Depression, Thwarted Belongingness, Perceived Burdensomeness, and Suicidal Behavior among Undergraduate Students: A Quantitative Study in Malaysia

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Abstract
Among Malaysian undergraduate students, little is known about the risk factors associated with suicidal behavior. The aim of this study was to examine the relationships among undergraduate students between depression, burdensomeness, thwarted ownership, and suicidal behavior. The study surveyed 120 undergraduate students in Peninsular Malaysia from a public university. Pearson's Correlation and multiple linear regression were used to evaluate the data. The result shows that around 20% of the participants tend to engage in suicidal behavior. Generally, there is a significant correlation between depression [$r(119) = .623$, $p<.50$], thwarted belongingness [$r(119) = .397$, $p<.50$], perceived burdensomeness [$r(119) = .363$, $p<.50$], and interpersonal needs [$r(119) = .443$, $p<.50$], with suicidal behavior among the participants. Among the three variables, only depression significantly predicts suicidal behavior ($R^2= .40$, $F(3, 115) = 25.855$, $p< .05$) with the explanation of 38.7%. These findings convey an important message to the student affairs section and counselling unit to conduct periodical mental health screening. Special attention should be given to curtail the role of depression as the catalyst in suicide actions.
Keywords: Suicidal Behavior, Undergraduate Students, the Interpersonal Theory of Suicide, Depression.

Introduction
Growing numbers of suicides have been brought to the forefront of a global public health concern as it maintains its position as the second most frequent cause of death among young adults, including university students (Centers for Disease Control and Prevention, 2016). University students facing stressful life events at campuses are often cited for having suicidal thoughts (Field et al., 2009). In previous studies, this tendency of suicidal ideation manifests

during the phase before a suicide act is carried out by a suicidal individual (Chu et al., 2016). A student cohort study estimated that suicide occurs at a rate ranging from 4.25 to 6.5 for every 100,000 students (Schwartz, 2011). Meanwhile, in another student cohort study in three American universities, suicidal ideation was just under 10%. Specifically, American college students, who experience severe depression and hopelessness, against the backdrop of a lower quality of life, were more inclined to resign towards suicidal ideation (Farabaugh et al., 2012). In another study among American undergraduate students, 11.1% (n=81) were found to entertain suicidal thoughts as recent as during the past four weeks, while 16.5% reported at least one suicide attempt or episode in their lifetime (Garlow et al., 2008). In Japan, Supartini et al. (2016) reported that 5.8% (n=115) of first-year university students endorsed suicidal ideation. In yet another study in a Japanese university, 55.2% (n=106) were reported to have experienced suicidal ideation at least once in their lifetime, while 44.8% (n=86) had never experienced suicidal ideation (Sugioka & Wakabayashi, 2012). It was reported that the high suicide rate among Japanese youth was due to the high-stakes university entrance exam that high school students had to take before entering their chosen university (Chu et al., 2017).

In Malaysia, rising youth suicide rates have become a significant concern. In 2007, the Malaysian Psychiatric Association (2007) reported that seven people attempt suicide daily and that the majority are young adults. The Youth Behaviour Risk Factor Surveillance Survey (YBRFSS) revealed that 7.8% of Malaysian adolescents resign towards suicidal ideation (Ministry of Health Malaysia, 2011). Meanwhile, the National Health and Morbidity Survey IV (2011) reported that 6.3% of the respondents had had suicidal ideation. The survey also highlighted that the highest risk cohort with suicidal thoughts is 16 to 19 years old, followed by 20 to 24 years. A recent study (Jailani et al., 2020), shows that there are major related problems faced by the students at the pre-university level. Although most studies in Malaysia have reported the prevalence of suicidal ideation, there remains an empirical research gap in studying risk factors that may explain the association.

Depression remains the strongest risk factor for suicide, and extant studies have established the link between the two (Dvorak et al., 2013; Khoshbooii et al., 2011; Al Horany, et al., 2011). It is widely known that suicidal thoughts are included in the clinical diagnostic standards for depression (American Psychiatric Association, 2020). Until recently, the focus of studies has moved from depression to investigate other risk factors that may heighten the risk of suicide. Consequently, several newly developed models, with underpinnings of depression, have proposed mental and social factors as predictors of suicidal thoughts and behavior (Chu et al., 2016). New dimensions such as desperation and depression (Mann et al., 2005) and most recently, interpersonal beliefs which were constructed within Joiner's interpersonal theory of suicide (ITS; Van Orden et al., 2010), which describes individuals who carry out near-fatal or fatal suicidal behavior, with the desire and capability for suicide (Van Orden et al., 2010). This model posits that the paired state of hopelessness, from feeling thwarted belongingness and perceived burdensomeness, seeds the desire for suicide (suicidal ideation).

Given the fact that university students are within the age range susceptible of having high suicide thoughts and depression (Ohayon & Roberts, 2014), the association may impede learning and acquisition of knowledge as well as socialization that is part of the university life. Depressed people tend to shy away from social contact with others, including their family and friends. Thus, preventing them from seeking the help they need (Jailani et al., 2020). If the

situation persists throughout their study years, they may be unable to excel academically or develop their community and leadership skills as future leaders (Rami et al., 2019).

Empirical support for the ITS continues to grow (Chu et al., 2017; Ma et al., 2016). However, a lack of studies directly tests ITS central hypothesis that contains thwarted belongingness, perceived burdensomeness, and depression as predictors of suicidal behavior. Therefore, to better understand the relationship between diverse risk factors and suicidal ideation, employing ITS can potentially lead to comprehensive insights. Going forward, this study aims to investigate the relationship between depression, ITS beliefs about thwarted belongingness and burdensomeness, and suicidal behavior among undergraduate students in the Malaysian context.

