The Benefit of Using a Psychoeducation Program Integrated with Qur’anic Values to Mathematics Anxiety Among Students

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Abstract

An innovative approach to education should be provided in Mathematics learning activities to battle anxiety. However, studies on handling mathematical anxiety problems through psychoeducational programs have not been conducted. This study aims to analyze the benefits of implementing a psychoeducational program that integrates Qur’anic values on students’ mathematics anxiety. The quasi-experimental research was applied to junior high schools in Indonesia, consisting of experimental and control groups. Furthermore, the mathematical anxiety scale was used as a data collection technique, while the Kruskal-Wallis Test was used for analysis. The results showed that the application of psychoeducational programs is beneficial in reducing students’ mathematics anxiety levels. Therefore, psychoeducation programs integrated with Qur’anic values are recommended for mathematics learning activities. The application is suitable for various groups of students. However, initial training is needed for teachers to have a level of mastery of scientific integration (Islam), hence the application of the programs can run well.

Keywords: Mathematics Anxiety; Psychoeducation; Qur’anic Values

1. Introduction

Mathematics is a subject considered a scourge for some junior high school (SMP) students in learning activities at school. This negative assumption is growing with the increase in graduation standards in the 2020/2021 school year. Based on the report on the results of the national exam (UN) from the Education Assessment Center of the Ministry of Education, Culture, Research, and
Technology, the achievement in Mathematics is the lowest compared to other subjects. National achievement in Mathematics, Science, English, and Bahasa Indonesia is 46.56, 48.79, 50.23, and 65.69. Based on the percentage of students who answered correctly on the national exam for Mathematics, the percentage of number material was 39.71%, algebra by 51.24%, geometry and measurement by 42.27%, and statistics and opportunities of 55.60% (Kemendikbud, 2019). A survey on students’ perceptions showed that 45% and 20% considered and stated that mathematics is quite difficult (Siregar, 2017). This is possibly due to many students experience anxiety during learning. Mathematics anxiety occurs when students struggle to solve problems or face exams (Davis, 1999; Santomauro et al., 2021), and it can happen among male and female students (Alizamar et al., 2019). It cannot be seen as normal because students’ inability to adapt to the subject causes difficulties and phobias towards the subject. This causes Mathematics achievement to be low, and one of the efforts to overcome this problem is to implement psychoeducational programs in learning activities. It is a health education program for individuals or groups who experience psychological anxiety disorders (Marcotte & Lévesque, 2018). Psychoeducation that integrates Quranic values can be applied among junior high school students. Quranic values have become the choice of psychoeducational program innovation. This is in line with the implementation of integrated education by the government.

Many studies on psychoeducational programs have been carried out by analyzing three aspects. The first is on the application of psychoeducation based on cognitive, behavioral, and health care therapies in clinics (Wong et al., 2016; Newby et al., 2018; Cotton et al., 2020). The second concerns the application of computational-assisted psychoeducation and internet/online models (Norr, Gibby, & Schmidt, 2017; Siegmund, Nonohay, & Gauer, 2016; Dowd et al., 2015). The third is on the application of psychoeducation oriented toward medical problems (Ekhtiari, Rezapour, Aupperle, & Paulus, 2017). Anxiety problems that often occur among students require the application of psychoeducation (Ramirez, Shaw, & Maloney, 2018; Chang & Beilock, 2016). However, the application of psychoeducation integrated with Quranic values can reduce students’ mathematics anxiety.

This paper aims to respond to the shortcomings of previous studies by focusing more on the application of psychoeducation integrated with Quranic values. The application of scientific integration in learning activities, namely between Islamic educational values in the Qur’an and learning Mathematics in schools, becomes the focus. The psychoeducational program’s application is expected to benefit students in reducing mathematics anxiety. This study analyzes students’ mathematical anxiety between those who received and did not receive the application of psychoeducation. In addition, it also provides an analysis of mathematics anxiety by gender. Further analysis was conducted to determine the anxiety differences between male and female students. This is necessary to analyze the suitability of the program’s application to various gender groups.

