Mental Health Screening among Malaysian Indian Adolescents amid COVID-19 Pandemic

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ABSTRACT

The COVID-19 health crisis is widespread across the globe and it is the cause of severe mental health issues. Due to the prevalence of mental health adversities among Indian adolescents in Malaysia, further investigation is required on this matter. However, there is a lack of literature on mental health issues among Malaysian Indian adolescents during this health crisis. Therefore, the present study is an attempt to assess the state of mental health among Indian adolescents during this COVID-19 health crisis and to determine the effectiveness of the General Health Questionnaire (GHQ-12) factor structure as a screening tool. Furthermore, the study also examined the association between demographic elements and GHQ-12 factors. A cross-sectional study comprised of 257 Indian adolescents were recruited using the snowball sampling method to complete the GHQ-12. The value of the reliability analysis was 0.847, which suggests that the scale employed in this study is highly reliable. The three factors of mental health issues that were studied comprised of social and emotional dysfunction, psychological distress, and cognitive disorder. The results were extracted from factor analysis with an overall variance of 56.4%. Contrary to expectations, the findings revealed that nearly 70.4% of the sampled adolescents were psychologically healthy and 29.6% of the adolescents exhibited psychological distress. Significant association was found between parent’s education background and all the three factors. Female respondents were negatively and significantly associated with the cognitive disorder factor. This study expanded the comprehension of mental health issues and revealed that the GHQ-12 is suitable to assess mental health among Indian adolescents. Further studies with a larger sample size is needed to evaluate the state of mental health among Malaysian Indian adolescents and the effectiveness of GHQ-12 as a screening tool.

Keywords: COVID-19, GHQ-12, Indian adolescent, Mental health, Malaysia
1.0 INTRODUCTION

Good mental health is defined as a state where the individual can feel and express positive emotions and whose body can function well. However, various elements can cause mental health deterioration, such as a sudden onset of a widespread contagious disease. Evidence postulates that the COVID-19 pandemic has not only resulted in a massive number of deaths but also contributed to the detrimental effects on individual mental health (Bengtsson and Helgert, 2019). When Spanish Flu was widespread, it killed nearly 50 million people (Cartwright, 2016), and psychiatrists were the unsung heroes in combating the emergence of mental health issues (Bengtsson and Helgert, 2019).

In recent times, the world was once again shaken by the active spread of a deadly virus. The novel Coronavirus disease (COVID-19), which is actively spreading around the globe, worsened the healthcare services and economic growth of the nation in a significant way. It is an infectious disease that originated from an incomprehensible cluster of pneumonia in China (Rajkumar, 2020). COVID-19 is highly contagious compared to other respiratory illness due to its number of DNA mutation (Shereen et al., 2020).

In the beginning, this deadly virus began to prevail in Wuhan, China. Since Wuhan is the capital city of Central China and is densely populated, the outbreak of the virus killed over 70,000 people and infected approximately 1,800 in the earliest stages of the pandemic (Shereen et al., 2020). The overwhelming and staggering death toll resulting from the COVID-19 pandemic is massive and highly critical. As of writing, there are now nearly 6 million people infected and 362, 541 deaths across the globe (Worldometer, 2020).

1.1 The Emergence of COVID-19 Pandemic in Malaysia

The COVID-19 pandemic was reportedly discovered in Malaysia in January 2020. It was first detected in one of the travellers from China who travelled to Malaysia through Singapore (Malaysia confirms first cases of coronavirus infection, 2020). The number of infected cases began to rise among locals after the emergence of a new cluster linked to a mass prayer in Petaling Jaya, Selangor (Ng, 2020). Within a few days, Malaysia had reached the top of the list of infected cases among other Southeast Asian countries. With a high capability of spreading, COVID-19 cases were reportedly throughout the entire nation.