Theoretical Background and Hypothesis Testing
The present study aims to scrutinize the relations between depressions, thwarted belongingness, perceived burdensomeness, and suicidal behaviors. Depression occurs when an individual's negative emotions entirely reside in his mental state. Clinically, a person is diagnosed as depressed only when depression symptoms are present for a fortnight or longer (American Psychiatric Association, 2020). According to the National Institute of Mental Health, depression is defined as a kind of mood disorder. It can affect the emotional, cognitive, and daily activities of the sufferer. Glasheen et al. remark that major depression is "one of the strongest known risk factors for suicide," and approximately 8.5 million adults have entertained the idea of taking their lives in the past year. It was only recently that the ITS was developed to provide a theoretical model of suicidal behavior (Joiner Jr et al., 2009; Van Orden et al., 2010). With ITS integration of diverse risk factors, it can predict those who will develop suicide ideation and attempt a suicide act.

Further, the theory provides better insights into the interaction between various suicide risk factors, thus pinpointing prevention and intervention efforts. The ITS stipulates that the causality of suicidal desire stems from the simultaneous presence of risk factors, in particular thwarted belongingness, perceived burdensomeness, and hopelessness – a sense that their situation "will never change" (Joiner et al., 2009; Van Orden et al., 2010). One of the hypotheses put forth is that the solitary experience of either perceived burdensomeness or thwarted belongingness only elicits passive suicidal thoughts. However, the interaction of both variables, coupled with a particular stagnant and unchanging view (i.e., hopelessness), is the critical trigger that will activate suicidal desire (Ma et al., 2016).

Thwarted belongingness is described as a sense of alienation from loved ones, peers, and/or other significant social circles. It comprises two components; loneliness (i.e., "I feel separated from others") and lack of mutual and requited care (i.e., "I have no one to turn to and I do not support others"). This dynamic cognitive-affective state is influenced by inter- and intrapersonal factors such as domestic conflicts, solitary living, lack of social support, and the tendency to interpret others' response as a rejection (Van Orden et al., 2010).

Perceived burdensomeness is when one perceives his/her existence as a burden to loved ones, peers, and/or society. This dimension consists of two components; self-hate (i.e., "I hate myself") and a sense of liability (i.e., "my death is worth more than my life to others"). Thus, based on the ITS, individuals who experience high levels of the two constructs - thwarted belongingness and perceived burdensomeness combined - are predicted to be at the highest risk for suicidal behavior, having both the desire for and capability to make a suicide attempt. Acknowledging this and the related literature, this study used the ITS variables alongside depression variables to explain suicide behavior among Malaysian

undergraduate students to develop the hypotheses.

Depression

Ohayon and Roberts (2014) support the observation of surging rates of depression among young adults. Botswana et al. (2014) investigated the link between depression and suicide ideation among 122 undergraduates aged 18 to 28. They found a significant correlation between the two variables. The outcome of this study also indicates that 29 of the 122 participants reported severe depression. Of the 29 respondents, 96.6% reported having suicidal thoughts, which means that those who have severe depression have suicidal thoughts in their minds concurrently. It must be noted that suicidal ideation is at an extreme level among depressed participants, but it is often present among groups with minimal and mild depression.

In 2015, a group of researchers focused on 253 Italian high school adolescents to assess the relationship between hopelessness, depression, subjective happiness, cognitive vulnerability, and suicidal behaviors (Pompili et al., 2015). The statistical results showed that among Italian youth, lifetime suicide ideation is around 9.1% while lifetime suicide attempt is 1.6%. The study also reported severe depression (10.7%) and significant hopelessness (17.4%) in the sample (Pompili et al., 2015). In Malaysia, Choon et al. (2015) examined the association between depression, negative thoughts, and suicidal behavior among secondary school students. This study revealed that depression is positively correlated with suicidal behavior and also negative thoughts.

Furthermore, in the context of the university campus, reviews of 36 different counselling centers indicate a surge in negative emotions like anxiety, fear, anger, and harmful tendencies. Vawda (2014) further argues that depression is one of the most impactful risk factors in suicidal behavior among college students. College students' increased suicidal behavior and depression rates, which correspond with increased risk factors, demonstrate strong correlational relationships. These relationships are possibly developed from stressful life events on campus, but it can also result from an individual being prone to develop depression. Based on previous research findings, we tested the following hypothesis:
H_1: There is a positive association between depression and suicidal behaviors.

Perceived Burdensomeness and Thwarted Belongingness

In recent cohort studies, substantial evidence links perceived burdensomeness with college students who possess suicidal ideation (Lamis & Lester, 2013), patients suffering from chronic pain (Kanzler et al., 2012), and outpatients diagnosed with psychiatric illness (Garza & Pettit, 2010). In other studies, the variable of thwarted belongingness has been linked to two cohorts; prison inmates with suicidal ideation (Simlot et al., 2013) and methadone patients who reported lifetime suicide attempts (Conner et al., 2007). Several other studies also found that perceived burdensomeness and thwarted belongingness worked in synergy to become a predictor of suicidal thoughts (Joiner Jr et al., 2009). Finally, perceived burdensomeness and thwarted belongingness were recurring themes found by researchers when examining suicide notes (Cox et al., 2013).

Thwarted belongingness builds suicidal thoughts in experiencing loneliness and the lack of trust in interpersonal associations (Van Orden et al., 2010). Moreover, as Joiner (2007) suggested, recurring life events that are stressful can reduce an individual's sense of connectedness with others, thus increasing thwarted belongingness. As another research suggested, thwarted belongingness is a significant predictor of suicidal desire among foster-

care youth (Timmons et al., 2011), and this is also true in predicting depression among college undergraduates (Van Orden et al., 2008). Furthermore, a cross-sectional design study by Davidson et al. (2011) found significant evidence consistent with this hypothesis tested among random undergraduates. Although depression is positively linked to perceived burdensomeness and thwarted belongingness, only the depression-perceived burdensomeness link is associated with suicidal ideation. In China, Zhang et al. (2013) tested the interpersonal theory's validity and subsequently found that thwarted belongingness, perceived burdensomeness, and the acquired ability to commit suicide (the three main variables under the ITS) obtained gender differences results. These results indicated that the three variables successfully predict suicidal ideation in women.