The argument is that the application of psychoeducation, either passive or active integrated with Quranic values, reduces students’ mathematics anxiety. Active psychoeducation is carried out by counselling students who experience mathematics anxiety. Meanwhile, passive is conducted by providing modules/booklets that contain how to overcome mathematics anxiety by strengthening the values of the Qur’an. The integration of Islamic educational values is related to the application of psychoeducational programs in learning mathematics in schools, normatively aiming to actualize the values of the Qur’an in education. In particular, implementing this program can benefit the psychological aspects of students who experience anxiety to provide inner peace. It can also provide benefits to (1) the spiritual aspects of students’ religion consisting of faith, piety, and noble character, (2) aspects of student learning culture consisting of independent attitudes, responsibility, and learning readiness, and (3) aspects of student intelligence that lead to the advancement of mathematics learning outcomes, namely intelligent, creative, skilled, disciplined, innovative, and productive in solving mathematical problems. The content of the values of the Qur’an can be applied to the context of learning Mathematics through the application of psychoeducational programs.
2. Literature Review

2.1 Mathematics Anxiety

Mathematics anxiety has been the main focus of several research in Psychology and Mathematics Education. According to its nature and situation, educational psychologists have identified two components of anxiety in general. Anxiety, by its nature, refers to the tendency of being found in a person, while according to the situation, it is a temporary emotional condition recognized as a certain situation in a mathematical environment (Baloglu & Zelhart, 2007). Mathematics anxiety is a feeling of anxiety experienced by some individuals when facing mathematical problems (Namkung, Peng, & Lin, 2019). Meanwhile Ashcraft (2019) defined it as tension or fear caused by manipulating ordinary numbers and solving mathematical problems. Students may feel a faster or stronger heartbeat and believe that they cannot solve problems or even avoid lessons (Moreno-Garcia, Garcia-Santillan, Molchanova, & Larracilla-Salazar, 2017). Mathematics anxiety is related to affective and cognitive areas (Furner & Duffy, 2002; Sun & Pyzdrowski, 2009). The affective area is related to emotional states of fear and worries about the future, while the cognitive field is related to the inability to perform certain mathematical tasks.

Several studies show that mathematics anxiety relates to students’ performance. Those who experience high anxiety impact poor performance (Carey, Hill, Devine, & Szücs, 2016; Namkung et al., 2019), decreasing their achievement (Zakaria & Nordin, 2008). Psychologically, students who experience anxiety also impact motivation to learn Mathematics (Li, Cho, Cosso, & Maeda, 2021; Süren & Kandemir, 2020). Therefore, they need to optimize in directing their thoughts, feelings, desires, and actions to reduce mathematics anxiety (Gabriel, Buckley, & Barthakur, 2020). Self-regulation ability is built through optimizing health education literacy (psychoeducation). Improving literacy skills can be pursued through psychoeducational programs that are given at the time of learning Mathematics in schools. The teacher directs students about mental health education and anxiety that may occur in Mathematics learning activities.

2.2 Gender Differences in Mathematics Anxiety

Gender differences have been studied as predictors of affective and cognitive aspects in Mathematics education studies (Carvalho, 2016). Mathematics anxiety negatively affects student achievement (Ramirez, Chang, Maloney, Levine, & Beilock, 2016). Both male and female students showed similar levels of intellectual ability, which generally had the same mathematical ability (Smetackova, 2015). Meanwhile, gender review on mathematics anxiety, according to Hill et al. (2016) reveals that female students have higher anxiety than males. Goetz et al. (2013) also showed that female students had higher anxiety about Mathematics tests and their learning. Bieg et al. (2015) who examined students in grades 9 and 10, also came to the same conclusion. However Onyeizuugo (2017) showed no significant gender difference in mathematics anxiety. Studies on this topic have been studied in elementary, middle school (Mahmood & Khatoon, 2011), high school (Xie, Xin, Chen, & Zhang, 2019), and college students (Primi, Busdraghi, Tomasetto, Morsanyi, & Chiesi, 2014; Wilder, 2013). However, they only describe mathematics anxiety and do not provide an overview of the pattern of gender-based handling through the application of psychoeducational programs.

