

STATISTICAL ANXIETY OF STUDENTS IN PANDEMIC ERA

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Abstract

This study aims to see how the statistical comparison of students who have not and have taken statistics courses for non-exact students. This research is a quantitative research with a survey approach. The instrument in this study adopted the Statistical Anxiety Scale (SAS) which consists of 3 components (worry, avoidance, emotionality) with a total of 17 items with 4 scales. Respondents in this study were students of the State Islamic University of Sultan Maulana Hasanuddin Banten in the first semester until the end of the semester. The number of samples in this study was 238. The results showed that there was no difference between the anxiety of students who had not and had taken course statistics. Nevertheless, descriptively the probability of changes in student statistics between before and after taking statistics courses. At the rate of increase the percentage decreases while at the rate of increase the percentage decreases. This shows a change in student statistics after taking statistics lessons, especially in the pandemic era by still using a bold learning system.

Keywords: *Statistical Anxiety, Covid-19, Comparison*

Abstrak

Penelitian ini bertujuan melihat bagaimana perbandingan kecemasan statistik mahasiswa yang belum dan sudah mengambil mata kuliah statistik untuk mahasiswa non-eksak. Penelitian ini merupakan penelitian kuantitatif dengan pendekatan survei. Instrumen pada penelitian ini mengadopsi Stastical Anxiety Scale (SAS) yang terdiri dari 3 komponen (khawatir, penghindaran, emosionalitas) dengan jumlah butir sebanyak 17 dengan 4 skala. Responden pada penelitian ini adalah mahasiswa Universitas Islam Negeri Sultan Maulana Hasanuddin Banten pada semester awal hingga semester akhir. Jumlah sampel pada penelitian ini sebesar 238. Hasil penelitian menunjukkan bahwa tidak terdapat perbedaan kecemasan statistik mahasiswa yang belum dan sudah mengambil mata kuliah statistik. Meskipun demikian, secara deskriptif terdapat perubahan kecemasan statistik mahasiswa antara sebelum dan setelah mengambil mata kuliah statistik. Pada tingkat kecemasan rendah terjadi peningkatan persentase sementara pada tingkat kecemasan tinggi terjadi penurunan persentase. Ini menunjukkan adanya perubahan kecemasan statistik mahasiswa setelah mengambil mata kuliah statistik khususnya di era pandemi dengan masih menggunakan sistem pembelajaran daring.

Kata Kunci: *Kecemasan Statistik, Covid-19, Komparasi*

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1. Introduction

Statistics is a field of science that studies the methods and rules related to data collection, processing, and drawing conclusions, as well as translating the data into simple language (Irianto, 2019; Schield, 2004) Statistics have become an important part of life All of us are often faced with statistical data and are required to collect, manage and interpret statistical information as the basis for everyday decision making in many areas of life (Libman, 2013). Statistics are very important in academia, where the use of statistics is one of the

bases for learning and research (Steinberger, 2020). In the past, the general perception of statistics has always been associated with people's ability to make decisions based on statistics, logic and probability rules (Steinberger, 2020). Recognition of the importance of statistics has led to the fact that statistics is a must for many disciplines, including social sciences and education. However, this course is considered the most difficult and most demanding in academic training (Lewthwaite & Nind, 2016). So that various perceptions arise among students stating that

statistics are quite difficult to understand, especially for those who do not have an exact educational background.

Statistical anxiety is defined as the feeling of anxiety encountered while taking a statistics course or performing statistical analysis; namely, collecting, processing, and interpreting (Nesbit & Bourne, 2018). Statistical anxiety is an anxiety reaction to any situation where a student is faced with statistics in any form and at any time. Some researchers found that more than 70% of students in their study experienced statistical anxiety (Tutkun, 2019). Similarly, causes of statistical anxiety are usually grouped around three main factors: dispositional, situational, and environmental (Baloğlu, 2003). Dispositional factors include psychological and emotional characteristics such as attitudes to statistics. Situational factors of statistical anxiety are direct factors resulting from statistical learning activities, but are not limited to statistics teacher, statistical nature, lack of feedback from statistical instructors, but also the speed of statistical instruction. Environmental factors are factors that have influenced the individual prior to the study of statistics and include gender, age, ethnicity, academic major, and previous mathematics experience. Gender is one of the most investigated environmental variables in anxiety statistical research. In general, women have been reported to face more difficulties in quantitative areas. Women experienced higher levels of statistical anxiety than men in their study. However, other studies failed to find significant differences between men and women regarding levels of statistical anxiety. Educational major, academic status, perceived previous success in learning mathematics, and time elapsed since last mathematics lesson were predictors of statistical anxiety.

