

## ORIGINAL ARTICLE

## Comparison of Mental Health Levels and Behavioural Disorders among Indonesian Adolescent Migrants and Local Non-migrants

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### ABSTRAK

Perkembangan kematangan remaja dipengaruhi oleh perubahan fizikal, kognitif dan tingkah laku. Perubahan ini menyebabkan remaja berisiko mengalami kesulitan dalam menyesuaikan diri dan berpotensi untuk mencetuskan masalah kesihatan mental. Satu kajian keratan rentas perbandingan tahap kesihatan mental antara remaja migran di Malaysia (migran) dan remaja Indonesia di negara asal (non-migran) telah dijalankan pada tahun 2023 menggunakan teknik pengambilan sampel berlapis dengan nisbah 3:1. Analisis bivariat menggunakan analisis regresi logistik binari mudah dan analisis multivariat regresi logistik binari kaedah 'backward stepwise' telah dilakukan ke atas semua pemboleh ubah signifikan yang ditemui dalam analisis bivariat. Kajian ni bertujuan untuk menilai hubungan antara pemboleh ubah tidak bersandar dan pembolehubah bersandar iaitu kesihatan mental bagi setiap kumpulan (migran dan non-migran). Borang soal selidik yang telah disahkan dan diterjemahkan ke dalam bahasa Indonesia telah digunakan, yang merangkumi ciri-ciri responden, soal selidik kekuatan dan kesukaran (SDQ), tingkah laku risiko kesihatan, keyakinan diri, sokongan ibu bapa dan rakan sebaya serta hubungan sosial diedarkan di sekolah terpilih. Kajian ini melibatkan penyertaan seramai 191 remaja dari Indonesia (non-migran) dan 79 migran remaja Indonesia dari Malaysia (migran). Hasil kajian bagi remaja bukan migran mendapati hubungan yang bererti ( $p < 0.05$ ) untuk (i) domain emosi SDQ bagi perempuan (AdjOR: 0.30; 95% CI: 0.16-0.57), (ii) domain masalah tingkah laku bagi perempuan (AdjOR: 0.94; 95% CI: 0.90-0.98), (iii) domain masalah rakan sebaya bagi remaja perempuan (AdjOR: 1.98; 95% CI: 1.02-3.83) dan (iv) domain kesukaran bagi remaja perempuan (AdjOR: 0.44; 95% CI: 0.20-0.93), bukan agama Islam (AdjOR: 15.96; 95% CI: 1.12-212.37) serta keganasan (AdjOR: 0.35; 95% CI: 0.14-0.91). Manakala, bagi remaja migran (migran), faktor hubungan bererti ialah (i) domain masalah tingkah laku dengan sokongan rakan sebaya (AdjOR: 2.90; 95% CI: 1.12-7.1), (ii) domain hiperaktif dengan sokongan rakan sebaya (AdjOR: 2.91; 95% CI: 1.30-6.54), interaksi sosial (AdjOR: 7.13; 95% CI: 2.41-21.07) dan (iii) domain kekuatan dengan remaja perempuan (AdjOR: 2.28; 95% CI: 1.05-4.93). Perancangan strategi berasaskan hasil yang berkesan dalam pembentukan intervensi yang lebih inklusif dan sensitif dari segi budaya dapat menyokong kesihatan mental remaja bagi kedua-dua kumpulan.

**Kata kunci:** Immigran; kesihatan mental; masalah perilaku remaja

## ABSTRACT

The development of adolescent maturation is influenced by physical, cognitive and behavioural changes. This puts them at risk of experiencing difficulties in adjusting and triggering mental health problems. A comparative cross-sectional study on mental health levels between Indonesian migrants in Malaysia (migrants) and local Indonesian adolescents (non-migrants) was conducted in 2023 using a stratified sampling technique with a 3:1 ratio. The bivariate analysis using simple binary logistic regression analysis and multivariate binary logistic regression backward stepwise analysis was performed for all significant variables found in the bivariate analysis. It aimed to examine the relationships between the independent and dependent variables (mental health) for each group (migrant and Non-migrant). A validated questionnaire, translated into the Indonesian language, covers respondent characteristics, the Strengths and Difficulties Questionnaire (SDQ), health risk behaviours, self-confidence, parental and peer support, and social relationships distributed at selected schools. The study recruited 191 Indonesian adolescents from local schools in Indonesia (Non-migrant) and 79 Indonesian migrant adolescents in Malaysia (migrant). The results found significant relationships ( $p < 0.05$ ) for (i) the emotional domain of the SDQ and females (AdjOR: 0.30; 95% CI: 0.16-0.57), (ii) the conduct problem domain and females (AdjOR:0.94; 95%CI:0.90-0.98), (iii) the peer problem domain and females (AdjOR: 1.98; 95% CI: 1.02-3.83) and (iv) the domains of difficulties and females (AdjOR: 0.44; 95% CI: 0.20-0.93), non-Muslim religion (AdjOR: 15.96; 95% CI: 1.12-212.37), and violence (AdjOR: 0.35; 95% CI: 0.14-0.91) among the non-migrant adolescents. Meanwhile, for migrant adolescents, significant relationship factors were (i) conduct problems domain with peer support (AdjOR:2.90; 95%CI:1.12-7.1), (ii) hyperactivity domain with peer support (AdjOR: 2.91; 95% CI: 1.30-6.54), social interaction (AdjOR: 7.13; 95% CI: 2.41-21.07) and (iii) strength domain with female (AdjOR: 2.28; 95% CI: 1.05-4.93). Effective outcome-based strategy planning in the development of more inclusive and culturally sensitive interventions can support adolescent mental health in both groups.