In a study of 185 inpatient veterans, Monteith et al. (2013) adapted ITS's three principal variables to examine their predictability towards suicidal behavior. The researchers found that thwarted belongingness is a significant predictor when it interacts with perceived burdensomeness. Besides, Mandracchia and Smith (2015) reported the strong predictors of depression and hopelessness towards suicidal ideation among 399 prisoners with an average age of 34.94 years. Another finding from this study reveals that suicidal ideation's prediction becomes the strongest when the paired presence of thwarted belongingness and perceived burdensomeness are at a high level. A cohort study by van Spijker et al. (2015) established the validity of ITS among online groups, and the results suggested that perceived burdensomeness and thwarted belonging are strongly correlated with depression and anxiety. Finally, another research on the cohort of 165 university students aged between 19 and 25 found that thwarted belonging and perceived burdensomeness positively predicted suicidal desire. The findings also indicate that regardless of the degree of thwarted belongingness, perceived burdensomeness remains significantly correlated with suicidal ideation (Servaty-Seib et al., 2016). Therefore, based on the findings of these studies, the next hypotheses were verified:

H_2: There is a positive association between perceived burdensomeness and suicide behaviors.
H_3: There is a positive association between thwarted belongingness and suicide behaviors.
H_4: There is a significant contribution to depression, thwarted belonging, and perceived burdensomeness in predicting suicide behaviors.

Materials and Methods
Population and Procedure
This study selected a public university in Peninsular Malaysia. The university has a population of 13,979 undergraduate students and 16 faculties. This population includes both local and foreign undergraduate students. However, this study only focuses on the participation of first-year, local undergraduate students.

To obtain a sample from the population, stratified sampling was chosen and carried out in this study. The population was divided according to strata so that every student from each stratum would have an equal chance to be selected as participants (Hassan & Ghazali, 2012). Since this study's population is first-year, local undergraduates, the strata were categorized according to faculties. Due to stratified sampling, the first step was to select one of the faculties. This selection was made by placing the numbers 1 to 16 in a box, and one of the numbers was drawn. The first number drawn was Number 6, which represented the Faculty of Economics and Management (FEM). There are three programs under this faculty, namely Bachelor of Economics (BE), Bachelor of Accountancy (BA), and Bachelor of Business Administration (BBA). The researchers proceeded to obtain the student name list of each

program, including their lecture schedule from the academic office of FEM. Each program's varied student population required the researchers to calculate the number of participants to be recruited.

To determine the sample size, Bartlett et al (2001) table was employed. Based on the criteria, the sample size needed for a population of 5,000 is 119. This number is for the margin error of .03 and alpha level of .05 (Bartlett et al., 2001). However, according to Salkind (1997), to cover the number of loss of questionnaires or non-responsive participants, it was suggested that the sample size should increase by 40 to 50 percent (Kotze & Kleynhans, 2013).

Instruments

This study used three instruments, namely, SBQ-R, CES-D, and INQ. The Suicide Behaviors Questionnaire-Revised (SBQ-R), created by Osman et al. (2001), has four items that measure suicidality from diverse dimensions with different scales. Item 1 measures the lifetime suicidal thought and suicide attempt with a scale ranging from 1 (never) to 4 (I have attempted to kill myself, and hoped to die). Item 2 prompts the frequency of individuals having ideas of suicide in the past year. The scale for this item is ranged from 1 (never) to 5 (very often). The threat of suicide attempts is the dimension measured in item 3. The scale is ranged from 1 (no) to 3 (yes, more than once, and wanted to do it). Lastly, item 4 assesses the future possibility of attempting suicide, and the scale ranges from 0 (never) to 6 (very likely). The researchers suggest that score of ≥ 7 as the cut-off point for nonclinical samples, while for clinical samples, the cut-off point is ≥ 8 (Osman et al., 2001). The higher the score, the higher is the risk of the individual displaying suicidal behavior.

The Center of Epidemiological Studies Depression Scale (CES-D), obtained for self-reporting, measures depressive symptoms across a population (Radlof, 1977). CES-D has 20 items that explore the level of depression during the past month. The participants are required to select a scale ranging from 0 to 3. The scale is represented by 0 = Rarely or none of the time (less than one day), 1= Some or a little of the time (1 to 2 days), 2 = Occasionally or a moderate amount of time (3 to 4 days), and 3 = Most or all of the time (5 to 7 days). The instrument has four items that require reversed scoring. Radloff (1977) suggests that the cut-off point for this instrument is 16. Therefore, a participant with a 16 and above score is considered to suffer from depression; the higher the score, the more severe are the symptoms of depression.

The Interpersonal Needs Questionnaire (INQ), developed by Van Orden et al. (2012), measures the perceived burdensomeness and thwarted belongingness. The 15-item INQ has a Likert scale ranging from 1 (Not at all true for me) to 7 (Very real for me). Items 1 to 6 measure perceived burdensomeness, whereby items 7 to 15 measure thwarted belongingness. There is a reversed score for items 7, 8, 10, 13, 14, and 15. The range of the total score for this instrument is from 15 to 105 marks.

Pilot Test

As INQ has yet to be adapted in any Malaysian studies, the researchers conducted a pilot test to determine INQ's reliability among a group of Malaysian university students. Simultaneously, SBQ-R and CES-D were also included in the pilot test to seek reliability in the said population. A total of 30 respondents were recruited for this pilot study. Among the 30 respondents, 5 are male (16.7%), and 25 are female (83.3%), while 50% are Malay, 43.3% are Chinese, and 6.7% are Indian. The participants are aged from 18 to 25 years, with a mean of 22 years.

