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Determining Risk Factors for Functional Gastrointestinal Disorder among Muslim University Students in Indonesia

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Abstract

Functional gastrointestinal disorders (FGIDs) are disorders of the gastrointestinal tract without a clear structural or biochemical cause. FGIDs can interfere with a person's daily life. Several psychological conditions can cause FGIDs as psychosomatic disorders. Five factors are thought to affect a person's FGID condition, namely Generalized Anxiety Disorder (GAD), life satisfaction, perceived stress, perceived social support, and religiosity. This study aims to analyze the determinants of FGID conditions and the role of religiosity as a moderator variable. This study used a quantitative approach with correlation methods. A total of 383 Indonesian Muslim students participated as respondents in this study. The instruments used in this study were the life satisfaction scale, perceived stress-10 scale, perceived social support multidimensional scale, GAD-7, Duke University Religion Index, and FGID scale. Research data were collected online from research respondents. Furthermore, the research data analysis technique used was partial structural equation modeling (PLS-SEM). The results of this study indicate that GAD, life satisfaction, and perceived stress are determinants of FGID conditions in Indonesian Muslim students. The results also show that religiosity acts as a moderator variable in the influence of GAD conditions on a person's FGID condition.

INTRODUCTION

Physical health problems, when viewed from psychosomatic medicine, can be caused by problematic psychological conditions. Psychosomatic medicine is a branch of medicine that studies the relationship between physical health and psychological conditions (Joos, 2020). One of the physical health disorders caused by this psychological condition is Functional Gastrointestinal Disorder (FGID). FGID is a digestive tract disorder without a clear structural or biochemical cause (Ardi et al., 2023; Koloski et al., 2020; Walker et al., 2022). Psychosomatic medical studies can explain this problem. In the study of psychosomatic medicine, there is a theory of the axis between the brain and the stomach (Fried et al., 2021;

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Kuwahara et al., 2020; Stasi et al., 2019). This theory explains a causal condition between the brain (psychological condition) and a person's digestive disorders. Therefore, someone with psychological disorders is more susceptible to experiencing digestive disorders, especially FGID (Darbari, 2023; Lasheras et al., 2020; Schiopu et al., 2022).

Psychosomatic medical research over the last two decades has revealed that Generalized Anxiety Disorder (GAD) is the most important factor determining the risk of FGID conditions (Berens et al., 2020; Drossman et al., 1999; Jones et al., 2007). GAD is a mental health disorder that occurs when someone feels excessively anxious. A person diagnosed with GAD experiences many negative reactions, such as anxiety, excessive worry, difficulty relaxing, irritability, and excessive fear (DeMartini et al., 2019; Sapra et al., 2020; Sun et al., 2011). Based on mental health studies, GAD often occurs in people of productive age (Black et al., 2020; Chandrasekara & Somaratne, 2023). At a productive age, a person tends to live a dynamic life with a high complexity of problems. In these conditions, a person will hope to live a good life by preventing and overcoming problems (Krukowski et al., 2021; Moldogazieva et al., 2019). However, this condition can disrupt a person's psychological condition if these expectations do not match reality, resulting in anxiety about their living conditions.

People of productive age (16-35 years) apparently experience the most GAD (Steutel et al., 2020). It is suspected that during this period, a condition called a quarter-life crisis occurred. A quarter-life crisis is defined as a phase of confusion in determining the direction and purpose of life (Agarwal et al., 2020; Ihsani & Utami, 2022). Apart from that, for some people, the quarter-life crisis phase is made worse by financial problems (Alvesson & Spicer, 2019; Jalal, 2023; Robinson, 2019). These conditions have the potential to cause psychological problems, such as stress and GAD. Three variables are predicted to influence GAD in someone of productive age. The first factor is life satisfaction (Mei et al., 2021). Life satisfaction is one component that manifests a person's subjective well-being (Ruggeri et al., 2020). Four indicators can describe a person's level of life satisfaction, namely being satisfied with life's achievements, being satisfied with current life conditions, not regretting something that has happened, and being grateful for life conditions (Margolis et al., 2019). High life satisfaction can expand positive emotions in a person, reducing the possibility of a person experiencing psychological disorders such as GAD (Uysal et al., 2021). The same thing was also expressed in recent research, which found that someone with a high level of life satisfaction tends to avoid psychological disorders, such as stress and anxiety (Das et al., 2020; Xu et al., 2022).

