

ORIGINAL ARTICLE

Association of Anger Expression Towards Anxiety Among General Adult Population in Malaysia: A Cross-sectional Study

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ABSTRACT

Introduction: Anger expression and anxiety are two significant psychological states that often occur simultaneously and have a profound impact on individuals' mental health and well-being. This study aims to investigate the prevalence of anger expression, anxiety levels, and the socio-demographic factors associated with both emotions among the general adult population in Malaysia. **Methods:** This cross-sectional study was conducted in Malaysia. Data was collected through an online structured questionnaire that assessed socio-demographic information, anger expression using the Clinical Anger Scale (CAS), and anxiety levels using the Generalized Anxiety Disorder-7 (GAD-7) scale. Convenience sampling was employed to gather respondents within Malaysia. **Results:** A total of 413 respondents' data were collected. Respondents from urban areas exhibited significantly higher levels of anxiety compared to their rural counterparts (aOR 2.50, 95%CI: 1.15, 5.4). Respondents with prior experience or attendance in anger management sessions were less likely to have moderate to severe anxiety (aOR 0.22, 95%CI: 0.10, 0.51). A significant relationship was also found between clinical anger levels and anxiety. Respondents with mild anger (aOR 7.39, 95%CI: 3.07, 17.80), with moderate anger (aOR 12.08, 95%CI: 5.09, 23.84), and with severe anger (aOR 27.10, 95%CI: 10.03, 59.09) showed a higher association with moderate to severe anxiety. **Conclusion:** Our study highlights the relationship between anger expression, anxiety, and their associated factors in Malaysia's general adult population. Addressing anger management and anxiety in a holistic manner is crucial for enhancing the emotional well-being of individuals and communities, especially in urban areas.

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INTRODUCTION

The experiences of anger, aggression, and violence are common in psychiatric disorders, and the simultaneous occurrence of anger and anxiety is often overlooked (1). Both anger and anxiety are psychological states that significantly impact individuals' well-being and daily functioning. Anger, an unpleasant emotion, can vary in intensity from mild irritation to intense fury. To differentiate how anger manifests, it is expressed

outwardly (anger-out) or suppressed inwardly (anger-in) (2). Often triggered by perceived threats or injustices, anger may be expressed through verbal outbursts, physical aggression, or passive-aggressive behaviors.

Anxiety, on the other hand, is a state of heightened arousal and apprehension, often marked by persistent worry and fear about future events. It is the body's natural response to feelings of worry, fear, or stress about what lies ahead. One explanation for the frequent co-occurrence of anxiety and anger is that individuals with high levels of anxiety tend to be more vigilant toward perceived threats or dangers (3). While anger is typically seen as a reactive, outwardly directed emotion, anxiety is more internally focused and pervasive. However, the

expression of anger has been identified as a potential risk factor for worsening anxiety symptoms. The relationship between anger and anxiety is both complex and reciprocal. Research indicates that individuals with anxiety disorders often show heightened anger responses, possibly due to a state of hyper-vigilance and sensitivity to perceived threats (4). Conversely, unexpressed or suppressed anger may contribute to the development or aggravation of anxiety symptoms.

People with generalized anxiety disorder, major depressive disorder, social phobia, panic disorder, and were reported to be associated to trait anger and anger attacks (5). Similarly, individuals with generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), social phobia (SP), and panic disorder (PD) report higher levels of hostility and anger compared to control groups (4, 6). Those with social anxiety disorder, in particular, have shown elevated levels of anger relative to non-anxious peers, displaying a greater tendency to experience anger across various situations (i.e., trait anger) and more frequently expressing anger in response to criticism or negative evaluation (angry reaction) or even without provocation (angry temperament) (7).

Anger is often overlooked in the assessment and treatment of pathological anxiety, despite evidence showing that it is elevated across all anxiety disorders (3). Anxiety disorders are among the most common mental health conditions worldwide, and Malaysia is no exception. According to the National Health and Morbidity Survey (NHMS) 2019, approximately 9.5% of the older children have reported to have mental health problems (8). While anger as a distinct emotion is less frequently measured in population-based studies, its manifestations have been observed in various settings. For example, workplace stress has been shown to be associated with dissatisfaction at job among employees in Malaysia (9).

In the Malaysian context, cultural norms and values significantly shape emotional expression. As a collectivistic society, Malaysia often discourages overt displays of negative emotions like anger, leading to the internalization of such feelings. The suppression of anger may, in turn, exacerbate anxiety levels as individuals struggle with unexpressed emotions (10). Understanding the link between anger and anxiety is crucial, especially given Malaysia's unique cultural and socio-economic landscape. Malaysia's multicultural society, which includes Malay, Chinese, Indian, and indigenous communities, significantly influences how emotions like anger and anxiety are expressed and managed. Cultural beliefs and practices shape emotional regulation, with some communities viewing the expression of anger as inappropriate or disrespectful. This often leads to the internalization of anger, which can contribute to increased anxiety (11).