As the pilot test's principal aim was to seek the reliability of the three instruments in UPM's said population, the Statistical Package for the Social Science (SPSS) version 24 was employed to obtain the Cronbach's alpha of the three instruments. Fraenkel et al. (2012) explained that there are few ways to prove the reliability; the alpha coefficient is one way under the internal consistency to show the instrument's reliability. The results showed that three of the instruments were highly consistent. SBQ-R obtained the coefficient alpha of .70, while CES-D and INQ both obtained the high consistency of which CES-D scored .88 and INQ attained .90. Therefore, all instruments can be adapted in this study. As no item is added or reduced, thus all items are maintained.

Data Analysis

This study used SPSS to analyze the data. The Pearson Correlations' 2-tailed test identified the relationship between the variables and predicted whether the relationship was positively or negatively interrelated. Multiple regression was also applied to determine which variables, among depression, impaired belonging, and perceived burdensomeness, would better predict suicidal behavior among Malaysian undergraduates.

Results and Discussion
Descriptive Results

From 120 questionnaires only one was not returned. Hence the total sample is n=119. Descriptive results show the frequency and percentage of gender, age, ethnicity, and study program, respectively. There were 25 males (21%) and 94 females (79%) who participated where most were Malay (74.8%), followed by Chinese (13.4%), Indian (10.1%), and other ethnicities (1.7%). As for the age distribution, the mean age is 21.56. The majority of the participants were 22 years old (32.8%), 20 years old (26.1%), and 23 years old (25.2%). The age range of the participants is 18 to 26 years. Enrolled in three different programs as mentioned before, 37.8% of the participants are from the BE program, 27.5% are from the BA program, and 34.7% are from the BBA program, respectively. The unreturned questionnaire was from the BE program; thus, the return rate is 99%.

The descriptive statistics results expose that 20.2% of the participants engaged in suicidal behavior, which is still tentatively lower than those who do not. This result is consistent with similar research investigating suicidal behavior among undergraduate students, whereby the percentage is also low (Barrios et al., 2000; Taliaferro et al., 2009; Wang et al., 2014).

Besides, the average score of suicidal behavior is 4.32. According to Osman et al. (2001), those who score 7 and above only are considered at high risk of engaging in suicidal behavior. Thus, the findings from this study reveal that Malaysian undergraduate students are not in the high-risk group. Nevertheless, the reason behind this lower score remains uncertain if it is due to individual religious practices or due to negative perceptions from society. For example, in Islam, suicide is strictly prohibited (Abdul-Khaaliq, 2010). As most of the participants are Malays who practice Islam, this might explain why the score in suicidal behavior is comparatively low.

Additionally, individuals may also worry about others' biases and negative perceptions if they admit to suicidal behavior. Due to these religious and cultural backgrounds, the participants may hesitate to reveal the truth. Although the mean result shows that this population is not at a high risk of engaging in suicidal behavior, some of the participants still

score higher than 7. Thus, the risk of Malaysian undergraduate students engaged in suicidal behavior is still an issue that should be noted by the university's management.

The finding reveals that more than half of the respondents (62.20%) obtained a score higher than 16. The mean score of depression in this study is 20.34, which is slightly higher than the cut-off point used to differentiate between depression and non-depression (Radloff, 1977). In other words, this undergraduate population has symptoms of depression. This analyzed data is similar to the findings from researches done by Iqbal et al. (2015), who found that more than 50% of the undergraduate cohort experience depression.

In this study, the depression level of Malaysian undergraduate students is considered higher than the levels reported in other researches (Farabaugh et al., 2012; Korb & Plattner, 2014). One explanation could be the questionnaire distribution period, held during week 7 of the semester that coincides with the mid-term test season. As CES-D serves to measure the depression symptoms during the past week, it captured the students' stress of the mid-term test. The occurrence of this mid-term test might cause the participants to perceive a higher level of stress and report more depression symptoms than usual. To prepare for the mid-term test, the participants might study until late at night, causing sleep deprivation. At the same time, they might also worry about their performance in the test. This could explain why the depression level appears so high among Malaysian undergraduate students.

As compared to other studies, the mean score of thwarted belongingness in this study is comparatively higher than what the other researches had reported (Chu et al., 2017; Servaty-Seib et al., 2016). One of the possible reasons for this phenomenon is the location of this study. The two types of researches were carried out in western countries, whereas this study was conducted in Malaysia. As compared to western culture, Asian countries practice the collectivist culture, which emphasizes group work or social life in a group, whereas western countries practice the individualist culture (Cox et al., 2013). Hence, the majority of Asians prefer group-based activities. The dimension of thwarted belongingness measures an individual's social interaction with others. This may lead Asian undergraduate students to easily experience thwarted belongingness, especially when they are not involved in social activities with their peers.

The finding of this study reveals that most of the participants (68.90%) are in the low-level category (score 6 to 18), with a mean score of 12, which is consistent with Servaty-Seib et al. (2016). The low score in perceived burdensomeness indicates that most participants do not feel like they are a burden to other people. This phenomenon may be because the participants live far apart from their family members, yet they can still connect with them via phone. The support from family members and their strong bond with one another may prevent them from feeling a burden to other people, especially significant ones. Therefore, it is safe to anticipate that Malaysian undergraduate students can face issues and challenges, despite sometimes not frequently requiring help from others. Overall, Malaysian undergraduate students do experience perceived burdensomeness, albeit at a less severe level. This result increases the understanding of the level of perceived burdensomeness among Malaysian undergraduate students.

