

Prevalence and Associated Factors of Depression and Anxiety in Adolescents Residing in Malay-operated Non-government-run Sheltered Homes in Selangor, Malaysia

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ABSTRACT

This study aimed to determine the prevalence of depression, anxiety, and the associated factors among 632 adolescents (age range: 13-17 years, $M_{age} = 14.47$, $SD = 1.32$) staying in sheltered homes in Malaysia. The Malay versions of the Beck Depression Inventory, Beck Anxiety Inventory, Automatic Thoughts Questionnaire, and Rosenberg Self-Esteem Scale were applied. The overall prevalence of mild to severe depression and anxiety in this study was 70.9% and 82.3% respectively, with 64.1% for comorbidity of both symptoms. Specifically, the prevalence rates of minimal, mild, moderate, and severe depressive symptoms were 29.1%, 38.4%, 22.4%, and 10.1% respectively whereas the

prevalence rates of minimal, mild, moderate, and severe anxiety symptoms were 17.7%, 27.7%, 33.2%, and 21.4% respectively. The severity of negative automatic thoughts increased with the severity of depression and anxiety. Age, anxiety, negative automatic thoughts, and self-esteem were significantly associated with depression while depression, negative automatic thought, and anger were significantly associated with anxiety.

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The high rates of depression and anxiety among adolescents residing in the sheltered homes indicate the need to identify these at-risk populations and provide trained personnel who can deliver psychiatric and psychological services at sheltered homes.

Keywords: Adolescents, anxiety, depression, Malaysia, orphans, prevalence

INTRODUCTION

Adolescent depression and anxiety are common mental disorders. According to the World Health Organization (WHO), anxiety disorders and depression are the topmost and third commonest mental health issues worldwide (World Health Organization, 2019). Childhood depression and anxiety have an early onset and progressive course of illness with a high chance of relapse in adulthood (Kessler et al., 2012).

Adolescent depression and anxiety can result in functional impairment and increased healthcare costs. Adolescent depression has been shown to increase various morbidity risks that persist throughout adulthood, including academic underachievement (Fergusson & Woodward, 2002; Pelkonen et al., 2008), nicotine dependence, unemployment, drug and substance abuse (Fergusson & Woodward, 2002), unlawful behaviours (Pelkonen et al., 2008), problematic relationships (Pelkonen et al., 2008), and suicidal ideation (Fergusson & Woodward, 2002; Ibrahim et al., 2017; Khasakhala et al., 2012). Likewise, adolescent anxiety was also associated with an exacerbated risk of

various problems in young adulthood such as academic underachievement (Dabkowska & Dabkowska-Mika, 2015; Essau et al., 2014), relapsed anxiety (Benjamin et al., 2013; Dabkowska & Dabkowska-Mika, 2015), depression (Dabkowska & Dabkowska-Mika, 2015; Essau et al., 2014), nicotine, substance, and alcohol dependence (Benjamin et al., 2013; Essau et al., 2014) as well as low income, unemployment, maladjustment, poor coping skills, and chronic stress (Essau et al., 2014).

Compared to the general population, adolescents residing at sheltered homes are potentially at a higher risk of succumbing to depression and anxiety disorders. Children and adolescents from orphanages display more symptoms of depression and anxiety than non-orphans from public/private schools (Cluver et al., 2012). Moreover, non-governmental operated sheltered homes may suffer from poorer conditions and management due to a lack of assistance from the government. Thus, some of the sheltered homes may not comply with physical safety and welfare standards (Sofian et al., 2013).

Prevalence of Depression and Anxiety

The prevalence of depression and anxiety varies considerably across the population due to the heterogeneity of assessment criteria in terms of diagnosis and severity assessment. Different measurement instruments may serve a different purpose in either meeting the formal diagnostic criteria of the disorders or to evaluate the severity of the symptoms. For instance, the prevalence of diagnosed depressive disorders or anxiety

disorders is often lower than the prevalence of the symptoms of depression or anxiety.

Based on a previous review, the worldwide pooled prevalence of depressive disorders in children and adolescents from 27 countries in different regions from 1985 to 2012 was 2.6% (CI 1.7-3.9%) (Polanczyk et al., 2015). In the United States (US), the prevalence of major depressive disorder ranged from 7.5% for past-year prevalence to 11.0% for lifetime prevalence (criterion: CIDI-3¹ and DSM-IV²) (Avenevoli et al., 2015). As for depressive symptoms, cross-sectional studies from different countries showed that the prevalence of depression symptoms among adolescents was 13.4% in Brazil (criterion: BDI-II >13³) (Bulhões et al., 2013), 21% in Uganda (criterion: CDI ≥ 19⁴) (Nalugya-Sserunjogi et al., 2016), 23.9% in China (criterion: CDI ≥ 19⁵) (Wang et al., 2016), and 26.5% in Nairobi (criterion: CDI ≥ 20) (Khasakhala et al., 2012). In Malaysia, the National Health and Morbidity Survey reported that one in five Malaysian adolescents had depressive symptoms (criterion: DASS-21⁶ Malay version ≥ 14) (Institute for Public Health, 2018). Two other cross-sectional studies showed that the prevalence of depressive symptoms among Malaysian secondary school students was 10.3% (criterion: the Malay version of the CDI) (Adlina et al.,

2007) and 32.7% (criterion: the Malay version of the PHQ-9⁷) (Ibrahim et al., 2017).

