Depression among children at shelter care institutions in Terengganu Malaysia

Siti Hajar Abdul Rauf[1], Asmah Ismail[2], Nuratikah Azima Razali[2], Ahmad Bisyri Husin Musawi Maliki[3]

[1]Senior Lecturer, [2]Undergraduate Student, [3]Postgraduate Student
Department of Social Work, Faculty of Applied Social Sciences, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

ABSTRACT

Background: Depression is a state of psychological disease that occurs to someone divers in age due to certain reasons. Among the factors include lack of self-confidence, problematic family, stress, low self-esteem and social environment. It could lead to a mental disorder that endangers the mental health. **Aim:** To investigate the status of children depression using the Children Depression Inventory (CDI) at 21 shelter care institutions in Terengganu Malaysia. **Methodology:** Quantitative research design was used. The sample consists of 404 respondents from 21 Islamic shelter cares such as Tahfiz, Madrasah and Orphanage in Terengganu Malaysia from the age of 10 to 18 years. Data was analyzed using Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and Discriminant Analysis (DA) which then computed to identify the most dominant factors whereas reducing the initial five parameters with recommended >0.50 of factor loading. **Results:** Forward stepwise of DA shows the total of groups validation percentage by 92.08% (17 independent). The result showed that the highest frequency of respondent index was at a moderate level (62.87% respondents). This showed that children still can be controlled and cared to reduce depression.

Keywords: Children Depression Index, Depression, Children, Institution, Shelter Care

INTRODUCTION

Depression, a treatable psychiatric disorder,[1] has been studied extensively both in overseas and local contexts. Globally, it has received much attention from researchers and health care personnel in recent decades. Within the last few years, there has been increasing interest in the area of childhood depression.[2] Although children with depressive disorders often manifested anxiety; symptomatology rarely was of sufficient severity or duration to warrant the diagnosis of an anxiety disorder. Children with depression disorder will experience anxiety, thus they will be on a state of fear all the time.[3]

Besides, National Health and Morbidity Study III indicate that mental health problem was at 11.2% among the adult and 20.3% among the children and teenagers. The research also stated that the main mental health problem was depression.[4] Although the statistic showed a small number, it also proved that depression does occur among the children. Apart from that, the study proved that the depression experienced by the children will give a negative impact to them. For example, rebel, aggressive and hot-tempered.[5-7] These indicate that awareness level about the depression among the children is still low as the society more focussed on the adult. Thus, to investigate the status of children depression using the Children Depression Inventory (CDI) at 21 shelter care institutions in Terengganu Malaysia were undertaken.

METHODS AND MATERIALS

Respondents were 542 students from institutions such as Madrasah, Tahfiz and Orphanage welfare centres around Terengganu

Address for Correspondence:

Dr. Siti Hajar Abdul Rauf
Department of Social Work, Faculty of Applied Social Sciences, Universiti Sultan Zainal Abidin, 21300, Terengganu, Malaysia
Email: hajarrauf@unisza.edu.my

Malaysia aged between 10 to 18 years of either sex. Authorization letters have been given to the institutions involved in obtaining their consent and permission.

Apart from the background of the respondents which includes name, age, gender and status whether orphan or not Children's Depression Inventory (CDI) was the instrument for this research which consists of 26 questions examine the depression level. It is the most widely used self-report measure of depression for children, but we still know relatively little about how developmental differences relate to CDI structure.[8] Reliability and validity of the Malay version of CDI were analyzed. The validation study showed that the Malay version of CDI had a satisfactory reliability Cronbach's alpha 0.83.[9]

Twenty-six questions divided into the five factors, which were anhedonia, ineffectiveness, negative self-esteem, negative mood and interpersonal problem. The measurement is in five points Likert-scale. The scale 1= really disagree, 2 = disagree, 3 = not sure, 4 = agree and 5 = very agree. Every question used were to represent the factors that were used in the study. For example, the factor of negative mood was used in question 1 'I feel sad everyday' and factor of interpersonal problems in question 20 'I never feel happy in the school.

Data Analysis: A matrix set of data contain 542 respondents were computed in this study. The total missing data was 139 respondents and only 404 respondents that can be used. The nearest neighbour method is the simple methods, where the endpoint of the gaps is used as estimates of all data missing the method examines the distance between each point and the closest point to it. Before the main analysis, normality, interclass correlation coefficient as well as reliability of the questionnaire feedback using Bahasa Melayu version of CDI were check and analyze.

