicating that this is the most vulnerable age group to experiencing IPV and it is where the majority of the university students' population falls (Cantor et al., 2023). Anecdotal surveys paint a picture of a number of students who may be psychologically and physically traumatised by their intimate partners, but they fail to report these incidences as they may depend on the perpetrators in one way or another and/or may fear the shame and stigma associated with IPV. This study shows the need to identify student-friendly tailored interventions to support students undergoing IPV in universities.

Universities have developed supportive measures such as policies and facilities like the gender office, the counselling department through the dean's student office, and the institution's security office. Despite these efforts, there has been a low uptake of these services by the student victims, with counsellors reporting few incidences, which may be attributed to feelings of shame, embarrassment, apprehension about being accused, mistrust of the legal system, or a lack of means to get IPV assistance (Wright et al., 2022). In addition, in spite of the availability of various support structures, many IPV victims do not receive adequate assistance, and the counselling services rendered may not be tailored to support victims of IPV. The effectiveness of social support models such as the BëST support model in mitigating the mental health impacts of IPV among university students remains underexplored. In addition, there is limited empirical evidence on how these support systems function within the unique socio-cultural and economic landscape of Western Kenya's universities. Therefore, this study aimed to investigate the effectiveness of the Belongingness, Evaluation Self-esteem and Tangible (BëST) support model in improving the mental health of IPV victims in universities in Western Kenya as an intervention programme for IPV. This model may help improve mental health outcomes for IPV victims.

1.2 Research Objectives

The objectives of this study were to:

i. To evaluate the effectiveness of BëST support model on mental health outcomes among intimate partner violence victims in Western Kenyan universities.
ii. To determine the factors influencing the effectiveness of the BëST support model among intimate partner violence victims in Western Kenyan universities.

1.3 Research hypotheses

The research hypothesis of this study was:

H_{01}: Belongingness Evaluation Self-esteem and Tangible (BëST) Support model is not effective in improving the anxiety levels of intimate partner violence victims among university students in Western Kenya.

H_{02}: Belongingness Evaluation Self-esteem and Tangible (BëST) Support model is not effective in improving the depression levels of intimate partner violence victims among university students in Western Kenya.

H_{03}: Belongingness Evaluation Self-esteem and Tangible (BëST) Support model is not effective in improving the post-traumatic stress disorders (PTSD) outcomes of intimate partner violence victims among university students in Western Kenya.

II. LITERATURE REVIEW

2.1 Theoretical Review

This study was based on social support theory, which is a middle-range theory. The creation of the Social Support Theory took place in the mid-1970s and early 1980s. The theory of social support originated from the works of Don Drennon-Gala and Francis Cullen, who incorporated perspectives from several theoretical frameworks. The hypothesis posits that instrumental, informational, and emotional assistance diminishes the probability of delinquency and criminal behaviour (Kort-Butle, 2017).

In 1983, Sheldon Cohen and Harry Hoberman examined the functions of social support in acting as a protective barrier against the adverse effects of stressful life events. They derived the BëST model which is structured from the functions of social support – Belongingness, Evaluation/Appraisal, self-esteem and tangible support. Belongingness is the emotional aspect of social support that provides a feeling of acceptance and value from others. Evaluation Support: This refers to receiving feedback and validation from others. When individuals receive positive evaluations, they receive encouragement that can boost their self-esteem and confidence. Self-Esteem Support: This form of support pertains to the encouragement and positive reinforcement individuals obtain from their social network. It aids in preserving and augmenting an individual's self-esteem and self-image. Tangible Support: This denotes the concrete assistance and resources offered by others, such as financial aid, services, or physical things. It encompasses any tangible assistance that can aid persons in managing tensions and obstacles (Cohen & Hoberman, 1983).

This theory informed the intervention of the study to analyse how social relationships influence IPV victims' cognitions, emotions, and behaviours and how it helps improve their mental wellbeing. This study intervention used the four constructs of the functions of social support: Belongingness was incorporated into the sessions, helping victims see themselves as others see them. This outcome was achieved by actively listening and responding to others who have experienced similar IPV circumstances. Evaluation or appraisal support which measured the availability of someone with whom the victim can discuss issues of personal importance by offering feedback advice and emotional understanding. In addition, it also offered informational support by imparting knowledge, the participants were provided with information on IPV, and counselling was done on a one-on-one basis and in groups, thus providing direction, advice and recommendations and passing helpful information. Self-esteem was promoted by focusing on each participant's strengths and accomplishments in surviving IPV. Tangible support, which was also referred to as instrumental support, was given through discussions of resources in the institution, including the role of the gender office, health care for victims, reporting, counselling services, and university policy on violence (Constantino & Bricker, 1997; House, 1983; Lakey & Cohen, 2000; Leahy-Warren, 2014; Williams et al., 2004). These four constructs were combined to assist in classifying and quantifying the various facets of social support.

2.2 Empirical Review

Social support is a multifaceted concept that encompasses various forms of support (informational, instrumental, emotional, and appraisal) provided by family members, friends, helping professionals, coworkers, or members of the community (Richardson et al., 2022). House (1981) defines social support as the perception and reality of receiving support and belonging to an encouraging social network. Social support acts as a protective barrier that enhances coping mechanisms, thereby influencing the relationship between stress and health outcomes. Social support refers to the presence of emotional support (such as caring, trust, love, and empathy); practical support (such as aids and services);

and informational support (such as guidance, recommendations, and obtaining knowledge) that can assist an individual in dealing with challenging situations like IPV (Omowumi & Olufunmilayo, 2024).