As for anxiety disorders, 27 countries from different regions recorded a worldwide pooled prevalence of 6.5% (CI 4.7-9.1%) (Polanczyk et al., 2015). The lifetime prevalence of anxiety disorders among adolescents in the US was 25.1%, of which 5.9% had severe anxiety disorders (criterion: CIDI⁸) (Merikangas et al., 2010). In China, the pooled current/lifetime prevalence of generalised anxiety disorders was 24.5/41.1%, with a higher rate among females (Guo et al., 2016). As for anxiety symptoms, locally, the Institute for Public Health (2018) reported that two in five Malaysian adolescents had anxiety symptoms, among which 42.3% were females and 37.1% were males (criterion: DASS-21⁹ Malay version ≥ 14). Another two local research showed the prevalence of anxiety symptoms among Malaysian secondary school students to be 65.9% (criterion: DASS-21¹⁰) (Latiff et al., 2015) and 60% (criterion: DASS-21¹¹) (Ibrahim et al., 2014).

In addition, the prevalence of mental health issues varied with the socioeconomic status of the participants. Specifically, epidemiological studies have shown that the prevalence of adolescent depression and anxiety was higher in sheltered homes than the general population. The prevalence of

¹ Composite International Diagnostic Interview, version 3.0

² Diagnostic and Statistical Manual for Mental Disorders, 4th edition

³ Beck Depression Inventory, 2nd edition

⁴ Child Depression Inventory

⁵ Child Depression Inventory-Chinese version

⁶ Depression, Anxiety, and Stress-21

⁷ Patient Health Questionnaire-9

⁸ Composite International Diagnostic Interview

⁹ Depression, Anxiety, and Stress-21

¹⁰ Depression Anxiety Stress Scale-21

¹¹ Depression Anxiety Stress Scale-21

depression symptoms (criterion HAM-D¹²) among adolescents residing in orphanages in India was 98%, whereby 52%, 23%, 14%, and 9% had mild, moderate, severe, and very severe depression respectively (Ramagopal et al., 2016). By comparison, the prevalence of anxiety symptoms among children in orphanages in Egypt was slightly lower at 45% (criterion: RCMAS¹³) (Fawzy & Fouad, 2010).

Apart from that, comorbidity with other psychiatric disorders is also commonly reported among adolescents. For instance, 40% of the adolescents in the US who had one mental health disorder also had another mental disorder (Merikangas et al., 2010). Anxiety disorders were the commonest disorder that coexists with two or more comorbid psychiatric disorders such as depression (Abbo et al., 2013). In short, depression and anxiety disorders are chronic and disabling conditions common among adolescents globally, particularly those at-risk children and adolescents residing in sheltered homes. Worse still, depression and anxiety often exist as a comorbidity of each other or other psychiatric disorders.

Factors Associated with Depression and Anxiety

Engel's (1977) biopsychosocial model is still relevant in today's medical research and practices. An updated version was published by Engel (1980) to delineate the development of mental illnesses through the interaction of biological factors (such as, genetic, neurobiochemical), psychological factors

(for example, mood), and social factors (for instance, socioeconomic, cultural, familial). Evidence abounds on the contribution of biopsychosocial factors towards the development of adolescent depression (Clark et al., 2012) and adolescent anxiety (Beidel & Alfano, 2011).

As for sociodemographic variables, several studies reported a sharp increase in the prevalence of depression during older adolescence and early adulthood (Hankin et al., 2015; Khasakhala et al., 2012). However, the exact relationship between age and depression has been inconsistent. Age was not associated with depression in adolescence in some studies (Mohammadzadeh et al., 2018; Nalugya-Sserunjogi et al., 2016) whereas a contrasting result was reported in another study (Khasakhala et al., 2012). Previously published evidence also showed that gender was associated with depression in adolescents (Derdikman-Eiron et al., 2011; Ibrahim et al., 2017; Khasakhala et al., 2012; Mohammadzadeh et al., 2018), especially in females (Fanaj et al., 2015; Pelkonen et al., 2008). Female adolescents were more likely to be depressed than male adolescents (Ibrahim et al., 2017; Khasakhala et al., 2012; McGuinness et al., 2012; Mohammadzadeh et al., 2018). Lastly, Mohammadzadeh et al. (2018) reported that orphaned status was not associated with depression among adolescents residing in sheltered homes in Malaysia.

The prevalence of anxiety was found to be gradually decreasing from early to middle or late adolescence in a study (Allan et al., 2014). However, the opposite finding was reported in another study (Van

¹² Hamilton Depression Rating Scale

¹³ Revised Children's Manifest Anxiety Scale

Oort et al., 2009). Furthermore, several studies showed that anxiety symptoms were more prevalent in younger than older adolescents (Ibrahim et al., 2014; Soenen et al., 2014). This was in contrast with the findings of Mohammadzadeh et al. (2018). Therefore, the relationship between age and anxiety is inconsistent. Whilst age was not associated with anxiety (Fanaj et al., 2015), another study showed contrary findings (Mohammadzadeh et al., 2018). Similarly, the evidence on the association between gender and anxiety in adolescents was also unclear. Gender was associated with anxiety in adolescents (Derdikman-Eiron et al., 2011) but not in other studies (Fanaj et al., 2015; Mohammadzadeh et al., 2018). Female adolescents have been shown to be more anxious than their male counterparts in two studies (Soenen et al., 2014; Van Oort et al., 2009) but it was the opposite finding in the other studies (Alexander et al., 2013; Mohammadzadeh et al., 2018). In addition, Mohammadzadeh et al. (2018) found that orphaned status was not associated with anxiety among Malaysian adolescents residing in sheltered homes.