Principal components analysis (PCA) was used in the study to give insights into the most critical parameters because of differences of relative performance components that explain the entire data set by lessening huge parameters with a considerable slightest loss of the original data.[10,11] Factor analysis has been used to reduce a large variable into a fewer variable. Hereby, the dominant factors

will be displayed. From this study, 26 of factors were categorized as an independent variable. However, the dominant factors extracted by PCA method was only interpreted when applying varimax rotation.[12] In the simplest form, this formula shows as below in the equation.

$$z_{ij} = a_{f1}f_{1i} + a_{f2}f_{2i} + \dots + a_{fm}f_{mi} + e_{fi}$$

Meanwhile, discriminant analysis (DA) was employed using the standard, forward and backward stepwise methods. DA controls the variables that separate among two or more joined group. It builds a discriminant capacity (DF) for every group (Johnson Wichern, 1992).[13] DA was applied in this study to ascertain whether the groups vary with respect to the mean of a variable and to utilize that variable to predict group membership. Three groups for the relative pattern (three sampling groups represents low, moderate and high. DA was conducted from the result of FA for the test to be valid separate other variables according to factor that have a significant based that contribute to a different group. In the forward stepwise mode, the variables were counted step by step beginning with the highest significant variable until no significant changes were obtained. In the backward stepwise model, variables were eliminated step by step starting with the less important variable until no significant changes were obtained. DA was computed using a formula as expressed below on equation.

$$f(G_i) = k_i + \sum_{j=1}^{n} w_{ij} P_{ij}$$

Before application of the statistics on the data obtained, the normality test was conducted using Shapiro-Wilk and the archers found to be homogeneously distributed. All the statistical analysis was performed at $p \leq 0.05$ alpha level of confidence using XLSTAT 2014 add-in software.

RESULT

Before the main result, Table 1 highlighted the data collected from the respondent. The data set encompasses of 404 respondents which giving their feedback of the CDI questionnaire. It is also highlighted the range of rating (minimum and maximum), mean, and standard deviation value based on each question 1 until 26.

Table 1: Summary statistics of minimum, maximum, mean and standard deviation

Variable	Observations	Minimum	Maximum	Mean	Std. deviation
s1	404	1.0	5.0	2.56	1.06
s2	404	1.0	5.0	2.30	1.05
s3	404	1.0	5.0	2.55	1.04
s4	404	1.0	5.0	2.12	1.06
s5	404	1.0	5.0	2.16	1.04
s6	404	1.0	5.0	2.57	1.14
s7	404	1.0	5.0	1.78	1.01
s8	404	1.0	5.0	2.61	1.17
s9	404	1.0	5.0	2.58	1.30
s1	404	1.0	5.0	2.61	1.14
s11	404	1.0	5.0	2.16	1.21
s12	404	1.0	5.0	2.78	1.05
s13	404	1.0	5.0	2.37	1.14
s14	404	1.0	5.0	3.09	1.43
s15	404	1.0	5.0	2.49	1.23
s16	404	1.0	5.0	2.64	1.14
s17	404	1.0	5.0	2.33	1.13
s18	404	1.0	5.0	2.87	1.29
s19	404	1.0	5.0	2.36	1.20
s2	404	1.0	5.0	2.10	1.21
s21	404	1.0	5.0	1.72	1.00
s22	404	1.0	5.0	2.37	1.26
s23	404	1.0	5.0	2.31	1.16
s24	404	1.0	5.0	2.10	1.18
s25	404	1.0	5.0	2.31	1.06
s26	404	1.0	5.0	2.17	1.17

The main analysis of factors pattern after varimax rotation was disclosed in Table 2. 26 questions can be seen from the first factor (D1) that fulfilled the 0.50 factor loading threshold s1, s2 and s19. Second, the dominant factor (D2) identifies 3 components factor loading are s15, s16 and s18. Third, dominant factors (D3) are 3 components such as s7, s13 and s24. Fourth, 3 components are s20, s21 and s22. Fifth, the dominants factor (D5) identifies to components which are s10 and s12. Sixth, the dominant factors (D6) are s5, s6 and s8. Seventh, the dominant factors (D7) are s25 and s26.