The condition of students’ mathematics anxiety based on gender differences can also be interpreted using their level (Wahid, Yusof, & Razak, 2014). High levels of anxiety make students avoid Mathematics. Moreover, anxiety can also interfere with students’ focus when solving problems (Foley et al., 2017). Those who do not easily understand the problem will experience anxiety, and there are two possibilities for such students. They will be indifferent to the Mathematics assignment and try their best to understand the concept. However, this can increase anxiety when there is no solution. Students who are calm and concentrated get different results from those that are restless and have difficulty concentrating due to high anxiety (Casad, Hale, & Wachs, 2015). For students with
high anxiety, few can provide the answer to one question completely. Many are unable to identify the problem. Meanwhile, low anxiety students can identify questions and provide the required answers. According to Zhang et al. (2019) male and female students also showed differences in problem-solving. Males are simpler in solving and providing direct answers to the core of the problem, while females are more systematic and detailed in writing down the steps.

2.3 Integrated Psychoeducation with Qur’anic Values

Psychoeducation programs can be applied to students in learning activities at school (Agherotimi, Olaseni, Oladele, & Temitayo Oladele, 2015). It is a health education given to those who experience psychological and physical disorders (Donker, Griffiths, Cuipers, & Christensen, 2009; Goldman, 1988). Students who experience mathematics anxiety can be given health education therapy and counselling to increase health knowledge and minimize anxiety. Several studies have resulted in the application of psychoeducational programs among students. Marcotte & Lévesque (2018) stated that psychoeducation reduces anxiety levels and improves welfare. Furthermore, it can be applied individually or in groups. Acceptance and Commitment Therapy (ACT) is a psychoeducational model applied through a group with implications for increasing students’ knowledge of anxiety (Aydin & Aydin, 2020; Bedel, Ercan, & Şahan, 2020). The next model for dealing with anxiety is Generalized Anxiety Disorder (GAD) (Behar, DiMarco, Hekler, Mohlman, & Staples, 2009; Ruscio, Hallion, Demyttenaere, Lee, & Lim, 2018). In addition to focusing on clinical models, psychoeducation is also conducted by utilizing music as a medium for anxiety therapy (Kenny, Driscoll, & Ackermann, 2014; Kenny, 2011). However, none of the psychoeducational models that have been applied in overcoming student anxiety used a religiosity approach. Therefore, programs integrated with Qur’anic values provide a new nuance in the variety of psychoeducation.

Psychoeducation programs integrated with Quranic values can be inserted into learning Mathematics in the classroom. It has a structure of components and stages that need to be carried out by teachers/education facilitators. The program’s resume on applied Mathematics learning activities is presented in Table 1.

