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RESEARCH

The Effectiveness of Psychoeducation and Systematic Desensitization to Reduce Test Anxiety Among First-year Pharmacy Students

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Objective: To analyze the effect of psychological intervention on reducing performance anxiety and the consequences of the intervention on first-year pharmacy students.

Methods: In this experimental study, 236 first-year undergraduate pharmacy students from a private university in Malaysia were approached between weeks 5 and 7 of their first semester to participate in the study. The completed responses for the Westside Test Anxiety Scale (WTAS), the Kessler Perceived Distress Scale (PDS), and the Academic Motivation Scale (AMS) were received from 225 students. Out of 225 students, 42 exhibited moderate to high test anxiety according to the WTAS (score ranging from 30 to 39) and were randomly placed into either an experiment group (n=21) or a waiting list control group (n=21).

Results: The prevalence of test anxiety among pharmacy students in this study was lower compared to other university students in previous studies. The present study's anxiety management of psychoeducation and systematic education for test anxiety reduced lack of motivation and psychological distress and improved grade point average (GPA).

Conclusion: Psychological intervention helped significantly reduce scores of test anxiety, psychological distress, and lack of motivation, and it helped improve students' GPA.

Keywords: psychological interventions, test anxiety, academic performance, motivation, pharmacy students

INTRODUCTION

Test anxiety involves significant emotional, physiological, and cognitive reactions to evaluative situations that can negatively impact both students' psychological well being and scholastic performance.[1-4] Test anxiety most closely aligns with the psychological disorder of social phobia[5] and can cause a person to experience fear of entering into social situations due to concerns about poor performance and embarrassment.[6] Test anxiety may adversely affect people in every field and of any age, when they undergo evaluation, assessment, and grading according to their abilities, achievements, or interests.[7] A test-anxious individual is prone to react excessively with worry, negative thoughts, nervousness, and physiological uneasiness in evaluative situations.[8] Test anxiety is also a type of "state anxiety" that causes an individual to experience significant psychological distress only under specific situations (eg, when taking a test, giving a class presentation, or answering questions in front of others).

In a study on medical, nursing, and pharmacy students, Anderson reported that pharmacy students demonstrated the highest psychological distress.[9] Other studies reported that 22% of pharmacy students experienced nervousness during examinations, and 69.3% experienced some level of anxiety during examinations even though they thought they were well prepared.[10-12] Thus, it is well documented that test anxiety negatively affects academic performance, motivation, and psychological well being.[13]

Motivation is one factor that influences students' academic achievement and optimism.[13] Motivation is generally divided into 3 types: intrinsic, extrinsic, and amotivation.[14] Intrinsic motivation is an internal drive to pursue something for self-satisfaction and extrinsic motivation occurs when an external source acts as a driving force for an individual's behaviour. Dornyei defines amotivation as "the relative absence of motivation that is not caused by a lack of initial interest but rather by the individual's experiencing feelings of incompetence and helplessness when faced with the activity".[15]

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Ergene revealed that intrinsic and extrinsic motivation is associated with test anxiety.[16] Ryan and Deci found that students who experienced test anxiety express low extrinsic motivation and high distress.[17] Affected students were not interested in attending classes and had negative perceptions about their academic performance, thus reducing their extrinsic and intrinsic motivation.[16,17] Furthermore, Ergene found that test anxiety was positively correlated with amotivation. Ahn et al and Rustegar et al showed that students with test anxiety experience more psychological distress compared to students without test anxiety.[18,19] In fact, text anxiety is one of the major causes for students' underachievement and low performance at different stages of their educational life.[20-23] The excessive worry and intrusive thoughts about performance that students with test anxiety experience are predictors of emotional and psychological distress.[20] Therefore, test anxiety is more likely an aggravating factor for psychological distress and amotivation. However, previous studies have not explored to what extent psychological intervention for test anxiety reduces psychological distress and amotivation.

Elliot and McGregor found that some students were not able to manage their test anxiety due to ineffective coping strategies, inadequate knowledge, and lack of awareness about the signs and symptoms of test anxiety.[24] Previous studies used stress management, cognitive behavior therapy, systematic desensitization, behavioral activation, progressive muscle relaxation, and psychoeducation to manage test anxiety.[24-30] However, no studies have explored interventions for test anxiety that reduce psychological distress and amotivation and the impact on academic performance among pharmacy students. Hence this study aimed to identify the prevalence of test anxiety among pharmacy students, to discover to what extent psychological intervention for test anxiety could reduce psychological distress and amotivation while increasing intrinsic and extrinsic motivation, and finally to determine if psychological intervention for test anxiety could increase GPA. The study used brief psychoeducation, relaxation therapy, systematic desensitization, and individual counseling to reduce test anxiety and its consequences.