The second factor predicted to influence GAD is perceived stress (Aslan et al., 2020). Perceived stress is a psychological disorder characterized by irritation, helplessness, ungratefulness, and irritability (Anwer et al., 2020). Perceived stress is related to a person's thoughts and feelings regarding life conditions that make him stressed (Knight et al., 2021; Liu et al., 2021; Sauk et al., 2023). Perceived stress also directly correlates with GAD (Huang et al., 2021; Mrklas et al., 2020). This is because the anxiety experienced by a person is also caused by a person's feeling of helplessness in controlling stress and other difficult situations. Therefore, someone who feels unable to control stress tends to experience anxiety about their life conditions. This is in accordance with research conducted by Mrklas et al. (2020), who found that conditions of perceived stress are a determining factor in a person's GAD condition.

The third factor predicted to influence a person's GAD condition is perceived social support (Hou et al., 2021; Karaer & Akdemir, 2019; Xiang et al., 2020). Perceived social support is social support that comes from a significant person, family, and friends (Laksmita et al., 2020). People tend to trust these three sources of social support to increase their happiness and enthusiasm for life. Someone who receives support from these three sources tends to have a high self-concept and life motivation (Tomás et al., 2020). Apart from that, the high level of support from these three sources can also increase a person's subjective well-being (Hellfeldt et al., 2019). Someone with high subjective well-being tends to be more protected from

psychological disorders, such as stress and anxiety. Therefore, it can be said that perceived social support can influence a person's GAD condition. This is also in line with research by Grey et al. (2020), who found that someone who received high levels of social support from significant others, family and friends tended to avoid the condition of GAD.

Life satisfaction, perceived stress, and perceived social support are also predicted to be directly correlated with a person's FGID condition. Dear et al. (2022) found that people with high life satisfaction feel that their lives are of high quality and are less likely to experience physical health problems, especially FGIDs. Furthermore, research by Oliviero et al. (2021) showed that perceived stress can be directly correlated with a person's FGID condition. This is because stressful conditions are also included in the brain and stomach axis theory. Someone who feels helpless in controlling stress is likely to experience FGID disorders. In fact, this study also found that the higher the level of stress, the more severe the FGID condition experienced by a person. Furthermore, research by Sundas et al. (2022) showed that perceived social support can be directly correlated with FGID conditions. Based on these three previous studies, it is possible that life satisfaction, perceived stress, and perceived social support can directly affect a person's FGID condition. However, further research needs to be conducted to strengthen this idea.

Based on theoretical studies and previous research results, it is estimated that GAD, life satisfaction, perceived stress, and perceived social support have the potential to influence a person's FGID condition. However, there is one more important variable that can influence a person's FGID condition, namely religiosity. Religiosity is a concept that describes a person's level of piety or obedience in worshiping according to their religion (Bentzen, 2021; Obregon et al., 2022; Toscanelli et al., 2022). A person with a high level of religiosity tends to have subjective and psychological well-being (Bartram, 2021; Villani et al., 2019). Previously, it was known that subjective well-being can suppress a person's potential to experience FGID conditions. Therefore, religiosity is also predicted to influence a person's FGID condition. Furthermore, religiosity is also predicted as a moderating variable in the correlation between GAD and FGID conditions. Mustafa and Ghoshal's (2022) research found that someone with GAD can avoid the risk of FGID if they have high religiosity. A person with a high level of religiosity tends to be devoted to worship and prays more so that his life will be better. High levels of religiosity can reduce the possibility of someone with GAD suffering from FGID. However, to prove this, research needs to be done.