Rapid urbanization and economic development in Malaysia have introduced various stressors that can trigger both anger and anxiety. Factors such as economic disparities, job insecurity, and the pressures of modern life contribute to emotional distress among Malaysian adults (12). Anger may emerge in response to perceived injustices or frustrations, while anxiety often arises from uncertainties linked to these socio-economic challenges. The interplay between these stressors and emotional responses highlights the need for a holistic understanding of mental health in the Malaysian context.

Gender also plays a crucial role in the manifestation and experience of anger and anxiety. Previous literature has been indicated that women are more prone to anxiety, while men are more likely to express anger outwardly (13). These differences may be shaped by societal expectations and traditional gender roles in Malaysian culture. Women, who are often socialized to suppress anger, may experience higher levels of anxiety as a result. Conversely, men may channel their anxiety into anger, reflecting a culturally accepted form of emotional expression.

The literature indicates a significant association between anger and anxiety, shaped by cultural, socio-economic, and gender factors. However, further research, particularly localized studies, is needed to fully understand and address the nuances of this relationship in Malaysia. While existing studies have explored the connection between anger and anxiety across various populations, including in Malaysia, several critical gaps remain. One key gap is the lack of localized research examining how the interplay between anger and anxiety manifests in different cultural and socio-economic contexts within the country.

Studies such as Deschenes et al. (2012) and Walsh et al. (2017) primarily focus on the role of anger in anxiety disorders, particularly generalized anxiety disorder (GAD) (6, 14). Most research has focused on the general prevalence of these emotions or their isolated effects, with few delving into how specific cultural norms, such as Malaysia's collectivistic society, influence the expression or suppression of anger and its impact on anxiety. In a country characterized by its diverse population and rapid socioeconomic change, understanding the dynamics of anger expression and its association with anxiety is essential for developing effective mental health interventions.

Moreover, there is limited research on how socio-economic factors, such as urbanization, economic disparity, and job insecurity, uniquely contribute to the relationship between anger and anxiety in the general population worldwide. While some studies have touched on these issues, more in-depth analyses are needed to understand how rapid socio-economic changes in Malaysia may exacerbate these emotional

states. Additionally, although gender differences in the expression and experience of anger and anxiety have been noted, the underlying reasons for these differences in the Malaysian context are not well understood.

Further research is required to explore how gender roles and expectations influence the interaction between anger and anxiety, particularly in a multicultural society like Malaysia. Addressing these gaps would provide a more comprehensive understanding of the complex relationship between anger and anxiety in Malaysia, leading to better-targeted interventions and mental health policies tailored to the specific needs of the Malaysian adult population. Therefore, our study aims to investigate the prevalence of anger expression, anxiety, socio-demographic characteristics associated with anger expression, and the relationship between anger and anxiety among the general adult population in Malaysia.

Methods

Study design

This study employed a cross-sectional design to investigate the relationship between anger expression and anxiety among Malaysian adults. Data collection took place in 2024 through an online questionnaire targeting individuals aged 18 and older.

Sample size and sampling

The study population comprised Malaysian adults aged 18 years and older. The expected sample size was determined to be 368 adults using the OpenEpi statistical calculator, based on an anticipated percentage frequency of clinical anger of 60.2% (15). This calculation assumed a 95% confidence interval (CI), a 5% margin of error, and a 10% non-response rate, leading to a final sample size of 408 adults.

Convenience sampling was employed to include respondents who were available during the data collection period. The inclusion criteria encompassed adults aged 18 and older, irrespective of gender, ethnicity, nationality, education level, or income, who provided informed consent. The exclusion criteria consisted of adults residing outside of Malaysia and those who did not give consent.

Data collection

An online questionnaire was created using Google Forms and distributed through social media platforms such as WhatsApp, Instagram, Facebook, as well as via emails to friends, family members, neighbors, and others. The study targeted the general adult population in Malaysia, with the specified inclusion and exclusion criteria applied. Respondents were informed about the study's background and assured that their involvement was entirely voluntary. At the end of the questionnaire, a

consent form was provided for respondents to complete.

The questionnaire comprised three sections: (1) demographic characteristics, (2) anger, and (3) anxiety. All questions were available in both English and Malay, allowing respondents to choose their preferred language for the study. A bilingual researcher translated the original English versions into Malay. The study team then thoroughly reviewed the translations to ensure accuracy and consistency.