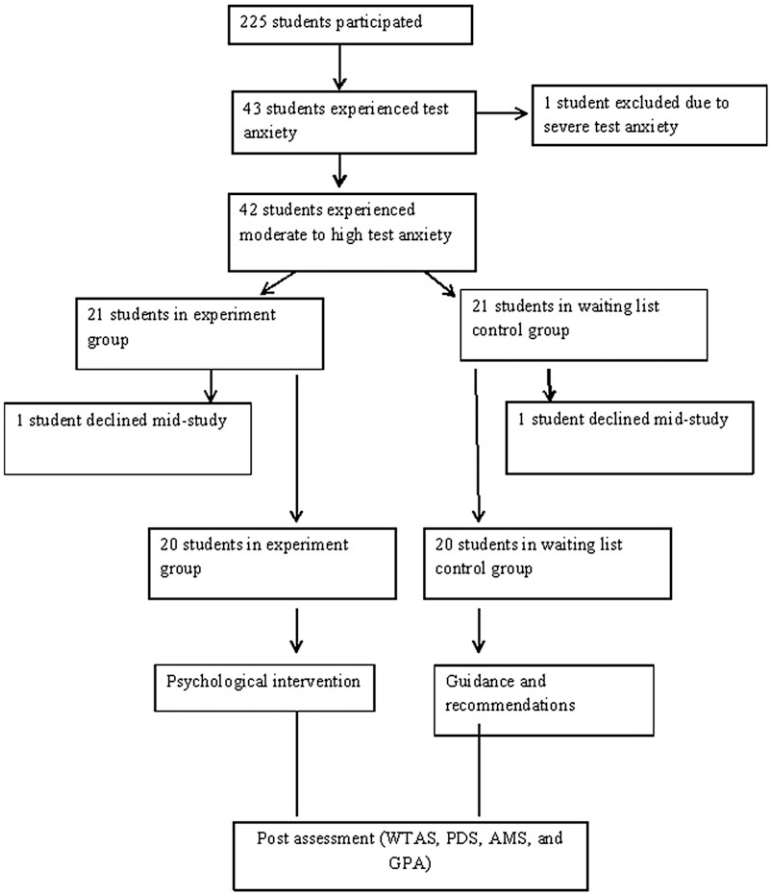

Figure 1. FlowChart of Study Design.

We hypothesized that (1) students who received psychological intervention for test anxiety would exhibit significant reduction in the scores on test anxiety, psychological distress, and amotivation compared to students who did not receive psychological intervention; (2) students who received psychological intervention for test anxiety would exhibit a significant increase on intrinsic and extrinsic motivation scores and GPA compared to students who did not receive psychological intervention.

METHODS

After obtaining ethical and research approval from the private university in Malaysia where this study was conducted, 236 first-year undergraduate pharmacy students were approached to participate in the study between weeks 5 and 7 of their first semester. Out of 236 students, 4 students were not interested in participating and 7 incomplete questionnaires were excluded. Students were approached, and those who agreed to participate provided written consent. Of the 225 students who completed the questionnaire, 156 were male and 69 were female, and the mean student age was 19. Forty-two students exhibited moderate to high anxiety and were randomly divided into experiment and waiting list control groups (Figure 1) using the SPSS (version 20 IBM, Cyberjaya, Selangor, Malaysia) random assignment method. Test anxiety scores were measured using the Westside Test Anxiety Scale (WTAS). The 42 students with moderate to high test anxiety had scores ranging from 30 to 39. One student who experienced extremely high test anxiety (WTAS score above 40) in the preliminary assessment was excluded from the study as this student may have been exhibiting comorbid psychological problems. The present study was intended to only include students with moderate to high test anxiety.