According to Cobb (1976), social support is a reciprocal phenomenon that integrates individuals into a society where they feel cared for, valued, and loved. It refers to the presence of people within a survivor's social network, either face-to-face or online (telephone or online), who offer emotional solace, practical guidance, concrete assistance, and constructive social engagement (Ogbe et al., 2020; Voth Schrag et al., 2020). Social support encompasses various dimensions, including emotional support (availability of someone to provide acceptance and sympathy), instrumental support (providing tangible help like lending money or childcare), informational support (providing relevant information for problem-solving or accessing resources), and appraisal support (assisting with decision-making through advice or feedback) (Berkman et al., 2014; Cohen & Hoberman, 1983; Lakey & Cohen, 2000).

BëST support model is an acronym structured from the four functions of social support developed by Cohen and Hoberman (1983) that stands for (Belongingness; Evaluation and Appraisal; Self-esteem; Tangible support). Its effectiveness is dependent upon reciprocity, accessibility and reliability on individuals' use (Williams et al., 2004). It characterised social relationships in terms that were highly specific, such as interactions or relationships between people that improve the wellbeing of the individuals within the relationships (Leahy-Warren, 2014).

2.2.1 Social Support and Mental Health Outcomes

Research indicates that social support levels are significantly correlated with the prevalence of depression and anxiety, where diminished social support is more likely to result in depressive and anxious symptoms when individuals encounter stress (Guntzviller et al., 2020; Simons et al., 2020). Therefore, this form of support is an essential element in mediating, mitigating, and enhancing the results for individuals who have experienced violence, as well as improving their mental health outcomes, as it is negatively associated with depression, thus improving their quality of life (Ogbe et al., 2020; Schultz et al., 2021; Žukauskienė et al., 2021). It also enhances individuals' capacity for emotional regulation, directly promotes the physical safety of women, reduces stress levels, and promotes the process of physical and mental health recuperation (Jose & Novaco, 2016; Stylianou et al., 2021).

Social support appears to play a significant role in reducing the effects of intimate partner violence (IPV) on the mental and physical well-being of victims by utilising coping methods that focus on managing emotions, thus reducing the symptoms of PTSD (Canady & Babcock, 2009). Receiving support from friends, family, and others can boost self-efficacy, which in turn helps individuals better understand and navigate violent situations and seek appropriate assistance. Furthermore, research has demonstrated that social support can effectively motivate individuals to definitively quit an abusive relationship and overcome feelings of isolation and reliance on the abuser (Dias et al., 2018). However, victims may fail to seek support as disclosing such experiences to family members can result in additional victimisation and stigmatisation of the victims (Žukauskienė et al., 2021).

Research has shown that high levels of social support correlate with an increase in reporting the cases of abuse therefore, leading to a decrease in unfavourable outcomes (Voth Schrag et al., 2020). Conversely, inadequate social support could directly enhance the probability of women encountering intimate partner violence (IPV). Women lacking strong support systems may not receive sufficient input regarding the appropriateness of possible partners, hence heightening the likelihood of entering into hazardous relationships. Insufficient social support might worsen the intensity of intimate partner violence (IPV) experienced, as one role of social support is to enhance healthy coping and personal development. In addition, research has shown that social support acts as a potential buffer against the detrimental effects of stress; it also mediates and modifies the link between IPV and mental health thus, beneficial in improving physical and mental health (Calhoun et al., 2022; Mahapatro et al., 2021; Richardson et al., 2022; Tonsing et al., 2021).

2.2.2 Factors Influencing the Effectiveness of BëST Support Model

The Belongingness Evaluation, Self-Esteem, and Tangible Social Support (BëST) paradigm aims to improve mental health outcomes by cultivating a sense of belonging, enhancing self-esteem, and offering tangible social support. Numerous elements affect the efficacy of this approach, which can be broadly classified into individual, relational, and contextual categories. The concepts of belongingness, evaluation, self-esteem, and tangible social support have been extensively studied in the literature as crucial factors influencing various aspects of human well-being and psychological functioning.

Individual factors: Self-Esteem and Personal Agency: Self-esteem is integral to the efficacy of the BëST model. Individuals possessing elevated self-esteem are more inclined to interact with and derive advantages from social support networks. The personal agency approach posits that an enhancement in self-esteem may result in heightened sentiments of belongingness (Perry & Lavins-Merillat, 2018). Belongingness, in particular, has been identified as a fundamental human need, with theories suggesting that individuals have an innate drive to form and maintain meaningful connections with others (Allen et al., 2022). Bowlby's attachment theory highlights the importance of early interactions between parents and children in shaping an individual's future relationships and sense of belonging. In educational environments,

the connection to peers and staff is an essential element of belongingness. Strategies to improve connectivity encompass fostering relationships, utilising varied educational techniques, and establishing inclusive environments (Allen et al., 2024).

Emotional Intelligence: Elevated emotional intelligence (EQ) correlates with enhanced social acceptability and reduced instances of rejection. Individuals with elevated emotional intelligence are more proficient in establishing and sustaining supportive relationships, hence augmenting the efficacy of the BëST model (Moeller et al., 2020).

