# A Study on Contributor Factors of Depression, Anxiety and Stress Scale (DASS) Questionnaire among Children in Shelter Care Institutions in Terengganu Malaysia

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*Abstract*- This study aims to identify the most contributed factors in Depression, Anxiety and Stress Scale (DASS) questionnaire among children in Shelter Care Institutions in Terengganu Malaysia. The sample consists of 234 respondents from six institutions by using 21-items version of the DASS-21 questionnaire. Principal Component Analysis (PCA) was used to study the most essential contributed factor in the questionnaire. The initial PCA show five variables factors out of 21-item as the most significant for factors with a considerable eigen value > 1. The result from factor loading after varimax rotation show that VF1 has five variables, VF2 and VF3 has four variables, VF4 has two variables while VF5 has three variables. We suggest that the further study might be required to assess the status among gender and level of academic.

*Keywords*- depression, anxiety, stress, shelter care, institution, children

## I. INTRODUCTION

Depression, anxiety and stress are seen as a problem for today's society that it can cause physical and mental disorders. This problem can occur and be experienced by anyone regardless of age, gender, economic status and education status. Depression is a type of mental illness requiring intensive care too bad and the possibility of this illness can be stressful, low mood, lost focus, loss of appetite and lose interest in a thing and activity enjoyed before and someone's life will be empty and lonely. According to Manning and Well (1992) [16] and Simon G et al., (1995) [23], depression also associated with high rates of health has severe limitations affecting everyday life. According to Riemann et al., (2010)[21] says that the most frequent report on depression is the problem of difficulty sleeping with difficulty. The risk of depression in one's life is high due to a life full of stress and problems.

According to Boyd (1986)[4] and Klerman et al., (1986)[14], the use of health care services is closely linked to anxiety. In theories of Clark (1986)[8] and Reiss and McNally (1985)[20] the sensitivity of anxiety can cause extreme anxiety that can raises panic attacks to somebody. Anxiety is a common emotional feeling experienced by individual causing the problem of mental health disorder and individual always feels the feeling throughout the day. Anxiety also a feeling of fear or anxiety with the upcoming events and the person with the problem will be tense, worried, restless, and show uncomfortable behavior as well negative behaviour toward them or to others (Cheever, et. al., 2014)[7]. The sensitivity of anxiety is defined as the distinction of fear for someone with extreme anxiety disorder that causes feelings of panic, phobia, trauma and social anxiety (Reiss & Mc- Nally, 1985; Taylor, 1999)[20, 30].

Stress has to turn out to be a part and parcel of life and it is inescapable (Ganesan, et. al., 2018)[11]. Many people around the world participation in stress regardless of their age, race, religion, color, profession, academic background or surrounding environment (Esia-Donkoh, Yelkpien & Esia-Donkoh, 2011)[10]. According to Bunge (1987)[5], stress is a person's psychological and physiological response to the perception of a request or challenge. Challenging life events can create negative emotions for individual who act differently (Grant et. al., 2003)[12]. Hussien and Hussien (2006)[13] defined stress is the condition of a person suffering from physical and psychological hypertension caused by the inevitable and overcoming factors of an individual's ability to deal with it. It is known that the life of those who suffer from stress have a life style filled with the problem and environment or culture they practice (Ganesan, et. al., 2018)[11]. Stress has two categories that are eustress and distress. Eustress is a positive cognitive response to a stressor and a positive stress that motivates an individual to continue to work while distress is a negative stress which occurs when the good stress becomes too much to handle.

In the scale of depression, anxiety and stress released by Lovibond and Lovibond (1995)[14] has 42 items divided into three features namely anxiety, depression and stress. The DASS has been translated into Malay by Musa, et. al., (2007)[16] with only 21-items only by dividing into seven for depression, seven for anxiety and seven for stress. In addition, in this questionnaire there is no religious and cultural element. So everyone can use this questionnaire without being

offended and having 30 different languages openly. According to Musa, et al., (2007)[16], by using this questionnaire, researchers can measure the level of depression, anxiety and stress at the same time.

According to Bay et al., (2002)[3] and Szab'o et al., (2010)[28], the level of stress on the college is often associated with cognitive deficits such as attention and concentration difficulties, mental disorder such as depression and anxiety, and decreased living satisfaction. This research also has demonstrated strong connections between depression and anxiety, leading to questions about whether they are actually distinct states or whether they reflect variation in broader underlying disorder. Previous studies reveal that student university all over the world need high psychological morbidity, especially depression and anxiety (Adewuya, et al., 2006[2]; Nerdrum, et al., 2006[18]; Ovuga, et al., 2006[19]; Stewart-Brown, et al., 2000[28]; Tomoda, et al., 2000[31]; Voelker, 2003[32]; Wong, et al., 2006)[33]. Therefore, the evidence showed that many university students are exposed to mental health problem resulting in anxiety to the community (Stanley, et al., 2001)[28]. Thus, this study aims to examine the contributed factor in DASS questionnaire among students in Shelter Care, Terengganu Malaysia.