The grave repercussion of the COVID-19 pandemic has led to the commencement of strict rules and regulations around the world to curtail the widespread of the pandemic. Similarly, in Malaysia, various efforts have been undertaken to combat the outbreak. On 13th March 2020, the Prime Minister of Malaysia announced the implementation of the Movement Control Order (MCO) as an endeavour to mitigate the spread of the virus (Azlan et al., 2020).
Experts have always considered the emergence of any health crisis as an attempt of interpreting individual mental health and campaigning for the intercorrelation of various scientific fields to improvise the narrative of mental health practice (Joober, 2016). Much research was conducted before the COVID-19 outbreak to examine the state of mental health among the public during the time of health crisis. For instance, Peng et al. (2010) revealed that people experienced severe psychological distress during the SARS outbreak and advocated for mental health education to assist newly infected patients. Similarly, Taha, Matheson and Anisman (2014) revealed that the epidemic of H1N1 in 2009 triggered the feeling of anxiety among Canadian adults. Simultaneously, in a local context, the study showed that 73.2% of 1050 respondents feared the widespread contagion of the SARS pandemic (Wong and Sam, 2011). Unlike SARS, COVID-19 has yielded an effect of greater magnitude in relevance to mental health issues. Since COVID-19 is more infectious and has spread to every continent (Hewings-Martin, 2020), experts presume that it may probably never disappear even after the discovery of a vaccine (Wan and Johnson, 2020).

Given the severe nature of this issue, various attempts to curb mental health issues have been made by psychologists across the globe, such as introducing mental health crisis hotline service targeting children and adolescents (Harley, 2020). Indeed, in Malaysia, scholars emphasise on future mental health models based on Malaysian community-oriented settings to handle mental health problems at the primary level according to their locality and among their community itself (Midin et al., 2018). Additionally, the lack of psychiatric personnel in Malaysia (Guan et al., 2018 and Lau 2017) and the relatively low monetary and scarcity of literature sources (Malaysian Healthcare Performance Unit, 2016) makes Malaysia more vulnerable towards the surge of mental health issues during this pandemic.

1.2 The Impact of Pandemic on Mental Health

The COVID-19 pandemic caused school closures to prevent rapid spread of infection. This affected school students in many ways due to the shift from physical classes to online classes and the practice of a social distancing lifestyle. Children are known to be more demanding while adjusting to the changes that happen rapidly. Home confinement imposes an immediate and lingering psychosocial impact due to drastic change in their lifestyle, physical activity and mental activities (Wang et al. 2020). A growing body of literature revealed different types of mental health issues associated with the COVID-19 pandemic. A survey conducted by Loades et al. (2020), consisting of 51, 576 participants showed a clear relationship between loneliness, depression and mental health issues among adolescents, and further indicated that the duration of isolation plays an important role in the development of mental health issues.

The emergence of COVID-19 pandemic is not only considered a colossal threat to physical health but also impacts individual mental health (Golberstein, Gonzales and Meara 2019). Indeed, mental health issues among adolescents have become a consequence of the COVID-19 pandemic and received considerable critical attention (Wang et al., 2019). The gradual decline of social connection resulting from the temporary closure of educational
institutions and economic recession aggravated emotional turmoil and worsened adolescents’ mental health (Aten, 2020). It has been estimated that 220 million Chinese adolescents would experience mental health issues due to prolonged school closure (Aten, 2020). This finding indicates that prolonged isolation and restriction in daily lifestyle resulted in psychosocial stress and further aggravated the detrimental effects on individual mental and physical health.

Furthermore, this pandemic has a grave effect on the vulnerable population such as children and adolescents with chronic diseases. They may encounter challenges in acquiring proper medical assistance for their disease due the preoccupation of healthcare centres in combating the outbreak of COVID-19. Besides that, the risk of sexual oppression has become greater in this quarantine period (Fegert, 2019). Since children and adolescents spend most of their time online, the risk of encountering online predators is higher. Social media usage correlates with negative mental health which results in stress and depression. Youths may not have the capability to manage their social media usage or to make rational judgements on the information shared via social media (Fegert, 2019).