Relational and Institutional factors: The calibre of relationships within the support network profoundly influences the efficacy of the BëST model. Supportive, trusting, and affirmative connections cultivate an enhanced sense of belonging and self-esteem. In contrast, detrimental or shallow connections might diminish these advantages (Allen et al., 2024). Cultural and social norms shape individuals' perceptions and interactions with social support. In many cultures, the pursuit of help may be stigmatised, thereby undermining the effectiveness of the BëST model. Comprehending and managing these cultural subtleties is crucial for the model's success (Allen et al., 2024).

The extent of institutional support, encompassing policies and practices that foster inclusivity and diversity, significantly influences the efficacy of the BëST model. Institutions that emphasise mental health and offer support resources foster an environment conducive to the optimal model's success (Allen et al., 2024). Utilising technology to foster connections and offer support can improve the effectiveness of the BëST model. Digital platforms and social media can enable the creation of virtual support networks, especially when restrictions limit in-person connections.

III. METHODOLOGY

3.1 Research Design

This study adopted a quasi-experimental non-equivalent pretest-posttest research design, which helps assess how well an intervention works in a real-world setting (Handley et al., 2018). The target population were university students in Western Kenya who had ever experienced intimate partner violence since enrolment for their undergraduate programme. The study adopted non-randomised sampling to recruit participants to the control and treatment groups. The study took place in all four public universities in Western Kenya, where participants were chosen based on the rates of intimate partner violence (IPV) reported in the Kenya Demographic Health Survey, 2022 (Kenya National Bureau of statistics [KNBS], 2023). Those from Masinde Muliro University of Science and Technology and Kibabii University, which had higher IPV rates, were placed in the treatment group, while those from Kaimosi Friends University and Alupe University College, which had lower rates, were placed in the control group.

3.2 Sample Size Calculation

Sample size was calculated using Solvin's formula. This formula is used when the population characteristic is unknown and calculates the minimum sample size needed based on the acceptable margin of error (Tejada & Punzalan, 2012). Since the prevalence of intimate partner violence among university students in Western Kenya is unknown, the sample size was calculated by using Solvin's formula at the 95% confidence interval. The student population was obtained from each of the four universities by contacting their respective registry offices.

According to the registry office in the respective four universities, the student population undertaking undergraduate studies is as follows: 23,000 students in MMUST, 12,000 students in Kibabii University, 7,000 students in Kaimosi Friends University, and 5,000 students in Alupe University College. The total population is 47,000 students. Using Solvin's formula, the sample size was:

$n = \frac{47000}{1+35715 \times 0.05^2}$ thus, n = 396 study participants

A sample size of 396 study participants was derived and divided equally among the four institutions, resulting in 99 participants per institution. However, due to ethical concerns, the researcher included all participants who reached out for support, even after achieving the desired sample size. Thereafter, a sampling size of four hundred and ninety-two participants was recruited to the study, whereas the study lost sixty-six participants in the course of the research period, ending up with a sample size of four hundred and twenty-six participants, refer to table 1 on the sample matrix.

Table 1

Sampling Matrix

University	Initial study population	Endline study population	Sampling technique	Intervention	Response rate
	Study participants				
MMUST	124	102	Snowball	Treatment (BëST support)	82%
KIBABII	125	108	Snowball	Treatment (BëST support)	86%
KAFU	115	104	Snowball	Control (Group counselling)	90%
ALUPE	128	112	Snowball	Control group (Group counselling)	86%
Total	**492**	**426**			

3.3 Sampling Procedure

IPV victims, particularly among university students, are considered a hard-to-reach population because of the sensitive nature of the issue may cause them to fear sharing their experiences due to stigma, shame, and trauma. Thus, the researcher used snowball sampling to recruit the study participants by penetrating the trusted social circles. To identify potential participants in the study, the researcher reached out to them through student leaders and various platforms, including peer support educators, make-detox platforms, and the International Women's Day Forum, as well as through print media to raise awareness of the study. Subsequently, willing participants reached out to the researcher, and then the snowball sampling technique was employed to identify additional study participants.

The inclusion criteria consisted of students who reported experiencing physical, sexual, or psychological violence, or all three forms of intimate partner violence, since enrolling in the undergraduate program at their respective institutions; participants who consented to a mental health screening; and those who agreed to participate in group therapy sessions. Students who exhibited observable signs of mental health disorders that could hinder their participation, as well as those at imminent risk of suicide, were excluded from the study and referred to the university counsellor and health centre for further evaluation and treatment.

3.4 Data Collection Methods

A sequential explanatory mixed methods approach was adopted. This mixed methods approach allowed for an in-depth exploration of the research problem, integrating both quantitative and qualitative data to provide a comprehensive analysis of the effectiveness of the social support model on mental health outcomes among intimate partner violence victims in universities in western Kenya. The quantitative data was collected at three distinct time points: baseline, 1-month post-intervention, and 3 months' post-intervention. The data collection involved self-administered questionnaires to gather information on the sociodemographic characteristics of the participants, and three validated screening tools to assess the participants' mental health status. The screening tools used in this study were, Patient Health Questionnaire (PHQ-9 and PHQ-2, (2020) a self-reporting tool that measured the level of depression. It comprised of nine questions that helped screen, diagnose, monitor, and measure the severity of depression. Additionally, this tool included screening questions for suicidal ideation, which were derived from the Patient Health Questionnaire PHQ-9. A second screening tool was the general anxiety disorder (GAD-7) screening tool that measured the level of anxiety. The screening tool had seven items, and respondents were expected to share the experiences they had in the previous two weeks. The score ranged from 0 (not at all) to 3 (nearly every day) for each item (Niwenahisemo et al., 2024). The third screening tool was the primary post-traumatic stress disorder screening tool that measured whether the victim had PTSD. This is composed of a 5-item screening tool called the Primary Care PTSD Test for DSM-5 (PC-PTSD-5). The respondents were instructed to answer five yes/no questions concerning how their IPV exposure has affected them over the past month (Li et al., 2024). Qualitative data collected through Focus Group Discussions with study participants after the intervention period to explore the factors associated with the effectiveness of the social support model and how the model can be used to suit the university student's needs.