Hypotheses Testing
Before the hypotheses are examined, it is essential to conduct the preliminary data analysis to examine the normality variables. Skewness and kurtosis are employed to examine the normality of the variables. The asymmetry of the data distribution is measured by skewness, while the peakness of the data distribution is assessed by kurtosis (Kim, 2013). According to

Kim (2013), the acceptable range of skewness is between -2 and +2, whereas the acceptable range for kurtosis is between -7 and +7. This study presents the skewness and kurtosis of the four measured variables. First, suicidal behavior has a skewness of 1.923 (SE= .222) and kurtosis of 3.570 (SE= .44). Subsequently, depression has .252 (SE= .222) skewness and -.877 (SE= .440) kurtosis while the skewness of thwarted belongingness is -.369 (SE= .222) with the kurtosis of -.349 (SE= .440). Finally, perceived burdensomeness has the skewness of .698 (SE= .222) with the kurtosis value of -.292 (SE= .440). The skewness range is between -.369 to 1.923, which is within the acceptable range of ± 2. Whereas for the kurtosis, the range of the variables between -.877 to 3.570 is within the acceptable range of ± 7. Therefore, the data is all normally distributed.

The Pearson correlation is executed to test the association between depression, perceived burdensomeness, thwarted belongingness, and suicidal behavior among undergraduate students. These results provide support for Hypothesis 1, 2, and 3 (see Table 1). The results indicate a moderate and positive correlation between depression and suicidal behavior as the relationship is statistically significant, with the value of r (119) = .623, $p<$ .05 (two-tailed). This means that depression levels are good indicators of suicidal behavior tendencies. This result is supported by previous studies (Bagalkot et al., 2014; Choon et al., 2015; Vawda, 2014).

Besides, the results also reveal a weak but positive correlation between thwarted belongingness and suicidal behavior as the relationship is statistically significant with the value of r (119) = .397, $p<$ .05 (two-tailed). This finding is aligned with previous researches (Chu et al., 2017; Cole-King et al., 2013; Fink-Miller & Nestler, 2018; Zhang et al., 2013). This is also supported by the ITS, which indicated that when the individual's desire to connect or interact with others has failed to be satisfied, the likelihood of engaging in suicidal behavior increases (Van Orden et al., 2010). Furthermore, the results indicate a weak but positive correlation between perceived burdensomeness and suicidal behavior, and the link is statistically significant of the value of r (119) = .363, $p<$ .05 (two-tailed). This result supports Van Orden et al.'s (2010) ITS, which explains how perceived burdensomeness is one of the risk factors that potentially trigger suicidal behavior, which is similar to past studies (Batterham et al., 2015; Cole-King et al., 2013; Mandracchia & Smith, 2015).

Table1
Pearson correlation coefficient between independent variables and suicidal behavior.

No.	Variable	Pearson correlation with suicidal behavior	Sig.
1	Depression	.623**	.000
2	Thwarted Belongingness	.397**	.000
3	Perceived Burdensomeness	.363**	.000

Note.** Association is significant at the 0.05 level (2-tailed).

Multiple regression is performed to determine the independent variables (depression, thwarted belongingness, and perceived burdensomeness) towards the dependent variable (suicidal behavior). The Multiple regression equation is as follow:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_p Xp + \in$$

Where
Y=dependent variable
x_i=explanatory variables
β_0=y-intercept (constant)

$βp$=slope coefficients for each explanatory variable
$ε$=the model's error term (also known as the residuals).
Table 2 shows the coefficient table of the predictor results.

Table 2
Multiple linear regression results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.926	.550		1.685	.095
Depression	.132	.021	.601	6.304	.000
Thwarted belongingness	.031	.019	.138	1.620	.108
Perceived burdensomeness	-.022	.028	-.073	-.773	.441

Note. Dependent Variable: Suicidal behavior.

Based on Table 2, the results of the regression reveal that the three predictors explained 38.7% of the variance (R^2= .40, F (3, 115) = 25.855, p< .05). However, Table 2shows that the depression variable significantly predicts suicidal behavior (β = .132, p<. 05). Though, both thwarted belongingness (β = .031, p>.05) and perceived burdensomeness (β = -.022, p>.05) do not significantly predict suicidal behavior. Overall, the hypothesis is successfully but partially accepted. This finding is in line with the previous cohort studies done, such as the undergraduate students (Singh & Brown, 2014), adolescents (Ibrahim et al., 2014; Vawda, 2014), and the community (Bagalkot et al., 2014). These depressed individuals experience more negative emotions and are overwhelmed in their current situation (Ibrahim et al., 2014). In turn, this makes them feel isolated or withdrawn and induce self-blame (Behera et al., 2014).

However, both thwarted belongingness and perceived burdensomeness did not qualify as predictive variables. For thwarted belongingness, most research reveals similar results, which indicate thwarted belongingness is not a significant predictor. This research finding is consistent with research conducted among the cohorts of undergraduates (Cole-King et al., 2013), veterans (Monteith et al., 2013), and male prisoners (Mandracchia & Smith, 2015). In contrast, most studies expose perceived burdensomeness as a significant, robust predictor (Cole-King et al., 2013; Fink-Miller & Nestler, 2018; Monteith et al., 2013; Servaty-Seib et al., 2016), which is in contrast with the result of this study. One potential reason is the culture practiced in Malaysia. Collectivist is an Asian culture where working in teams and supporting each other is considered standard practice (Noordin & Jusoff, 2010; Darwish & Abdeldayem, 2019). Consequently, perceived burdensomeness cannot quickly impact undergraduate students as they are used to collaborating with others. This variable may not be sufficient for predicting suicidal behavior among Malaysian undergraduate students.