FGID can disrupt a person's life. Professional mental health services, such as counseling, play an important role in preventing and treating FGIDs in individuals. Professional health services can prevent and treat FGIDs in individuals by considering the determinants based on the results of this study.

Literature Review

FGID is a digestive tract disorder without clear structural and biochemical causes (Basnayake et al., 2020; Ford et al., 2020; Talley, 2020). This condition causes discomfort so that it can interfere with someone living their life (Ardi et al., 2023). Five factors influence a person's FGID condition, namely GAD, life satisfaction, perceived stress, perceived social support, and religiosity.

GAD is a mental health disorder characterized by excessive anxiety. The symptoms experienced by someone who has GAD are anxiety, excessive worry, difficulty relaxing, irritability, and excessive fear (Guo et al., 2022; Zaitoun et al., 2020). The GAD condition experienced by a person can directly increase the adrenaline hormone (Khakham, 2023; Yan et al., 2023). High amounts of the hormone adrenaline in the body will increase stomach acid production and change the motility of the digestive tract (Askoura et al., 2020; Du et al., 2019). Therefore, the more severe the GAD condition experienced by a person will directly worsen a

person's digestive system or FGID condition. Apart from that, GAD, as one of the determining factors for FGID, is also influenced by life satisfaction, perceived stress, and perceived social support (Aslan et al., 2020; Grey et al., 2020; Lu et al., 2020).

Life satisfaction can also influence a person's FGID condition (Tomlinson et al., 2021). Someone satisfied with their life conditions tends to have a more conducive psychological condition (Yan et al., 2023). High life satisfaction can also increase happiness to avoid negative psychological conditions, such as stress, depression, and anxiety (Edinger-Schons, 2020). Therefore, several studies have found that life satisfaction is correlated with psychosomatic disorders, such as FGID. Research conducted by Jang et al. (2022) found that people with good digestive tract conditions tend to be satisfied with their life experiences.

A person's FGID condition can also be influenced by a person's perceived stress (Bouchoucha et al., 2022). High stress levels can increase a person's production of the hormone adrenaline (Du et al., 2019; Lew et al., 2019). The large amount of adrenaline hormone in the body tends to increase heart rate, speed up blood flow, increase stomach acid production, and even worsen the condition of FGID (Labanski et al., 2020). Recent research conducted by Bouchoucha et al. (2022) found that people who often experience stress in daily life tend to be susceptible to FGID problems. This condition will get worse if a person cannot control the stress they experience.

Furthermore, perceived social support is also thought to influence a person's FGID condition (Sundas et al., 2022). People who feel social support also tend to feel their lives are meaningful and happier. Of course, people who feel social support can avoid psychological disorders. Recent research conducted by Lee and Lee (2023) found the important role of social support in preventing and overcoming FGID conditions. People with poor FGID conditions tend to feel that they do not receive meaningful social support. This will make a person feel that their life is meaningless, making them vulnerable to experiencing psychological disorders and even psychosomatic disorders, such as FGID.

The FGID condition can also be caused by a person's low level of religiosity (Sateemae et al., 2023). Research on religiosity has found that religiosity is a determining factor in several diseases, especially psychosomatic disorders (Kesavelu, 2023). FGID is a psychosomatic disorder that is thought also to be caused by a person's low level of religiosity (Major, 2021). Fundamental research conducted by Sperber et al. (2021) on FGID patients in 33 countries found that religiosity is a determining factor in a person's FGID condition.

Of the five factors that can influence FGID, GAD is a factor that can mediate several other factors in influencing a person's FGID condition. This means that conditions of life satisfaction, perceived stress, and perceived social support can influence the condition of GAD first before affecting a person's condition of FGID. Furthermore, religiosity is also a factor that moderates the influence of GAD on FGID. This means that religiosity can strengthen or weaken the influence of GAD on FGID. However, to prove theoretical studies and previous research results, further research needs to be carried out.