**Keywords:** Adolescent behavioural disorders; immigrant; mental health

## INTRODUCTION

Adolescents in migratory situations face mental health issues worldwide (Elshahat & Moffat 2022). A higher risk of mental health disorders than their counterparts in their home country, and the impact of mental health disorders on migration has been documented in several studies conducted internationally (Mock-Muñoz de Luna et al. 2019). Children and adolescents who migrate and those who do not have a substantial difference in the framework for mental health issues (Vos et al. 2021). Among young migrants, mental health issues did not differ by percentage or crude odds ratios across different ethnic groups (Kim et al. 2018). The psychological problems of adolescents who migrated to Germany showed the highest rates of anxiety, depression and post-traumatic stress disorder (PTSD), as well as low social support, low economic resources and

poor German language proficiency (Muller et al. 2019). Adolescence is a crucial stage of human development, which includes the growth of the body, brain and mind (Bennouna et al. 2019; Stark et al. 2022). The relationship between immigration history and adolescent mental health issues is significantly influenced by socio-economic demographic and gender, as seen in the mental health of humanitarian migrants, which is impacted by both pre-migration stressors and post-migration potentially traumatic situations (Duihnhof et al. 2019).

The United Nations Development Programme reports mentioned that adolescents who migrate with their parents are more likely to experience mental health issues (International Organisation for Migration 2022). This is supported by research that found Syrian refugees who had experienced the war also displayed signs of PTSD when

they arrived in Turkey (Yayan & Düken 2019). According to a different study conducted among Latino youths in America, adolescents between the ages of 14 and 19 are typically initially exposed to depression and PTSD (Pérez-Rojas et al. 2021). Significant evidence on the contemporary population in European cultures, which consists of adolescents with an immigration background, has shown that these adolescents are more likely than their native counterparts to suffer from mental health issues (Gustafsson et al. 2023). Social inequality prevents many migrant families from obtaining well-paying jobs, healthcare and other essential resources. Migrant families' mental health is most impacted by inadequate income, unemployment and underemployment.

Indonesia-National Adolescent Mental Health Survey (I-NAMHS) is the first national survey in Indonesia on mental health, revealing that one in three adolescents (34.9%) had a mental health problem in the past 12 months, equating to 15.5 million Indonesian adolescents (Erskine et al. 2024; Wahdi et al. 2023). One in 20 adolescents (5.5%) had a mental disorder in the past 12 months, equating to approximately 2.45 million Indonesian adolescents. Anxiety disorders were the most common mental disorder experienced by adolescents. No difference was seen in the overall prevalence of mental disorders by sex or by age. However, sex and age differences were seen in the prevalence of specific mental disorders. Only 2.6% of adolescents with a mental health problem had accessed services that provide support or counselling for emotional and behavioural problems in the past 12 months. Overall, only one in 50 adolescents (2.0%) had used services in the past 12 months, and two-thirds of these adolescents (66.5%) only accessed a service once. Only 4.3% of primary caregivers identified that their adolescent needed help for emotional and behavioural problems in the past 12 months (despite 34.9% of adolescents having experienced a mental health problem in the same period). Of the primary caregivers who indicated that their adolescent needed help, more than two-fifths (43.8%) reported that they did not seek help because they preferred

to handle their problems themselves or with the support of family or friends. During the COVID-19 pandemic, 4.6% of adolescents reported often feeling more anxious, more depressed, lonely or having poor concentration more frequently than usual (Center for Reproductive Health 2022). The 2023 National Health Survey reported that depression, anxiety and schizophrenia are the third most prevalent problems that contribute to two per cent of Indonesians aged over 15 (Antara News 2024).

To present knowledge, neither Malaysia nor Indonesia has studied the mental health of their adolescent migrants. Different migration backgrounds compared to non-migrants have been shown to affect the mental and social well-being of adolescents in a survey conducted in Flanders, Belgium (Devos et al. 2024). Mental health issues have a detrimental effect on adolescents' mental and physical development. Evidence for future planning can be produced by a thorough investigation that considers aspects from both parents and children. Thus, the current study sought to evaluate the associations between mental health status, peer support, parental support, social support and self-confidence among Indonesian adolescents who were studying in Malaysia and adolescents studying in their home country. Our research questions focused on; (i) What is the difference in the prevalence of mental health problems between Indonesian adolescents who migrated to Malaysia (migrant group) and local Indonesian adolescents (non-migrant group)? and (ii) What factors influence mental health among adolescents who migrated to Malaysia (migrant) and local Indonesian adolescents (non-migrant group)?

## MATERIALS AND METHODS

A comparative cross-sectional study design was conducted from July 2022 to June 2023, using stratified sample selection based on a list of Indonesian secondary schools located in Surabaya, Indonesia and Kuala Lumpur, Malaysia. Both Surabaya and Kuala Lumpur are

large urban areas with high population density, which are most likely to be prone to mental health problems and needs. Three Indonesian schools and one Malaysian school were chosen at a random ratio of 3:1. The adolescents from Indonesia who were enrolled in secondary schools in Malaysia and Indonesia were identified as the sample population. There was only one Indonesian International School in Kuala Lumpur. The sample unit was defined as an Indonesian adolescent enrolled in secondary school in Malaysia or Indonesia who met the following criteria: aged between 12 and 17 years old, a registered student for at least 6 months, had parental consent, was enrolled in school during the data collection period and was not sick.

A total of 327 teenagers were required to participate in the study, which was determined using the Open Epi sample size calculator (Dean-Boucher et al. 2020) using a prevalence of 34.9% from 2023 I-NAMHS, a population size of 5000 in a school, 95% confident interval and accepted 5% margin of error. Every chosen school that met the inclusion requirements had been sampled for random selection. If class teachers were not present, respondents were encouraged to participate and complete the questionnaire with permission from the head teacher of the schools, and the researcher assisted when needed. The year 2022-2023 was the year in which the COVID-19 pandemic struck and data collection was affected, as just a small number of pupils attended classes. Several questionnaires were reviewed for their suitability for this study, as listed in Table 1. This study adapted the validated Indonesian SDQ questionnaire, with permission to use granted. The demographic information comprised living circumstances, health status, length of attendance at particular schools, gender, age and religion.