Section 1: Demographic Characteristics of Respondents

This section collected demographic information, including gender, age, nationality, ethnicity, relationship status, education level, occupation, household income, and residential area. A question was also included to determine whether respondents had prior experience attending anger management talks or training sessions.

Section 2: Clinical Anger Scale (CAS)

This section assessed anger expression, which served as the independent variable in the study. The validated Clinical Anger Scale was utilized, with responses recorded on a 4-point Likert scale (0, 1, 2, 3). Scores were summed, and levels of anger expression were categorized as minimal (0-13), mild (14-19), moderate (20-28), or severe (29-63) based on predefined score ranges (16).

Section 3: General Anxiety Disorder (GAD-7)

This section gathered information on respondents' anxiety levels, the dependent variable in the study. The validated GAD-7 scale was employed, with responses recorded on a 4-point scale (0, 1, 2, 3) reflecting the frequency of symptoms. The total score was then used to categorize anxiety levels as minimal (0-4), mild (5-9), moderate (10-14), or severe (15-21) (17).

Data analysis

Data collected through the online Google Form was thoroughly checked for duplicates and inconsistencies to ensure data validation. The data were analyzed using SPSS (Version 29). Descriptive analysis was performed to summarize the demographic characteristics, prevalence of anger levels, and severity of anxiety. Results were presented in terms of frequency, percentage, mean, and standard deviation. The association between socio-demographic characteristics, anger expression, and anxiety were assessed using the multivariate logistic regression analysis.

Ethical Considerations

Prior to data collection, respondents were provided with a detailed informed consent form, ensuring they understood the study's purpose, potential risks, benefits, and their right to withdraw at any time. Respondents' confidentiality was prioritized, with all personal details

anonymized and securely stored. The research adhered to the highest ethical standards and received approval from the Research Ethics Committee at Manipal University College Malaysia (Ethics approval ID: 0038/08/2924).

Results

Table 1 presents the demographic characteristics of the respondents. The majority of respondents (72.2%) were in the younger age group (18-24 years). There were more female respondents (64.8%) compared to males and the majority were Indian ethnicity (75.3%). Approximately half of the respondents (55.4%) were in the middle-income group and 79.7% of respondents lived in urban areas (Table 1).

Table I: Sociodemographic characteristics of respondents (n= 413)

Sociodemographic Characteristic	n (%)
Age (completed years)	
18-24	298 (72.2)
25 and above	115 (27.8)
Mean (SD)	25.82 (9.75)
Minimum, Maximum	18, 87
Gender	
Male	145 (35.1)
Female	268 (64.9)
Ethnicity	
Malay	21 (5.1)
Indian	311 (75.3)
Chinese	56 (13.6)
Others	25 (6.1)
Residential Area	
Urban	329 (79.7)
Rural	84 (20.3)
Monthly family income	
Bottom 40% income (<RM4,849)	50 (12.1)
Middle 40% income (RM4,850 - RM10,959)	229 (55.4)
Top 20% of income (>RM10,960)	134 (32.4)
Occupation	
Student	259 (62.7)
Employed	133 (32.2)
Unemployed	21 (5.1)
Education Level	
Primary Education	11 (2.7)
Secondary Education	69 (16.7)
Tertiary Education	333 (80.6)
Marital Status	
Married	47 (11.4)
Single	344 (83.3)
Divorced/Widowed	22 (5.3)

The mean score of clinical anger level among the respondents was 12.45 (SD 13.18). Figure 1 shows the prevalence of different levels of anger among the respondents. This distribution suggests that most respondents experience minimal clinical anger (64.8%), with fewer respondents falling into severe anger category (11.4%) (Figure 1).

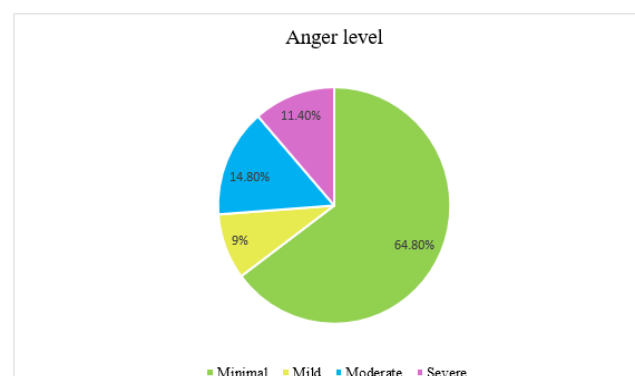


Figure 1. Prevalence of different severity of anger expression among general adult population in Malaysia (n= 413), Anger scale was classified as Minimal (0-13), Mild (14-19), Moderate (20-28), Severe (29-63) (16).