Few researchers have addressed the impact of COVID-19 pandemic on mental health among an at-risk group of people such as the elderly (Yang et al., 2020), the homeless (Tsai and Wilson, 2020), and immigrants (Liem et al., 2020). However, very little is known regarding the impact of COVID-19 among adolescents, particularly in the South-East Asian communities, even though South-East Asian countries are among the hardest hit by COVID-19 (Rajkumar, 2020). As adolescents are more vulnerable to psychological impairments (Paus et al., 2008), there is a need for expansion of the literature with precise empirical data to assist mental health interventionists during this pandemic.

Theoretically, the COVID-19 pandemic has disrupted all layers of the Maslow hierarchy of needs. Maslow (1943) argues that failure to attain the various stages in the hierarchy of need (physiological needs, safety needs, love and belonging, self-esteem, and self-actualization) might lead an individual towards mental illness (Maslow, 1943). As human beings, we are almost pre-programmed to feel connected to other people and experience a sense of belonging. Therefore, lacking social connection during this pandemic may lead to severe psychological adversity.

As discussed earlier, the consequences of COVID-19 health crisis has been widely studied in a short period of time among the public, patients, immigrants and healthcare workers (Chen et al., 2020; Zhu et al., 2020; Ahmad et al., 2015). A closer look at the literature based on the impact of COVID-19 pandemic on mental health revealed several gaps which needs to be further addressed. As far as we know, only a couple of studies were conducted among the local population of Malaysia (Shanmugam et al., 2020; Chong, 2020). Currently, there is no known information on the psychological impact and mental health of Indian adolescents during the peak of the COVID-19 pandemic. This is especially pertinent with the uncertainty surrounding an outbreak of such unparalleled magnitude.

Since, there is a higher prevalence of mental health cases such as suicide, depression, self-harm (Malaysian Healthcare Performance Unit, 2016), and poor mental health literacy (Khan et al., 2010) among Malaysian Indian adolescents, empirical studies are necessary to comprehend this phenomenon and assist early detection of those prone to developing mental health illness. It also provides a clear framework for practitioners and educators to plan and implement culturally sensitive prevention and intervention programs.

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The COVID-19 health crisis is the cause of many crucial mental health issues. Therefore, examining the state of mental health across genders and family structures is required to determine the effectiveness of prevention and intervention strategies (Afifi, 2007; Berg et al., 2017). Few studies have documented the gender difference in mental health during the COVID-19 health crisis. Research on the relationship between gender-role intensification and mental health status indicated that females are more vulnerable to experiencing severe mental health related issues compared to males (Etheridge and Spantig, 2020; Liu et al., 2020; Özdin and Özdin, 2020).

Apart from gender differences, family structure is an essential determinant in an adolescent’s mental health. Most prevention and intervention programs accentuate family as a vital element in determining positive outcome (Kuhn and Laird, 2014). Previous studies indicate that children raised by a single parent have more disadvantages in their development compared to children with both parents. Children raised by a single parent are associated with various psychopathological problems (Daryanani, 2017). Instable financial situation (Stack and Meredith, 2018), poor educational background (Goodrum et al., 2012), and higher vulnerability of developing psychopathology among children raised by single mothers consequently influence their psychological well-being (Agnafor, 2019; Bunney et al., 2017). However, the knowledge on which types of family structure tend to demean an adolescent’s mental health during this pandemic is mostly unknown in a local and international context.

Concurrently, experts have also found that parents’ educational background is a critical aspect that dictates their children’s mental health. For instance, two studies which measured the association between parents’ educational background and their children’s state of mental health revealed that the level of education of parents is a more definite indicator of their children’s mental health (Thomson et al., 2017; Sonego et al., 2013). They explained that parents with higher educational background devoted more time to their children than less-educated parents (Gurian, Hurst and Kearney, 2008). In Malaysia, there have been limited studies examining the link between parents’ education level and mental health status of children (Yahaya et al., 2012; Tam et al., 2011). However, to our knowledge, none of them specifically analysed Indian adolescents.