The questionnaire had many domains as followed;

#### (i) Strengths and Difficulties Questionnaire

Goodman and Dent (2019) developed the Strengths and Difficulties Questionnaire

(SDQ), which has been expanded to measure adolescents' psychological strengths and challenges for those aged up to 17 years. Reliability was judged by internal consistency (Cronbach's alpha: 0.73) (Goodman 2001). Back-to-back translation into the Indonesian language shows good accuracy for screening with a cut-off score of 5.50, providing excellent sensitivity and specificity (Valentia & Turnip 2022).

#### (ii) Health and Behaviour

In 2021, a survey of the health status of Malaysian adolescents was conducted using the Adolescents' Health Survey 2022 Malaysia (Institute for Public Health 2022). We adopted some domains on alcohol use and junk food consumption, translated them into the Indonesian language and validated them among the Indonesian adolescents.

#### (iii) Multiple Perceived Social Support

A validated Multiple Perceived Social Support questionnaire was adopted to measure social support from three different sources: friends, family, and a significant other (Zimet et al. 1988). The English questionnaire has been translated into the Indonesian language and validated among Indonesian adolescents.

#### (iv) Self-Efficacy (GSES)

The Generalised Self-Efficacy (GSE) rating scale (Bandura 2006) measures a person's level of confidence in their ability to handle new or challenging circumstances. It was in the Indonesian language, and permission to use was granted.

#### (v) Peer Support

The Peer Support (PS) rating scale gauges perceived peer support. It was used to examine students' spending time outside of class, when they ask for assistance when they are having difficulties (Solomontos-Kountouri & Strohmeier

TABLE 1: Summary of previous research instruments used on the mental health of adolescents

| Instrument                                                                     | Rationale/Outcome Measured                                                                                                                                                                          | Component                                                                                                                                                                                                                                   | Values                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strengths and Difficulties Questionnaire (SDQ) (Goodman 2001)                  | Used to screen for poor mental health dimensions                                                                                                                                                    | Two of the sub-scales from the original five: Peer Problems and Prosocial sub-scales                                                                                                                                                        | Each sub-scale is valued from 0 to 10, with a higher score reflecting greater mental health problems.                                                                                                                                         |
| Health Behavior (Institute for Public Health 2022)                             | Measure the health behaviour of adolescents through physical activity, Sports, and healthy food consumption.                                                                                        | Mental health problems (including Healthy Mind Screening)                                                                                                                                                                                   | 21 items scale with score from 0-3: Did not apply to me at all (0), Applied to me to some degree or some of the time (1), Applied to me to a considerable degree or a good part of time (2), Applied to me very much, or most of the time (3) |
| Risk Behavior (Institute for Public Health 2022)                               | Measure the risk of Health behaviours of adolescents due to alcohol use, smoking, and free sex behavior, suicide ideation, bullying, violence, and junk food consumption.                           | Four questions were asked about drug use; six questions asked about drinking alcohol; five questions asked about sexual intercourse; three questions asked about physical activity; six questions asked about your feelings and friendships | Each item was scaled from 0-4: never (0) to always (4).                                                                                                                                                                                       |
| Generalised Self-Efficacy (Bandura 2006)                                       | Measure the strength of an individual's belief in his or her ability to respond to a novel or difficult situation and to deal with any associated obstacles or setbacks.                            | 10-item scale                                                                                                                                                                                                                               | Use a value from 1 to 4, with a higher value reflecting better self-efficacy.                                                                                                                                                                 |
| Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al. 1988) | Measures perceived social support from three respective sources: friends, family, and a significant other; has been validated with multiple adolescent populations.                                 | 12-item scale                                                                                                                                                                                                                               | Use a value from 0 to 7, with a higher value score reflecting greater perceived social support                                                                                                                                                |
| Peer Support (Miller & Stiver 1997)                                            | Measure perceived peer support to analyse with whom the participant spends time together while being students, outside of time lectures, which the participant asked for help when facing problems. | 15-item scale                                                                                                                                                                                                                               | use a value from 1 to 3, with a higher value score reflecting greater perceived peer support                                                                                                                                                  |
| Family Support (Bowen 1966)                                                    | Measure perceived family support and analyse how the role of family solves the adolescent's problems.                                                                                               | 20-item scale                                                                                                                                                                                                                               | Use a value from 1 to 3, , with a higher value score reflecting greater perceived family support                                                                                                                                              |
| Social Interaction (Vigu & Tardif-Grenier 2024)                                | Measure social interaction between adolescents with the social environment.                                                                                                                         | 15 item scale                                                                                                                                                                                                                               | Use a value from 1 to 2, with a higher value score reflecting good social interaction.                                                                                                                                                        |

2021). The Indonesian language version was used with permission granted.

#### (vi) Family Support

The Family Support (FS) rating scale was used to evaluate whether the adolescent's concerns are resolved by the family and gauges supportive (Sarason et al. 1983). The Indonesian language version was used with permission granted.

#### (vii) Social Interaction

Adolescents' social interactions in a social setting are measured by the Social Interaction rating scale (Askeland et al. 2017).

### Data Collection

All adolescents invited to participate in the study were briefed on the purpose and the scale used in answering. Their consent was taken after parental consent was obtained. Utilising Statistical Package for Social Sciences (SPSS), version 25 (IBM Corp., Armonk, NY, USA) the statistical analysis was conducted. For every clinical, physical and demographic data point, descriptive analysis and odds ratios were calculated. Continuous variables were represented by means and standard deviations, while categorical variables were displayed as frequencies and percentages. By using the skewness and kurtosis indices, the continuous variables were evaluated. Bivariate and multivariate regression analyses were run to evaluate factors influencing the SDQ subscales. The backward stepwise analysis of multivariate binary logistic regression modelling was used in this research. This approach was beneficial as it yielded results in several steps simultaneously, based on the iterative removal of non-significant variables from the final model.

### Ethical Consideration

The study had been granted approval from the Research Ethics Committee of the Universiti Kebangsaan Malaysia (UKM) (JEP 2021-814/ FF-

2022-056). Permission to use the questionnaires was granted before the survey was conducted. All respondents were informed about the study and assured of their right to withdraw from the study at any point.