Table 2 presents the distribution of anxiety level among the respondents. This distribution shows that the majority of the population had minimal (51.8%) to mild anxiety (27.1%), with fewer people experiencing moderate (15.0%) or severe anxiety (6.1%) levels.

Table II: Severity levels of anxiety among general adult population in Malaysia (n= 413)

Anxiety Level	n (%)
Minimal (0-4)	214 (51.8)
Mild (5-9)	112 (27.1)
Moderate (10-14)	62 (15)
Severe (>15)	25 (6.1)
Mean= 5.5 (SD=5.1)	

*GAD7 = Generalized Anxiety Disorder 7

Table 3 presents the factors associated with anxiety among the respondents. In the multivariate logistic regression analysis, residence area was found to be significantly associated with anxiety. Respondents in urban areas were 2.5 times likely to have moderate to severe anxiety compared to the respondents in rural areas (aOR 2.50, 95%CI: 1.15, 5.45). Respondents with previous experience or attendance in anger management sessions were less likely to have moderate to severe anxiety (aOR 0.22, 95%CI: 0.10, 0.51). Furthermore, clinical anger level among the respondents was significantly associated

with anxiety increasing association. Compared to the respondents with minimal anger level, respondents with mild anger were 7.39 times (aOR 7.39, 95%CI: 3.07, 17.80), moderate anger were 11.02 times (aOR 11.02, 95%CI: 5.09, 23.84), and severe anger were

24.35 times (aOR 24.35, 95%CI: 10.03, 59.09) likely to have moderate to severe anxiety. Therefore, statistically significant and increasing association with higher levels of anxiety and clinical anger level were observed in this study (Table 3).

Table III: Association of demographic factors, anger expression, and anxiety among general adult population in Malaysia (n=413)

Variable	Minimal and mild anxiety n (%)	Moderate to severe anxiety n (%)	OR (95%CI)	P	aOR (95%CI)	P
Age (years)						
<25	243 (81.5)	55 (18.5)	Reference		Reference	
25 and above	83 (72.2)	32 (27.8)	1.70 (1.03, 2.81)	0.038	0.93 (0.47, 1.85)	0.843
Gender						
Female	209 (78.0)	59 (22.0)	Reference			
Male	117 (80.7)	28 (19.3)	1.18 (0.71, 1.95)	0.520		
Ethnicity						
Others*	18 (72.0)	7 (28.0)	Reference			
Malay (1)	18 (85.7)	3 (14.3)	0.43 (0.10, 1.93)	0.269		
Indian (2)	252 (81.0)	59 (19.0)	0.60 (0.24, 1.51)	0.279		
Chinese (3)	38 (67.9)	18 (32.1)	1.22 (0.43, 3.44)	0.709		
Residential Area						
Rural	59 (70.2)	25 (29.8)	Reference		Reference	
Urban	267 (81.2)	62 (18.8)	0.55 (0.32, 0.94)	0.030	2.50 (1.15, 5.45)	0.021
Income						
Bottom 40% of income earners (<RM4,849)	41 (82.0)	9 (18.0)	Reference			
Middle 40% of income earners (RM4,850 - RM10,959)	178 (77.7)	51 (22.3)	1.31 (0.60, 2.86)	0.506		
Top 20% of income earners (>RM10,960)	107 (79.9)	27 (20.1)	1.15 (0.50, 2.65)	0.744		
Occupation						
Unemployed	16 (76.2)	5 (23.8)	Reference			
Employed	98 (73.7)	35 (26.3)	0.71 (0.25, 2.03)	0.523		
Student	212 (81.9)	47 (18.1)	1.14 (0.39, 3.35)	0.808		
Education Level						
Primary Education	10 (90.9)	1 (9.1)	Reference		Reference	
Secondary Education	42 (60.9)	27 (39.1)	6.43 (0.78, 53.12)	0.084	5.57 (0.43, 73.03)	0.191
Tertiary Education	274 (82.3)	59 (17.7)	2.15 (0.27, 17.15)	0.469	2.36 (0.19, 29.52)	0.504
Marital Status						
Single	37 (78.7)	10 (21.3)	Reference			
Married	273 (79.4)	71 (20.6)	1.04 (0.49, 2.19)	0.919		
Divorced/ Widowed	16 (72.7)	6 (27.3)	1.44 (0.54, 3.82)	0.461		

CONTINUE

Table III: Association of demographic factors, anger expression, and anxiety among general adult population in Malaysia (n=413) (CONT.)