Table 1: Resume of an Integrated Psychoeducational Program with Qur’anic Values

<table>
<thead>
<tr>
<th>Model Sections</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Goals and objectives</td>
<td>-Presenting a learning model containing Qur’anic values as a student’s inner supplement. Therefore, this program reduces mathematics anxiety problems when students learn in class.</td>
</tr>
<tr>
<td></td>
<td>-Emphasizing a learning innovation that provides a learning experience according to the values of Islamic education.</td>
</tr>
<tr>
<td></td>
<td>-Presenting psychoeducational programs based on learning stages containing Qur’anic values as a choice of innovative models for increasing IQ, EQ, and SQ.</td>
</tr>
<tr>
<td></td>
<td>-Strengthening character education and students’ spiritual values, hence the learning process is not limited to the transfer of knowledge but also familiarizes positive values and forms a comprehensive educated human being (kaffah).</td>
</tr>
<tr>
<td>Psychoeducation material</td>
<td>The material taught is related to the concept of psychoeducation containing Qur’anic values, as well as providing an explanation related to the concept, supporting factors, and the types of anxiety in students.</td>
</tr>
<tr>
<td>Instructions for implementing psychoeducation programs</td>
<td>Psychoeducation program is implemented in junior high schools (SMP/MTs) as part of the classroom learning process.</td>
</tr>
<tr>
<td></td>
<td>The learning activities are carried out to obtain additional Quranic values in each stage of learning. The implementation time of this program can be conducted in 4-5 meetings or 1 subject of didactic material.</td>
</tr>
<tr>
<td>Media/teaching aids</td>
<td>The psychoeducational program is included in the teacher’s scientific learning model. The use of religious music media complements this psychoeducational program. The purpose is for students to gain inner peace hence they are not easily anxious when learning mathematics.</td>
</tr>
<tr>
<td>Qur’anic values</td>
<td>Education related to Qur’anic values focuses on 4 activities, including:</td>
</tr>
<tr>
<td></td>
<td>a. The expected learning objectives are to become people with faith and knowledge, a noble character, and the awareness to guard themselves against evil deeds (QS. Al-Hujurat:13, QS. Al Iman: 190-191, QS. Al-Ahzab: 21, and QS. At-Tauhah:22)</td>
</tr>
<tr>
<td></td>
<td>b. The learning methods used include hikmah, good advice/teaching and jidal (discussion); exemplary/imitation; story; practical experience (trial and error), and the thought experiment (QS. An-Nahl:125, QS. Al-Maida: 31, QS. Al-Ahzab: 21, QS. Yusuf:2-3, and QS. Al-Ankabut:20)</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Psychoeducation program integrated with Qur’anic values used mathematics anxiety scale. Evaluation of students’ anxiety was conducted using pretest and post-test.</td>
</tr>
</tbody>
</table>
3. Method

3.1 Study Design

The method used was quasi-experimental, and the pretest-posttest control group design was chosen to answer the study problem. This includes the application of an integrated psychoeducational program with Quranic values. It was conducted in Junior High Schools (SMP) and Madrasah Tsanawiyah (MTs). These schools have different educational auspices based on management and curriculum content. SMP is under the auspices of the Ministry of Education and Culture, while MTs are under the Ministry of Religion. Regarding curriculum content, SMP implements a general education curriculum, while MTs apply Islamic education. The various schools were selected to make the results of the experimental study analysis more representative of different educational models. In addition, the school consisted of a control and an experimental group. The experimental group is students who apply for psychoeducational programs in their Mathematics learning, while the control group only applies to ordinary learning.

The population of this study were all students of SMPN 1 Palimanan and MTsN 1 Cirebon in Cirebon Regency, West Java, Indonesia. Stratified random sampling technique was used to determine the research subjects. Two experimental and control classes were taken in each school with a total sample of 125 students of class VII. There are 3 elements to consider when choosing a sample. first, the age range of students is between 13-14 years when their psychological condition is still unstable. second, the sample is taken with almost the same gender proportion. Third, samples were taken from schools with the highest accreditation under the two ministries of education.

3.2 Procedure

The experimental research consisted of three stages. In the first stage, students performed a pretest regarding their mathematics anxiety. In the second stage, they were given the application to a psychoeducation program for three months. In the last stage, they were assigned a final test of their mathematics anxiety (post-test). The post-test was conducted to determine the benefits of applying psychoeducation.

3.3 Data collection technique

The data was collected using a mathematical anxiety scale arranged with a Likert scale reference of five answer choices consisting of never (HTP), very rarely (SJ), sometimes (KD), very often (SS), and always (HSL). The 40 statements consist of favorable (F) and unfavorable (UF) statements.