The General Health Questionnaire (GHQ-12), a unidimensional model comprised of 12 items, were utilised in this study to obtain data on the respondent’s mental health level. The GHQ-12 mental health screening tool was originated by Goldberg and utilised extensively among samples from various ethnic and cultural backgrounds (Kandeger et al., 2018; Guan and Han, 2019; Mansor et al., 2016). With its psychometric value across different countries (Gelade et al., 2015) and culturally pertinent value (Kim et al. 2013), it enables precise comprehension and assessment of mental health conditions among the respondents.

Although the 12 items in the GHQ-12 questionnaire represents a one-dimensional model, a significant number of studies state that the GHQ-12 is multidimensional which measures two to three factors such as social and emotional dysfunction, psychological distress, and cognitive disorder (Zulkefly and Baharudin, 2010; Hu et al., 2007). Furthermore, scholars asserted that the multidimensional model, which yielded two or three factors fitted the data better than the one-dimensional model (El-Metwally, 2018; Winzer et al., 2014). The emergence of two or three factors found in a multitude studies (El-Metwally et al., 2018; Ibrahim et al., 2014; Zulkefly and Baharudin, 2010; Montazeri,
were influenced by various demographic factors such as socioeconomic (Guan and Han, 2019) and the nationality of the respondents (Salama-Younes et al., 2009). Therefore, it can be deduced that samples from different populations can influence the factor structure of GHQ-12.

In the Malaysian context, few studies have been conducted to assess the level of mental health among Indian adolescents (Mansor et al., 2016; Ibrahim et al., 2014; Zulkefly and Baharudin, 2010); however, no relevant evidence was found on assessing the factorial structure of GHQ-12 among Indian adolescents in Malaysia.

To the best of our knowledge, no previous studies have yet documented on examining the state of mental health using the GHQ-12 among Malaysian Indian adolescents during this health crisis. With this in mind, the objective of the current study is to:

1. assess the GHQ-12 scores, identify the factorial structure of GHQ-12, and,
2. investigate the association between gender, parent’s educational attainment, and family structure with mental health among the Indian adolescents in Malaysia.

2.0 METHODS

2.1 Sample and Procedures

The present study employed a quantitative research method and cross-sectional study design to assess the level of mental health among Indian adolescents during the COVID-19 pandemic. The sample of this study (n=257) were Indian adolescent aged 13-18 years old (M=3.0, SD =1.3) recruited by employing the snowballing sampling method. The hyperlink of the survey was distributed by the researchers through Google with the help of class teachers to obtained response from the respondents. The time span of the data collection was between 1 April – 5 April 2020. The participants of our survey is from Selangor, Malaysia. The researchers selected respondents from secondary schools located in Gombak district because it has recorded one of the highest numbers of COVID-19 cases and has been declared to act under the Enhanced Movement Control Order by the Malaysian Government. The target population identified as Indian adolescents (13-18 years of age) due to the high prevalence of suicide and depression (Malaysian Healthcare Performance Unit, 2016).

The researchers selected samples from that particular age category because they are more vulnerable to experiencing a mental health crisis due to the lack of social resources resulting from school closure. Furthermore, experts also stated that adolescents could experience changes in multiple dimensions, such as emotional, psychological, and physical development (Lévesque and Minniti, 2011).

2.2 Measure
Respondents in this study completed a set of survey instruments that comprised of two sections. The first section regarding the demographic information of respondents consisted of age, parent’s educational background, and types of family. The second section measured mental health by using the adapted version of the General Health Questionnaire (GHQ-12) in Malay language. GHQ-12 is a self-assessment screening test and has excellent psychometric properties (Gelaye et al., 2015)

This questionnaire comprised of 12 items, and each of the items contained four response options which were ‘Better than usual’, ‘Same as usual’, ‘Less than usual’, and ‘Much less than usual’. These responses were scored 0,1,2, and 3. Total scores range from 0 to 36. Higher scores (more than 12) indicate psychological distress. The reliability level of the scale was 0.847, which indicated that the instrument used in this study possessed an excellent standard and was suitable for this study.