## RESULTS

### Socio-Demographic Characteristics

The final sample consisted of 191 adolescents of non-migrants from Indonesia (non-migrant group) who were between the ages of 11 and 19 (66 females and 125 males). In addition, 79 adolescents (41 girls and 38 boys) between the ages of 11 and 19 were Indonesian migrants who attended Indonesian International School in Malaysia after following their parents (Table 2). Both groups comprised majority of the 15-16-year-old age group, as well as grades X1-X11, with a length of stay in their respective countries exceeding 12 months. However, many migrants who participated were males compared to the local (non-migrant group).

### Strengths and Difficulties Questionnaire Domain (Emotional, Conduct Problem, Hyperactivity, Peer Problem and Prosocial -Strength)

Five domains with 25 items comprised the SDQ: emotional symptoms, conduct problems, hyperactivity, peer relationship problems and prosocial. Table 3 showed the correlation test for each domain. There was a positive weak correlation between conduct problems and hyperactivity ( $r = 0.223$ ,  $p < 0.05$ ) and peer relationship problems ( $r = 0.124$ ,  $p < 0.05$ ). There was a weak negative correlation between hyperactivity and prosocial behaviour ( $r = -0.224$ ,  $p < 0.05$ ); prosocial behaviour and peer relationship problems ( $r = -0.158$ ,  $p < 0.05$ ).

Table 4 showed the SDQ descriptive analysis. The migrant vs non-migrant comparison showed lower mean scores for emotional symptoms (4.70 sd 2.34 vs 5.82 sd 2.54); conduct problems (2.30 sd 1.35 vs 3.89 sd 1.91); and peer relationship

TABLE 2: Socio-demographics of adolescents: migrant and non-migrant

| Socio-demographics | Category    | Migrant, <i>n</i> = 79 |      | Non-migrant, <i>n</i> = 191 |      |
|--------------------|-------------|------------------------|------|-----------------------------|------|
|                    |             | <i>n</i>               | %    | <i>n</i>                    | %    |
| Age (Years)        | 15          | 15                     | 18.0 | 24                          | 12.6 |
|                    | 16          | 23                     | 29.1 | 59                          | 30.9 |
|                    | 17          | 31                     | 39.2 | 77                          | 40.3 |
|                    | 18          | 9                      | 1.4  | 25                          | 13.1 |
|                    | 19          | 1                      | 1.3  | 6                           | 3.1  |
| Gender             | Male        | 41                     | 51.9 | 66                          | 34.6 |
|                    | Female      | 38                     | 48.1 | 125                         | 65.4 |
| Grade              | Grade X     | 12                     | 15.2 | 67                          | 35.1 |
|                    | Grade XI    | 34                     | 43.0 | 56                          | 29.3 |
|                    | Grade XII   | 33                     | 41.8 | 68                          | 35.6 |
| Religion           | Muslim      | 79                     | 100  | 189                         | 99.0 |
|                    | Non-Muslim  | 0                      | 0    | 2                           | 1.0  |
| Time of stay       | < 12 months | 12                     | 15.2 | 2                           | 1.0  |
|                    | > 12 months | 67                     | 84.8 | 189                         | 99.0 |

TABLE 3: Correlation analysis of Strengths and Difficulties Questionnaire (SDQ) domains

|                            |                     | Emotional symptoms | Conduct problems | Hyperactivity | Peer relationship problems | Prosocial behaviour |
|----------------------------|---------------------|--------------------|------------------|---------------|----------------------------|---------------------|
| Emotional symptoms         | Pearson Correlation | 1                  | 0.042            | 0.080         | -0.003                     | -0.105              |
|                            | Sig. (2-tailed)     |                    | 0.494            | 0.190         | 0.962                      | 0.086               |
| Conduct problems           | Pearson Correlation | 0.042              | 1                | 0.223**       | 0.124*                     | -0.019              |
|                            | Sig. (2-tailed)     | 0.494              |                  | 0.000         | 0.041                      | 0.755               |
| Hyperactivity              | Pearson Correlation | 0.080              | 0.223**          | 1             | 0.078                      | -0.224**            |
|                            | Sig. (2-tailed)     | 0.190              | 0.000            |               | 0.201                      | 0.000               |
| Peer relationship problems | Pearson Correlation | -0.003             | 0.124*           | 0.078         | 1                          | -0.158**            |
|                            | Sig. (2-tailed)     | 0.962              | 0.041            | 0.201         |                            | 0.009               |
| Prosocial behaviour        | Pearson Correlation | -0.105             | -0.019           | -0.224**      | -0.158**                   | 1                   |
|                            | Sig. (2-tailed)     | 0.086              | 0.755            | 0.000         | 0.009                      |                     |

problems (4.72 sd 1.31 vs 4.82 sd 1.44). However, the mean for the prosocial behaviour domain was equal in both groups ( $7.71 \pm 1.82$  vs  $7.71 \pm 1.68$ ). Total difficulty scores were calculated based on the sum of the first four subscales (emotional symptoms, conduct problems, hyperactivity and

peer relationship problems). The total difficulty mean scores were higher among the non-migrants ( $17.68 \pm 4.53$  vs  $20.32 \pm 5.26$ ).