It disclosed the most significant component of factor loading after varimax and it can be seen the contribution of the variance for D1 (9.51%), D2 (7.12%), D3 (7.21%), D4 (8.57%), D5 (6.47%), D6 (7.17%) and D7 (6.18%) with a total of the variance is 52.22%

respectively. Further analysis by applying seven new latent factors further computed using confirmatory factor analysis (CFA).

Additionally, further analysis was computed by developing a Terengganu Children Depression Index by applying the output of the CFA. Terengganu Children Depression Index is based on the most dominant parameters resulting to produce three different categorical groups of CDI namely low, moderate and high performer shown in Table 3. Categorical groups of question are defining based on the calculated standardization range of all variable and it is tabulate ranked in the index as shown in the group range on Table 3. It also presents the frequency and cumulative frequency of the respondents in each group. Based on the result each group were coded as low = 1, moderate = 2 and high = 3 for the analysis. Based on an index described 43(10.64%) respondent for

high, 254(62.87%) moderate and 107 (26.49%) low.

Discriminant Analysis (DA) has chosen the standard mode, backward and forward stepwise methods to carry out further studies. Total standard mode and the backward stepwise total is 93% while forward stepwise is 92% only. Standard mode (26 independent variables), backward stepwise (19 independent variables) and forward stepwise (17 independent variables) table 4.

Table 2: Descriptive statistic of Factor pattern after Varimax rotation on CDI construct

Variable	D1	D2	D3	D4	D5	D6	D7
s1	**0.76**	0.20	0.01	0.03	0.21	0.03	0.04
s2	**0.62**	0.08	0.32	0.12	-0.16	0.06	0.28
s3	0.41	0.02	0.17	-0.10	0.05	0.36	0.26
s4	0.40	0.21	-0.11	0.38	-0.17	0.38	-0.01
s5	0.10	0.08	0.33	0.18	-0.08	**0.65**	-0.02
s6	-0.11	0.14	0.11	0.08	0.14	**0.57**	0.18
s7	0.14	-0.01	**0.50**	0.16	0.30	0.35	0.04
s8	0.13	0.04	0.00	-0.01	0.27	**0.62**	0.26
s9	0.49	0.07	0.01	0.06	0.49	0.22	-0.02
s1	0.30	0.04	0.09	0.03	**0.55**	0.30	0.07
s11	0.23	0.08	0.02	**0.50**	0.43	0.11	-0.04
s12	-0.01	0.01	0.14	0.20	**0.60**	-0.04	0.11
s13	0.04	0.11	**0.75**	-0.09	0.12	0.17	0.00
s14	-0.02	**0.45**	0.23	-0.15	0.38	-0.12	0.27
s15	0.07	**0.62**	0.05	0.03	0.08	0.26	-0.05
s16	0.16	**0.70**	0.01	0.09	-0.10	0.05	0.13
s17	0.20	**0.48**	-0.06	0.24	0.18	-0.03	0.16
s18	0.23	**0.57**	0.10	-0.04	0.08	0.07	-0.03
s19	**0.57**	0.07	0.24	0.38	0.11	0.01	0.01
s2	0.36	0.10	0.05	**0.51**	0.17	0.11	0.08
s21	0.17	-0.06	0.12	**0.70**	-0.01	0.15	0.01
s22	-0.20	0.13	0.08	**0.62**	0.15	-0.03	0.26
s23	0.15	-0.07	**0.49**	0.34	0.12	0.02	0.36
s24	0.19	0.00	**0.61**	0.43	-0.10	0.00	0.14
s25	0.02	0.15	0.08	0.15	0.04	0.09	**0.68**
s26	0.15	0.02	0.05	0.03	0.05	0.15	**0.72**
Eigenvalue	5.62	1.73	1.52	1.34	1.23	1.11	1.02
Variability (%)	9.51	7.12	7.21	8.57	6.47	7.17	6.18
Cumulative %	9.51	16.63	23.84	32.40	38.88	46.04	52.22
Cronbach's alpha	0.7136	0.5917	0.6497	0.6203	0.3968	0.5185	0.4769

Table 3: Index Status of Children Depression

Score	Freq	Cum. Freq.	%	Cum. %	Group Range	Group
-50.18	107	107	26.49%	26.49%	$-50.18 \leq \text{low} < -12.64$	Low
-12.64	254	361	62.87%	89.36%	$-12.64 \leq\ < \text{Moderate} < 24.91$	Moderate
24.91	43	404	10.64%	100.00%	$\text{High} \geq 24.91$	High