2.3 Data Analysis

The Statistical Package for Social Science (SPSS Version 25.0) was employed to analyse the data in this study. Descriptive statistics was used to explain the demographic details of the respondents. Kaiser-Meyer-Olkin (KMO) test and Bartlett’s Test of Sphericity to discover factor analysis were used to identify the underlying variables. Multiple regression analysis was conducted to identify the association between demographic factors and GHQ-12 factors.

3.0 RESULTS

The treatment of outliers is one of the crucial steps in the data screening process. In this study, Mahalanobis distance was used in identifying outliers. As a result, seven samples were detected as multivariate outliers and removed. Hence, a final total sample of 257 was left and used for further analysis.

The demographic details of the total respondent (84 males, 173 females) of this study are shown in Table 1. Their age ranges from 13 to 18 years old, and most of them were 15-16 years old (46.7%). Furthermore, 218 respondents (84.8%) are living with both parents, 32 respondents (12.5%) are living with single parents, and seven respondents (2.7%) are living with a guardian/caretaker. Most parents have completed upper secondary education (41.2%), followed by lower secondary (30.7%), Diploma (11.7%), Degree (11.7%), primary school education (3.1%), and parents without any education (1.6%).

Table 1: Demographic characteristics of the respondents (n = 257)
3.1 Descriptive Analysis

The primary feature of all the demographic values of the present study, including the respondent’s General Health Questionnaire (GHQ-12) were extracted from the descriptive analysis. For this study, the 4-point Likert scale scoring method (0-1-2-3) was chosen. The descriptive analysis demonstrated that the minimum score of GHQ-12 was 0 and the maximum score was 36. The results revealed that the mean score for GHQ-12 was 9.67 (SD = 6.22), which was lower than the cut-off point of 12. All items added to obtain a total score that ranged between 0-36. A score of more than 12 indicated psychological distress. The study revealed that 181 (70.4%) respondents scored below 12 while 76 (29.6%) respondents scored 12 and above on the GHQ-12. These findings indicate that the majority of the students were psychologically healthy compared to others who showed symptoms of psychological distress.

### Frequency Table

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>84</td>
<td>32.7</td>
</tr>
<tr>
<td>Female</td>
<td>173</td>
<td>67.3</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-14</td>
<td>86</td>
<td>33.5</td>
</tr>
<tr>
<td>15-16</td>
<td>120</td>
<td>46.7</td>
</tr>
<tr>
<td>17-18</td>
<td>51</td>
<td>19.8</td>
</tr>
<tr>
<td><strong>Level of education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>8</td>
<td>3.1</td>
</tr>
<tr>
<td>Secondary Lower</td>
<td>79</td>
<td>30.7</td>
</tr>
<tr>
<td>Secondary Upper</td>
<td>106</td>
<td>41.2</td>
</tr>
<tr>
<td>Diploma</td>
<td>30</td>
<td>11.7</td>
</tr>
<tr>
<td>Degree</td>
<td>30</td>
<td>11.7</td>
</tr>
<tr>
<td>No Education</td>
<td>4</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Family status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Living with single parents</td>
<td>32</td>
<td>12.5</td>
</tr>
<tr>
<td>Living with both parents</td>
<td>218</td>
<td>84.8</td>
</tr>
<tr>
<td>Living with care taker/guardian</td>
<td>7</td>
<td>2.7</td>
</tr>
</tbody>
</table>

3.2 Factor Analysis
Principal component extraction and varimax rotation method were performed to conduct factor analysis. The resulting value of Bartlett’s test of sphericity is significantly (p < 0.001) in favour of the correlation matrix and is not an identity matrix (Table 2). Besides, the Kaiser-Meyer-Olkin (KMO) value is 0.850, which is more significant than the recommended value of 0.50 (Kaiser, 1974). The value of KMO confirms that the factor analysis is appropriate to conduct.