Conclusion
This study extends previous research and tests the direct relationship between depression, thwarted belongingness, perceived burdensomeness, and suicidal behavior among undergraduate students. The results revealed that almost 20% of undergraduate students tend to engage in suicidal behavior. Furthermore, there is a significant and positive relationship between the three variables and suicidal behavior among undergraduate students. All of the relationships stated are significant and positive. Moreover, depression is

the only variable that can predict suicidal behavior. Given this, prevention and awareness programs are one of the necessary interventions that should be conducted by the student affairs section and counselling unit to maintain the undergraduate students' mental well-being and, at the same time, prevent any unwanted tragedies from happening. New research has shown that the COVID-19 pandemic negatively impacts youths' mental health as suicidal thoughts and attempts, anxiety, and depression are reportedly on the rise (Gunnell et al., 2020). While both the United Nations (UN) and the World Health Organization (WHO) have concentrated mainly on tackling COVID-19 as a physical health issue, much needs to be done to enhance mental health initiatives. This is in line with the inclusion and growing acceptance in mental health studies of suicide prevention as an essential part of the recovery plan (Berman et al., 1991). Thus, future research is needed to help ensure that decision-making across all aspects of health, including youth's mental health, is informed by the best quality data at each pandemic stage.

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References

Abdul-Khaaliq, N. (2010). *Suicide and Islam: A Deeper Perspective*. http://www.ascertainthetruth.com/att/index.php/al-islam/al-islam-andsuicide/131-suicide-and-islam-a-deeper-perspective

Al Horany, A., Hassan, S. A., Baba, M., & Juhari, R. (2011). Efficacy of group cognitive behavioral therapy on depression among Muslim parents of autistic children in Jordan. *Australian Journal of Basic and Applied Sciences, 5*(12), 827-832.

American Psychiatric Association. (2020). *What Is Depression?* https://www.psychiatry.org/patients-families/depression/what-is-depression

Bagalkot, T. R., Park, J.-I., Kim, H.-T., Kim, H.-M., Kim, M. S., Yoon, M.-S., Ko, S.-H., Cho, H.-C., & Chung, Y.-C. (2014). Lifetime prevalence of and risk factors for suicidal ideation and suicide attempts in a Korean community sample. *Psychiatry: Interpersonal and Biological Processes, 77*(4), 360–373. doi:10.1521/psyc.2014.77.4.360

Barrios, L. C., Everett, S. A., Simon, T. R., & Brener, N. D. (2000). Suicide ideation among US college students associations with other injury risk behaviors. *Journal of American College Health, 48*(5), 229–233. doi: 10.1080/07448480009599309

Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organization research; determining appropriate sample size in survey information technology. *Learning and Performance Journal, 19*(1), 43–50. doi:10.5032/jae.2002.03001

Batterham, P. J., Ftanou, M., Pirkis, J., Brewer, J. L., Mackinnon, A. J., Beautrais, A., Fairweather-Schmidt, A. K., & Christensen, H. (2015). A systematic review and evaluation of measures for suicidal ideation and behaviors in population-based research. *Psychological Assessment, 27*(2), 501 –512. doi: 10.1037/pas0000053

Behera, C., Karthik, K., Singh, H., Deepak, P., Jhamad, A. R., & Bhardwaj, D. N. (2014). Suicide pact by drowning with bound wrists: A case of medico-legal importance. *Medico-Legal Journal, 82*(1), 29–31. doi: 10.1177/0025817213508676

Berman, A. L., Jobes, D. A., & Silverman, M. M. (1991). *Adolescent suicide: Assessment and intervention*. American Psychological Association Washington, DC.

Centers for Disease Control and Prevention. (2016). *Ten leading causes of death and injury*. National Center for Injury Prevention and Control, CDC.

http://www.cdc.gov/injury/images/lc-charts/leading_causes_of_death_age_group_2014_1050w760h.gif

Choon, M. W., Abu Talib, M., Yaacob, S. N., Awang, H., Tan, J. P., Hassan, S., & Ismail, Z. (2015). Negative automatic thoughts as a mediator of the relationship between depression and suicidal behaviour in an at-risk sample of Malaysian adolescents. *Child and Adolescent Mental Health*, *20*(2), 89–93. doi: 10.1111/camh.12075

Chu, C., Buchman-Schmitt, J. M., Moberg, F. B., & Joiner, T. E. (2016). Thwarted belongingness mediates the relationship between fear of negative evaluation and suicidal ideation. *Cognitive Therapy and Research*, *40*(1), 31–37. doi: 10.1007/s10608-015-9715-3

Chu, C., Buchman-Schmitt, J. M., Stanley, I. H., Hom, M. A., Tucker, R. P., Hagan, C. R., Rogers, M. L., Podlogar, M. C., Chiurliza, B., & Ringer, F. B. (2017). The interpersonal theory of suicide: A systematic review and meta-analysis of a decade of cross-national research. *Psychological Bulletin*, *143*(12), 1313–1345. doi: 10.1037/bul0000123

Cole-King, A., Green, G., Gask, L., Hines, K., & Platt, S. (2013). Suicide mitigation: A compassionate approach to suicide prevention. *Advances in Psychiatric Treatment*, *19*(4), 276–283. doi: 10.1192/apt.bp.110.008763

Conner, K. R., Britton, P. C., Sworts, L. M., & Joiner, J. T. E. (2007). Suicide attempts among individuals with opiate dependence: The critical role of belonging. *Addictive Behaviors*, *32*(7), 1395–1404. doi: 10.1016/j.addbeh.2006.09.012

Cox, G. R., Owens, C., Robinson, J., Nicholas, A., Lockley, A., Williamson, M., Cheung, Y. T. D., & Pirkis, J. (2013). Interventions to reduce suicides at suicide hotspots: A systematic review. *BMC Public Health*, *13*(1), 214–231. doi: 10.1186/1471-2458-13-214.

Darwish, S., & Abdeldayem, M. M. (2019). Risk Management and Business Ethics: Relations and Impacts in the GCC. *International Journal of Civil Engineering and Technology*, *10*(10), 489-504.