3.5 Intervention

The theoretical model of social support established the criteria of social support (Constantino & Bricker, 1997; House, 1983). In addition, Cohen and Hoberman (1983) developed the BëST concept, which led to the adoption of the social support intervention. The BëST concept involved "belongingness," which was achieved by listening and responding to others who were in the same group and had similar IPV circumstances. The sessions incorporated evaluation or appraisal by assisting victims in understanding their own perspectives. Self-esteem was promoted by focussing on each participant's strengths and accomplishments in surviving IPV. Discussions about the institution's resources, the gender office's role, health care for victims, reporting, counselling services, and university policies on violence provided tangible support.

The researcher conducted an individual session with potential participants who reached out to collect their baseline data and perform a general health assessment and screen the participants of depression anxiety and posttraumatic stress disorders (PTSD). Participants who had observable signs of mental psychiatric disorders, or had a higher risk of suicide were attached to a counsellor and the university health centre for further evaluation and treatment. The participants who met the eligibility criteria their details and contacts were saved, unique codes were given to them and were enrolled into the homogeneous groups of males, females, and transgenders.

The sessions were conducted online, via Google Meet platform this ensured confidentiality and anonymity by allowing them to login anonymously using the unique codes given during recruitment, this was done to encourage participants to speak freely and share their experiences. The intervention was done twice a week for a period of four weeks. The study participants in Kaimosi Friends University and Alupe University were recruited into the control groups, citing their lower prevalence rates per county in the KDHS 2022 report, while the treatment group included Kibabii University and Masinde Muliro University of Science and Technology (MMUST).

The intervention consisted of two weekly sessions for a period of four weeks. These sessions were sixty-minute group sessions of 8–12 participants. The intervention group was taken through a structured BëST social support model while the control group had group therapy sessions of 8-12 homogenous participants who had a free-flowing conversation with no structure, and each group was guided by two facilitators. Furthermore, in all four institutions, there was a counsellor attached to provide counselling to those in need, irrespective of whether they were in the experimental or control groups. The outcomes of the intervention were measured at one month and three months post intervention.

3.6 Data management and analysis

Measuring effect of IPV on mental health: This study assessed the following mental health outcomes: post-traumatic stress disorder, anxiety disorder, depression, and suicide. The mental health outcomes were measured by the use of validated screening tools. These measures were taken at baseline (before the intervention) and 1 month and 3 months post-intervention. To identify respondents who suffered from post-traumatic stress disorder (PTSD), respondents were subjected to a 5-item screening tool called the Primary Care PTSD Test for DSM-5 (PC-PTSD-5). The respondents were instructed to answer five yes-or-no questions concerning how their lifetime exposure to trauma affected them over the past month; if they responded to any four questions as 'Yes', they were classified as respondents with PTSD (Prins et al., 2016).

A self-reporting Patient Health Questionnaire (PHQ-9) screening tool was used to assess for depression. This tool was comprised of nine questions that helped to screen and diagnose the severity of depression. Additionally, this tool also contained screening questions on suicidal ideation (Patient Health Questionnaire (PHQ-9 and PHQ-2), 2020). The screening tool has been proven to have high validity, with a reported sensitivity of 88% and a specificity of 88% for major depressive disorders (Kroenke et al., 2001). This study classified depression as follows: those with no depression (0–4), mild depression (5–9), moderate depression (10–14), moderately severe (15–19), and severe anxiety (20–27) (Kroenke et al., 2001).

A General Anxiety Disorder-7 tool (GAD-7) was used to screen participants of anxiety. The list has seven items, and respondents were expected to share the experiences they have had in the previous two weeks. The score ranged from 0 (not at all) to 3 (nearly every day) for each item. The cumulative score, ranged from 0 to 21. The classification of anxiety was done as follows: minimal anxiety (0–4), mild anxiety (5–9), moderate anxiety (10–14), and severe anxiety (above 15) (Spitzer et al., 2006). To measure anxiety levels, participants were screened with the use of General Anxiety Disorder-7 tool (GAD-7). The list has seven items, and respondents were expected to share the experiences they have had in the previous two weeks. The score ranged from 0 (not at all) to 3 (nearly every day) for each item. The cumulative score, ranged from 0 to 21. The classification of anxiety was done as follows: minimal anxiety (0–4), mild anxiety (5–9), moderate anxiety (10–14), and severe anxiety (above 15) (Spitzer et al., 2006).

Data Analysis: Classification of depression, was done based on the data obtained from the self-reported Patient Health Questionnaire (PHQ-9) screening tool; primary care PTSD screen for the DSM-5 screened for PTSD and General Anxiety Scale (GAD) scale measured the level of anxiety at baseline, one month and three months post-intervention. A multiple analysis of variance (MANOVA) test was done to test for the effects of the different forms of IPV (physical, sexual, and psychological) on mental health (depression, PTSD and anxiety).