Variable	Minimal and mild anxiety n (%)	Moderate to severe anxiety n (%)	OR (95%CI)	P	aOR (95%CI)	P
Previous experience of participating in any anger management seminars, counseling sessions, or training programs						
No	141 (69.5)	62 (30.5)	Reference		Reference	
Yes	185 (88.1)	25 (11.9)	0.31 (0.18, 0.51)	<0.001	0.22 (0.10, 0.51)	<0.001
School or organizations conduct anger management seminars, counseling sessions, or training programs						
No	132 (72.5)	50 (27.5)	Reference		Reference	
Yes	194 (84.0)	37 (16.0)	0.50 (0.31, 0.81)	0.005	2.08 (0.93, 4.65)	0.073
Anger						
Minimal	247 (92.2)	21 (7.8)	Reference			
Mild	25 (67.6)	12 (32.4)	5.65 (2.49, 12.82)	<0.001	7.39 (3.07, 17.80)	<0.001
Moderate	34 (55.7)	27 (44.3)	9.34 (4.76, 18.32)	<0.001	11.02 (5.09, 23.84)	<0.001
Severe	20 (42.6)	27 (57.4)	15.88 (7.65, 32.95)	<0.001	24.35 (10.03, 59.09)	<0.001

Note: Variables with P value <0.25 were included in the multivariate logistic regression analysis. Hosmer and Lemeshow test (P= 0.398)

Discussion

Our study aimed to assess different levels of anger expression, anxiety, and factors associated with anxiety among the general adult population in Malaysia. Regarding the anger expression, over half of the respondents (approximately 65%) exhibited minimal clinical anger, with an average anger score of 12.45. These findings indicate lower levels of clinical anger in our adult population compared to a similar study among medical and sociology students in Pakistan, where the mean anger score was 19.65, and only 39.8% of respondents fell within the minimal anger category (15). Another study conducted among adolescents and youth in India reported a higher prevalence of aggression, with 61.7% showing elevated levels of aggression (18).

The discrepancy in anger expression across these studies may be due to differences in the age distribution of the participants. It is well documented that younger age groups, particularly adolescents, tend to exhibit more frequent and intense anger or aggressive behaviors, a phenomenon potentially influenced by the developmental changes and emotional volatility typical of this life stage (19). In contrast, anger expression often changes with age as individuals develop better emotional regulation and coping strategies. This may explain the relatively lower anger levels observed in our study, which focused on the general adult population. Moreover, previous research in Malaysia has also highlighted that younger individuals, particularly males, are more prone to express anger aggressively, especially in high-stress environments like driving (20). These findings reinforce the importance of considering age as a significant factor in studies of anger and aggression.

Regarding anxiety, approximately half of our study respondents reported experiencing minimal anxiety, while only 6.1% presented severe anxiety. These findings are consistent with previous research conducted among Malaysians, which reported a slightly higher prevalence of severe anxiety at 9% (21). The elevated anxiety levels in that study could be attributed to the timing of data collection during the third wave of the COVID-19 pandemic in Malaysia (21). Similarly, other studies conducted in Malaysia, such as Bin Adnan et al. found a comparable anxiety prevalence of 7% (22), further indicating that anxiety rates varied during the pandemic, with many studies reporting elevated levels (23-26). Notably, during the pre-pandemic era, the anxiety prevalence among Malaysia's general adult population ranged from 0.4% to 5.6% (27). Our findings, obtained in the post-pandemic period, suggest a possible return to pre-pandemic anxiety levels, although continued monitoring is essential, particularly among vulnerable or high-risk groups.

Differences in anxiety experiences between urban and rural respondents were identified in our study. Respondents from urban areas were more likely to experience anxiety compared to those from rural areas. This finding aligns with previous research, which has shown a similar pattern in various regions. A review of mental well-being among residents in urban and rural areas found that anxiety disorders were more prevalent in urban populations compared to rural populations in both Latin American and Asian countries (28). Several studies have also highlighted the association between urbanization, the social environment, and its impact on mental health (29, 30). Urban living often entails higher levels of stress due to factors such as overcrowding,

noise, pollution, and increased social pressures, which can contribute to higher prevalence of mental health issues (28). The association between urban residence status and anxiety highlights the importance of understanding the stressors in urban settings and it may help in designing targeted interventions to mitigate anxiety in these populations.

In our study, no significant gender difference was observed in anxiety levels among the respondents. This finding contrasts with some previous systematic review that have reported higher anxiety prevalence among females (31). One possible explanation for this discrepant result might be related to social desirability bias, where participants underreport their anxiety symptoms to align with socially acceptable norms (32). Additionally, sample imbalance in terms of gender distribution may have influenced the findings, as our sample had a higher proportion of female respondents, which may limit the ability to detect true gender differences. It is also possible that variations in anxiety expression across genders are influenced by complex socio-cultural factors not fully captured in this study. Therefore, future research with a more balanced sample and culturally sensitive measures may help clarify these relationships.