Davidson, C. L., Wingate, L. R., Grant, D. M., Judah, M. R., & Mills, A. C. (2011). Interpersonal suicide risk and ideation: The influence of depression and social anxiety. *Journal of Social and Clinical Psychology*, *30*(8), 842–855. doi: 10.1521/jscp.2011.30.8.842

Dvorak, R. D., Lamis, D. A., & Malone, P. S. (2013). Alcohol use, depressive symptoms, and impulsivity as risk factors for suicide proneness among college students. *Journal of Affective Disorders*, *149*(1–3), 326–334. doi: 10.1016/j.jad.2013.01.046

Farabaugh, A., Bitran, S., Nyer, M., Holt, D. J., Pedrelli, P., Shyu, I., Hollon, S. D., Zisook, S., Baer, L., & Busse, W. (2012). Depression and suicidal ideation in college students. *Psychopathology*, *45*(4), 228–234. doi: 10.1159/000331598

Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2009). Breakup distress in university students. *Adolescence*, *44*(176), 705–727. doi: 10.1037/t66170-000

Fink-Miller, E. L., & Nestler, L. M. (2018). Suicide in physicians and veterinarians: Risk factors and theories. *Current Opinion in Psychology*, *22*, 23–26. doi: 10.1016/j.copsyc.2017.07.019

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). McGraw-Hill.

Garlow, S. J., Rosenberg, J., Moore, J. D., Haas, A. P., Koestner, B., Hendin, H., & Nemeroff, C. B. (2008). Depression, desperation, and suicidal ideation in college students: Results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depression and Anxiety*, *25*(6), 482–488. doi: 10.1002/da.20321

Garza, M. J., & Pettit, J. W. (2010). Perceived burdensomeness, familism, and suicidal ideation among Mexican women: Enhancing understanding of risk and protective factors.

Suicide and Life-Threatening Behavior, *40*(6), 561–573. doi: 10.1521/suli.2010.40.6.561

Gunnell, D., Appleby, L., Arensman, E., Hawton, K., John, A., Kapur, N., Khan, M., O'Connor, R. C., Pirkis, J., & Caine, E. D. (2020). Suicide risk and prevention during the COVID-19 pandemic. *The Lancet Psychiatry*, *7*(6), 468–471. doi: 10.1027/0227-5910/a000731

Hassan, S. A., & Ghazali, R. (2012). *Quick tips fast track conducting quantitative research*. Quty Researcher.

Ibrahim, N., Amit, N., & Suen, M. W. Y. (2014). Psychological factors as predictors of suicidal ideation among adolescents in Malaysia. *PLoS One*, *9*(10), e110670. doi: 10.1371/journal.pone.0110670

Iqbal, S., Gupta, S., & Venkatarao, E. (2015). Stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates. *The Indian Journal of Medical Research*, *141*(3), 354–357. doi:10.4103/0971-5916.156571

Jailani, O., Adli, A. H. T., Amat, M. A. C., Othman, S. M., Deylami, N., & Rahim, N. S. A. (2020). The self-perceived problems among Malaysian pre-university students: Implications for college counselling. *Asian Journal of University Education, 16*(3), 112-124. doi: 10.24191/ajue.v16i3.11075

Joiner, J. T. E., Van Orden, K. A., Witte, T. K., & Rudd, M. D. (2009). *The interpersonal theory of suicide: Guidance for working with suicidal clients.* American Psychological Association. doi:10.1037/11869-000

Joiner, J. T. E., Van Orden, K. A., Witte, T. K., Selby, E. A., Ribeiro, J. D., Lewis, R., & Rudd, M. D. (2009). Main predictions of the interpersonal–psychological theory of suicidal behavior: Empirical tests in two samples of young adults. *Journal of Abnormal Psychology*, *118*(3), 634. doi:10.1037/a0016500

Joiner, T. (2007). *Why people die by suicide*. Harvard University Press.

Kanzler, K. E., Bryan, C. J., McGeary, D. D., & Morrow, C. E. (2012). Suicidal ideation and perceived burdensomeness in patients with chronic pain. *Pain Practice*, *12*(8), 602–609. doi: 10.1111/j.1533-2500.2012.00542.x

Khoshbooii, R., Hassan, S. A. B., Hamzah, M. S. G. B., & Baba, M. B. (2011). Effectiveness of group cognitive behavioral therapy on depression among Iranian women around menopause. *Australian Journal of Basic and Applied Sciences, 5*(11), 991-995.

Kim, H.-Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics*, *38*(1), 52–54. doi: 10.5395/rde.2013.38.1.52

Korb, I., & Plattner, I. E. (2014). Suicide ideation and depression in university students in Botswana. *Journal of Psychology in Africa*, *24*(5), 420–426. doi: 10.1080/14330237.2014.997010

Kotze, M., & Kleynhans, R. (2013). Psychological well-being and resilience as predictors of first-year students' academic performance. *Journal of Psychology in Africa*, *23*(1), 51–59. doi: 10.1080/14330237.2013.10820593

Lamis, D. A., & Lester, D. (2013). Gender differences in risk and protective factors for suicidal ideation among college students. *Journal of College Student Psychotherapy*, *27*(1), 62–77. doi: 10.1080/87568225.2013.739035

Ma, J., Batterham, P. J., Calear, A. L., & Han, J. (2016). A systematic review of the predictions of the Interpersonal–Psychological Theory of Suicidal Behavior. *Clinical Psychology Review*, *46*, 34–45. doi: 10.1016/j.cpr.2016.04.008

Malaysian Psychiatric Association. (2007). *Suicide-It's SOS*. Retrieved on October 25, 2020 from http://www.psychiatry-malaysia.org/ article.php?aid=504

Mandracchia, J. T., & Smith, P. N. (2015). The interpersonal theory of suicide applied to male prisoners. *Suicide and Life-Threatening Behavior*, *45*(3), 293–301. doi: 10.1111/sltb.12132

Mann, J. J., Apter, A., Bertolote, J., Beautrais, A., Currier, D., Haas, A., Hegerl, U., Lonnqvist, J., Malone, K., & Marusic, A. (2005). Suicide prevention strategies: A systematic review. *Jama*, *294*(16), 2064–2074. doi: 10.1001/jama.294.16.2064

Ministry of Health Malaysia. (2011). *National Suicide Registry Malaysia (NSRM) Annual Report for 2009*. NSRM.