Prior to treatment, the study participants were subjected to baseline and endline data at 1 month and three months post-intervention to assess the effects of the model on the mental health of the participants. The findings from three sets of data were analysed by the analysis of variance statistical test to compare the differences within the intervention group and the control group in order to analyse the effectiveness of the BëST support model on mental health outcomes. An adjusted logistical regression was done to assess for the factors that may have influence the effectiveness of the BëST support model while controlling for confounders.

IV. FINDINGS & DISCUSSION

4.1 Socio Demographic Characteristics

Table 2 depicts the sociodemographic variables of the study participants and their distribution in the intervention and control groups. Of the total 426 participants, the majority 264 (62%) were in the age bracket of (20-29), male gender 284 (67), Christians 390 (91%), and depended on parents for their financial support 282 (66%). The minority of the participants included Muslims 24 (6%), females 142 (33%), those who were divorced or separated 10 (2%), those with mental health disorders 38 (9%), and those who lived with their partners and relied on them for financial support were 19 (5% and 23(5%), respectively.

Table 2

Socio-Demographic Characteristics of Study Participants

Variables	Categories	Intervention (n = 210)	Control (n = 216)	Total	P value
Age group	20 - 29	111 (52.9)	153 (70.8)	264 (62)	0.0001
	30 - 39	99 (47.1)	63 (29.2)	162 (38)	
Gender	Male	135 (64.3)	149 (69.0)	284 (67)	0.304
	Female	75 (35.7)	67 (31.0)	142 (33)	
Religion	Christian	193 (91.9)	197 (91.2)	390 (91)	0.163
	Muslim	14 (6.7)	10 (4.6)	24 (6)	
	Other	3 (1.4)	9 (4.2)	12 (3)	
Ethnicity	Luhya	52 (24.8)	72 (33.3)	124 (29)	0.056
	Luo	38 (18.1)	49 (22.7)	87 (20)	
	Kamba	14 (6.7)	9 (4.2)	23 (5)	
	Kikuyu	11 (5.2)	18 (8.3)	29 (7)	
	Kalenjin	43 (20.5)	33 (15.3)	76 (18)	
	Abagusii	33 (15.7)	20 (9.3)	53 (12)	
	Others (Teso, Meru, Digo, Maasai, and others)	19 (9.0)	15 (6.9)	34 (8.0)	
Marital status	Single and searching	102 (48.6)	104 (48.1)	206 (48)	0.661
	Single but dating	89 (42.4)	99 (45.8)	188 (44)	
	Married	13 (6.2)	9 (4.2)	22 (5)	
	Divorced or separated	6 (2.9)	4 (1.8)	10 (2)	
Living arrangement	Lives alone in university hostel	79 (37.6)	83 (38.4)	162 (38)	0.066
	Lives alone off campus	79 (37.6)	77 (35.6)	156 (37)	
	Lives with friends off campus	28 (13.3)	45 (20.8)	73 (17)	
	Lives with partner off campus	13 (6.2)	6 (2.8)	19 (5)	
	Lives with family member	11 (5.2)	5 (2.3)	16 (4)	
Source of financial support	Parents	147 (70.0)	135 (62.5)	282 (66)	0.076
	Guardian	26 (12.4)	36 (16.7)	62 (15)	
	Friends	6 (2.9)	18 (8.3)	24 (6)	
	Partner	13 (6.2)	10 (4.6)	23 (5)	
	Self	18 (8.6)	17 (7.9)	35 (8)	
Ever been diagnosed with mental disorder	Yes	13 (6.2)	25 (11.6)	38 (9)	0.051
	No	197 (93.8)	191 (88.4)	388 (91)	

4.1.1 Comparison of Mental Health Outcomes at Baseline, 1 month and 3 months between the Intervention and Control Groups

Table 3 demonstrates that the intervention group's mean PTSD scores steadily decreased from baseline (1.16) to 3 months (1.10), while the control group's mean scores at baseline, 1 month, and 3 months were 3.34, 3.09, and 3.61, respectively. Overall, the experimental group showed an improvement in the mean PTSD scores compared to the control group. The repeated measures ANOVA showed that time did not have a significant effect on the PTSD scores of the study participants [F: 1.15, $p = 0.318$]. This means that the PTSD scores of the participants in both groups did not get better over time. Compared with the control group, the improvement in PTSD was highly statistically significant among participants in the intervention group [F: 443.51, $p < 0.001$]. The interaction effect (time×group) was significant [F: 27.14, $p < 0.0001$], indicating that the group exhibited a change over time, and the change was different across the groups.

In the intervention group, the mean scores of depression decreased from baseline (9.90) to 1 month (7.80) and 3 months (4.31), compared to the control group, which reported mean scores of 8.66, 10.66, and 8.77 at baseline, 1 month, and 3 months, respectively. Generally, the reduction in mean scores of depression among the intervention group compared to the control group was statistically significant. Effect of time (within group) on depression scores among students [F (41.12, p<0.001], suggesting that the participants in both groups exhibited a reduction in depression over time. Compared with the control group, the improvement in depression was highly statistically significant among participants in the intervention group [F (36.34, p < 0.0001]. The interaction effect (time×group) was significant [F (35.27, p < 0.0001], demonstrating that the group exhibited a change over time, and the change was different across the groups.