Paechter, Macher, Martskvishvili, Wimmer, & Papousek (2017) found that the duration of education in mathematics learning taken and the presence or absence of previous statistics course experience were significant predictors of statistical anxiety. Math skills and the number of math courses completed are relevant to statistical anxiety. A person's age and educational level are also hypothesized as environmental causes of anxiety (Bui & Alfaro, 2011). Older students often experience more difficulties in the academic world.

Older students experienced more statistical anxiety than their younger peers. On the one hand, statistical test anxiety was not statistically different between graduate and undergraduate students. On the other hand, graduate students experienced higher levels of statistical anxiety, although undergraduate students experienced higher levels of general anxiety.

In the current pandemic era, some areas that are still in level 3 have not been allowed to conduct face-to-face learning, which means that the entire learning process is carried out virtually. On the one hand, this is very effective in preventing the spread of the Covid-19 virus, but on the other hand it limits students in carrying out activities including the interaction process during learning both between fellow students and with lecturers. Some people may have difficulty understanding the lesson because even though virtually communication can be done, it is not enough to make what is being taught is absorbed properly. These things become one of the triggers for the emergence of anxiety in students in dealing with a learning situation.

Several studies that have been conducted on statistical anxiety have been carried out. Research conducted by Suminta & Sayekti (2018) about how statistical anxiety is when viewed from gender. The results of this study indicate that there are differences in anxiety between men and women. Research conducted by (Nazliati, Sari, & Fitriani, 2019) on the statistical anxiety of non-mathematical students. The results of this study indicate that in general these students have a high level of anxiety. Research conducted (Faradiba & El Walida, 2019) on the statistical anxiety of prospective teacher students shows that in general students do not have statistical anxiety based on the four anxiety domains that are measured. From this research, no one has conducted research on statistical anxiety of students who have not and have taken statistics courses. This is interesting to do to see how the condition of student anxiety at State Islamic Religious Colleges which basically does not have an exact background. In addition, the policy of implementing online learning that has been determined to be an interesting thing to study related to student statistical anxiety.

2. Method

This research is a quantitative research with a

survey approach. Respondents in this study were students of the State Islamic University of Sultan Maulana Hasanuddin Banten in the first semester to the final semester. The number of samples in this study were 238 students. The researcher used the Statistical Anxiety Scale (SAS) instrument developed by Faber, Drexler, Stappert, & Eichhorn (2018) which consisted of 3 components (worry, avoidance, emotion) with a total of 17 items on 4 scales. Data analysis used descriptive and comparative analysis. Descriptive analysis is used to describe the level of anxiety of students who

have not and have taken statistics courses. Comparative analysis is used to see if there is a difference in the level of anxiety for students who have not and have taken statistics courses.

3. Result and Discussion

The research was carried out by distributing questionnaires using the google form facility. From data collection using a questionnaire, the results are obtained as shown in Figure 1 for students who have not taken the MK Statistics

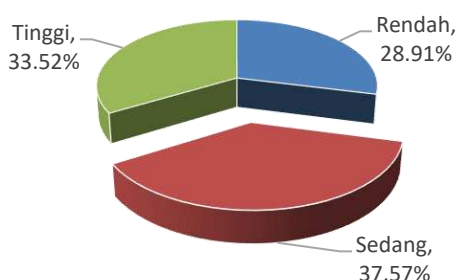


Figure 1. Graph of Student Statistics Anxiety Who Have Not Taken MK Statistics

From Figure 1 shows the condition of statistical anxiety of students who have not taken MK Statistics. From these results, it can be seen that 33.52% of students have a high level of anxiety, 37.57% of students have a low level of anxiety, and 29.91% of students have a low level of anxiety. It can be seen that there are still many students who

have high levels of anxiety (33.52%). When compared with those who have a low level of statistical anxiety (28.91%) there is a difference of about 4.61% where the level of low statistical anxiety is smaller than the number of students who have a high level of anxiety.