Monteith, L. L., Menefee, D. S., Pettit, J. W., Leopoulos, W. L., & Vincent, J. P. (2013). Examining the interpersonal–psychological theory of suicide in an inpatient veteran sample. *Suicide and Life-Threatening Behavior*, *43*(4), 418–428. doi: 10.1111/sltb.12027

National Health and Morbidity Survery. (2011). *National health and morbidity survey 2011 fact sheet* (pp. 1–2). NHMS.

Noordin, F., & Jusoff, K. (2010). Individualism-collectivism and job satisfaction between Malaysia and Australia. *International Journal of Educational Management*, *24*(2), 159–174. doi: 10.1108/09513541011020963

Ohayon, M. M., & Roberts, L. W. (2014). Links between occupational activities and depressive mood in young adult populations. *Journal of Psychiatric Research*, *49*, 10–17.

Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire-Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*, *8*(4), 443–454.

Pompili, M., Venturini, P., Lamis, D. A., Giordano, G., Serafini, G., Murri, M. B., Amore, M., & Girardi, P. (2015). Suicide in stroke survivors: Epidemiology and prevention. *Drugs & Aging*, *32*(1), 21–29.

Radlof, L. S. (1977). The CES-D scale: A self-report depression scali for research in the general population. *Applied Psychological .Mrmuremenr*, *1*, 385–401.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385–401.

Rami, A. M., Simin, H., Abdullah, R., & Ibrahim, A. (2019). Community leader in enhancing rural economic growth in state of Terengganu, Malaysia. *International Journal of Recent Technology and Engineering, 8*(2 Special Issue 11), 680-684.

Salkind, N. J. (1997). *Exploring research* (3rd ed., Vol. 19). Prentice Hall, Inc.

Schwartz, A. J. (2011). Rate, relative risk, and method of suicide by students at 4-year colleges and universities in the United States, 2004–2005 through 2008–2009. *Suicide and Life-Threatening Behavior*, *41*(4), 353–371. doi: 10.1111/j.1943-278x.2011.00034.x

Servaty-Seib, H. L., Lockman, J., Shemwell, D., & Marks, R. L. (2016). International and domestic students, perceived burdensomeness, belongingness, and suicidal ideation. *Suicide and Life-Threatening Behavior*, *46*(2), 141–153.

Simlot, R., McFarland, K., & Lester, D. (2013). Testing Joiner's theory of suicide in jail inmates: An exploratory study. *Psychological Reports*, *112*(1), 100–105.

Singh, K., & Brown, R. J. (2014). Health-related Internet habits and health anxiety in university students. *Anxiety, Stress, & Coping*, *27*(5), 542–554. doi: 10.1080/10615806.2014.888061

Sugioka, M., & Wakabayashi, S. (2012). A basic study on the psycho-education of suicide prevention in university. In *A basic study on the psycho-education of suicide prevention in university* (pp. 9–15). Hiroshima Bunka Gakuen University.

Supartini, A., Honda, T., Basri, N. A., Haeuchi, Y., Chen, S., Ichimiya, A., & Kumagai, S. (2016). The impact of sleep timing, sleep duration, and sleep quality on depressive symptoms and suicidal ideation amongst Japanese freshmen: The EQUSITE study. *Sleep Disorders*, *3*, 1–10.

Taliaferro, L. A., Rienzo, B. A., Pigg, R. M., Miller, M. D., & Dodd, V. J. (2009). Associations between physical activity and reduced rates of hopelessness, depression, and suicidal behavior among college students. *Journal of American College Health*, *57*(4), 427–436. doi: 10.3200/jach.57.4.427-436

Timmons, K. A., Selby, E. A., Lewinsohn, P. M., & Joiner, T. E. (2011). Parental displacement and adolescent suicidality: Exploring the role of failed belonging. *Journal of Clinical Child & Adolescent Psychology*, *40*(6), 807–817.

Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., & Joiner Jr, T. E. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the Interpersonal Needs Questionnaire. *Psychological Assessment*, *24*(1), 197–215.

Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner Jr, T. E. (2010). The interpersonal theory of suicide. *Psychological Review*, *117*(2), 575–600. doi: 10.1037/a0018697

Van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., & Joiner, J. T. E. (2008). Suicidal desire and the capability for suicide: Tests of the interpersonal-psychological theory of suicidal behavior among adults. *Journal of Consulting and Clinical Psychology*, *76*(1), 72–83. doi: 10.1037/0022-006x.76.1.72

Van Spijker, B. A., Calear, A. L., Batterham, P. J., Mackinnon, A. J., Gosling, J. A., Kerkhof, A. J., Solomon, D., & Christensen, H. (2015). Reducing suicidal thoughts in the Australian general population through web-based self-help: Study protocol for a randomized controlled trial. *Trials*, *16*(1), 1–10.

Vawda, N. (2014). The prevalence of suicidal behaviour and associated risk factors in grade 8 learners in Durban. *South African Family Practice*, *56*(1), 37–42. doi: 10.1080/20786204.2014.10844581

Wang, C.-W., Chan, C. L., & Yip, P. S. (2014). Suicide rates in China from 2002 to 2011: An update. *Social Psychiatry and Psychiatric Epidemiology*, *49*(6), 929–941.

Zhang, J., Lester, D., Zhao, S., & Zhou, C. (2013). Suicidal ideation and its correlates: Testing the interpersonal theory of suicide in Chinese students. *Archives of Suicide Research*, *17*(3), 236–241. doi: 10.1080/13811118.2013.805643