Uncontrolled anger can negatively impact an individual's mental well-being, potentially leading to issues such as increased anxiety or stress. In our study, respondents who had previously attended anger management sessions, such as seminars or training programs, were significantly less likely to experience moderate to severe anxiety. This suggests that anger management interventions may play a protective role in promoting better mental health. Similarly, a study conducted among 165 women demonstrated that anger management training was effective not only in reducing aggression but also in positively improving mental health (33).

Evidence supports that anger management techniques, including relaxation training, cognitive restructuring, problem-solving skills, and social skills training, consistently reduce aggression and promote emotional well-being (34-35). These interventions will be beneficial to the people to manage emotional challenges, practical strategies to response the challenges, improve interpersonal relationships, and foster better emotional regulation. The positive effects of such programs highlight the importance of integrating anger management training into broader mental health initiatives.

In our study, higher levels of anger expression were significantly associated with an increased likelihood of experiencing moderate to severe anxiety among respondents. The relationship between anger and anxiety is complex. Theoretically, anger can trigger anxiety, while at the same time, the expression of anger may also be a response to underlying anxiety in individuals (36).

This dynamic interaction between the two emotions suggests that emotional dysregulation plays a key role in both anxiety and anger expression, potentially leading to broader mental health challenges (37).

A longitudinal study conducted over four years further supports this association, revealing that the relationship between anger expression and anxiety is reciprocal reporting that each can exacerbate the other over time (36). These findings highlight the need for integrated approaches that address both anger and anxiety to enhance emotional well-being and improve mental health outcomes.

Limitations

While our study provides valuable insights into the relationship between anger and anxiety, it is important to acknowledge some limitations. First, the cross-sectional design limits our ability to establish causal relationships. Although the data reveal a significant association between anger levels and anxiety, we cannot definitively conclude whether anger leads to anxiety or vice versa. To better understand the timing and directional aspects of these relationships, longitudinal studies in the Malaysian context are essential. Secondly, we did not collect detailed information on the nature of the anger management programs attended by respondents (e.g., self-initiated versus institutionally organized), which limits our ability to investigate the specific effects of different types of interventions.

Third, the use of a non-probability convenience sampling method for recruiting respondents may limit the generalizability of our findings. Future research should consider recruiting representative samples with probability sampling to enhance the generalizability of the findings in Malaysia.

Conclusion and recommendation

In conclusion, our study highlights the relationship between anger expression, anxiety, and their associated factors in Malaysia's general adult population. Notably, respondents from urban areas exhibited significantly higher anxiety levels, reflecting the mental health stressors associated with urban living. These findings highlight the potential benefit of incorporating anger management into mental health interventions.

Our findings also suggest that anger management interventions may reduce anxiety levels, highlighting their potential role in mental health promotion. Programs focusing on emotional regulation techniques, such as relaxation training, cognitive restructuring, and problem-solving, could be effective in mitigating emotional challenges and improving overall well-being.

This research has proved the need for tailoring effective strategies to manage both anger and anxiety in Malaysia, ensuring they align with country's social and cultural

dynamics. This research also paves the way for future studies to explore the role of other contributing factors such as stress, lifestyle, and coping mechanisms, enhancing the precision of mental health interventions in Malaysia.