In terms of psychological factors, depression was strongly related to anxiety and vice versa (Fanaj et al., 2015; Ibrahim et al., 2014, 2017; Mohammadzadeh et al., 2018). Cognitive variables showed a strong relationship either with depression or anxiety. For instance, strong correlations between thought problems and depression, as well as anxiety were reported among adolescents (Rood et al., 2010; Soenen et al., 2014). Additionally, negative thinking

was a risk factor for depression (Clark et al., 2012) and anxiety (Mahmoud et al., 2015). Negative thinking could interact with negative events and result in maladaptive coping, a predictor of depression (Hankin et al., 2004) and anxiety (Mahmoud et al., 2015). Moreover, Ishikawa (2015) reported that the levels of negative self-statements, cognitive errors, and anxiety symptoms were higher among a clinical group of children and adolescents compared to those in a community group. In addition, cognitive distortions such as self-critique, self-blame, helplessness, hopelessness, and preoccupation with danger were positively correlated with depression in juvenile delinquents (Nasir et al., 2010). Other psychological factors such as self-esteem was negatively associated with depression and anxiety among adolescents in the general population (Derdikman-Eiron et al., 2011; Ibrahim et al., 2017) and also among the orphaned adolescents (Getachew et al., 2011; Mohammadzadeh et al., 2018). Furthermore, a recent systematic review reported that low self-esteem was positively associated with depression and anxiety among young people aged 18 and below, especially among those with comorbid depression and anxiety (Keane & Loades, 2017). In a sample of orphaned adolescents, the higher the self-esteem level, the lower the anxiety and depressive symptoms (Getachew et al., 2011). With regard to another psychological variable, anger, Novaco (2010) stated that clinically depressed individuals manifested both expression and suppression of anger in

which they directed their anger towards others (e.g., violence) or themselves (e.g., self-harm, suicide). Additionally, Yavuzer et al. (2014) reported that emotional disorders such as depression and anxiety were associated with and predicted anger.

In Malaysia, Ramli and colleagues (2014) reported the prevalence of depression among Malaysian children and adolescents from the sheltered homes in Kota Bahru, Kelantan as 50.6%. However, the study did not use a randomised sampling method or a validated questionnaire (criterion: Malay version of BDI) (Ramli et al., 2014). Another study on children and adolescents at sheltered homes in Kota Bahru, Kelantan used a different instrument and found that the male gender was the only variable that did not significantly predict depression and anxiety (criterion: Malay version of SDQ¹⁴) (Zakaria & Yaacob, 2008). A recent study showed that the prevalence of depressive and anxiety symptoms of adolescents in sheltered homes was 85.2% and 80.1% respectively (criterion: DASS-21¹⁵) (Mohammadzadeh et al., 2018). Very little attention has been paid to adolescents residing in sheltered homes, including orphans. Furthermore, past research in other parts of the world has shown that the prevalence rates of depression and anxiety symptoms of adolescents residing in sheltered homes are generally higher than the general population. However, similar studies are lacking in Malaysia. The absence of reliable statistics may undermine

the psychosocial wellbeing of children and adolescents residing in sheltered homes in Malaysia as it represents a major hindrance to the development of effective preventive and treatment programmes for this population. Until today, there are no official statistics in terms of mental health and its associated factors of orphans living in sheltered homes in Malaysia. Hence, this study can reduce the literature gap and contribute new knowledge regarding depression and anxiety among adolescents residing in sheltered homes in Malaysia.

Since self-reporting screening instruments vary in many ways from scoring to the range of severity, this study applied the Malay version of BDI to measure depressive symptoms and the Malay version of BAI to measure anxiety symptoms. In addition, due to the inconsistent links between the sociodemographic variables with depression and anxiety, robust statistical analysis, i.e., generalised linear mixed model (GLMM) was performed to establish more reliable results.

In short, firstly, this study aimed to provide more robust evidence on the prevalence of depression and anxiety among adolescents residing in the sheltered homes in Selangor as well as the associated factors to address a gap in the literature. Secondly, this study also aimed to investigate the association of sociodemographic variables with depression and anxiety. Thirdly, this study set out to examine the associations of psychological variables such as anxiety, negative automatic thought, self-esteem, and anger with depression among the sampled

¹⁴ Strengths and Difficulties Questionnaire

¹⁵ Depression Anxiety Stress Scale-21

adolescents. This study also examined the associations of depression, negative automatic thoughts, self-esteem, and anger with anxiety.

METHODS

Participants

A total of 682 adolescents including orphans and non-orphans residing in 17 non-government-run sheltered homes for underprivileged children and adolescents across nine districts of Selangor, Malaysia were screened. Consents were obtained from their legal guardians who were either the founders or the person-in-charge at these sheltered homes. The adolescents were invited to participate in this study on a voluntary basis. They were informed about the research objectives and their freedom to withdraw from the study at any time. The inclusion criteria for the participants included: (a) 13 to 17 years old, (b) own family was unable to provide living necessities and care; (c) non-orphans or orphans (i.e., either one or both parents died); (d) stayed in the sheltered homes for at least one day, and (e) could speak, read, and write in Bahasa Malaysia. Meanwhile, the exclusion criteria for the participants were as follows: (a) the presence of organic brain disorders or learning disorders and (b) absent during data collection. The final sample consisted of 632 adolescents who met the inclusion criteria, giving a response rate of 92.7%. All the participants completed a set of self-report measures as listed below.