3.4 Data analysis technique

The data analysis technique applied was descriptive statistics and ANOVA test. The ANOVA test is to compare the mean difference between two groups based on two different treatments. The inputted data has passed the hypothesis prerequisite test (classical assumption test), namely the normal and homogeneous data characteristics. As an alternative to the ANOVA test, the Kruskal-Wallis Test can be used when the test data are not normally distributed. Decision-making on hypothesis testing is based on an average difference with a significance value of less than 0.05.

4. Results and Discussion

4.1 The Impact of Psychoeducational Programs on Mathematics Anxiety

Data on students’ mathematics anxiety obtained from the experimental and control groups were first tested with classical assumptions of normality and homogeneity tests. The normality test was
conducted as a prerequisite to determine the distribution of students’ mathematical anxiety data based on the application of an integrated psychoeducational program with Qur’anic values. The data analysis of the results of the normality test is as follows tabel 2.

### Table 2: Tests of Normality of Mathematics Anxiety

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Kolmogorov-Smirnov²</th>
<th>Statistic</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Anxiety (Pretest)</td>
<td>Experiment</td>
<td>0.122</td>
<td>65</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>0.125</td>
<td>60</td>
<td>0.021</td>
<td></td>
</tr>
<tr>
<td>Final Anxiety (Posttest)</td>
<td>Experiment</td>
<td>0.100</td>
<td>65</td>
<td>0.174</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>0.117</td>
<td>60</td>
<td>0.041</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 2, the results of testing the normality of the data using the Kolmogorov-Smirnov showed that the significance value of the mathematics anxiety data is only for the experimental group on the post-test, which is greater than 0.05. Therefore, data on anxiety based on the application of psychoeducational programs are not normally distributed. Furthermore, the homogeneity of variance test results from all groups was obtained.

### Table 3: Test of Homogeneity of Variances Mathematics Anxiety

<table>
<thead>
<tr>
<th>Test Condition</th>
<th>Levene Statistic</th>
<th>df₁</th>
<th>df₂</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Anxiety (Pretest)</td>
<td>2.881</td>
<td>1</td>
<td>123</td>
<td>0.092</td>
</tr>
<tr>
<td>Final Anxiety (Posttest)</td>
<td>23.592</td>
<td>1</td>
<td>123</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Based on Table 3, the results of the homogeneity test of variance using Levene statistics show that the students’ mathematics anxiety data are not all homogeneous. This is because the variance is homogeneous only in the pretest condition (Sig. > 0.05), while it is not occurred in the post-test condition (Sig. < 0.005). The first hypothesis test related to the impact of implementing psychoeducational programs using the Kruskal Wallis rank test is presented in Table 4 below.

### Table 4: Differences in Mathematics Anxiety Based on the Application of Psychoeducational Programs

<table>
<thead>
<tr>
<th>Test Condition</th>
<th>Rank Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Anxiety (Pretest)</td>
<td>Experiment</td>
<td>65</td>
<td>61.11</td>
<td>0.370</td>
<td>1</td>
<td>0.543</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>60</td>
<td>65.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Anxiety (Posttest)</td>
<td>Experiment</td>
<td>65</td>
<td>44.57</td>
<td>35.084</td>
<td>1</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>60</td>
<td>82.97</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Group

Based on Table 4, the Kruskal Wallis rank analysis results for the pretest scores show a significance value of 0.543 > 0.05. This indicates no difference in the pretest scores between the study subject groups. Meanwhile, the post-test score is known to have a significant value of <0.05, which is smaller than 0.05. This shows a significant difference in the post-test scores between the experimental and the control groups. Therefore, applying a psychoeducational program integrated with Quranic values is beneficial in reducing students’ mathematics anxiety.

The data analysis of the next research is on the mean rank score. The measurement results showed that students’ mathematics anxiety for the experimental group was unique. The mean rank or group mean decreased from pretest to post-test. Therefore, the application of psychoeducational
programs positively reduces anxiety. It is different from the results of the measurement of students' mathematics anxiety in the control group which also experienced far differences. The condition is just the opposite since increased mathematics anxiety is experienced.