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REFERENCES

- Kohn SR, Asnis GM. Aggression in Psychiatric Disorders. In: Mattson MP, editor. *Neurobiology of Aggression: Understanding and Preventing Violence*. Totowa, NJ: Humana Press Inc.; 2003. p. 135-49. doi: <http://dx.doi.org/10.1385/1-59259-382-8:135>
- Puskar K, Ren D, Bernardo LM, Haley T, Stark KH. Anger correlated with psychosocial variables in rural youth. *Issues Compr Pediatr Nurs*. 2008;31(2):71-87. doi: 10.1080/01460860802023513.
- Thompson JS, Schmidt NB. The role of anxiety sensitivity in anger symptomatology: Results from a randomized controlled trial. *Journal of Anxiety Disorders*. 2021;83:102462. doi: 10.1016/j.janxdis.2021.102462.
- Moscovitch DA, McCabe RE, Antony MM, Rocca L, Swinson RP. Anger experience and expression across the anxiety disorders. *Depress Anxiety*. 2008;25(2):107-13. doi: 10.1002/da.20280.
- de Bles N J, Rius Ottenheim N, van Hemert AM, Pütz LEH, van der Does AJW, Penninx BWJH, & Giltay EJ. Trait anger and anger attacks in relation to depressive and anxiety disorders. *Journal of affective disorders*. 2019;259, 259–265. <https://doi.org/10.1016/j.jad.2019.08.023>
- Deschkes SS, Dugas MJ, Fracalanza K, Koerner N. The role of anger in generalized anxiety disorder. *Cogn Behav Ther*. 2012;41(3):261-71. doi: 10.1080/16506073.2012.666564.
- Erwin BA, Heimberg RG, Schneier FR, Liebowitz MR. Anger experience and expression in social anxiety disorder: Pretreatment profile and predictors of attrition and response to cognitive-behavioral treatment. *Behavior Therapy*. 2003;34(3):331-50. doi: 10.1016/S0005-7894(03)80004-7.
- Institute for Public Health (IPH). National Health and Morbidity Survey (NHMS) 2019: Vol. I: NCDs – Non-Communicable Diseases: Risk Factors and other Health Problems. National Institutes of Health; 2020. Available from: https://iku.moh.gov.my/images/IKU/Document/REPORT/NHMS2019/Report_NHMS2019-NCD_v2.pdf
- Jain R, Kaur S. Impact of work environment on job satisfaction. *International Journal of Scientific and Research Publications*. 2014;4(1). Available from: <https://www.ijsrp.org/research-paper-0114/ijsrp-p2599.pdf>
- Yamaguchi A, Kim MS, Akutsu S, Oshio A. Effects of anger regulation and social anxiety on perceived stress. *Health Psychol Open*. 2015;2(2):2055102915601583. doi: 10.1177/2055102915601583.
- Cirasino D, Orlando S, Schiralli M, Verardo A, Marano M, Macchia E, Zilli C, Mangiacavallo I, Conte D. Anger as a primary phenomenon in anxiety and panic symptomatology: a Gestalt-phenomenological psychotherapeutic perspective. *Phenomena Journal - International Journal of Psychopathology, Neuroscience and Psychotherapy*. 2025. 7(4), 159–175.
- Yusoff MS, Abdul Rahim AF, Yaacob MJ. Prevalence and Sources of Stress among Universiti Sains Malaysia Medical Students. *Malays J Med Sci*. 2010;17(1):30-7. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC3216143/pdf/mjms-17-1-030.pdf>
- Chaplin TM. Gender and Emotion Expression: A Developmental Contextual Perspective. *Emotion review : journal of the International Society for Research on Emotion*. 2015. 7(1), 14–21. <https://doi.org/10.1177/1754073914544408>
- Walsh LM, Wolk CB, Haimen EMB, Jensen-Doss A, Beidas RS. The Relationship Between Anger and Anxiety Symptoms in Youth with Anxiety Disorders. *J Child Adolesc Couns*. 2018;4(2):117-33. doi: 10.1080/23727810.2017.1381930.
- Ansar F, Naveed H, Khattak A, Khan SA. Frequency of anger and its potential relationship with Self-esteem and Adverse Childhood Experiences among Medical and Sociology undergraduate students in Pakistan. *Pak J Med Sci*. 2023;39(2):524-8. doi: 10.12669/pjms.39.2.6113.
- Snell WE, Jr., Gum S, Shuck RL, Mosley JA, Hite TL. The Clinical Anger Scale: preliminary reliability and validity. *J Clin Psychol*. 1995;51(2):215-26. doi: 10.1002/1097-4679(199503)51:2<215::aid-jclp2270510211>3.0.co;2-z.
- Spitzer RL, Kroenke K, Williams JB, Luwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*. 2006;166(10):1092-7. doi: 10.1001/archinte.166.10.1092.
- Garg I, Sethi S, Kishore J. The Prevalence and Patterns of Aggression in School Adolescents in a Rural Area of Moga District of Punjab, India. *Indian Journal of Youth & Adolescent Health*. 2018;5(1). doi: 10.24321/2349.2880.201805.
- Liu J, Lewis G, Evans L. Understanding aggressive