Materials used in the study included an information sheet to identify students' gender, age, and past mental health treatment, and 3 scales to measure psychological responses among study participants. The Westside Test Anxiety Scale (WTAS) measures anxiety levels that interfere with performance during examinations.[31] It comprises a 5-point scale extending from 1 (not at all true) to 5 (extremely true). Scores range from 10 to 50, and scores ranging from 10 to 29 indicate normal test anxiety levels, 30 to 34 indicate moderate test anxiety, 35 to 39, high test anxiety, and 40 to 50, extremely high test anxiety. This scale has been widely used by researchers to measure test anxiety among student populations.[31-33] Onyeizugbo found an alpha of 0.78 and split half reliability of 0.77.[33] The alpha reliability of this scale in this study was 0.89. The second scale used was the Kessler Perceived Distress Scale (PDS). The PDS consists of 10 items and uses a 5-point Likert scale.[34] It is based on negative emotional experiences and measures psychological distress levels. A score below 20 indicates no stress, while scores from 21 to 50 indicate psychological distress. This tool has been widely used by researchers to measure psychological distress.[35,36] The alpha reliability is 0.95,[36] and the alpha reliability of the scale in this study was 0.92. Finally, the Academic Motivation Scale (AMS was used to measure intrinsic motivation, extrinsic motivation, and amotivation.[15] Scales of 12 items are used to measure intrinsic motivation and extrinsic motivation, and amotivation has a scale of 4 items. Responses are recorded on a 7-point Likert scale. The higher one scores, the more one suffers from psychological distress. Previous studies used AMS to measure motivation among students.[37-39] Reliability of the scale ranges from 0.70 to 0.79.[14,37] The alpha reliability of the scale in this study was 0.91.

The 42 students who exhibited moderate to high test anxiety were randomly placed into either an experiment group (n=21) or a waiting list control group (n=21) by SPSS random assignment method (Figure 1). Waiting list control group students were informed that they would receive psychological treatment after postassessment.[40] Students in both groups were instructed not to discuss the psychological intervention as it might affect the study's results as well as interventions given to other students. Students were told they could withdraw from the study at any time and that participation was not part of the university's requirements. Waiting list control group members were also instructed to inform the principle investigator if they consulted any professionals for their psychological conditions prior to their postassessment.

After one student from each group opted out of the study, 20 students from each group took preassessments and postassessments, administered by a researcher who did not provide the psychological intervention. The SDS, WTAS, PDS, and AMS were administered preassessment, during the first 5-7 weeks of the first semester and the postassessment was conducted using WTAS, PDS, AMS, and GPA 2 weeks before second-semester examinations. The experiment group students received 6 sessions of psychological intervention to decrease their test anxiety before their first-semester examinations. The psychological intervention was spread out over 3 weeks and in each week, 2 sessions of psychological intervention were conducted. The waiting list control group students received 1 session of guidance and recommendations to manage their test anxiety before first-semester examinations.

The interventions given to the experiment group included psychoeducation, relaxation therapy, and systematic

desensitization. Each session of counseling was conducted for approximately 1 hour for 6 sessions.

The first session focused on explaining the scores on test anxiety, psychological distress, and motivation. The therapist conducted brief semi-structured interviews to ensure students did not have any comorbid mental illnesses. The therapist also explained the number of sessions, duration of the psychological intervention, and rules and regulations of the counselling sessions. In addition, the therapist asked the students to share their feelings and thoughts related to test anxiety and ensured the students that information collected from them would be kept confidential.

The second session focused on psychoeducation and progressive muscular relaxation therapy (PMRT). Psychoeducational counseling focuses on the causes, symptoms, and consequences of test anxiety. During pyschoeducation, the therapist counseled the students on the psychological and physical problems of test anxiety and its indications. He also discussed the consequences of test anxiety such as low grades and pessimistic thoughts about themselves and their performance. Then, the therapist introduced the short version of PMRT. Participants used CDs and headphones to listen to the PMRT and were advised to practice the therapy twice daily until the next session. The therapist asked students to write the hierarchy of least to most provoking situations of test anxiety. They were also advised to rate the level of anxiety from 0 to 100 for each item and describe the feelings and emotions related to each item.

The third session focused on systematic desensitization. The first few minutes were spent on clarifying and reviewing the previous session. Then the therapist went through the test anxiety hierarchy and discussed with the students how they rated the situations. Students were advised to practice the relaxation therapy by slowly imagining the least anxiety-producing situation from the hierarchy. If students felt any tension and anxiety, they were advised to stop and return to the relaxation technique until they were comfortable. Once they were relaxed, they were asked to continue imagining the anxiety-producing situations from least to most anxiety-producing. Homework was given to practice the exercise with at least 2 situations from the list.

Table 1. Prevalence of Test Anxiety Among Participants

Anxiety Lvels	Number of Students	Percentage
No anxiety	182	81.0
Moderate anxiety	22	9.8
High anxiety	20	8.8
Extremely high anxiety	1	0.4
Total	225	100

Table 2. Differences in Test Anxiety Scores Between Experiment and Waiting List Control Group

	Experiment Group		Waiting List Control Group			
Anxiety	**M**	**SD**	**M**	**SD**	***t*(42)**	***p***
Preassessment	37.0	4.0	38.0	4.2	-0.4	.62
Postassessment	20.2	5.0	39.5	4.0	-15.1	.000**

$p<0.001$.