The application of psychoeducation integrated with Quranic values provides psychological benefits for students. The psychological disorder of students in Mathematics learning activities is anxiety. The two responsible factors are, First, the number of formulas that should be remembered, the fear of solving problems in front of the class, worry about solving problems, and poor achievement of learning outcomes. Second, mathematics anxiety that occurs in students can also come from themselves. For example, poor physical conditions while studying, low mathematical abilities, poor attitudes toward mathematics lessons, and prolonged past trauma. Handling students' mathematics anxiety through psychoeducation provides benefits for reducing anxiety levels. This needs to be accomplished in line with the views of Alaina Hellum (2010), who stated that mathematics anxiety also affects student learning outcomes. Students with high anxiety tend to lack confidence and experience obstacles in understanding mathematical concepts (Mutlu, 2019; Justicia-Galiano, Martín-Puga, Linares, & Pelegrina, 2017). Therefore, this should be addressed to develop learning outcomes (Gresham, 2018).

The application of the psychoeducational program in the experimental group had a positive impact. This is because of the influence of providing educational treatment related to knowledge of handling anxiety and strengthening Islamic education through Quranic values. Meanwhile, the control group experienced an increase in their mathematics anxiety. The hypothesis test showed differences in anxiety between the two groups. This is in line with Marcotte & Lévesque (2018), where psychoeducation reduces personal anxiety. In addition, implementing the Quranic values also affects students’ psychology, especially anxiety-related. This is in line with Rosmiarti, Ria, Maya, & Jamalluddin (2020) revealing that Qur’an therapy positively reduces anxiety. It also cures various mental illnesses, such as anxiety, restlessness, anger, and hatred (Quadri, 2004; Sedaghat, 2022). The application of psychoeducational programs through the integration of Quranic values strengthens the soul/mentality of students. Therefore, they become calm and mature individuals, and eventually, learning Mathematics at school goes well.

4.2 Differences in Students’ Mathematics Anxiety Based on Gender

The second hypothesis analysis examined the differences in students’ mathematics anxiety based on gender. At this stage, the normality test was also conducted as a prerequisite test to determine the distribution of students’ mathematics anxiety data based on gender differences. The data of normality test results are presented in Table 5.

Table 5: Tests of Normality Mathematics Anxiety Based on Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th>Kolmogorov-Smirnov²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Statistic</td>
</tr>
<tr>
<td>Initial Anxiety (Pretest)</td>
<td>Male</td>
<td>0.334</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0.098</td>
</tr>
<tr>
<td>Final Anxiety (Posttest)</td>
<td>Male</td>
<td>0.115</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0.141</td>
</tr>
</tbody>
</table>

Based on Table 5, the results of testing the normality using the Kolmogorov-Smirnov also showed that the significance value of students’ mathematics anxiety data based on gender in the male group in the pretest data and the female group in the post-test data was smaller than 0.05 (Sig. < 0.05). Few of the students’ mathematics anxiety data were normally distributed. Furthermore, the results of the homogeneity of variance test on mathematics anxiety data by gender from all groups are presented in Table 6.
Table 6: Test of Homogeneity of Variances of Mathematics Anxiety Based on Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Anxiety (Pretest)</td>
<td>0.003</td>
<td>1</td>
<td>123</td>
<td>0.958</td>
</tr>
<tr>
<td>Final Anxiety (Posttest)</td>
<td>0.263</td>
<td>1</td>
<td>123</td>
<td>0.609</td>
</tr>
</tbody>
</table>

Based on Table 6, the results of the homogeneity of variance test using Levene statistics showed that all students’ mathematics anxiety data is homogeneous. This is based on the pretest and post-test mathematics anxiety data, with a significance value greater than 0.05 (Sig. > 0.05). However, this hypothesis analysis also uses the Kruskal Wallis rank test with the following results because the data are not normally distributed.