The Rationale of the Study

FGID is a psychosomatic disorder that can interfere with a person's life (Ardi et al., 2023). FGID is caused by psychological disorders experienced by a person (Koloski et al., 2020). A person with stress, depression and anxiety is very vulnerable to FGID (Yan et al., 2023). Recent studies have revealed several psychological conditions that can affect a person's FGID condition, such as low levels of life satisfaction, high levels of stress, low levels of meaning in life, and high levels of anxiety. In addition, previous studies have also revealed that the level of religiosity can also affect a person's FGID condition. Previous studies have not analyzed the moderating role of religiosity in influencing FGID conditions. In the current study, we aim to test the correlation of factors that are thought to affect a person's FGID condition. In addition,

in this study, we also aim to determine whether religiosity is a variable that has a direct influence on FGID conditions or is a moderating variable for FGID. This research is important to determine the development of counseling service models and media in preventing and treating FGID conditions.

Hypotheses of the Study

Based on theoretical studies and previous research, we suspect that several variables can influence a person's FGID condition so that we can develop a hypothesis (H) in this research, namely:

H1: Life satisfaction is negatively and significantly correlated with GAD conditions.
H2: Perceived stress is positively and significantly correlated with GAD conditions.
H3: Perceived social support is negatively and significantly correlated with GAD conditions.
H4: GAD is positively and significantly correlated with FGID conditions.
H5: Life satisfaction is negatively and significantly correlated with FGID conditions.
H6: Perceived stress is positively and significantly correlated with FGID conditions.
H7: Perceived social support is negatively and significantly correlated with FGID conditions.
H8: Religiosity is negatively and significantly correlated with FGID conditions.
H9: Religiosity is significant as a moderating variable in the correlation of GAD with FGID.

METHODS

Research Design

This research uses a quantitative approach with a correlational method. The correlational research method examines the relationship between variables (Seeram, 2019). The reason for using the correlational method is to explain the magnitude of the correlation of factors that are thought to correlate with a person's FGID condition. In this study, life satisfaction, perceived stress, perceived social support, GAD, and religiosity are independent variables, while FGID is the dependent variable. Of the five variables or factors that influence the condition of FGID, religiosity is a moderating variable in the correlation between GAD and FGID. This means that religiosity can strengthen or weaken the influence of GAD on FGID conditions.

Table 1. Demographics of Research Participants

Respondent Category	*N*	*Percentage*
Gender		
Male	41	10.70%
Female	342	89.30%
Age		
16-20 years	337	87.99%
21-35 years	46	12.01%
Residence		
Boarding house	139	36.30%
Own house	244	63.70%
Feeling Experiencing Symptoms of a FGID		
Yes	40	10.45%
No	293	76.50%
Not yet identified	50	13.05%

Participants and Data Collection

The number of research participants or respondents was 383 people. The sampling technique used in determining respondents is purposive random sampling. The reason for using this sampling technique is to determine samples with certain criteria. Furthermore, the participants in this research were Indonesian university students who were Muslim. The reason we chose students as research participants is because students are of productive age, and based on research by Randini (2023), it was found that students are a population that is vulnerable to

experiencing FGID conditions. The demographics of the research participants can be seen in Table 1.

Next, we collect data online from research participants or respondents. The time required for data collection is two weeks. In collecting data, we instructed participants or respondents to be honest, voluntary and thorough in filling out the instruments we provided.

Instrumentation

There are six instruments used to collect the research data, namely the life satisfaction scale, perceived stress-10 scale, perceived social support multidimensional scale, GAD-7, Duke University Religion Index, and FGID scale. The instruments we used were existing instruments, which we then translated into Indonesian. The translation of the research instrument begins with analyzing the subvariables, indicators, and items of the research instrument. Furthermore, the statements in the research instrument were translated into Indonesian. The translation process involved one English expert and one Indonesian expert. The linguists assessed the level of readability and the respondents' level of understanding of the research instrument. Table 2 shows the outline of the research instrument.