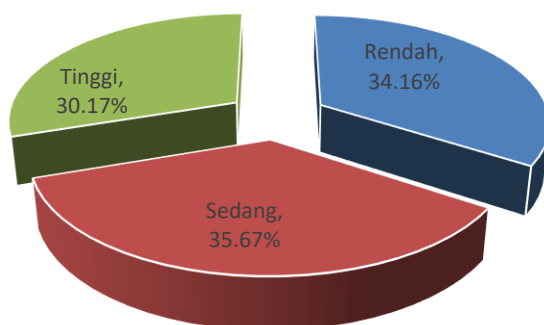


Figure 2. Graph of Student Statistics Anxiety Those who have taken MK Statistics

Figure 2 shows the state of statistical anxiety of students who have taken MK Statistics. From these results, it can be seen that 30.17% students have

high anxiety levels, 35.67% students have low anxiety levels, and 35.16% students have low anxiety levels. From this value, it is found that

students who have a low level of statistical anxiety (34.16%) are higher than students who have a high level of statistical anxiety (30.17%). If viewed from

the comparison of the anxiety levels of students who have not and have taken MK Statistics, it can be seen in Figure 3.

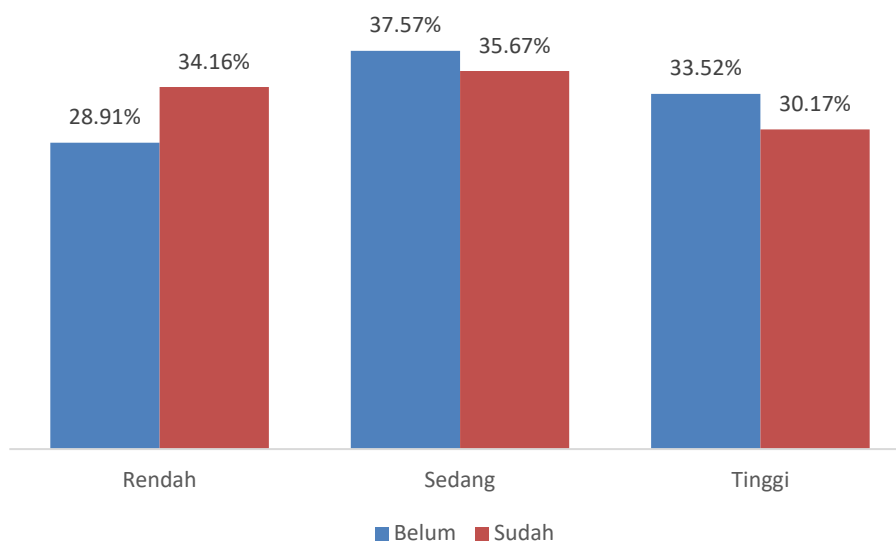


Figure 3. Comparison of Student Anxiety Levels Before and After Taking MK Statistics

Figure 3 shows that there is a difference between the students' anxiety levels before and after taking the Statistical MK. If it is reviewed by statistical

testing, the results show that there is no difference in anxiety levels

Table 1. Independent t test

		F	Sig.	t	df	Sig. (2-tailed)
Kecemasan Statistik	Equal variances assumed	.076	.783	-1.234	236	.218
	Equal variances not assumed			-1.234	229.253	.219

The test results show a significance value of 0.218. This value is more than alpha (0.05), which means that there is no significant difference in the level of student anxiety before and after taking MK Statistics. Although descriptively there is a change in the level of anxiety (decreased level of anxiety), but statistically the change is not significant. This is certainly an interesting thing because the role of learning that has been implemented does not have a significant impact. The "previous" knowledge certainly has a big impact considering that it becomes the capital for someone to build knowledge now. When the knowledge foundation is strong, the knowledge design will automatically be good. This of course will affect how someone views what they are dealing with. In the context of statistical anxiety, a person's numerical knowledge

can certainly be the basis for them to avoid anxiety. Anditya & Murtiyasa (2016) stated that many factors can affect a person's mathematical anxiety, one of which is in exact learning, many formulas are a scourge for students. Like mathematics, statistics also has many formulas that are of course less attractive to some people.