## II. METHOD

### Participant

This research using a quantitative approach. The sample of this study consisted of 234 children from six institutions in the district of Besut, Terengganu Malaysia. In each institution, the consent of the children is taken into account once the researcher clarifies about the aim of the study to be conducted and their information will be kept confidential. Before that, a special permission was obtained from the students and management of all institutions.

### Study Instrument

The survey was conducted using by Depression, Anxiety and Stress Scale (DASS) questionnaire. According to Bhasin et al., (2010)[6], DASS is a set of questionnaires which consists of three self-reports scales created by Lovibond to measure the state of negative emotional depression, anxiety and stress. The DASS has been translated in Malay version has 21-items and the questionnaire has indicated on a 4-point Likert scale where 0 = did not apply to me until 3 = applied to me very much or most of the time. By referring to the Cronbach's alpha value, the reliability of BM DASS-21 had been determined by Ramli Musa, Mohd Ariff Fadil and Zaini, which the Cronbach's alpha value for overall items was very good at 0.904 (95% CI). For scale the value of depression is 0.84, anxiety is 0.74 and stress is 0.79 respectively (Musa, R., et. al., 2007)[17].

### Data Analysis

Principal component analysis (PCA) is a technique used to emphasize variations and produce strong patterns in datasets and PCA was used in the study in order to give insights into the most essential variables. Furthermore, According to Abdullah M. R. et. al. (2017)[1], PCA is a powerful statistical technique which involves recognizing the pattern of the observed group or any of the parameters specified. PCA is this is because PCA is very essential in extracting the required information from a big amount of data (Abdullah, M. R., et. al., 2017)[1]. The principle component (PC) can be stated as Equation 1 below;

$$z_{ij} = a_{il}\, x_{1j} + a_{i2}\, x_{2j} + \ldots + a_{im}\, x_{mj}$$

where :

z : the element score

a : the element stacking

x : the assessed estimation of the variable

i : the element number

j : the subject number

m: the aggregate number of variables

According to Simeonov et al., (2003)[24] and Dominick et. al., (2017)[9], the PCA method is used to explain the variation of large groups of variables that are interconnected by converting into a new set which is a smaller set of independent variables, namely Principal Components (PCs). PCA was used in this study because PCA was able to identify the most significant variable pattern and could shows the main resource of the DASS questionnaire. Thus, by using PCA in this study, suggested by Singh et al., (2004, 2005)[25,26], Shrestha and Kazama (2007)[22], we eliminated the variables that have less factor loading based upon on distinct eigenvalue from data set.

PCA in this study was run twice as recommend by previous research while as first step of PCA is to classified the factors that mean the trustworthy of the eigenvalue. Secondly, PCA was run again after the identifying the factors that exciding eigenvalue trustworthy. The rotation eigenvalue used by Varimax rotation. In this study has 21 variables carried out by using the PCA method.

## III. RESULT AND DISCUSSION

Table 1 exhibits the descriptive statistics of the respondents. It shows the total number of the 234 respondents drawn from different institutions. The minimum and maximum scores, mean as well as the standard deviation of each parameter is shown. Based on figure 1, the eigenvalue for the initial PCA has been reveals. From the figure 1, it can be observed that the PCA identified five components as the most essential due to their higher eigenvalue than 1 (>1).

