International Journal of Applied Psychology 2014, 4(2): 68-72
DOI: 10.5923/j.ijap.20140402.04

Relationship of Test Anxiety, Psychological Distress and Academic Motivation among First Year Undergraduate Pharmacy Students

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Abstract Passing standardized academic tests are important in current education system which increases the prevalence of test anxiety among students. Test anxiety has become ubiquitous and leads to several complications, for instance psychological distress and amotivation. The aim of this study is to identify the prevalence of test anxiety and psychological distress among pharmacy students, to identify the relationship between test anxiety and psychological distress among pharmacy students and at what extend test anxiety is a predictor of psychological distress and academic motivation. Westside Test Anxiety Scale (WTAS), Kessler Psychological Distress Scale (K10) and Academic Motivation Scale (AMS) were distributed to 144 first semester students who are pursuing under graduate pharmacy program in one of the universities in Malaysia. Forty seven (32.5%) participants experienced test anxiety and 88(61.1%) of them experienced psychological distress. Further results showed that there is a significant positive relationship between test anxiety and psychological distress as well as between test anxiety and amotivation. Test anxiety is a significant predictor of psychological distress and amotivation. Over all, pharmacy students experience test anxiety and psychological distress. Test anxious students tend to experience higher level of psychological distress and amotivation.

Keywords Test Anxiety, Psychological Distress, Academic Motivation, Pharmacy Students

1. Introduction

Test anxiety is a combination of perceived physiological over-arousal, feelings of worry and dread, self-depreciating thoughts, tension, and somatic symptoms that occur during test situations. Passing standardized tests and graduating from academic institution are inevitable aspects in the life of students nowadays. Approximately 75% of the citizens of United States are pressured under a stress environment and it is estimated between 25% and 40% of students, exhibit test anxiety when they are under high level of distress [1], [2]. A study stated that 61% of students reported test anxiety on an occasional basis while another study stated that 26% of students experienced test anxiety on a very frequent basis [3], [4]. In fact, test anxiety can become a vicious cycle. After repeatedly enduring from test anxiety, students became more anxious during the next evaluative situation [4].

1.1. Test Anxiety and Psychological Distress

Psychological distress can defined as a manifestation of multiple ways at different levels of severity. But in very general terms it is psychological discomfort. It can be experienced as sadness, anxiety, distraction, and in the most extreme cases - psychotic symptoms [5]. University students are known to be the vulnerable group of population who are particularly prone to distress due to the transitional nature of college life [6]. 37% stress references were displayed on college freshmen's Facebook profiles within a year and half especially pharmacy students being the highest prevalence group (70.6%) compared to medical (66.1%) and dentistry (62.5%) students [6]. Previous literatures indicated significant positive linear relationships between psychological distress and test anxiety which explained that students with higher academic stress often scored higher worry and emotionality scores and lower academic achievement [7], [8]. However, there are no studies done so far on pharmacy students regarding test anxiety and psychological distress. Also, there is no studies report so far whether test anxiety is a predictor of psychological distress among pharmacy students.

1.2. Test Anxiety and Academic Motivation

Motivation is a psychological feature that induces an organism to act towards a desired goal and elicits, controls,

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Published online at http://journal.sapub.org/ijap

and sustains certain goal-directed behaviors [9]. Motivation is generally subdivided into three types: intrinsic motivation (an internal drive to pursue something for self-satisfaction), extrinsic motivation (an external source that acts as driving force for an individual's behaviour) and amotivation [10]. Test anxious students showed low extrinsic and intrinsic motivation under highly evaluative settings [9], [10]. Test anxiety is positively correlated with amotivation. Correlation between test anxiety and motivation revealed significant inverse relationship where students with test anxiety were found to be performing poorly and less motivated in highly evaluative situations [11]. Also, test anxiety was found to be inversely related to course grade. Low-test-anxious students were found to have significantly higher CGPA than high-test-anxious students [10]. However, there are no studies done so far on pharmacy students regarding test anxiety and academic motivation. Also, there is no studies report so far whether test anxiety is a predictor of academic motivation among pharmacy students. Based upon the above research findings the aim of the present study is to identify the prevalence of test anxiety and psychological distress among undergraduate pharmacy students, to identify the relationship between test anxiety and psychological distress among undergraduate pharmacy students, and to identify the relationship between test anxiety and subscales of academic motivation (extrinsic motivation, intrinsic motivation and amotivation) among pharmacy students and to identify at what extend test anxiety is a predictor of psychological distress and subscales of academic motivation (extrinsic motivation, intrinsic motivation and amotivation) among undergraduate pharmacy students.