Table 2: Value of KMO and Bartlett’s

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</th>
<th>0.850</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td></td>
</tr>
<tr>
<td>Approx. Chi-Square</td>
<td>904.393</td>
</tr>
<tr>
<td>Df</td>
<td>66</td>
</tr>
<tr>
<td>Sig.</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Initial eigenvalues of more than 1.00 were used to determine the number of the desired factor. The outcome demonstrated the presence of three underlying factors with eigenvalues exceeding one, explaining 19.2%, 18.9% and 18.2% of the variance, respectively, as shown in Table 3 below. The three factor solutions also revealed 56.4% of the variances. Based on the rotated component matrix result, three factors were identified, which were factor one (social and emotional dysfunction), factor two (psychological distress) and factor three (cognitive disorder). The first factor, social and emotional dysfunction, comprised of four items: 1) Playing a valuable part, 2) Feeling reasonably happy, 3) Able to concentrate, and 4) Able to face up to your problems. The second factor, psychological distress, comprised of three items: 1) Been losing confidence in yourself, 2) Thinking of self as a worthless person, 3) Felt capable of making decisions, and 4) Able to enjoy day-to-day activities. The third factor, which was named as a cognitive disorder, had four items: 1) Feeling unhappy and depressed, 2) Lost much sleep over worry, 3) constantly under strain, and 4) Couldn’t overcome your difficulties. Further checking on factor two discovered that item ‘Felt capable of making decisions’ and ‘Able to enjoy day-to-day activities’ had cross-loading items which factor loadings greater than 0.40. Also, factor three showed that item ‘Couldn’t overcome your difficulties’ also loaded on two factors namely psychological distress (0.422) and cognitive disorder (0.479).

Table 3: Varimax rotated component matrix on the GHQ-12

<table>
<thead>
<tr>
<th>Social and Emotional Dysfunction</th>
<th>Psychological Distress</th>
<th>Cognitive Disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing a useful part (Q3)</td>
<td>0.725</td>
<td></td>
</tr>
<tr>
<td>Feeling reasonably happy (Q12)</td>
<td>0.670</td>
<td></td>
</tr>
</tbody>
</table>
Able to concentrate (Q1) .610
Able to face up to your problems (Q8) .581
Been losing confidence in yourself (Q10) .778
Thinking of self as a worthless person (Q11) .766
Felt capable of making decisions (Q4) .454 .594
Able to enjoy day-to-day activities (Q7) .417 .513
Feeling unhappy and depressed (Q9) .779
Lost much sleep over worry (Q2) .718
Constantly under strain (Q5) .629
Couldn’t overcome your difficulties (Q6) .422 .479
Eigen value 4.53 1.15 1.08
% Variance 19.22 18.90 18.19

3.3 GHQ-12 Factors and Demographic Elements

The regression analysis results as shown in Table 4 demonstrated that the R2 value was 0.058, indicating that this regression model can predict 5.8% variance in the Social and Emotional Dysfunction factor that was accounted for by all the predictors (gender, parents’ education, and the family structure). Meanwhile, for Psychological Distress factors as the dependent variable, the results showed that R2 value was 0.121, indicating that this regression model can predict 12.1% variance in Psychological Distress by all the predictors in the regression model. Moreover, for Cognitive Disorder factor as the dependent variable, the result showed that R2 value was 0.100, indicating that this regression model can predict 10% variance in Cognitive Disorder factor that was accounted for by all the predictors in the regression model.

Table 4: Model summary
Predictors: (Constant), Living=living with care taker/guardian, education=primary, education=degree, living=living with single parents, ender=female, education=no education, education=diploma, education=secondary lower.

Before performing the multiple regression analysis, a few assumptions were performed, such as normality of the residuals and multicollinearity. After confirming all of the assumptions, the multiple regression for three factors (gender, education level, and family status) were suitable to be conducted as shown in Table 5.