Measures

Depression Inventory-Malay version (BDI-Malay). The 20-item self-report BDI-Malay (Mukhtar & Oei, 2008) is a validated Malay version of the English Beck Depression Inventory (Beck et al., 1961) that measures depressive symptoms. The BDI-Malay has two subscales, namely cognitive/affective and somatic/vegetative. The Cronbach's alpha values of the BDI-Malay ranged from .71 to .91 and the values for concurrent validity ranged from .52 to .84. Each item is scored on a four-point Likert scale ranging from 0 to 3. The recommended scoring ranges for the BDI-Malay are minimal depression: 0–9, mild depression: 10–18, moderate depression: 19–29, and severe depression: 30–60. In this study, the operational definition of depression was based on the items that measured depression symptoms on the Malay version of the BDI, i.e., cognitive/affective, and somatic/vegetative.

Beck Anxiety Inventory-Malay version (BAI-Malay). The 21-item BAI-Malay (Mukhtar & Zulkefly, 2011) is a validated Malay version of the Beck Anxiety Inventory (Beck & Steer, 1990) that measures anxiety symptoms. It consists of a three-factor structure (subjective anxiety, autonomic response, and neurophysiology). The Cronbach's alpha values ranged from .66 to .89 and the values for concurrent validity ranged from .22 and .67. Each item on the BAI-Malay is scored on a four-point Likert scale ranging from 0 (*not at all*) to 3 (*severely*). The recommended scoring

ranges for the BAI-Malay are minimal anxiety: 0–7, mild anxiety: 8–15, moderate anxiety: 16–25, and severe anxiety: 26–63. The operation definition of anxiety in this study was based on the items in the Malay version of the BAI that include three factors i.e., subjective anxiety, autonomic response, and neurophysiology.

Automatic Thoughts Questionnaire-Malay version (ATQ-Malay). The 17-item self-report ATQ-Malay (Oei & Mukhtar, 2008) is a validated Malay version of the 30-item Automatic Thoughts Questionnaire (Hollon & Kendall, 1980) that measures negative automatic thoughts. The ATQ-Malay has a three-factor structure (negative self-concept, negative expectations, and personal maladjustment). The Cronbach's alpha values ranged from .83 to .93 and the values for concurrent validity ranged from .33 to .65. The ATQ-Malay was able to discriminate between clinical and non-clinical populations (Oei & Mukhtar, 2008). Responses are given on a five-point Likert scale ranging from 1 (*not at all*) to 5 (*all the time*). Total scores range from 17 to 85 whereby higher scores indicate more frequent negative automatic thoughts.

Rosenberg Self-Esteem Scale-Malay version (RSES-Malay). The 10-item self-report RSES-Malay (Yaacob, 2006) is a validated Malay version of the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) that measures global self-esteem. It has two factors (positive and negative) with an overall Cronbach's alpha value of

.84. Responses are given based on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The positive items are numbered 1, 2, 4, 7, and 10 while the negative items are numbered 3, 5, 6, 8, and 9. The five negative items are reverse-scored in the calculation of the total score. Total scores range from 10 to 50 in which higher scores indicate greater self-esteem. The criterion for low self-esteem in adolescents is a score of less than 30 (Farid & Akhtar, 2013). The RSES-Malay has been shown to have high internal consistency and good convergent validity in a Malay-speaking sample population (Schmitt & Allik, 2005).

Procedure

This study employed single-stage cluster sampling. The official website of the Department of Social Welfare Malaysia, the Registry of Society Malaysia, and the Selangor Islamic Department were explored to identify all the residential sheltered homes in the state of Selangor. In Malaysia, most orphans are looked after in various non-government-run sheltered homes for underprivileged children and adolescents, where they live alongside non-orphans. To be eligible for inclusion, the sheltered homes must be a Malay-operated non-government-run sheltered home for underprivileged children and adolescents including orphans and the homes must provide basic necessities such as accommodation, food, money, education, transportation, and other living support. On the other hand, the exclusion criteria

included (a) government-run sheltered homes, (b) non-Malay-operated non-government-run sheltered homes, (c) home-schooling centres/academies/tuition centres, (d) management offices that did not provide a sheltered living, (e) homes that shelter children and adolescents, but does not have more than three adolescents, (f) homes sheltering adults, (g) old folk homes, (h) homes sheltering mentally and physically disabled individuals, (i) kindergartens, (j) child day-care centres, (k) nursing homes, and (l) community service centres such as a counselling centre. The reason non-Malay-operated non-government-run sheltered homes were excluded was due to language barriers. Government-run sheltered homes were also excluded because of the differences in governance and facilities such as trained personnel, financial assistance, and adequacy of physical facilities as compared to non-government homes. In Malaysia, the non-government-run sheltered homes are founded by associations in the community and they mainly rely on public donations for their financial source.