Table 5 showed the descriptive analysis of the SDQ domain levels. Overall, the prevalence of normal levels for each SDQ domain was

TABLE 4: Mean, median and standard deviation values of Strengths and Difficulties Questionnaire (SDQ) domain between migrant and non-migrant

|                            | Migrant, n = 79 |        |      | Non-migrant, n = 191 |        |      |
|----------------------------|-----------------|--------|------|----------------------|--------|------|
|                            | Mean            | Median | SD   | Mean                 | Median | SD   |
| Emotional symptoms         | 4.70            | 5.00   | 2.34 | 5.82                 | 6.0    | 2.54 |
| Conduct problems           | 2.30            | 2.00   | 1.35 | 3.89                 | 5.80   | 1.91 |
| Hyperactivity              | 5.94            | 6.0    | 1.53 | 5.80                 | 6.0    | 1.80 |
| Peer relationship problems | 4.72            | 5.0    | 1.31 | 4.82                 | 5.0    | 1.44 |
| Prosocial behavior         | 7.71            | 8.0    | 1.82 | 7.71                 | 8.0    | 1.68 |
| Total difficulty scores    | 17.68           | 17.00  | 4.53 | 20.32                | 20     | 5.26 |

higher among the migrant compared to non-migrant adolescents for the normal emotional domain (64.6% vs 45.0%); the normal conduct problems domain (81.6% vs 32.5%); the normal hyperactivity domain (45.6% vs 36.1%) and the prosocial behaviour domain (91.1% vs 88.0%). However, the prevalence of peer relationship problems was higher among the migrants (93.7% vs 67.5%). The total difficulty level was higher for the abnormal group (score 20-40), among the migrants (30.4% vs 25.7%).

### Bivariate Analysis

Table 6 showed the bivariate analysis using simple binary logistic regression analysis between SDQ domains and independent variables among the migrant adolescents. There were no variables studied that showed a significant relationship for emotional symptoms. However, the conduct problems domain was only associated with peer support (crude OR: 2.67; 95%: 1.17, 6.12). The hyperactivity domain was significantly associated with peer support (crude OR: 4.64; 95%: 1.17,

TABLE 5: Distribution of Strengths and Difficulties Questionnaire (SDQ) domains between migrant and non-migrant

| SDQ domains               | Categories             | Migrant, n = 79 |      | Non-migrant, n = 191 |      |
|---------------------------|------------------------|-----------------|------|----------------------|------|
|                           |                        | n               | %    | n                    | %    |
| Emotional symptoms        | Normal (score 0-5)     | 51              | 64.6 | 86                   | 45.0 |
|                           | Borderline (score 6)   | 11              | 13.9 | 27                   | 14.1 |
|                           | Abnormal (score 7-10)  | 17              | 21.5 | 78                   | 40.9 |
| Conduct problems          | Normal (score 0-3)     | 64              | 81.0 | 62                   | 32.5 |
|                           | Borderline (score 4)   | 9               | 11.4 | 42                   | 22.0 |
|                           | Abnormal (score 5-10)  | 6               | 7.6  | 87                   | 45.5 |
| Hyperactivity             | Normal (score 0-5)     | 36              | 45.6 | 69                   | 36.1 |
|                           | Borderline (score 6)   | 23              | 29.1 | 32                   | 16.8 |
|                           | Abnormal (score 7-10)  | 20              | 25.3 | 90                   | 47.1 |
| Peer relationship problem | Normal (score 0-3)     | 5               | 6.3  | 52                   | 27.2 |
|                           | Borderline (score 4-5) | 38              | 48.1 | 42                   | 22.0 |
|                           | Abnormal (score 6-10)  | 36              | 45.6 | 97                   | 50.8 |
| Prosocial behaviour       | Normal (score 6-10)    | 72              | 91.1 | 168                  | 88.0 |
|                           | Borderline (score 5)   | 3               | 3.8  | 17                   | 8.9  |
|                           | Abnormal (score -4)    | 4               | 5.1  | 6                    | 3.1  |
| Total difficulty          | Normal (0-15)          | 29              | 36.7 | 106                  | 55.5 |
|                           | Borderline (16-19)     | 26              | 32.9 | 36                   | 18.8 |
|                           | Abnormal (20-40)       | 24              | 30.4 | 49                   | 25.7 |

6.12) and social interaction (crude OR: 4.56; 95% CI: 1.80, 11.56).

Table 7 presented the bivariate analysis on the non-migrant group. There was an association between the emotional symptoms' domain and gender (crude OR: 0.31; 95% CI: 0.17, 0.60). The conduct problems domain was associated with self-efficacy (crude OR: 0.48; 95% CI: 0.26, 0.89) and social support (crude OR: 1.76; 95% CI: 1.01, 3.10). The peer relationship problems were associated with age (crude OR: 0.38; 95% CI: 0.17, 0.84), gender (crude OR: 1.98; 95% CI: 1.03, 3.81) and parental occupation (crude OR: 0.23; 95% CI: 0.06, 0.84). None was associated with the hyperactivity domain.

### Multivariate Analyses

Table 8 showed the results of the multivariate analysis using multivariate binary logistic regression analysis after adjusting for independent variables with  $p > 0.25$  in the bivariate analysis for migrant and non-migrant groups based on each SDQ domain. The model was presented according to the SDQ domain with significant variables ( $p < 0.05$ ).

The migrant group showed significant variables on (i) peers' support for domain conduct problems [Adjusted (Adj) OR: 2.90; 95% CI: 1.19, 7.06], (ii) peer support (Adj OR: 2.91; 95% CI: 1.29, 6.54) and social interaction (Adj OR: 7.13; 95% CI: 2.41, 21.07) for domain hyperactivity, (iii) gender for domain peer relationship problems (Adj OR: 1.98; 95% CI: 1.02, 3.83) and (iv) gender for domain prosocial behaviour (Adj OR: 2.28; 95% CI: 1.05, 4.93).

The non-migrant group showed significant variables for (i) gender on domain emotional symptoms (Adj OR: 0.30; 95% CI: 0.16, 0.59), (ii) self-efficacy (Adj OR: 0.94; 95% CI: 0.90, 0.98) for domain conduct problems, (iii) gender (Adj OR: 1.98; 95% CI: 1.02, 3.83) for domain peer relationship problems and (iv) gender (Adj OR: 0.44; 95% CI: 0.20, 0.93) and religion (Adj OR: 15.96; 95% CI: 1.20, 212.37), and for violence (Adj OR: 0.35; 95% CI: 0.14, 0.91) for domain difficulty.