The analysis showed that the female gender was negatively and significantly associated with cognitive disorder factor, (Beta = -0.733, S.E. = 0.363, p-value = 0.045), which indicated a significant difference between females and males. This result showed that the GHQ-12 factor of cognitive disorder for the female respondents was 0.733 lower than the male respondents. However, there was no significant association reported between gender and social and emotional dysfunction and psychological distress. The respondents having parents with no educational background were positively and significantly associated with all three factors of the GHQ-12 score compared with respondents having parents with upper secondary education. Findings revealed that respondents from parents with no education background were positively and significantly associated with the social and emotional dysfunction factor (Beta = 3.331, S.E. = 1.059, p-value = 0.002), psychological distress (Beta = 5.483, S.E. = 1.296, p-value < 0.001), and cognitive disorder factor (Beta = 4.982, S.E. = 1.300, p-value < 0.001). Overall, the GHQ-12 score on social and emotional dysfunction factor, psychological distress, and cognitive disorder factor were reportedly higher among respondents having parents with upper secondary education. Additionally, findings also revealed that there was no significant association between family structure (living with single parents and living with a caretaker/guardian) compared to living with both parents for all three factors namely social and emotional dysfunction, psychological distress, and cognitive disorder.

Table 5: Associations of demographic characteristics with GHQ-12 factors

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>.241a</td>
<td>.058</td>
<td>.028</td>
<td>2.03887</td>
</tr>
<tr>
<td>2</td>
<td>.348a</td>
<td>.121</td>
<td>.093</td>
<td>2.49493</td>
</tr>
<tr>
<td>3</td>
<td>.317a</td>
<td>.100</td>
<td>.071</td>
<td>2.69251</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender (v. male)</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta (S.E.)</td>
<td>P-value</td>
<td>Beta (S.E.)</td>
</tr>
<tr>
<td>(Social and Emotional Dysfunction)</td>
<td>(Psychological Distress)</td>
<td>(Cognitive Disorder)</td>
<td></td>
</tr>
</tbody>
</table>
### Table

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Education (v. Secondary upper)</th>
<th>No education</th>
<th>Degree</th>
<th>Diploma</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.251</td>
<td>0.363</td>
<td>-0.607</td>
<td>0.072</td>
<td>-0.733</td>
</tr>
<tr>
<td>(0.275)</td>
<td>(0.337)</td>
<td>(0.363)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education (v. Secondary upper)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>0.594</td>
<td>0.430</td>
<td>1.514</td>
<td>0.101</td>
<td>1.704</td>
</tr>
<tr>
<td>(0.752)</td>
<td>(0.920)</td>
<td>(0.993)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary lower</td>
<td>-0.138</td>
<td>0.656</td>
<td>0.089</td>
<td>0.815</td>
<td>-0.134</td>
</tr>
<tr>
<td>(0.309)</td>
<td>(0.379)</td>
<td>(0.409)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>0.601</td>
<td>0.156</td>
<td>1.436</td>
<td>0.006*</td>
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</tr>
<tr>
<td>(0.423)</td>
<td>(0.517)</td>
<td>(0.558)</td>
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<tr>
<td>(1.059)</td>
<td>(1.296)</td>
<td>(1.399)</td>
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</table>

*significant at 0.05

### 4.0 DISCUSSION

As mentioned in the literature review, the number of mental health-related issues are gradually increasing around the globe. The present study was designed to assess the level of mental health during the COVID-19 health crisis among Malaysian Indian adolescents and also to identify the factorial structure of GHQ-12. In contradiction with previous findings (Wang et al., 2020; Aten, 2020), the outcome of the present study revealed that the majority of the adolescents (70.4%) were psychologically healthy. Apart from that, only 29.6% of adolescents shows symptoms of psychological distress. However, given that our findings were based on a small sample size and targeted on a single ethnicity, the results from our analyses need to be interpreted with caution. A possible explanation for this might be that most of the respondents of this study (84.8%) are living with both parents. A previous study indicated that adolescents living with parents demonstrated good mental health (Ee and Arshat, 2017) and less externalising problems (Brière et al., 2013). These results are likely to suggest the importance of parents as a primary influence of their children’s mental health.
condition. Therefore, this finding has a strong basis for encouraging the development of positive parent-child relationship. Besides that, the outcome of the present study also suggests that mental health professionals and Parents-Teachers Association (PTA) support parents in carrying out their parenting roles more effectively to minimise the emergence of mental health-related issues among their children.