Table 7: Differences in Mathematics Anxiety by Gender

<table>
<thead>
<tr>
<th>Test Condition</th>
<th>Rank</th>
<th>Test Statistics(^{a,b})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gender</td>
<td>N</td>
</tr>
<tr>
<td>Initial Anxiety (Pretest)</td>
<td>Male</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>81</td>
</tr>
<tr>
<td>Final Anxiety (Posttest)</td>
<td>Male</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>81</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test
b. Grouping Variable: Gender

Based on Table 7, the Kruskal Wallis rank analysis for pretest and post-test scores obtained a significance value greater than 0.05 (Asymp. Sig. > 0.05). This shows no difference in pretest and post-test scores between groups of study subjects. Therefore, the application of psychoeducational programs integrated with Quranic values based on gender differences does not have any differences. The psychoeducational program’s application benefits all groups, both male and female students. The same thing is also seen based on the mean rank score, which shows no drastic decrease in mathematics anxiety. Initial anxiety in the group of female students was higher than that of males. However, after being given the application of a psychoeducational program integrated with Qur’anic values, female students experienced a slight decrease, but not significant enough compared to the males.

Further studies on mathematics anxiety by gender were carried out in this study. The potential occurs in all circles of students, and the results showed that female mathematics anxiety was higher in the pretest. Calm students with low anxiety followed the lesson better than those who were restless and had difficulty concentrating. This is in line with Bieg et al. (2015) stating that female students have higher anxiety than males. However, this trend is not always consistent for primary and secondary education students (Szczygiel, 2020; Szczygiel, 2021; Commodari & La Rosa, 2021). According to Haynes et al. Hayes, Mullins & Stein (2004) female students’ anxiety occurs when they get poor scores. Knezović (2020) described them as emotional, easy to give up, weak in calculating, passive, and easily influenced. Meanwhile, male students are rational, active, independent, aggressive, dominant, achievement-oriented, and proficient in Mathematics because of better spatial abilities (Author, 2002).

After the implementation of the psychoeducational program, the mathematics anxiety data (post-test) obtained is contradictory to before. The second hypothesis test results show no difference between the two groups of subjects. However, the mean rank score shows a decrease in anxiety among female students, although it is not significant. Based on the hypothesis, psychoeducation containing Quranic values can be implemented for various groups of students irrespective of gender. The unique finding shows that female students are more likely to participate than male students. This is in line with several studies on the differences in the learning styles of the students (Mammen et al.,
Female students are also more easily directed to psychoeducational program activities than male. Teachers have an important role to play in helping students overcome their difficulties with arithmetic (Acharya, 2017; Hoyles, 1992). Additionally, mathematics teachers at Madrasah Tsanawiyah are easier to implement the program than those in junior high schools. This is because they are already familiar with the implementation of the Islamic education curriculum. In contrast, junior high school teachers need training in the form of micro-teaching for learning and mastering the content of the Quranic values.

5. Conclusion

The problem of mathematics anxiety has not been widely addressed through psychoeducational program innovations. Strengthening Quranic values through the program provides psychological benefits for students. This study shows the importance of education related to students’ mathematics anxiety through an innovative program in mathematics learning. Quranic values have significant benefits to the implementation of the psychoeducational program. The study’s success shows that students’ mathematics anxiety decreases after implementing the Quranic values-integrated psychoeducation program. All male and female students can accept this psychoeducation program, which can run well when the teacher’s readiness for mastery of Quranic values is good. Therefore, an intermediate program is needed before implementing the Quranic values-integrated psychoeducation.

This study is a follow-up to the development of a psychoeducational program for religious values in the Qur’a’n. Mathematical anxiety can only be viewed from a clinical psychology approach, but the gaps in the results of previous studies were covered. The integrated psychoeducation can reduce students’ mathematics anxiety levels. The limitation lies in the limited scope of the study field, namely Mathematics, and it is still very open for further analysis. This study still uses a quantitative approach with an experimental design is needed to obtain contextual and comprehensive results for mapping students’ anxiety problems in schools. This is because students’ psychological problems continue to develop with social changes in the educational environment.

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