## DISCUSSION

The study compares the mental health problems between Indonesian adolescents (aged 15-19 years) in Indonesia and Indonesian adolescents who migrate to Malaysia. The questionnaire has been adapted and validated in Indonesian for clarity and trustworthiness to be used among Indonesian adolescents. The results of the study showed that there were differences in means of emotional symptoms, conduct problems, hyperactivity and prosocial domains between the two groups of Indonesian migrant and non-migrant adolescents, with higher percentages of normal levels among the migrant Indonesian adolescents. However, for peer relationship problems and total difficulty domains, a higher percentage for the normal level was noted among the non-migrant Indonesian adolescents.

The findings are consistent with a previous study in Germany (Runge et al. 2022), in which local mental health services were provided in the destination country to migrant school children helps in preventing mental health problems. The finding is different from a study conducted in Australia that reported that parents of their children who migrate abroad have mental health issues after the adolescents arrive in the destination country (Guo et al. 2023). A study conducted in Canada showed similar findings with lower levels of emotional problems and hyperactivity compared to their non-immigrant (Salami et al. 2023).

The correlation test found a weak correlation between the conduct problems and hyperactivity; the hyperactivity and the prosocial behaviour, and the peer relationship problem and strength domains.

Past studies in European countries indicate a higher prevalence of mental health problems among immigrants, but recent findings on immigrant children and adolescents are mixed (Salami et al. 2023). Our findings based on bivariate analysis found that out of 15 independent variables tested with the emotional domain of mental health, only gender significantly influences emotional symptoms among the non-migrant adolescents. The conduct problems showed

TABLE 6: Bivariate analysis between Independent variables and Strengths and Difficulties Questionnaire (SDQ) domains among migrants

| Independent variable                 | Emotional symptoms |        | Conduct Problems |        | Hyperactivity |        | Peer Relationship Problems |        | Prosocial behavior |        |      |       |      |       |
|--------------------------------------|--------------------|--------|------------------|--------|---------------|--------|----------------------------|--------|--------------------|--------|------|-------|------|-------|
|                                      | cOR                | 95% CI | cOR              | 95% CI | cOR           | 95% CI | cOR                        | 95% CI | cOR                | 95% CI |      |       |      |       |
| Gender (ref: Male)                   | 1.26               | 0.51   | 3.12             | 0.93   | 0.30          | 2.87   | 2.90                       | 0.30   | 2.87               | 0.81   | 4.89 | 0.69  | 0.18 | 2.63  |
| Grade (ref: Grade x)                 | 1.08               | 0.57   | 2.06             | 1.41   | 0.61          | 3.26   | 5.12                       | 0.61   | 3.26               | 0.86   | 1.62 | 1.08  | 0.42 | 2.79  |
| Physical activity (ref: less active) | 1.16               | 0.47   | 2.86             | 1.70   | 0.54          | 5.34   | 4.41                       | 0.54   | 5.34               | 2.18   | 0.88 | 5.39  | 1.03 | 3.88  |
| Smoking (ref: no)                    | 2.22               | 0.46   | 10.69            | 3.75   | 0.74          | 18.95  | 11.94                      | 0.74   | 18.95              | 0.30   | 0.06 | 1.66  | 1.17 | 10.84 |
| Junk food consumption (ref: no)      | 0.90               | 0.34   | 2.42             | 0.51   | 0.13          | 2.01   | 3.97                       | 0.13   | 2.01               | 0.77   | 0.30 | 2.03  | 0.53 | 2.73  |
| Self-efficacy (ref: low)             | 1.12               | 0.99   | 1.27             | 0.67   | 0.20          | 2.24   | 1.978                      | 0.20   | 2.24               | 1.12   | 0.41 | 3.04  | 0.49 | 1.95  |
| Social support (ref: low)            | 0.52               | 0.15   | 1.78             | 0.81   | 0.19          | 3.48   | 10.37                      | 0.19   | 3.48               | 0.97   | 0.31 | 3.03  | 1.73 | 9.20  |
| Peer support (ref: low)              | 1.14               | 0.60   | 2.16             | 2.67   | 1.17          | 6.12   | 4.64                       | 1.17   | 6.12               | 1.78   | 0.92 | 3.43  | 0.55 | 1.58  |
| Family support (ref: low)            | 1.07               | 0.61   | 1.88             | 1.11   | 0.55          | 2.21   | 2.20                       | 0.55   | 2.21               | 1.48   | 0.84 | 2.62  | 0.62 | 1.56  |
| Social interaction (ref: low)        | 1.29               | 0.61   | 2.74             | 0.79   | 0.31          | 2.01   | 4.56                       | 1.80   | 11.56              | 4.56   | 1.80 | 11.56 | 0.99 | 2.98  |
| cOR: Crude odds ratio                |                    |        |                  |        |               |        |                            |        |                    |        |      |       |      |       |

TABLE 7: Bivariate analysis between independent variables and Strengths and Difficulties Questionnaire (SDQ) domains among Non-Migrants