Similarly, the mean scores of anxiety in the intervention group decreased from baseline (7.84) to 1 month (4.66) and 3 months (2.68), compared to the control group, which reported mean scores of 7.49, 7.43, and 6.26 at baseline, 1 month, and 3 months, respectively. Overall, the reduction in mean scores of anxiety among the intervention group compared to the control group was statistically significant. Effect of time on anxiety scores among students [F(44.31, p<0.001], indicating that the participants in both groups displayed a reduction in anxiety over time. Compared with the control group, the improvement in anxiety was highly statistically significant among participants in the intervention group [F (38.69, p < 0.0001]. Notably, the interaction effect (time×group) was significant [F (18.56, p < 0.0001], suggesting that the group showed a change over time, and the change was different across the groups.

This study rejected the first and the second null hypotheses, which stated that the Belongingness Evaluation Self-esteem and Tangible (BëST) Support model is not effective in improving the anxiety and depression levels of intimate partner violence victims among university students in Western Kenya. The statistical analysis yielded a p-value of less than 0.0001, indicating a highly significant effect of the BëST Support model in reducing anxiety and depression levels. However, this study failed to reject the third null hypothesis, which stated that the Belongingness Evaluation Self-esteem and Tangible (BëST) Support model is not effective in improving the PTSD levels of intimate partner violence victims among university students in Western Kenya, since the statistical analysis yielded a p-value of 0.318; hence, the observed effect is not statistically significant.

Table 3

ANOVA Test on Mental Health Outcomes at Baseline, 1 month, 3 months Post-Intervention

Dependent variable	Group	Baseline Mean (SD)	1 month Mean (SD)	3 months Mean (SD)	Effects	F	df	P value
PTSD	Treatment	1.60	1.71	1.10	Time	1.15	2	0.318
	Control	3.34	3.09	3.61	Group	443.51	1	<0.0001
					Time * Treatment	27.14	2	<0.0001
Depression	Treatment	9.90	7.80	4.31	Time	41.12	2	<0.0001
	Control	8.66	10.66	8.77	Group	36.34	1	<0.0001
					Time * Treatment	35.27	2	<0.0001
Anxiety	Treatment	7.84	4.66	2.68	Time	44.31	2	<0.0001
	Control	7.49	7.43	6.26	Group	38.69	1	<0.0001
					Time * Treatment	18.56	2	<0.0001

Notes: PTSD score of 4 Yes and above suggests PTSD;

Depression score range 0–4: none or minimal; 5 – 9: mild; 10 – 14: moderate; 15 – 19: moderately severe; 20 – 27: severe.Anxiety score range 0–4: minimal; 5 – 9: mild; 10 – 14: moderate; ≥15 severe. Time refers to within group effects, group refers to between group effects, and time×group refers to interaction effects.

4.2 Factors Influencing the Effectiveness of BëST Support Model among IPV Victims in Universities in Western Kenya

Sociodemographic factors influencing the effectiveness of BëST support model among study participants (Multiple Logistic Regression)

The data presented in Table 4 shows the results of an adjusted logistic regression model of PTSD, depression, anxiety and socio-demographic characteristics. The likelihood of experiencing depression among IPV victims who went through the BëST support model was lower among Christians compared with those from other religions after controlling possible confounders (AOR: 0.16; 95% CI: 0.02 – 1.10). However, age group, gender, ethnicity, marital status and living arrangement did not significantly influence mental status of participants after controlling for confounders.

Table 4

Socio-Demographic Factors Influencing the Effectiveness of BëST Support Model

Characteristics	Categories	Endline PTSD AOR (95% CI)	Depression AOR (95% CI)	Anxiety AOR (95% CI)
Age group	30 – 39 (Ref)	1.00	1.00	1.00
	20 - 29	0.69 (0.24 – 2.00)	0.41 (0.07 – 2.47)	0.37 (0.45 – 4.20)
Gender	Female (Ref)	1.00	1.00	1.00
	Male	0.57 (0.21 – 1.56)	1.13 (0.95 – 6.60)	1.17 (0.39 – 3.55)
Religion	Muslim, others (Ref)	1.00	1.00	1.00
	Christians	1.30 (0.15 – 11.04)	***0.16 (0.02 – 1.10) ****	1.84 (0.22 – 15.69)
Ethnicity	Other tribes (Ref)	1.00	1.00	1.00
	Luhya	1.04 (0.35 – 3.11)	1.88 (0.40 – 8.81)	0.40 (0.09 – 1.84)
Marital Status	Married and others (Ref)	1.00	1.00	1.00
	Single and searching	1.10 (0.39 – 3.09)	0.83 (0.17– 4.07)	1.00 (0.34 – 2.95)
Living arrangement	Other forms of living arrangement (Ref)	1.00	1.00	1.00
	Lives alone in university hostel	1.31 (0.47 – 3.63)	0.28 (0.03 – 2.52)	1.82 (0.63 – 5.26)

*p = 0.063

Drug and childhood related factors influencing the effectiveness of BëST support model among study participants (Multiple Logistic Regression)

The data presented in table 5 shows the results of an adjusted logistic regression model of PTSD, depression, anxiety and drug and childhood related factors. The likelihood of experiencing PTSD was lower among participants who never consumed alcohol compared to those who took alcohol occasionally to always after controlling possible confounders (AOR: 0.32; 95% CI: 0.10-1.05). In addition, the likelihood of experiencing depression was lower among participants who never used illegal drugs compared to those who used it rarely to always (AOR: 0.08; 95% CI: 0.01-0.47) after controlling for confounders. However, smoking cigarettes financial support, parental and childhood violence did not significantly influence mental status of participants who went through the BëST support model after controlling for confounders.