During the fourth and fifth sessions, students again practiced systematic desensitization. The therapist helped the students relax while imagining the least anxious situations from the hierarchy. Then the therapist advised the students to practice the relaxation exercise with at least 2 situations a day from the hierarchy. A sixth session was provided for students who needed additional practice overcoming anxiety in the listed situations.

Meanwhile, students in the waiting list control group were advised to plan their time management and use effective study skills. They were also advised to use breathing techniques to reduce their anxiety before taking the examinations.

RESULTS

Out of 225 students, 182 (80.8%) did not experience test anxiety during the assessment while 43 (19.1%) experienced test anxiety (Table 1). Table 2 shows that there was a significant difference between the scores of the students in the experiment and control group on postassessment of test anxiety ($p<0.001$). There was also a significant difference between the scores of the students in the experiment group and waiting list control group on intrinsic motivation ($p<0.001$), extrinsic motivation ($p<0.001$), and psychological distress ($p<0.001$), as shown in Tables 3 and 4, respectively.

Table 5 shows a significant difference between preassessment and postassessment scores on test anxiety, academic motivation, and psychological distress among students from the experiment group. Out of the 20 students from the experiment group, 19 (90.9%) recovered from test anxiety and 1 (9.1%) was still experiencing test anxiety after receiving intervention (Table 6).

Finally, there was also a significant difference in GPA scores between students in the experiment and waiting list control groups (Table 7).

DISCUSSION

This study explored the usefulness of psychological interventions on test anxiety to reduce psychological distress and increase motivation among pharmacy students at a private university in Malaysia. The prevalence of test anxiety among the sample of students was 19%,

Table 3. Differences in Academic Motivation Scores Between Experiment and Waiting List Control Group

Academic Motivation	Experiment Group M	Experiment Group SD	Waiting List Control Group M	Waiting List Control Group SD	*t*(42)	*p*
Intrinsic motivation						
Preassessment	38.0	8.0	36.0	7.0	0.7	0.41
Postassessment	70.0	8.9	29.1	10.0	14.0	.000**
Extrinsic motivation						
Preassessment	33.2	9.0	32.7	6.9	0.45	0.68
Postassessment	61.0	9.0	26.9	9.8	15.0	.000**
Amotivation						
Preassessment	21.8	3.7	21.8	3.7	-0.19	0.90
Postassessment	11.0	4.0	21.0	3.9	-11.0	.000**

$p<0.001$.

which was lower than that found in previous studies on university students in Australia (23%),[10] UK (24%),[11] Malaysia (30%),[12] and Texas (44%),[9] but higher than that found in studies involving medical students in Taiwan (7%)[38] and India (6%).[39] Thus, the prevalence of test anxiety among pharmacy students in Malaysia was lower overall compared to other university students in previous studies.[9-12] Participants from the present study entered the pharmacy program with high entry requirements, which may have helped increased their self-confidence to face the challenges in the program. The study's results did show that students who received psychoeducation and systematic desensitization for test anxiety experienced significant reduction in scores on test anxiety, psychological distress, and amotivation compared to students who did not receive psychological interventions (Tables 2-4). Though the interventions on pharmacy students were given for the first time, the results of this study were consistent with the findings of previous studies in which relaxation therapy, psychoeducation, and systematic desensitization were effective in reducing test anxiety in students.[25, 27, 28] Students who did not receive intervention consistently exhibited higher levels of test anxiety at postassessment compared to students who received intervention. These interventions proved valuable for the students since untreated test anxiety can lead to poor academic performance, pessimistic attitude about the future, low self-confidence, and amotivation.[41-43]

Table 4. Differences in Psychological Distress Between Experiment and Waiting List Control Group

Psychological Distress	Experiment Group M	Experiment Group SD	Waiting List Control Group M	Waiting List Control Group SD	*t*(42)	*p*
Preassessment	27.9	3.9	29.9	4.0	-1.8	0.19
Postassessment	16.8	3.8	30.9	4.9	-13.5	.000**

$p<0.001$.

Students with test anxiety are also more likely to have anxiety regarding other performance related tasks such as pharmacy skill development (PSD), problem-based learning, portfolio preparation, small group discussions, and personal development plan (PDP), but their anxiety is most likely excessive before professional examinations than before other performance activities.[37,38] Most students in this study were unaware of the symptoms and consequences of test anxiety. Hence, providing psychoeducation was useful for them to understand its causes and consequences, to learn about coping strategies to manage it, and to consult mental health professionals, compared to students who had inadequate insight about test anxiety.