Table 1 : Descriptive statistics of the respondents

| Varia-ble | Observa-tions | Mini-mum | Max-imum | Me-an | Std. deviation |
|---|---|---|---|---|---|
| Q1 | 234 | 1.0 | 4.0 | 2.06 | 0.69 |
| Q2 | 234 | 1.0 | 4.0 | 2.00 | 0.86 |
| Q3 | 234 | 1.0 | 4.0 | 1.80 | 0.72 |
| Q 4 | 234 | 1.0 | 4.0 | 1.62 | 0.81 |
| Q5 | 234 | 1.0 | 5.0 | 1.89 | 0.73 |
| Q6 | 234 | 1.0 | 4.0 | 1.94 | 0.87 |
| Q7 | 234 | 1.0 | 4.0 | 1.93 | 0.77 |
| Q8 | 234 | 1.0 | 4.0 | 1.92 | 0.81 |
| Q9 | 234 | 1.0 | 4.0 | 1.78 | 0.84 |
| Q10 | 234 | 1.0 | 4.0 | 1.76 | 0.80 |
| Q11 | 234 | 1.0 | 4.0 | 1.84 | 0.75 |
| Q12 | 234 | 1.0 | 4.0 | 1.90 | 0.83 |
| Q13 | 234 | 1.0 | 4.0 | 2.03 | 0.83 |
| Q14 | 234 | 1.0 | 4.0 | 2.02 | 0.86 |
| Q15 | 234 | 1.0 | 4.0 | 1.68 | 0.73 |
| Q16 | 234 | 1.0 | 4.0 | 1.68 | 0.70 |
| Q17 | 234 | 1.0 | 4.0 | 1.76 | 0.89 |
| Q18 | 234 | 1.0 | 4.0 | 2.26 | 0.99 |
| Q19 | 234 | 1.0 | 4.0 | 1.85 | 0.89 |
| Q20 | 234 | 1.0 | 4.0 | 1.68 | 0.84 |
| Q21 | 234 | 1.0 | 4.0 | 1.47 | 0.75 |
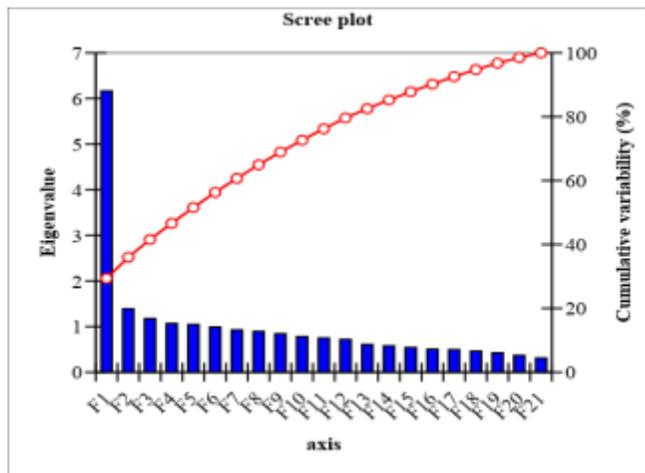


Figure 1 : Scree Plot of Descriptive Eigenvalue value.

Factor loadings after varimax rotation were disclosed in Table 2. It can be seen from table that from variable factors (VF1) has five variable out of the 21 variables fulfilled the 0.50-factor loading threshold are Q10, Q12, Q13, Q17, and Q21. There are four variables that can be seen from the second variable factors (VF2) in factor loading is Q8, Q9, Q19, and Q20. The table showed that the third variable factors (VF3) has four variables are Q3, Q4, Q5, and Q16. Likewise, the fourth variable factors (VF4) has less variable than others which has two components such as Q2 and Q18. While VF5 identifies three with a positive higher factor loading such as Q6, Q7, and Q15.   Table 2 shows the most significant

variables of factor loading after varimax rotation the contribution of the variability for VF1 (15.24%), VF2 (10.05%), VF3 (8.80%), VF4 (8.92%) and VF5 (8.58%). The total cumulative of factor loadings after varimax rotation has been shown in the table with 51.60%. Figure 2 shown that VF1 and VF2 contributed to about 25.30% of the total data set and the variability of 15.24% and 10.05% respectively.

Table 2 : Factor loadings of PCA after Varimax rotation

| Variables | VF1 | VF2 | VF3 | VF4 | VF5 |
|---|---|---|---|---|---|
| Q1 | 0.36 | 0.18 | 0.12 | 0.46 | 0.13 |
| Q2 | -0.07 | 0.05 | 0.33 | **0.54** | 0.21 |
| Q3 | 0.24 | 0.25 | **0.60** | 0.11 | -0.12 |
| Q4 | -0.06 | 0.41 | **0.51** | -0.11 | 0.27 |
| Q5 | 0.21 | 0.01 | **0.60** | 0.29 | 0.03 |
| Q6 | 0.21 | 0.01 | 0.25 | 0.08 | **0.64** |
| Q7 | 0.08 | 0.26 | -0.12 | 0.11 | **0.57** |
| Q8 | 0.05 | **0.57** | 0.22 | 0.22 | 0.27 |
| Q9 | 0.35 | **0.59** | -0.05 | -0.14 | 0.05 |
| Q10 | **0.54** | 0.11 | 0.36 | 0.16 | 0.13 |
| Q11 | 0.28 | 0.34 | 0.25 | 0.48 | 0.14 |
| Q12 | **0.64** | 0.21 | 0.10 | 0.08 | 0.25 |
| Q14 | 0.33 | 0.42 | -0.10 | 0.30 | 0.20 |
| Q15 | 0.18 | 0.14 | 0.04 | 0.19 | **0.71** |
| Q16 | 0.50 | 0.06 | **0.51** | -0.04 | 0.35 |
| Q17 | **0.75** | 0.00 | -0.02 | 0.31 | 0.11 |
| Q18 | 0.27 | 0.15 | -0.04 | **0.73** | 0.08 |
| Q19 | 0.01 | **0.51** | 0.16 | 0.18 | 0.18 |
| Q20 | 0.22 | **0.62** | 0.18 | 0.23 | -0.04 |
| Q21 | **0.78** | 0.20 | 0.14 | 0.02 | 0.05 |
| Eigenvalue | 6.16 | 1.39 | 1.17 | 1.06 | 1.04 |
| Variability (%) | 15.24 | 10.06 | 8.80 | 8.92 | 8.58 |
| Cumulative % | 15.24 | 25.30 | 34.10 | 43.02 | 51.60 |
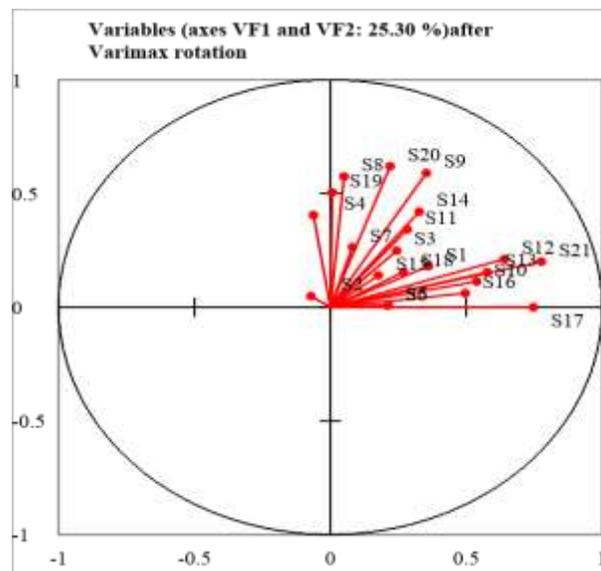