Table 5

Drug and Childhood Related Factors Influencing the Effectiveness of BëST Support Model among Study Participants

Characteristics	Categories	Endline PTSD AOR (95% CI)	Depression AOR (95% CI)	Anxiety AOR (95% CI)
Alcohol intake	Occasionally to always (Ref)	1.00	1.00	1.00
	Never	**0.32 (0.10 – 1.05)**	2.81 (0.22 – 36.41)	3.38 (0.55 – 20.70)
Smoking cigarettes	Rarely to always (Ref)	1.00	1.00	1.00
	Never	1.25 (0.15 – 10.19)	1.35 (0.14 – 12.94)	0.41 (0.08 – 2.12)
Frequency of using illegal drugs	Rarely to always (Ref)	1.00	1.00	1.00
	Never	1.84 (0.22 – 15.05)	**0.08 (0.01 – 0.47)**	0.73 (0.14 – 3.92)
Financial support	Others (Ref)	1.00	1.00	1.00
	Parents	0.60 (0.21 – 1.74)	0.88 (0.18 – 4.39)	1.59 (0.47 – 5.37)
Mental disorder	No (Ref)	1.00	1.00	1.00
	Yes	**7.22 (1.37 – 37.98)**	-	1.91 (0.31 – 11.96)
	Yes	1.38 (0.29 – 6.64)	-	2.67 (0.33 – 21.66)
Experienced childhood violence	No (Ref)	1.00	1.00	1.00
	Yes	0.37 (0.09 – 1.46)	0.19 (0.02 – 1.94)	0.81 (0.23 – 2.90)

Violent relationships and their influence on the effectiveness of BëST support model among IPV victims in universities in Western Kenya

The data presented in table 6 shows the results of an adjusted logistic regression model of PTSD, depression, anxiety and drug and violent relationships encountered among the study participants. The findings indicate that the violent relationship factors did not significantly influence the mental status of participants who went through the BëST support model after controlling for confounders.

Table 6

Multiple Regression on Violent Relationship Factors and their Influence on Effectiveness of BëST Support Model

Characteristics	Categories	Endline PTSD AOR (95% CI)	Depression AOR (95% CI)	Anxiety AOR (95% CI)
Number of violent relationships encountered	More than one (Ref)	1.00	1.00	1.00
	One	1.75 (0.43 – 7.14)	0.72 (0.10 – 5.09)	2.51 (0.48 – 13.26)
Perpetrator of violence	Other (Ref)	1.00	1.00	1.00
	Girlfriend / Boyfriend	1.76 (0.57 – 5.43)	1.45 (0.28 – 7.60)	0.65 (0.20 – 2.13)
Type of abuse	Sexual / Psychological (Ref)	1.00	1.00	1.00
	Physical	0.64 (0.20 – 2.03)	0.51 (0.09 – 2.99)	1.09 (0.33 – 3.61)
Duration of violent relationship	≥ 6 months (Ref)	1.00	1.00	1.00
	< 6 months	0.63 (0.20 – 2.00)	0.76 (0.15 – 3.89)	0.66 (0.19 – 2.30)
Type of the relationship	Non-exclusive (Ref)	1.00	1.00	1.00
	Exclusive	1.41 (0.45 – 4.43)	0.1.78 (0.36 – 8.82)	0.46 (0.10 – 2.08)
Other partners during the relationship	No (Ref)	1.00	1.00	1.00
	Yes	0.18 (0.02 – 1.51)	0.24 (0.02 – 2.67)	0.33 (0.06 – 1.89)
Perpetrator control behaviours	No (Ref)	1.00	1.00	1.00
	Yes	1.16 (0.36 – 3.77)	0.44 (0.07 – 2.66)	0.83 (0.23 – 2.98)
Lives with the perpetrator of violence	No (Ref)	1.00	1.00	1.00
	Yes	1.92 (0.40 – 9.24)	2.19 (0.29 – 16.29)	1.06 (0.09 – 12.61)
Perpetrator imposes curfew time	No (Ref)	1.00	1.00	1.00
	Yes	0.44 (0.10 – 1.83)	3.25 (0.50 – 21.19)	0.93 (0.23 – 3.82)
Perpetrator drinks alcohol or use illegal drugs	No (Ref)	1.00	1.00	1.00
	Yes	0.23 (0.03 – 1.92)	0.32 (0.03 – 3.69)	1.15 (0.27 – 5.00)
Perpetrator limits interactions friends	No (Ref)	1.00	1.00	1.00
	Yes	0.71 (0.17 – 2.87)	3.61 (0.58 – 22.49)	0.31 (0.06 – 1.74)
Still in the relationship with the perpetrator	No (Ref)	1.00	1.00	1.00
	Yes	2.31 (0.62 – 8.52)	1.36 (0.21 – 8.58)	0.92 (0.19 – 4.52)
Who provided support during the abuse	Others (Ref)	1.00	1.00	1.00
	Friends	0.70 (0.24 – 2.08)	0.81 (0.13 – 4.85)	0.43 (0.14 – 1.34)
Ever reported the perpetrator of violence	No (Ref)	1.00	1.00	1.00
	Yes	0.58 (0.18 – 1.87)	1.14 (0.18 – 7.24)	2.04 (0.60 – 6.98)
Whom did you report the abuse	Others (Ref)	1.00	1.00	1.00
	Friends	1.71 (0.53 – 5.44)	0.61 (0.10 – 3.75)	8.15 (1.94 – 34.21)
	Yes	0.52 (0.10 – 2.78)	0.65 (0.09 – 4.75)	1.73 (0.44 – 6.89)