Further, the study used systematic desensitization intervention to assuage student worries and tension related to test anxiety. Rafiq, Ghazal, and Farooqi used systematic desensitization to reduce test anxiety but did not indicate whether the intervention was useful in reducing psychological distress.[26] Providing anxiety management that included psychoeducation, relaxation therapy, and systematic desensitization in this study was found to reduce test anxiety, demotivation, and psychological distress.

Table 5. The Preassessment and Postassessment Scores of Experiment Group

Variables	Preassessment M	Preassessment SD	Postassessment M	Postassessment SD	*t*(20)	*p*
Test anxiety	40.0	4.0	20.2	5.0	17.2	.000
Intrinsic Motivation	38.0	8.0	61.0	8.9	-12.5	.000
Extrinsic Motivation	33.2	9.0	61.0	9.0	-13.0	.000
Amotivation	21.8	3.7	11.0	3.9	12.9	.000
Psychological Distress	27.9	3.9	16.8	3.8	12.0	.000

$p<0.001$.

Table 6. Percentage of Students Recovered from Test Anxiety on Postassessment

	Anxiety Score	
Group	**Less than 30, n (%)**	**Above 30, n (%)**
Experiment group	19 (90.9)	1 (9.1)
Waiting list control group	0	20 (100)

In our study, pharmacy students experienced more psychological distress at the preassessment level. Arefi, Momeni, and Mohsenzadeh found that psychoeducation was useful in reducing psychological distress but not test anxiety,[27] which was an aggravating factor for psychological distress.[41] Students who experienced test anxiety perceived their skills and academic performance pessimistically and this aggravated their psychological distress. If the students sat for examinations with test anxiety and psychological distress, they were more likely to secure low marks.[42, 43] In our study, students who received psychoeducation and systematic desensitization were able to reduce their test anxiety and psychological distress before their examinations, which in turn seemed to increase their confidence and motivate them to secure higher GPA.

Students with test anxiety are not extrinsically motivated to receive rewards.[44,45] These results may suggest that test anxiety students are most likely demotivated. Our study's results showed that students whose test anxiety was reduced were able to improve their intrinsic and extrinsic motivation and reduce amotivation. Consequently, these students were internally motivated to do interesting tasks. The findings are in accordance with studies that found students who managed to handle their test anxiety were intrinsically interested in positive activities.[46] Though various factors such as time management, cognitive functions, individual skills, study strategies, and intrinsic and extrinsic motivation contribute to academic performance, test anxiety is an important factor affecting students' academic performance.[45,46] In our study, students who learned how to manage their test anxiety were able to secure high GPAs, suggesting that the increased motivation resulting from psychological intervention helped improve academic performance (Table 7).

Table 7. Grade Point Average (GPA) Difference Between Experiment and Waiting List Control Group

	M	**SD**	***t*(38)**	***p***
Experiment group GPA	2.9	0.3	2.1	0.04*
Waiting list control group GPA	2.7	0.3	-	-

*$p<0.05$.

Limitations of the study included only collecting data from pharmacy students at a private university, so the results cannot represent the whole pharmacy student population in Malaysia. In addition, the study did not have any follow-up assessment on test anxiety after the post-assessment. Therefore, the long-term effectiveness of this psychological treatment to reduce test anxiety remains in question. There was also no comparison of GPAs from preassessment to postassessments participants were first semester students with no grades available prior to pre-assessment. Moreover, the study intervention occurred before first semester examinations, so, GPA could only be measured after these examinations.

Most students from the experiment group wanted reassurance from the therapist that he would not tell anyone about their treatment for test anxiety, which implies that students did not want to reveal that they experienced test anxiety and psychological distress. Thus, individual counselling might be most suitable for these kinds of students. In addition, students seemed to prefer less time-consuming, short-term counseling and simple psychological techniques. This study used psychoeducation, relaxation therapy, and systematic desensitization as they have been found to be effective and are techniques that are easy to comprehend.

Universities might consider providing awareness about test anxiety and its consequences and about availability of psychological services during orientation week to reduce cases of test anxiety among pharmacy students.

CONCLUSION

The present study's brief psychoeducation, systematic desensitization, and individual counseling for test anxiety were effective in reducing students' test anxiety, amotivation, and psychological distress. The interventions also helped increase GPA, as well as intrinsic and extrinsic motivation, compared to students who did not receive these psychological interventions. Overall, universities and student counselors might want to explore the psychological interventions used in this study to manage students' test anxiety, psychological distress, and lack of academic motivation.

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