Statistical anxiety is one of the problems in the world of education. This study was conducted to see how the statistical anxiety of students who have not and have taken the MK Statistics, especially for students who come from religious universities, are basically not a basic thing. From the results of the research described above, it shows that the level of statistical anxiety of students who have not and have taken the MK Statistics did not experience a significant change.

When viewed from the percentage level of anxiety, the highest percentage of student statistical anxiety is in the medium category.

At the low level of anxiety, the student's anxiety level which was originally 28.91% after taking the MK Statistics increased to 34.16%. The increase in students who feel less anxious is certainly influenced by their understanding of the statistics they get. They have understood how the status of statistics in everyday life, especially in terms of completing the final three later. In addition, the delivery of good material and with a learning approach that is able to make students understand statistics without causing confusion. The Statistical Course is basically a course that is one of the compulsory MKs taken by students, especially for majors whose research is oriented to numerical data analysis. Not only at low anxiety levels that experience changes, at moderate and high levels of anxiety as well. At the moderate level of anxiety, initially the percentage of statistical anxiety level was 37.57% decreased to 35.67%. Likewise with the high level of anxiety which initially the percentage of statistical anxiety level of 33.52% decreased to 30.17%. The changes that were not so striking and supported by the results of statistical calculations showed that there was no difference in students' statistical anxiety before and after taking the MK.

One of the things that causes this problem is the background of students who do not generally come from religious education (non-exact) so that they are not very familiar with various forms of statistical calculations. In addition, the statistical anxiety felt by students was not permanent or in other words temporary (Feist & Gregory, 2013). This is indicated by the increase in the level of anxiety as described above. This anxiety is only felt when following the Statistical Constitutional Court only. This does not apply to all the Constitutional Courts they take. The results of this study are in line with what was stated by Suminta & Sayekti (2018) in their research which states that academic support from friends has no effect on student statistical anxiety. In the current pandemic era, student interactions with fellow students are limited. The existence of these restrictions makes interaction between students also not possible. As we know, students in carrying out lecture activities are not entirely able to immediately understand the teaching material, especially for material that

they feel awkward to learn. The existence of support from friends will also have an impact on the level of student anxiety.

This support will make student efforts more effective, both in terms of learning, including when dealing with statistical tasks. Friends are a means for teenagers to interact with each other. Each group of friends has its own rules and has its own expectations for its members. Through a group of friends one will learn adult moral standards, good play, cooperation, honesty and responsibility. In a group of friends a person can feel accepted, needed, and appreciated. Students are more motivated in learning if there is reinforcement from friends than teachers. With the motivation, will give direction to a person's behavior. Students are able to channel their energy to complete academic tasks, develop social relationships, get awards (acceptance) from their social environment and improve their abilities, because students are motivated to fulfill their own shortcomings. Friends are a source of support, especially in sharing knowledge and modeling the academic environment. Peer support has a higher relationship with enthusiasm for learning in class than the desire to adjust academic norms built by lecturers. Peer support is a strong predictor of student achievement, however, the relationship is indirect and partly through mediating variables.

4. Conclusion

From the explanation that has been described, it shows that there is no difference in the level of students' statistical anxiety before and after taking the statistics course. One of the reasons for this is the policy to conduct online lectures. In addition, non-exact students who are the population of this study are certainly one of the causes. The relatively high percentage of statistical anxiety level of around 30% shows how the position of statistical courses is not very attractive but because it is a compulsory course, students must take these courses if they want to complete their studies. The results of the study which state that the high level of statistical anxiety in non-exact students during the current pandemic (online learning) is expected to be able to motivate lecturers and students to like their subjects. Perceptions of difficult statistics must be changed, one of them is with fun learning methods.

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