- behaviour across the lifespan. *J Psychiatr Ment Health Nurs.* 2013;20(2):156-68. doi: 10.1111/j.1365-2850.2012.01902.x.
20. Sullman MJM, Stephens AN, Yong M. Anger, aggression and road rage behaviour in Malaysian drivers. *Transportation Research Part F: Traffic Psychology and Behaviour.* 2015;29:70-82. doi: <https://doi.org/10.1016/j.trf.2015.01.006>
21. Marzo RR, Vinay V, Bahari R, Chauhan S, Ming DAF, Nelson Fernandez SFA, et al. Depression and anxiety in Malaysian population during third wave of the COVID-19 pandemic. *Clin Epidemiol Glob Health.* 2021;12:100868. doi: 10.1016/j.cegh.2021.100868.
22. Bin Adnan MAA, Bin Kassim MSA, Bt Sahril N, Bin Abd Razak MA. Prevalence and Predictors of Anxiety among Stable Hospitalized COVID-19 Patients in Malaysia. *Int J Environ Res Public Health.* 2022;20(1). doi: 10.3390/ijerph20010586.
23. Leong Bin Abdullah MFI, Ahmad Yusof H, Mohd Shariff N, Hami R, Nisman NF, Law KS. Depression and anxiety in the Malaysian urban population and their association with demographic characteristics, quality of life, and the emergence of the COVID-19 pandemic. *Current Psychology.* 2021;40(12):6259-70. doi: 10.1007/s12144-021-01492-2.
24. Perveen A, Hamzah H, Othamn A, Ramlee F. Prevalence of Anxiety, Stress, Depression among Malaysian Adults during COVID-19 Pandemic Movement Control Order. *Indian Journal of Community Health.* 2020;32(3):579 - 81. doi: <https://doi.org/10.47203/IJCH.2020.v32i03.020>.
25. Wong LP, Alias H, Md Fuzi AA, Omar IS, Mohamad Nor A, Tan MP, et al. Escalating progression of mental health disorders during the COVID-19 pandemic: Evidence from a nationwide survey. *PLOS ONE.* 2021;16(3):e0248916. doi: <https://doi.org/10.1371/journal.pone.0248916>.
26. Bayrak NG, Uzun S, Kulakaz N. The relationship between anxiety levels and anger expression styles of nurses during COVID-19 pandemic. *Perspect Psychiatr Care.* 2021;57(4):1829-37. <https://doi.org/10.1111/ppc.12756>
27. Shawaluddin NS, Awaluddin SM, Mahjom M, Kuay LK, Mohd T, Lah AT, et al. Prevalence And Factors Associated With Probable Generalized Anxiety Disorder Among Healthcare Workers Working In Medical Laboratories Of The Central Peninsular Malaysia During Covid19 Pandemic. *Malaysian Journal of Public Health Medicine.* 2023;23(3). Available from: <https://mjphm.org/index.php/mjphm/article/view/2163>.
28. Gruebner O, Rapp MA, Adli M, Kluge U, Galea S, Heinz A. Cities and Mental Health. *Dtsch Arztebl International.* 2017;114(8):121-7. doi: 10.3238/arztebl.2017.0121.
29. Poddar P, Banavaram AA, Ramanaik S, Jayabalan M, S V. How city living affects mental health-a qualitative exploration of urban stressors among adults in a megacity in India. *BMC Public Health.* 2025;25(1):1597. <https://doi.org/10.1186/s12889-025-22817-x>
30. Ochnik D, Buława B, Nagel P, Gachowski M, Budziński M. Urbanization, loneliness and mental health model - A cross-sectional network analysis with a representative sample. *Scientific Reports.* 2024;14(1):24974. <https://doi.org/10.1038/s41598-024-76813-z>
31. Remes O, Brayne C, van der Linde R, Lafortune L. A systematic review of reviews on the prevalence of anxiety disorders in adult populations. *Brain Behav.* 2016;6(7):e00497. <https://doi.org/10.1002/brb3.497>
32. Nederhof AJ. Methods of coping with social desirability bias: A review. *European journal of social psychology.* 1985;15(3):263-80. <https://doi.org/10.1002/ejsp.2420150303>
33. Bahrami E, Mazaheri MA, Hasanzadeh A. Effect of anger management education on mental health and aggression of prisoner women. *J Educ Health Promot.* 2016;5:5. doi: 10.4103/2277-9531.184563.
34. Blake CS, Hamrin V. Current approaches to the assessment and management of anger and aggression in youth: a review. *J Child Adolesc Psychiatr Nurs.* 2007;20(4):209-21. doi: 10.1111/j.1744-6171.2007.00102.x.
35. Anjanappa S, Govindan R, Munivenkatappa M, Bhaskarapillai B. Effectiveness of anger management program on anger level, problem solving skills, communication skills, and adjustment among school-going adolescents. *J Educ Health Promot.* 2023;12:90. doi: 10.4103/jehp.jehp_1216_22.
36. Segel-Karpas D. Anger and anxiety in older adults: a cross-lagged examination. *Aging & Mental Health.* 2024;28(9):1209-15. doi: 10.1080/13607863.2024.2320137.
37. Mennin DS. Emotion regulation therapy for generalized anxiety disorder. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice.* 2004;11(1):17-29. Available from: <https://doi.org/10.1002/cpp.389>