2. Methodology

2.1. Participants

In this cross sectional study, 144 first year undergraduate pharmacy students participated from one of the private universities in Malaysia. Based upon the Raosoft software sample calculation, this study needed 105 participants but this study received 144 participants as they were voluntaries. 29 male and 115 female pharmacy students participated. The mean age was 19. Participants who completed their first five weeks in their first semester of the undergraduate pharmacy program were included in this present study.

2.2. Tools/Instruments

The questionnaires used in this study were in English since the Pharmacy courses offered in Malaysia is also in English. Demographic Scale (DS) was prepared for this study purpose to collect the age, gender and program of the participants.

Westside Test Anxiety Scale (WTAS) [12] was used to measure test anxiety. WTAS consisted of 10 items and each item has scores in five point Likert scale. Some of the items are: the closer I am to a major exam, the harder it is for me to concentrate on the material, during important exams, I think that I am doing awful or that I may fail. The scores from each item was summed and divided by 10 to obtain the mean value, which was the test anxiety score. Mean value obtained of less than 3 was considered as normal anxiety whereas mean value of more than 3 was considered as having test anxiety. The alpha value of this study was 0.89.

To measure participants' Kessler Psychological Distress Scale (K10) [13] was used to measure psychological distress. K10 consisted of 10 questions each with a five-level response scale. Some of the items from this scale are: about how often did you feel tired out for no good reason, about how often did you feel hopeless. The scores of 10 items were added and yielding a minimum score of 10 and maximum score of 50. Scores ranges from 10 to 20 were considered as no stress, whereas score ranges from 21-50 were considered as more stress. The alpha value of this study was 0.91.

Academic Motivation Scale (AMS) [14] was used to identify the types and level of motivation. It is the only scale that reflects the types of motivation with proven validity and reliability and been used widely by researchers [14], [15]. AMS consisted of 28 questions and each question was measured in 7-level response scale. Some of the items from this scale are: because I want to have "the good life" later on, to show myself that I am an intelligent person. AMS is divided into three subscales that reflected three types of motivation, which are intrinsic motivation, extrinsic motivation and amotivation. The higher the scores were, the higher the motivation. The alpha value of this study was 0.91.

2.3. Procedure

After obtaining ethical and research approval, the researcher of this study approached the first semester undergraduate pharmacy students after their lecture hours. The researcher of this study explained about the aim of the present study; participation in this study is not a university requirement, participants may withdraw from this study at any time and all the information collected would be kept confidential. After explaining all these information, participants who were voluntaries received DS, WTAS, AMS and K-10 questionnaires. After receiving back the completed questionnaires, researchers thanked the participants who participated in this study.

2.4. Data Analysis

Descriptive statistics were used to identify the prevalence of test anxiety and psychological distress, Spearman correlation test was used to analyze the correlation between test anxiety, psychological distress and academic motivation among pharmacy students.

3. Results

3.1 Prevalence of Test Anxiety and Psychological Distress

Descriptive statistics frequency test was used to measure the prevalence of test anxiety and psychological distress. Table 1, shows the prevalence of test anxiety among the participants. 47 (32.6%) participants according to WTAS had test anxiety, when cut-off point was set at score 3.0. The remaining 97 participants (67.4%) fell in the category of normal level of test anxiety. On the other hand, 88 (61.1%) of them experienced psychological distress and 56 (38.9%) reported no psychological distress. Looking further into the subscales of test anxiety, breaking down the level of test anxiety to normal, moderately high, high and extremely high, the prevalence rates were found to be 67.4%, 22.2%, 7.6% and 2.8% respectively.

Table 1. Prevalence of Test Anxiety and Psychological Distress

Level of Test anxiety	**No. of participants n=144**	**Percentage (%)**
Normal	97	67.4
Moderately High	32	22.2
High	11	7.6
Extremely High	4	2.8
Test Anxiety	47	32.6
Level of Psychological distress	**No. of participants n=144**	**Percentage (%)**
Non-psychological distress	56	38.9
Psychological distress	88	61.1

3.2. Relationship between Test Anxiety and Psychological Distress and Academic Motivation

Spearman correlation test was used to measure the relationship between test anxiety and psychological distress and academic motivation. The results showed that there is a significant correlation exists between test anxiety and pschological distress and amotivation (refer table 2).