Figure 2 : Factor loading plot after varimax rotation.

A total of 21 question from 234 respondents were quantified and PCA was engaged to identify the most significant variable in the questionnaire. Variables have been standardized with absolute values of > 0.50 as the selection threshold due to the fact that the value of 0.50 is strong and stable by showing the moderate and strong burden on the factors being injected. Figure 2 shows VF1, contributing to about 15.24% of the total data set variability. It reveals a positive factor loading from Q1(0.54), Q12(0.54), Q13(0.58), Q17(0.75) and Q21(0.78), (Table 2). Factor loading after Varimax rotation showed that the contributed factor in D1 is depression and stress.

Next, VF2, contributes to about 10.06% of the total variability of the data set (Figure 2). It reveals a positive factor loading from Q8(0.57), Q9(0.59), Q19(0.51), and Q20(0.62) while VF3 indicated positive factor loading from Q3(0.60), Q4(0.51), Q5(0.60), and Q16(0.51), VF4 reveals Q2(0.54), and Q18(0.73), and VF5 reflects Q6(0.64), Q7(0.57), and Q15(0.71). Factor loading after Varimax rotation in this study shown that the contributed factor in VF2 is anxiety and stress while VF3 is depression and anxiety, VF4 and VF5 is anxiety and stress.

This study sought to examine the VFs in DASS questionnaire. The finding can be seen in the questionnaire by using PCA. There were 7-items for depression (Q3, Q5, Q10, Q13, Q16, Q17, and Q21). For examples question 3; "I couldn't seem to experience any positive feeling at all". If they can't be experienced any positive feeling they will feel down. Furthermore, anxiety also has 7-item such as Q2, Q4, Q7, Q9, Q15, Q19 and Q20. For instance, question 7; "I had a feeling of shakiness". If the student feels shakiness, it will caused they can't do anything well. The last question for stress also has 7-items such as Q1, Q6, Q8, Q11, Q12, Q14 and Q18. For examples Question 18; "I felt that I was rather touchy". It can be seen someone can't accept that reprimand from someone else.

The result obtained in this study show that the DASS questionnaire has the VFs. There have only five VFs that contributed from 21 questions which is greater than 1. The overall of variable factors of VF1 to VF5 showed a value of 0.51 until 0.78. That means, DASS questionnaire can be measured and showed the symptoms of depression, anxiety, and stress. Whether or not parents should avoid depression, anxiety, and stress in order to prevent this disease from being burdensome in their lives. This disease very dangerous to people because it can be suicide and also can be a crime. People need to take serious steps to overcome depression, anxiety, and stress from continuous especially among student.

## IV. CONCLUSION

The aim of the study was to investigate and identify the contributed factor in the questionnaire used at different institutions. The original data collected has 244 respondents and only 234 of respondents were used. The data collected by using DASS questionnaire and we utilized PCA to determine the most contributed factors in the questionnaire. The PCA analysis shows five variable factors out of 21 as the most significant variable factors and to find out the question. The present study has successfully identified that Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q12, Q13, Q15, Q16, Q17, Q18, Q19, Q20, and Q21 are the most essential variable in DASS questionnaire.

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