A total of 417 homes were identified from these three sources. However, 400 homes were excluded because of redundancy, not meeting the selection criteria, unreachable due to wrong contact information, and refusal to participate. The final sample consisted of all the adolescents from the 17 non-government operated sheltered homes distributed across all nine districts of Selangor. The sample size calculation was based on the one-sample proportion formula (Chow et al., 2017). The estimated

proportion of depression and anxiety was based on the prevalence rate of depression and anxiety reported by Mohammadzadeh et al. (2018). The sample size formula based on the accuracy in parameter estimation (AIPE) approach (Kelley & Maxwell, 2003) was used to evaluate the associated factors in this study. The sample sizes for the prevalence and associated factors in this study met the requirements. Moreover, the AIPE method gives a precise estimate of the population parameters by providing adequate sample sizes even when the widths of confidence intervals appear to be narrow. Data collection was carried out from one district to another district. The questionnaires were checked upon completion. The participants were served snacks and drinks after completing the questionnaires.

Data Analysis

Data were analysed using the IBM Statistical Package for Social Sciences Software Version 22 (SPSS 22). The accuracy of input, missing values, and multivariate normality were checked. Descriptive statistics were used to describe the sociodemographic distribution and the prevalence of depression and anxiety. The magnitude of means between independent variables and depression as well as anxiety were analysed. When the value of intraclass correlation (ICC) was greater than .05 (Heck et al., 2013) and the design effect was greater than 2 (Peugh, 2010), it indicated the need for the GLMM analysis. The associations were obtained through GLMM in view of the clustering effect.

Ethical Considerations

Approval was obtained from the Universiti Putra Malaysia Ethics Committee for Research Involving Human Subjects (Reference No.: UPM/TNCPI/RMC/1.4.18 (JKEUPM)/F1. Furthermore, formal permission was sought from the authors of the scale before beginning the study. Informed consent was obtained from the legal guardians of the nongovernment-run homes where the participants were residing.

RESULTS

Sociodemographic Characteristics

Table 1 shows the sociodemographic characteristics of 632 participants. The overall mean age was 14.48 years (*SD* = 1.32). One-third of the participants were females (33.7%). Most of the participants were Malays (99.2%) and all were Muslims (100%). The sample contained approximately half non-orphans (53.0%) and half orphans (47.0%). Amongst the orphans, 41.5% were single orphans (lost

Table 1
Sociodemographic characteristics of participants (*N* = 632)

Characteristic	Frequency		<i>M</i> (<i>SD</i>)
	<i>n</i>	%	
Age			14.48 (1.32)
13 years old	187	29.7	
14 years old	172	27.2	
15 years old	122	19.3	
16 years old	83	13.1	
17 years old	68	10.8	
Age group			
13-15 years old (younger)	481	76.1	
16-17 years old (older)	151	23.9	
Gender			
Female	213	33.7	
Male	419	66.3	
Ethnicity			
Malay	627	99.2	
Other	5	.8	
Religious affiliation			
Islam	632	100.0	
Other	0	0.0	
Type of orphan			
Non-orphan	335	53.0	
Orphan	297	47.0	
History of attendance at counselling			
Had attended	181	28.6	
Had never attended	451	71.4	

either one of their parents) and 5.5% were double orphans (lost both parents).

Prevalence of Depression and Anxiety

Based on the BDI-Malay (Mukhtar & Oei, 2008), the range of depressive symptoms reported by 616 adolescents was as follows: 179 (29.1%) minimal range, 237 (38.4%) mild range, 138 (22.4%) moderate range, and 62 (10.1%) severe range. Hence, most of the adolescents reported mild to severe range of depressive symptoms (70.9%). Based on the BAI-Malay (Mukhtar & Zulkefly, 2011), the range of anxiety symptoms reported

by 588 adolescents was as follows: 104 (17.7%) minimal range, 163 (27.7%) mild anxiety, 195 (33.2%) moderate range, and 126 (21.4%) severe range. Thus, four in five of the adolescents reported mild to severe range of anxiety symptoms (82.3%). More than half of the adolescents ($n=371$, 64.1%) had comorbidity of depression and anxiety.

Magnitudes of Means in Depression and Anxiety

Table 2 shows that the mean of total depression score was 15.59 ($SD = 9.26$). Female adolescents were significantly more

Table 2
Depression by sociodemographic characteristics ($N=621$)

Characteristic	<i>n</i>	Depression <i>M (SD)</i>	Statistical test (<i>df</i>)	<i>p</i>	η^2
Participants	621	15.59 (9.26)			
Age					
13 years old	182	16.46 (9.83)	$F(4,616) = .57$	.69	.00
14 years old	168	15.24 (8.80)			
15 years old	121	15.31 (9.47)			
16 years old	82	15.17 (9.05)			
17 years old	68	14.13 (8.73)			
Age group					
13-15 years old	471	15.73 (9.37)	$t(619) = .68$	.50	.00
16-17 years old	150	15.14 (8.89)			
Gender					
Female	208	17.62 (9.60)	$t(619) = 3.93$	<.001**	.02
Male	413	14.56 (8.91)			
Type of orphan					
Nonorphan	328	15.51 (8.80)	$t(591) = -.21$	.83	.00
Orphan	293	15.67 (9.76)			
HoAC					
Had attended	179	16.54 (9.58)	$t(619) = 1.63$	.10	.00
Had never attended	442	15.20 (9.11)			

Note. HoAC = history of attendance at counselling, df = degree of freedom, η^2 = eta-squared, * $p < .05$ (2-tailed), ** $p < .001$ (2-tailed).

depressed ($M = 17.62, SD = 9.60$) than male adolescents ($M = 14.56, SD = 8.91$), $t(619) = 3.93$ ($p < .001$) and the effect size was small ($\eta^2 = .02$). The total depression scores were not significantly different for age or between age groups, type of orphan, and history of attendance at counselling.