| Independent variable                        | Emotional symptoms |        | Conduct Problems |        | Hyperactivity |        | Peer Relationship Problems |        | Prosocial behavior |        |      |       |      |      |       |
|---------------------------------------------|--------------------|--------|------------------|--------|---------------|--------|----------------------------|--------|--------------------|--------|------|-------|------|------|-------|
|                                             | cOR                | 95% CI | cOR              | 95% CI | cOR           | 95% CI | cOR                        | 95% CI | cOR                | 95% CI |      |       |      |      |       |
| Age                                         | 0.99               | 0.46   | 2.15             | 0.72   | 0.33          | 1.60   | 1.03                       | 0.46   | 2.31               | 0.38   | 0.17 | 0.84  | 0.51 | 0.13 | 1.98  |
| Gender (ref: male)                          | 0.31               | 0.17   | 0.60             | 0.95   | 0.50          | 1.81   | 0.83                       | 0.44   | 1.55               | 1.98   | 1.03 | 3.81  | 0.51 | 0.13 | 1.98  |
| Grade (ref: Grade x)                        | 1.03               | 0.73   | 1.45             | 1.19   | 0.82          | 1.72   | 0.93                       | 0.65   | 1.33               | 0.70   | 0.47 | 1.04  | 0.86 | 0.46 | 1.62  |
| Parental occupation (ref: professional job) | 1.33               | 0.64   | 2.74             | 0.71   | 0.19          | 2.60   | 1.34                       | 0.33   | 5.36               | 0.23   | 0.06 | 0.84  | 2.15 | 0.48 | 9.70  |
| Physical activity (ref: less active)        | 1.32               | 0.64   | 2.73             | 0.59   | 0.28          | 1.29   | 0.63                       | 0.30   | 1.30               | 0.65   | 0.30 | 1.41  | 2.18 | 0.88 | 5.38  |
| Smoking (ref: no)                           | 0.82               | 0.45   | 1.47             | 0.85   | 0.27          | 2.67   | 0.53                       | 0.18   | 1.60               | 0.46   | 0.15 | 1.42  | 0.30 | 0.05 | 1.66  |
| Junk food consumption (ref: no)             | 1.47               | 0.70   | 3.03             | 0.69   | 0.37          | 1.28   | 0.91                       | 0.50   | 1.67               | 0.67   | 0.35 | 1.28  | 0.77 | 0.29 | 2.02  |
| Self-efficacy (ref: low)                    | 0.58               | 0.32   | 1.03             | 0.48   | 0.26          | 0.89   | 0.83                       | 0.46   | 1.51               | 0.76   | 0.40 | 1.44  | 1.11 | 0.41 | 3.04  |
| Social support (ref: low)                   | 0.97               | 0.57   | 1.64             | 1.76   | 1.01          | 3.10   | 0.89                       | 0.51   | 1.52               | 0.65   | 0.36 | 1.18  | 0.97 | 0.31 | 3.03  |
| Peer support (ref: low)                     | 5.07               | 0.55   | 46.26            | 1.40   | 0.23          | 8.60   | 2.72                       | 0.44   | 16.73              | 4.19   | 0.68 | 25.85 | 1.77 | 0.92 | 3.43  |
| Family support (ref: low)                   | 1.52               | 0.83   | 2.79             | 1.35   | 0.70          | 2.58   | 0.55                       | 0.30   | 1.02               | 0.54   | 0.28 | 1.04  | 1.48 | 0.84 | 2.61  |
| Social interaction (ref: low)               | 1.52               | 0.83   | 2.79             | 1.34   | 0.70          | 2.57   | 0.55                       | 0.30   | 1.02               | 0.54   | 0.28 | 1.04  | 4.56 | 1.80 | 11.55 |
| cOR: Crude odds ratio                       |                    |        |                  |        |               |        |                            |        |                    |        |      |       |      |      |       |

TABLE 8: Final multivariate model analysis between independent variables and Strengths and Difficulties Questionnaire (SDQ) domains among migrants and non-migrants

| Variable                                                                                    | B      | S.E.  | Wald   | df | Sig   | Adj Odds Ratio | Lower, 95% CI | Upper, 95% CI |
|---------------------------------------------------------------------------------------------|--------|-------|--------|----|-------|----------------|---------------|---------------|
| <b>Emotional Symptoms</b>                                                                   |        |       |        |    |       |                |               |               |
| Migrants adolescents                                                                        |        |       |        |    |       |                |               |               |
| Self-efficacy (ref: low)                                                                    | 0.639  | 0.551 | 1.343  | 1  | 0.246 | 1.894          | 0.643         | 5.577         |
| Non-migrant adolescents                                                                     |        |       |        |    |       |                |               |               |
| Gender (ref: male)                                                                          | -1.190 | 0.334 | 12.667 | 1  | 0.000 | 0.304          | 0.158         | 0.586         |
| Peer support (ref: low)                                                                     | 1.821  | 1.164 | 2.446  | 1  | 0.118 | 6.178          | 0.630         | 60.546        |
| <b>Conduct Problems</b>                                                                     |        |       |        |    |       |                |               |               |
| Migrants Adolescents                                                                        |        |       |        |    |       |                |               |               |
| Smoking (ref: no)                                                                           | 1.680  | 0.941 | 3.189  | 1  | 0.074 | 5.364          | 0.849         | 33.890        |
| Violence (ref: yes)                                                                         | 1.223  | 0.707 | 2.997  | 1  | 0.083 | 3.399          | 0.851         | 13.579        |
| Peer Support (ref: low)                                                                     | 1.064  | 0.454 | 5.494  | 1  | 0.019 | 2.899          | 1.191         | 7.060         |
| Non-Migrant Adolescents                                                                     |        |       |        |    |       |                |               |               |
| Self-efficacy (ref: low)                                                                    | -0.064 | 0.022 | 8.500  | 1  | 0.004 | 0.938          | 0.899         | 0.979         |
| <b>Hyperactivity</b>                                                                        |        |       |        |    |       |                |               |               |
| Migrants Adolescents                                                                        |        |       |        |    |       |                |               |               |
| Violence (ref: yes)                                                                         | 1.066  | 0.414 | 6.643  | 1  | 0.010 | 2.905          | 1.291         | 6.536         |
| Peer Support (ref: low)                                                                     | 1.964  | 0.553 | 12.623 | 1  | 0.000 | 7.130          | 2.413         | 21.072        |
| Non-Migrant Adolescents                                                                     |        |       |        |    |       |                |               |               |
| Self-efficacy (ref: low)                                                                    | -0.586 | 0.313 | 3.502  | 1  | 0.061 | 0.556          | 0.301         | 1.028         |
| <b>Peer Relationship Problems</b>                                                           |        |       |        |    |       |                |               |               |
| Migrants Adolescents                                                                        |        |       |        |    |       |                |               |               |
| Gender (ref: male)                                                                          | 0.683  | 0.337 | 4.107  | 1  | 0.043 | 1.980          | 1.023         | 3.834         |
| Non-Migrant Adolescents                                                                     |        |       |        |    |       |                |               |               |
| Gender (ref: male)                                                                          | 0.683  | 0.337 | 4.107  | 1  | 0.043 | 1.980          | 1.023         | 3.834         |
| Social Interaction (ref: low)                                                               | -0.610 | 0.338 | 3.254  | 1  | 0.071 | 0.543          | 0.280         | 1.054         |
| <b>Prosocial Behaviour</b>                                                                  |        |       |        |    |       |                |               |               |
| Migrants Adolescents                                                                        |        |       |        |    |       |                |               |               |
| Gender (ref: male)                                                                          | 0.822  | 0.394 | 4.350  | 1  | 0.037 | 2.276          | 1.051         | 4.927         |
| Non-Migrant Adolescents                                                                     |        |       |        |    |       |                |               |               |
| Social support (ref: low)                                                                   | 0.708  | 0.422 | 2.820  | 1  | 0.093 | 2.030          | 0.888         | 4.639         |
| <b>Total Difficulty Scores</b>                                                              |        |       |        |    |       |                |               |               |
| Migrants Adolescents                                                                        |        |       |        |    |       |                |               |               |
| Family support (ref: low)                                                                   | 2.725  | 1.396 | 3.811  | 1  | 0.051 | 15.255         | 0.989         | 235.268       |
| Non-Migrant Adolescents                                                                     |        |       |        |    |       |                |               |               |
| Gender (ref: male)                                                                          | -0.828 | 0.388 | 4.564  | 1  | 0.033 | 0.437          | 0.204         | 0.934         |
| Religion (ref: Muslim)                                                                      | 2.770  | 1.321 | 4.399  | 1  | 0.036 | 15.958         | 1.199         | 212.374       |
| Violence (ref: yes)                                                                         | -1.051 | 0.485 | 4.687  | 1  | 0.030 | 0.350          | 0.135         | 0.905         |
| Adj: Adjusted; B: Beta; CI: Confident interval; S.E: Standard error; Sig: Significant level |        |       |        |    |       |                |               |               |