Despite this fact, it is critical to note that 29.6% of adolescents have experienced psychological problems. However, this percentage should be assessed while considering the small sample size. The findings seem to suggest that adolescents can develop mental health disorders later in their lives if left unnoticed. This group of the adolescents should have access to and receive appropriate mental health support from relevant institutions to minimise the possibility of experiencing severe mental health illnesses in the future.

The findings of this study identified three factors of the GHQ-12 which are social and emotional dysfunction, psychological distress, and cognitive disorder. This finding substantiates previous findings in the literature (El-Metwally, 2018; Winzer et al., 2014) and suggests that the GHQ-12 is a well-founded instrument to measure the state of mental health among Malaysian Indian adolescents. However, the emergence of three factors from the GHQ-12 might be determined by the other demographic elements such as gender and socioeconomic status.

The R-squared analysis was conducted to identify the percentage of variance for the dependent variable that is explained by the independent variable. Table 4 shows the interaction of the R-squared values for all three factors of the GHQ-12, which are social and emotional dysfunction, psychological distress, and cognitive disorder, with the predictor variables. Although the R-squared values were relatively low, they were significantly different from 0, which indicated that the regression model of this study are statistically significant. However, further research is needed to investigate other various factors to identify potential explanatory variables to assess the GHQ-12.

In our study, no significant association was found between gender, social and emotional dysfunction and psychological distress. However, female respondents were negatively and significantly associated with the cognitive disorder factor compared to male respondents. The findings suggest that female respondents were comparably related to the presence of lower rates of negative mental health items. The association between GHQ-12 and parents’ education background was reported to be positively and significantly associated with all the three factors of GHQ-12 among the respondents. The findings of the study suggested that the GHQ-12 score of social and emotional dysfunction factor, psychological distress factor, and cognitive disorder factor were higher compared to the respondents from parents who have upper secondary education. The outcome of this study confirms the findings of previous studies (Sonego et al., 2013), which suggested that adequate educational background of parents has a more providential influence on their child mental health. However, given that our findings are based on a limited number of respondents having parents with no educational background, the results from such analyses need to be interpreted with caution. Therefore, further study with a larger sample size is warranted to confirm this association. Apart from this, quite contrary to the findings in most studies (Daryanani et al. 2016; Bannink et al. 2013), the findings of this study on family structure towards three GHQ-12 factors (social and emotional dysfunction, psychological distress, and cognitive disorder) revealed no association. However, there is a shred of empirical evidence concerning the single parents and their children’s state
of mental health (Agnafors et al., 2019), which indicates that children from single mothers do not exhibit behavioural and emotional difficulties.

5.0 CONCLUSION

The evidence from this study revealed an unexpected finding which is that the majority of the Indian adolescents in Malaysia demonstrated overall good mental health scores amid the COVID-19 pandemic. Nonetheless, there are several adolescents experiencing mental health issues during this health crisis who require urgent attention. Hence, it is essential to integrate the available mental health care to assist vulnerable adolescents in combating psychological distress during this pandemic. The outcome of this study proved that GHQ-12 is a reliable and suitable instrument which has good factor structure to measure the level of mental health among Malaysian Indian adolescents.

Our work has some limitations. The most important limitation lies in the design of this study. The present study employed cross-section design which was unable to examine the causal relationships. Secondly, the findings of this study were limited to mono-ethnicity, thus this study was unable to investigate the effectiveness of the factor structure of GHQ-12 in assessing different ethnicities. Thirdly, the outcome of this study might not be transferable to the entire population of Indian adolescents due to the limited sample size. It is recommended to perform further investigations on a larger non-clinical sample from different ethnicities in Malaysia. Finally, future studies on the current topic are highly recommended to identify other factors affecting adolescents’ mental health during the COVID-19 pandemic.

DECLARATION

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Conflicts of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Availability of data and material

www.turkjphysiotherrehabil.org
The data that support the findings of this study are available upon request from the corresponding author. The data is not publicly available due to the data containing information that could compromise the privacy of research participants.

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