Table 3 shows that the overall mean total anxiety score to be 17.52 ($SD = 9.95$). Overall, anxiety was significantly different by age [$F(4,583) = 2.47$ ($p < .05$)] and the effect size was small ($\eta^2 = .02$). However, there was no significant difference for anxiety between younger and older participants. Female adolescents were

significantly more anxious ($M = 19.38, SD = 10.24$) than male adolescents ($M = 16.58, SD = 9.67$), $t(586) = 3.25$ ($p < .01$) but the effect size was small ($\eta^2 = .02$). In addition, adolescents who have attended counselling in the past were significantly more anxious ($M = 19.47, SD = 10.29$) than adolescents who had never attended counselling ($M = 16.71, SD = 9.07$), $t(586) = 3.09$ ($p < .01$) and the effect size was small ($\eta^2 = .01$). The total anxiety score was not significantly different between non-orphans and orphans.

Table 4 shows that the adolescents reported negative automatic thoughts more often with increasing severity of depression,

Table 3
Anxiety by sociodemographic characteristics ($N=588$)

Characteristic	<i>n</i>	Anxiety <i>M (SD)</i>	Statistical test (<i>df</i>)	<i>p</i>	η^2
Participants	588	17.52 (9.95)			
Age					
13 years old	168	18.17 (9.85)	$F(4,583) = 2.47$	.04*	.02
14 years old	162	15.70 (9.55)			
15 years old	114	17.49 (10.62)			
16 years old	78	18.01 (9.64)			
17 years old	66	19.80 (9.87)			
Age group					
13-15 years old	444	17.09 (9.99)	$t(586) = -1.86$	.06	.01
16-17 years old	144	18.86 (9.72)			
Gender					
Female	198	19.38 (10.24)	$t(586) = 3.25$	<.001**	.02
Male	390	16.58 (9.67)			
Type of orphan					
Non-orphan	308	16.88 (9.27)	$t(586) = -1.64$	.10	.00
Orphan	280	18.23 (10.61)			
HoAC					
Had attended	173	19.47 (10.29)	$t(586) = 3.09$	<.001**	.01
Had never attended	415	16.71 (9.70)			

Note. HoAC = history of attendance at counselling, *df* = degree of freedom, η^2 = eta-squared, * $p < .05$ (2-tailed), ** $p < .001$ (2-tailed).

Table 4

Negative automatic thought by the severity of depression and anxiety, and between low self-esteem and high self-esteem (N=603)

Severity of symptoms	<i>n</i>	NAT Mean (<i>SD</i>)	Statistical test (<i>df</i> ₁ , <i>df</i> ₂)	<i>p</i>	η^2
Depression	603				
Minimal	176	24.98 (5.13)	F(3,203) = 147.27	<.001*	.20
Mild	230	32.74 (7.56)			
Moderate	135	40.51 (10.13)			
Severe	62	46.71 (12.62)			
Anxiety	575	NAT Mean (<i>SD</i>)			
Minimal	103	24.75 (7.12)	F(3,478) = 108.37	<.001*	.16
Mild	161	29.71 (7.75)			
Moderate	188	35.41 (9.01)			
Severe	123	44.16 (10.58)			
Self-esteem		Depression Mean (<i>SD</i>)			
Low	135	21.73 (9.46)	<i>t</i> (602) = 9.43	<.001*	.12
High	469	13.82 (8.32)			
Self-esteem		Anxiety Mean (<i>SD</i>)			
Low	133	21.37 (10.16)	<i>t</i> (570) = 5.25	<.001*	.04
High	439	16.31 (9.63)			

Note. NAT = negative automatic thought, **p* < .001 (2-tailed).

$F(3,203) = 147.27$ ($p < .001$) and there was a significant large effect size ($\eta^2 = .20$). Similarly, the negative automatic thoughts also increased with the severity of their anxiety, $F(3,478) = 108.37$ ($p < .001$). There was a significant large effect size ($\eta^2 = .16$). Furthermore, adolescents with low self-esteem were significantly more depressed ($M = 21.73$, $SD = 9.46$) than adolescents with high-self-esteem ($M = 13.82$, $SD = 8.32$), $t(602) = 9.43$, ($p < .001$) and this showed a large effect size ($\eta^2 = .12$). Adolescents with low self-esteem were significantly more anxious ($M = 21.37$, $SD = 10.16$) than adolescents with high-self-esteem ($M = 16.31$, $SD = 9.63$), $t(570) = 5.25$ ($p < .001$) but this showed a small effect size ($\eta^2 = .04$).