Table 2. Correlations between Test Anxiety, Psychological Distress and Academic Motivation

		Psychological Distress	**Intrinsic Motivation**	**Extrinsic Motivation**	**Amotivation**
Text anxiety	**Correlation Coefficient**	.572**	-.073	.087	.210*
	Sig. (1-tailed)	.001	.383	.000	.012

Psychological distress: **P<0.01; amotivation: * p<0.05

3.3. Test Anxiety is a Predictor of Psychological Distress and Amotivation

This study used total test anxiety score as a predictor variable whereas, total psychological distress and amotivation scores as criterion variables. Table 3 indicates that test anxiety is a significant predictor of psychological distress and amotivation. Test anxiety predicts 33% (R^2 = .33, F (1, 142) = 70.45, P< 0.01) of psychological distress and amotivation 30% (R^2 = .03, F (1, 142) = 4.39, P< 0.05).

Table 3. Test Anxiety is a Predictor of Psychological Distress and Academic Motivation

	B	Std. error	β
Psychological distress	10.587	1.550	
Total anxiety score	4.79	.572	.576**
Amotivation	4.74	1.299	
Total anxiety score	1.005	.479	.173*

Psychological distress: ΔR^2 =.332, **P<0.01; amotivation: ΔR^2 =.030, * p<0.05

4. Discussion

4.1. Prevalence of Test Anxiety and Psychological Distress

There was a need to study the prevalence of test anxiety and psychological distress among pharmacy students as many numbers of universities offer pharmacy program in Malaysia. Lack of large-scale epidemiological study created a challenging state to estimate the number of students experiencing test anxiety [16]. The prevalence rate of test anxiety 32.6% in this study was in agreement with a previous research [17] which means 3 out of 10 pharmacy students are experiencing test anxiety. However, this test anxiety can either be physical, behavioral or affective symptoms associated with test anxiety [17], [18]. In current research findings, 22.2% of pharmacy students fell in the category of "moderately high" test anxiety while only 7.6% of them have "high" level of test anxiety. However, the prevalence rate of test anxiety among pharmacy students was 61.1%.

4.2. Test Anxiety and Psychological Distress

The current finding of significant positive relationship between test anxiety and psychological distress among pharmacy students illustrate that pharmacy students with higher level of test anxiety experienced higher level of psychological distress. This finding was highly consistent with previous study where students who faced test anxiety expressed high level of stress [19], [20]. Further results showed that test anxiety is a predictor of psychological distress. This is the first study determining test anxiety as a predictor of psychological distress. Psychological interventions for test anxiety can be recommended to pharmacy students who have test anxiety which most likely may reduce the psychological distress.

4.3. Test Anxiety and Subscales of Academic Motivation

Regarding the non-significant relationship between test anxiety and intrinsic motivation among pharmacy students, this association was found to be inconsistent with previous researches [21], [22] where they reported significant negative relationship between test anxiety and intrinsic motivation. Intrinsically motivated students were reported with lower level of test anxiety due to the better learning capability and better feeling when they pursue intrinsic goals rather than extrinsic goals and thus enhancing their academic achievement [23], [24], [25]. Current finding was in agreement with a research [26] where test anxiety was not related to intrinsic motivation. Current research showed a significant positive relationship was shown between test anxiety and amotivation among pharmacy students. Further results showed that test anxiety is a predictor of amotivation. Students with test anxiety tend to have lower motivation as proposed by a previous research [27]. Highly test anxious students who were poorly motivated, had a bad self-evaluation and they often suffer from concentration difficulties under highly evaluative conditions [28], [29]. Despite the supportive literatures mentioned earlier, there was also research [30] that was not in agreement with current findings where test anxiety was claimed to be uncorrelated with motivation.

4.4. Limitations and Recommendations

One of the limitations of this research is that this cross-sectional study was done only on first year pharmacy students in one of the universities, but not the entire student population of pharmacy program in Malaysia. Hence, the result of this study cannot be generalized among all undergraduate pharmacy students in Malaysia. On top of that, the data collected are solely based on self-reported information from the participants and thus reporting bias may have arose as questions interpretation and understanding may be varied. Longitudinal study which involves greater number of participants is recommended in order to determine the definite relationship among the variables. There is also a need to design appropriate test anxiety and stress management program to address the vulnerable group of students.

5. Conclusions

This study indicated that test anxiety is a significant predictor of psychological distress, and amotivation. The current findings suggested that moderately high test anxiety rate (32.6%) and high prevalence rate of psychological distress (61.1%) existed among pharmacy students. High test-anxious students tend to encounter higher level of psychological distress and amotivation. However, intrinsic motivation and extrinsic motivation was not influenced regardless of the level of test anxiety. Overall one third of first year undergraduate pharmacy students experience test anxiety and psychological distress. Universities need to consider the existence of test anxiety among pharmacy students. These students most likely need psychological interventions to manage their test anxiety and its consequences. Untreated test anxiety may surge the psychological distress and amotivation as test anxiety is a predictor of psychological distress and amotivation.

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