4.3 Discussion

Counselling, cognitive behaviour therapy, interpersonal therapy, and group therapy are all crucial psychological treatments for depression and post-traumatic stress disorder (Benavides et al., 2021; Santos et al., 2016). This is in tandem with this study finding, as shown in Table 3, where the p-values of depression and anxiety over the three time periods were significant for both groups. The improvements in mental health outcomes in this study may have been linked to the provision of therapy sessions for both groups, where the treatment group went through the BëST support model while the control group had group therapy sessions. However, in comparison to the mean scores, there was a significant improvement in the intervention group as compared to the treatment group. This finding is in tandem with several studies that have alluded to social support functions as a protective barrier in the connection between stress and mental health outcomes by providing buffering effects and improving coping mechanisms, thus reducing depression (Constantino et al., 2015; Omowumi & Olufunmilayo, 2024; Schultz et al., 2021; Žukauskienė et al., 2021). In addition, social support has been found to be an essential element in mediating, mitigating, and enhancing the effects of violence, as well as improving their mental health outcomes by enhancing individuals' capacity for emotional regulation, directly promoting physical safety, reducing stress levels, and promoting the process of physical and mental health recuperation (Jose & Novaco, 2016; Ogbe et al., 2020; Stylianou et al., 2021). Other consistent findings is a study by Pasinringi et al. (2022), which noted that there exists a substantial correlation between sources of social support and the level of mental health among emerging adult students at Universitas Hasanuddin. A contrasting finding is a systematic study done by Karakurt et al. (2022), whose meta-analysis showed that the interventions focused on support components alone did not demonstrate a significant difference in alleviation of depressive symptoms when compared to the control groups.

Findings on PTSD as shown in Table 3 show a steady decrease in mean scores for PTSD in the intervention group as compared to the control group. However, these findings were not statistically significant and had a non-significant effect of time. These findings are similar to the systematic review and meta-analysis by Karakurt et al. (2022), whose findings among ten therapeutic research studies on 1454 patients revealed that there was no statistically significant reduction in PTSD symptoms as compared to the control groups. Similar to this finding is a meta-analysis done by Emezue et al. (2022) on twelve random control trials across the United States, Canada, New Zealand, the Republic of China, Kenya, and Australia, whose study found out that at no time point did digital interventions significantly reduce PTSD. Ogbe et al. (2020) systematic review noted that there was a moderate decrease in PTSD scores between the control and the intervention group five to six weeks post-intervention in an interpersonal psychotherapy for pregnant women. Thus, there is a need to identify other intervention programs that may significantly improve PTSD among IPV victims; interventions such as cognitive behavioural therapies (CBT) and CBT plus empowerment treatments have been shown to considerably lower the levels of PTSD symptoms (Karakurt et al., 2022).

This study findings show strong links between certain lifestyle factors and the mental health outcomes of IPV victims who were in the intervention group. Table 4 revealed that the likelihood of experiencing depression among participants who underwent the BëST support model was lower among Christians as compared to other religions after controlling for confounders. The reduced prevalence of depression among Christians may be attributed to various variables. Religious affiliation frequently fosters a robust sense of community and belonging, which corresponds with the fundamental tenets of the BëST model (Dougherty & Whitehead, 2011; King, 2019). Religious communities provide social support that can deliver emotional and physical aid, alleviating feelings of loneliness and hopelessness associated with depression (Block, 2018). Moreover, religious activities and beliefs may cultivate resilience and offer coping strategies that alleviate depression symptoms (Johnson et al., 2007).

This study also shows that victims who abstained from illegal drug use exhibited a lower likelihood of experiencing depression. The lack of drug usage certainly improves the efficacy of the BëST model by enabling participants to fully participate in and derive advantages from the support offered. This findings aligns with established literature on the detrimental effects of illicit drug use on mental health (Crocker et al., 2021; Lewer et al., 2020). Refraining to use illicit drugs may lead to superior overall mental health, as substance use often increases the risk of depression due to its impact on brain chemistry and social functioning (Armoon et al., 2021; Ignaszewski, 2021).

The adverse effects of alcohol on mental health can explain the reduced probability of PTSD in individuals who abstain from drinking (Danielson et al., 2021; Simpson et al., 2022). Excessive alcohol use is known to aggravate PTSD symptoms and impede recovery (Robinson & Deane, 2022). Refraining from alcohol may improve emotional control and coping mechanisms; hence, it may augment the protective benefits of the BëST model against PTSD. These findings hold significant implications for the application of the BëST model in academic environments. If adopted, universities should integrate elements that tackle substance use and encourage healthy lifestyle choices within the intervention. Furthermore, using supportive networks within religious communities may augment the model's efficacy for individuals who adhere to a specific faith.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

There was a significant improvement in depression and anxiety levels in both the treatment and control group however, the mean scores of anxiety and depression steadily decreased among participants who used the BëST model as compared to those who were in group therapy. Despite the lack of significance in PTSD scores for those who used the BëST model, there was a consistent decline in mean scores at baseline, one month, and three months post-intervention. This study found that Christians and those who never used illegal drugs were less likely to experience depression, while those who never consumed alcohol were less likely to develop PTSD among victims who followed the BëST model.

5.2 Recommendations

This study recommends universities to implement the BëST support model in managing students who undergo intimate partner violence, and to identify complementary intervention programs to support students who may experience PTSD. During its implementation, this study suggests initiating rehabilitative measures for the victims who abuse alcohol and illegal substances

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