Factors Associated with Depression and Anxiety

The ICC values for depression and anxiety were .40 and .01 respectively and the design effects for depression and anxiety were 15.54 and 1.49 respectively, thus indicating the needs for the GLMM statistical analyses. Table 5 shows that most of the sociodemographic variables were not associated with depression. Only age was negatively associated with depression [$\beta = -.57$, $t = -2.69$ ($p < .01$)]. As for the psychological variables, anxiety [$\beta = .21$, $t = 5.60$ ($p < .001$)], negative automatic thought [$\beta = .33$, $t = 8.56$ ($p < .001$)] and anger [$\beta = .12$, $t = 3.16$ ($p < .01$)] were positively associated with depression. On the contrary, self-esteem [$\beta = -.32$, $t = -5.12$ ($p < .001$)]

Table 5
Factors associated with depression and anxiety (N=632)

	β	SE	t	p	95%CI	
					LL	UL
Depression						
Age	-.57	.21	-2.69	<.01*	-.98	-.15
Gender	.48	.71	0.68	.50	-.91	1.87
Type of orphan	.42	.67	0.63	.53	-.89	1.73
HoAC	.33	.61	0.54	.59	-.88	1.54
Anxiety	.21	.04	5.60	<.001**	.14	.29
Negative automatic thought	.33	.04	8.56	<.001**	.26	.41
Self-esteem	-.32	.06	-5.12	<.001**	-.44	-.20
Anger	.12	.04	3.16	<.01*	.05	.20
Anxiety						
Age	.40	.24	1.71	.09	-.06	.87
Gender	-.65	.80	-0.81	.42	-2.23	.93
Type of orphan	.16	.75	0.21	.83	-1.31	1.67
History of attendance at counselling (HoAC)						
Depression	.27	.05	5.68	<.001***	.18	.36
Negative automatic thought	.28	.05	6.35	<.001***	.20	.37
Self-esteem	.05	.07	0.73	.47	-.09	.19
Anger	.25	.04	6.02	<.001***	.17	.33

Note. SE = standard of error, β = beta, t = t-test, CI = confidence interval, LL = lower limit, UL = upper limit, * $p < .05$ (2-tailed), ** $p < .01$ (2-tailed), *** $p < .01$ (2-tailed)

was negatively associated with depression. All sociodemographic variables were not associated with anxiety. Depression [$\beta = .27, t = 5.68 (p < .001)$], negative automatic thought [$\beta = .28, t = 6.35 (p < .001)$], and anger [$\beta = .25, t = 6.02 (p < .001)$] were positively associated with anxiety but self-esteem was not significantly associated with anxiety.

DISCUSSION

This study aimed to examine the prevalence of depression and anxiety among adolescents staying in the Malay-operated non-government-run sheltered homes in

Selangor as well as to identify factors associated with depression and anxiety. The overall prevalence of mild to severe depression and anxiety symptoms in this study was 70.9% and 82.3% respectively, with 64.1% of the respondents reporting both comorbidities. The prevalence rates are similar to those reported by another study on Malaysian adolescents from sheltered homes (Mohammadzadeh et al., 2018). Both studies showed a high prevalence of depression and anxiety among adolescents in non-government-run sheltered homes. Furthermore, our findings are consistent with previous studies in which anxiety

was more common than depression. In addition, our results also suggest that depression and anxiety are more prevalent among Malaysian adolescents in sheltered homes compared to the general adolescent population (Ibrahim et al., 2014, 2017; Latiff et al., 2015).

The high comorbidity between depression and anxiety in this study is in line with past literature (Abbo et al., 2013; Merikangas et al., 2010). High comorbidity of internalising symptoms might be explained by the significant direct association between them. Nilsen et al. (2013) emphasised that comorbidity of externalising symptoms such as conduct problems did not affect the treatment outcomes of depression and anxiety since the primary disorder was either depression or anxiety. Most of the studies on depression and anxiety are based on the standard diagnostic criteria for these disorders while others use the standardised screening instruments to measure the symptoms. Some studies used both measuring methods. These differences are partly responsible for the large variation in the estimates of prevalence between studies. Baxter et al. (2013) stated that the methodological and sociodemographic differences across samples would contribute to the variability in prevalence estimates. Another possible contributing factor to the differences could be the application of different threshold values for clinically significant depression and anxiety. Nevertheless, the high prevalence of depression and anxiety in the study implies an urgent need to increase

the number of government-run sheltered homes in Malaysia as well as speeding up legal adoption of orphaned children. A large, national-level survey should also be conducted to obtain comprehensive official statistics about orphans and sheltered homes in Malaysia.

In addition, this study implies that the biopsychological model could be applied. In this study, after adjusting the clustering effect, most sociodemographic variables as they were not associated with depression and anxiety. However, most of the psychological variables appeared to have strong associations with depression and anxiety.

In this study, age was significantly related to depression but not anxiety. However, by evaluating the results of the magnitude of means, there was a significant difference in anxiety by age but not for depression. These contradicting results were in line with past literature that indicated age as a relatively unstable factor in association with depression and anxiety (Fanaj et al., 2015; Khasakhala et al., 2012; Mohammadzadeh et al., 2018; Rood et al., 2010). The specific reasons behind this were unknown but Allan and colleagues (2014) stated that when other risk factors were not taken into account, the observed relationship between age and anxiety became somewhat unstable. Furthermore, Clark et al. (2012) also stated that age might be a predictor of depression when only stressors occurred.

In addition, this study showed that female adolescents were more depressed and anxious than male adolescents. This was

in line with past literature (McGuinness et al., 2012; Soenen et al., 2014). The plausible explanation could be due to the fact that depressed females were more sensitive to the effects of adverse childhood experiences than males (Piccinelli & Wilkinson, 2000). Females were also more emotion-focused (Li et al., 2006) and had a greater tendency to ruminate (McGuinness et al., 2012). Despite the significant differences in depression and anxiety between males and females in this study, the effect sizes were small. The relationship between gender and anxiety was rather inconsistent in literature as some studies showed no significant relationship between gender and anxiety (Fanaj et al., 2015; Ibrahim et al., 2017; Khasakhala et al., 2012; Mohammadzadeh et al., 2018; Rood et al., 2010) while some studies did not (Derdikman-Eiron et al., 2011; Fanaj et al., 2015; Ibrahim et al., 2017; Khasakhala et al., 2012; Mohammadzadeh et al., 2018). As for this study, gender was not associated with depression and anxiety after taking the clustering effect into account.