Table 4: Classification Matrix of the Discriminant Analysis

Sample Groups	% Correct	Group Assigned		
		High	Low	Moderate
Standard Mode (26 Independent Variable)				
High	88.37%	38	0	8
Low	92.52%	0	99	6
Moderate	94.49%	5	8	240
Total	93.32%	43	107	254
Backward Stepwise (19 Independent Variable)				
High	88.37%	38	0	7
Low	92.52%	0	99	10
Moderate	93.31%	5	8	237
Total	92.57%	43	107	254
Forward Stepwise (17 Independent Variable)				
High	88.37%	38	0	8
Low	88.79%	0	95	7
Moderate	94.09%	5	12	239
Total	92.08%	43	107	254

DISCUSSION

In this current study, it is to determine whether the factor structure of the CDI refers to the result. The finding can be seen through the questioner to determine dominant factors. The results also suggest that the extent of the differences was a factor. These questions divided into five factors, which were anhedonia, ineffectiveness, negative self-esteem, negative mood and interpersonal problem. The result obtained from the current study implies that 17 independent variables were found the most significant variables for CDI from 26 independent variables that have stated from CDI.

Based on the forward stepwise method, moderate level shows the most significant and highest result with 94.09%. This can be proved from the anhedonia factor that provides significant questions for a comprehensive result in this research. Six questions represent anhedonia factor, they were s4, s6, s10, s15, s18 and s19. For instance, Question 4; 'there is no fun'. Anhedonia will cause the children to lose interest in doing activities that can give joy to oneself. If this anhedonia factor is not constraint wisely, the depression issue will increase and worsen among the children. This symptom is risky as anhedonia is described as decreased interest and pleasure in most activities most of the day.[14,15]

These findings lend support to the hypothesis that the anhedonia seen in patients can be characterized by specific changes to the pleasure networks through dual changes in activity in the ventral striatum (including the nucleus accumbens) and the prefrontal cortex (including the VMPFC and orbitofrontal cortex).[16] Research state that, these tests may offer greater specificity in diagnosing anhedonia in many heterogeneous psychological disorders, where symptoms may be expressed differently across people, or even differently across time within the same individual.[17]

Next, the low level shows the second-highest result that is 88.79% of the ineffectiveness factor. Four questions represent this kind of factor. For example, Question s2, s3, s22 and s23 in which s2 reflect 'no one care for me'. This resulted from the ineffectiveness quality that leads to low self-esteem, lack of confidence, feel lonely and left out and also lack of conscience. Besides, this factor influenced by the bad social environment such as the children do not get attention, love and support from their parents and also friends. These situations will cause the children to face depression and then space themselves far from other people.

There are several suggestions to solve the problems; one of them is ensuring that depressed children receive assistance and suitable psychological treatment. These children need moral support, love, understanding, encouragement and attention and the parents must be patient. They cannot be treated as the one who's pretending to be sick or lazy and cannot expect that they will be recovered easily in short time. With such support and encouragement, they have high possibility to recover and live their lives in peace and harmony.

CONCLUSION

The research shows that respondent tends to have moderate depression, knowing that if it doesn't prevent or treat in the early stage may worsen and can lead to major depression, isolation or even suicidal. The institution needs to prepare a counsellor to talk about their problem and how to solve the problem they face. Not just that, intuition also needs to be more alert; their student change of emotion and consoled in a better way.

The result showed that the increasing depression index influenced by several situations whereby the children feel sad, give up, despair, lose spirit and also sorrow. Depression occurred among the children will cause cognitive and attitude changes.[17] Results of this study showed that respondent tends to have moderate depression factors that contribute the most is anhedonia. When management can detect the problem that occurred, intuition can give guides from authorising to build a new program that can help prevent depression to become much worse. The changes happened involved the somatic symptoms, which means those children will experience headache, easy to get angry, tension and tiredness. Hence, the management should give counselling session and held a program to counter depression at the care centre. The program should mainly focus on reducing the depression index among the children who have high depression index.

REFERENCES

1. Malaysian Mental Health Association. Depression is common and treatable. [cited 7 February 2020]. Available from: http://mmha.org.my/wp-content/uploads/2014/08/MMHA-Bulletin-August-2014-FINAL-final-ang-Publisher Revised2 CMYK-1.pdf2014.