that only peer support was affected among the migrant adolescents, and only self-efficacy was affected in the non-migrant adolescents. The hyperactivity domain was significant for social interaction in the migrant group alone. The peer relationship problems domain was found to be significant for participation in physical education among the migrant group. However, for the non-migrant group, significant results were found for age, gender and suicide risks. Meanwhile, the prosocial problems domain was significant only for violence risks in the migrant group and social interaction for the non-migrant group.

The study found that the final multivariate model included a few independent variables that are significantly important. The results of the multivariate test of non-migrant Indonesian adolescents found that SDQ domains are associated with gender and self-efficacy. The female adolescents who show good mental health are likely to have good self-efficacy. The Oppong Asante (2015) study showed notable gender differences in health risk behaviours, in which females were more likely than males to have planned suicide, had participated in survival sex, and had experienced violence-rated sex. For the migrant group, the SDQ domains are associated with peer support, social interaction and gender. A positive social interaction is more prominent among the late adolescent group with a good support environment (Vigu & Tardif-Grenier 2024).

Overall, our results showed that SDQ can be used to assess risk for mental health problems among the adolescents of migrant and non-migrant Indonesians. Early detection of mental health problems among them in schools is encouraged to guide parents and teachers to act help by providing timely and reliable insights into a variety of behavioural and emotional interventions. Through an analysis of emotional symptoms, conduct issues, hyperactivity/inattention, peer interaction challenges and prosocial behaviour, the SDQ can assist school staff in identifying students who may be at risk for mental health problems and need to be monitored. An earlier study conducted by van

den Berg & Wenseleers (2018) showed that suboptimal behaviour can be adapted when the heterogeneity and uncertainty of the surrounding factors were considered in the social heuristics modelling analysis.

COVID-19 crisis, when most schools had returned to their functions. Therefore, our study did not find much difference between migrant Indonesian adolescents in Malaysia and those in their home country. During the pandemic, Malaysia has started many mental health support programs through non-governmental associations and government agencies' hotlines for everyone who needs help. Environmental support promotes mental health and guides those needing mental health services. All schools in Malaysia are required to have a school counsellor to help students. Therefore, the mental health problem factors do not differ much between the groups, even though many studies have reported higher mental health problems faced by migrants. The normative developmental tasks that adolescents face (e.g., social and cultural identity construction, physical changes, increased independence and academic pressure), among those with an immigrant background, may be exposed to several unique challenges. Malaysia faces a significant problem with the migration issues related to mental health. Future studies may need to explore mental health problems among those illegal migrants who bring their children. Most of this group will be deported back to their home country due to immigration violations and stay in repatriation programs before deportation (Immigration Department Malaysia 2025). This situation might pose another root of a mental health issue.

### Strengths and Limitations

The primary strength of this research is the utilisation of a validated mental health assessment (SDQ), which has been implemented in Indonesian schools for a screening program. The SDQ is simple to use in Indonesian and accessible to everyone, including parents and teachers, allowing for early diagnosis. The SDQ

questionnaire is not meant to be used for the diagnosis of mental illness, but rather only for the early detection of behavioural disorders, emotional abnormalities, hyperactive behaviour, social difficulties and the overall difficulty score. Limited respondents and a small number of schools for the sample selection of a school versus a three-school ratio. This is a baseline study before any intervention will be implemented in the respective schools. Data collection was conducted using the self-reported SDQ, which may impact broader findings. Some of the data included in this study needs to be verified by parents and educators. Additional clinical evaluation by psychiatrists, psychologists and mental health doctors is still required following the SDQ screening.

## CONCLUSION

A study among the Indonesian migrant vs non-migrant adolescents aged 15 to 19 discovered that non-migrant adolescents were more likely than migrant adolescents in Malaysia to experience mental health problems. The migrant had successfully adapted to their new environment after almost a year in Malaysia. After a trauma, the healing and adjustment process frequently takes less than six months. The parents could have done their role to prepare for the before, during and post-migration stages and offer support. In Indonesia, adolescents with mental health problems face emotional disturbances that can be caused by peer connections, parental disputes and scholastic difficulties, which need to be explored.

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