Moreover, non-orphans and orphans did not differ significantly in depression and anxiety in this study. The orphaned status was also not significantly associated with depression and anxiety. A plausible explanation could be the sharing of similar support in the residential homes between orphans and non-orphans that subsequently leveraged the differences. Potential biases could have also occurred due to the underlying difference in the sociodemographic characteristics between orphans and non-orphans in this study.

Hence, future research should expand on this area.

Surprisingly, adolescents who had attended counselling in the past were not significantly different in depression compared to non-attenders. Although the difference was small, those who had attended counselling reported a higher level of anxiety symptoms. Most participants received only between one and three sessions of counselling while some participants were on counselling for several years. Therefore, the significant effect of counselling might not be detected, thus explaining why the history of attendance at counselling was not significantly associated with both depression and anxiety in this study.

On the other hand, the findings of our study are consistent with other studies that reported a strong association between depression and anxiety (Fanaj et al., 2015; Ibrahim et al., 2014, 2017; Rood et al., 2010). Seligman and Ollendick (1998) reported that anxiety might be a risk factor for affective disorders such as depression. In our study, it is possible that anxiety increased the risk of depression. However, several points should be taken into consideration. Firstly, the direction of the association was unclear as the cross-sectional nature of this study can indicate reverse causality. Nilsen et al. (2013) mentioned that reverse causality could influence the significance of the findings. Secondly, high comorbidity between depression and anxiety might explain the significant association between the two conditions in this study. Despite the frequent co-occurrence of the two disorders,

Van Oort and colleagues (2009) argued that an increase in anxiety symptoms could not be explained by the increase in depression symptoms because the two pathologies followed different developmental courses.

Regarding negative automatic thoughts, they were positively associated with depression and anxiety in this study. As the severity of depression and anxiety increased, a higher level of negative automatic thoughts was reported by the adolescents. The modification of cognitive errors such as negative thinking is an effective way of treating depression and anxiety. Cognitive behaviour therapy (CBT) is based on the principle of modifying cognition errors. There is a large body of evidence indicating CBT as an effective treatment for childhood depression and anxiety with long-term benefits even at follow-up (Rood et al., 2010; Weisz et al., 2013; Zhou et al., 2015). Therefore, CBT can be a good choice of treatment since it targets both depression and anxiety.

Furthermore, this study showed that even though low self-esteem contributed to higher depression and anxiety, self-esteem was only positively associated with depression but not with anxiety. This result was in contrast with Sowislo and Orth (2013) who reported a stronger predictive ability of self-esteem on depression than vice versa. The same study reported the effects of low self-esteem and anxiety to be relatively equal. Moreover, Waite et al. (2012) suggested that the relationship between low-self-esteem and psychiatric illness was unclear in which some studies

showed psychiatric disorders could lower self-esteem while others claimed that low self-esteem predisposed to psychiatric disorders such as depression and anxiety. Despite this uncertainty, treatment for adolescents with depression and anxiety often include therapies designed to increase their self-esteem because these therapies ensure a wider recovery benefit, especially under stressful conditions. Besides, Moksnes et al. (2010) also pointed out that adolescents with high self-esteem could cope better with stressful life events and be more resilient to challenges in life.

To a certain extent, the significant association between depression and anger in this study explained the coexistence of anger and depression. It could also be extended to other aggressive behaviours such as self-harming, suicidal ideation, violence, and delinquency (Novaco, 2010). The association between anxiety and anger could explain the reason why patients with anxiety disorders often had a higher level of anger, hostility, and aggression than non-clinical patients (Novaco, 2010). In view of this, the interrelationships between depression and anger as well as between anxiety and anger warrant further research.

CONCLUSION

In summary, our findings contributed to the literature on the mental health of adolescents staying in non-government-run sheltered homes in Malaysia. The results highlighted the urgent need to improve the outreach programme for underprivileged children and adolescents in sheltered homes.

Furthermore, apart from increasing the number of government-run sheltered homes nationwide, the facilities in the existing non-government-run sheltered homes should also be enhanced. Specifically, the support for legal foster care and psychiatric services must be put in place. Early identification of depression and anxiety symptoms through appropriate screening process can facilitate the implementation of an appropriate preventive and treatment programme to reduce the high costs of mental health care. Caregivers of the sheltered homes can be trained to provide group intervention programmes along with school counsellors. Future research in this area should be geared towards the administration of more evidence-based treatment such as cognitive behaviour therapy for adolescents with depression and anxiety.

Limitations and Recommendations

Firstly, the generalisability of the findings is limited because the sample was only drawn from the state of Selangor and the use of self-administered questionnaires might have resulted in a biased response. Secondly, almost 100% of the participants were Malays and Muslims, thus limiting the generalisability of our findings to other ethnicities. We recommend future researchers to use the standard diagnostic classification such as the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) with standardised measures such as Structured Clinical Interview of DSM-5 (SCID-5) for their participants. This has important implications

for the research direction and management programme in treating depression and anxiety disorders rather than just reducing the symptoms.

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