2. Finch AJ, Saylor CF, Edwards GL. Children's Depression Inventory: Sex and Grade Norms for Normal Children. Journal Of Consulting and Clinical Psychology 1985;53(3):424-25.

3. Siti Hajar AR, Hidayatul Najihah MZ, NurAdilla A, Nor Farizan S, Ahmad Bisyri HMM, Cik Siti Nurulhuda B. A Study on Depression, Anxiety, and Stress Scale According to Status and Gender among Islamic Shelter Care Residents in Terengganu Malaysia. International Scientific Journal of Social Research and Innovation 2019;(1).

4. Ministry of Health Malaysia.Non-Communicable Diseases (NCDs). [cited 7 February 2020]. Available from: http://www.moh.gov.my/moh/resources/Penerbitan/Rujukan/NCD/Kesihatan%20Mental/Kemurungan_Apa_Yang_Anda_Perlu_Tahu.pdf2019.

5. Tsai SJ, Cheng CY, Yu YW, Chen TJ, Hong CJ. Association Study of a Brain-Derived Neurotrophic-Factor Genetic Polymorphism and Major Depressive Disorders, Symptomatology, and Antidepressant Response. American Journal of Medical Genetics Part 2003;123:19-22.

6. Sin NL, Lyubomirsky S. Enhancing Well-Being and Alleviating Depressive Symptoms with Positive Psychology Interventions: A Practice-Friendly Meta-Analysis. Journal Clinical Psychology 2009;65(5):467-87.

7. Peluso MA, Hatch JP, Glahn DC, Monkul ES, Sanches M, Najt, Bowden CL, Barratt ES, Soares JC. Trait Impulsivity in Patients with Mood Disorders. Journal of Affect Disorder 2007;100:227–31.

8. Weiss B, Weisz JR, Politano M, Carey M, Nelson WM, Finch AJ. Developmental differences in the Factor Structure of the Children's Depression Inventory. Psychological Assessment: A Journal of Consulting and Clinical Psychology 1991;3(1),38-45.

9. Rosliwati MY, RohayahH, Jamil BYM, ZaharahS. Validation of the Malay Version of Children Depression Inventory (CDI) among Children and Adolescents Attending Outpatient Clinics in Kota Bharu, Kelantan. Malaysian Journal of Psychiatry 2008;17:23-9.

10. Kannel PR, Lee S, Kanel SR, Khan SP. Chemometric Application in Classification and Assessment of Monitoring Locations of an Urban River System. Analytica Chimica Acta 2007;582(2):390-99.

11. Razali MR, Alias N, Maliki AB, Musa RM, Kosni LA, Juahir H. Unsupervised pattern recognition of physical fitness related performance parameters among Terengganu youth female field hockey players. International Journal on Advanced Science, Engineering and Information Technology 2017;7(1):100-5.

12. Abdullah MR, Musa RM, Maliki AB, Kosni NA, Aziz MA. The Application of Principle Components Analysis to Identify Essential Performance Parameters in Outfield Soccer Players. Research Journal of Applied Sciences 2016;11:1199-205.

13. Johnson RA, Wichern DW. Applied multivariate statistical analysis. Upper Saddle River, NJ: Prentice hall; 2002.

14. Siti Aimi AMZ, Wan NurUmirah WA, NurulIzzati MN, Siti Musliha M, NurZahidah MZ, Siti Hajar AR.

Comparative Analysis on Child Depression Inventory among Islamic Educational Institutions in Malaysia. Journal of Social Science and Humanities Research 2018;3(12):1-11.

15. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders: DSM-V. Washington DC: American Psyhiatric Association 2013.

16. Gorwood P. Neurobiological Mechanisms of Anhedonia. Dialogues Clin. Neurosci 2008;10,291 -99.

17. Nelson SE, Gebauer L, Labrie RA, Shaffer HJ. Gambling Problem Symptom Patterns and Stability across Individual and Time Frame. Psychol. Addict. Behav. 2009;23, 523-33.

18. Hetherington EM, Stanley Hagan MM. The Effects of Divorce on Fathers and Their Children. In Lamb ME (Ed.), The Role of the Father in Child Development (3rd ed.) New York: John Wiley & Sons, Inc 1997.