Table 2. Outline of Research Instruments

Instruments	*Indicator/factor*	*N*	*References*
Life Satisfaction Scale	1. Satisfied with life achievements 2. Satisfied with current living conditions 3. Don't regret something that has happened 4. Be grateful for your living conditions	10	Margolis et al. (2019)
Perceived Stress Scale-10	1. Upset because of unwanted circumstances 2. Feeling unable to overcome life's problems 3. It's hard to feel grateful 4. Get angry easily	10	Anwer et al. (2020)
Multidimensional Scale of Perceived Social Support	1. Support from a significant person 2. Support from family 3. Support from friends	11	Laksmita et al. (2020)
Generalized Anxiety Disorder 7-item (GAD-7)	1. Restlessness 2. Worried 3. It's hard to relax 4. Easily offended 5. Excessive fear	7	Sun et al. (2021)
Duke University Religion Index (DUREL)	1. Carry out worship or religious activities 2. Believe in God's help when experiencing difficulties 3. Live your life according to the teachings of your religion	7	Toscanelli et al. (2022)
Functional Gastrointestinal Disorders (FGID) Scale	1. Feeling discomfort, pain, or burning sensation in the throat or chest 2. Feeling pain or discomfort in the pit of the stomach 3. Feeling uncomfortable in the stomach 4. Having problems defecating	20	Black et al. (2020)

Table 3. Factor Loading and Reliability Test Results of Research Instruments

Instrument	*Average Loading Factor*	*Information*	*α*	*Information*
Life Satisfaction Scale	.909	Valid	.930	Reliable
Perceived Stress Scale-10	.902	Valid	.886	Reliable
Multidimensional Scale of Perceived Social Support	.872	Valid	.844	Reliable
Generalized Anxiety Disorder 7-item (GAD-7)	.922	Valid	.956	Reliable
Duke University Religion Index (DUREL)	.907	Valid	.893	Reliable
Functional Gastrointestinal Disorders (FGID) Scale	.900	Valid	.922	Reliable

After the instrument was translated, we tested the research instrument to test its validity and reliability. The instrument was tested on 383 people who had the same characteristics as the actual respondents, namely people of productive age aged 16-35 years. A good research instrument is an instrument that has an average loading factor value above 0.7 (Hair et al., 2021). Furthermore, a research instrument can be valid if it has a Cronbach's alpha value above 0.7 (Hair et al., 2021). The results of the validity and reliability test of the research instrument can be seen in Table 3.

Based on Table 3, all research instruments have met the requirements for good validity and reliability as research instruments. Therefore, these research instruments can be used to collect research data.

Data Analysis

The research data analysis technique used is a partial least squares-structural equation model (PLS-SEM). The reason for using PLS-SEM data analysis is to study the direct and indirect effects between FGID variables and conditions. There are two stages in PLS-SEM analysis, namely outer model evaluation and inner model evaluation (Hair et al., 2021). Outer model evaluation aims to evaluate the extent to which variables can be valid and reliable in the research structural model (Hair et al., 2021). Next, the inner model evaluation evaluates the structural correlation between research variables (Hair et al., 2021). Furthermore, the fit model measure is used to see whether the model and data are feasible to test the effect of variables. A model or data is suitable for testing if it has a Standardized Root Mean Square (SRMR) value below 0.08 (Hair et al., 2021). The SRMR value of this research model is 0.05. This means that the model tested in this study is suitable for testing its effect.

RESULTS AND DISCUSSION

Outer Model

Evaluation of the outer research model aims to evaluate the validity of the variables in the structural model. The validity tests used in evaluating the outer model are the convergent validity test and the discriminant validity test (Hair et al., 2021). Furthermore, in evaluating the outer model, the reliability of the variables in the research structural model was also tested (Hair & Alamer, 2022). In Figure 1, we can see the results of the outer model evaluation.

Convergent Validity

The convergent validity test aims to evaluate the extent to which variable indicators are valid in measuring the construct (Hair & Alamer, 2022). An indicator has good convergent validity if it has a loading factor value above 0.7 (Hair et al., 2021). The results of the convergent validity test can be seen in Table 4.

Based on table 4, it is known that each indicator of the research variables has a loading factor value above 0.7, so it can be said that all indicators of each research variable are valid in measuring the construct.

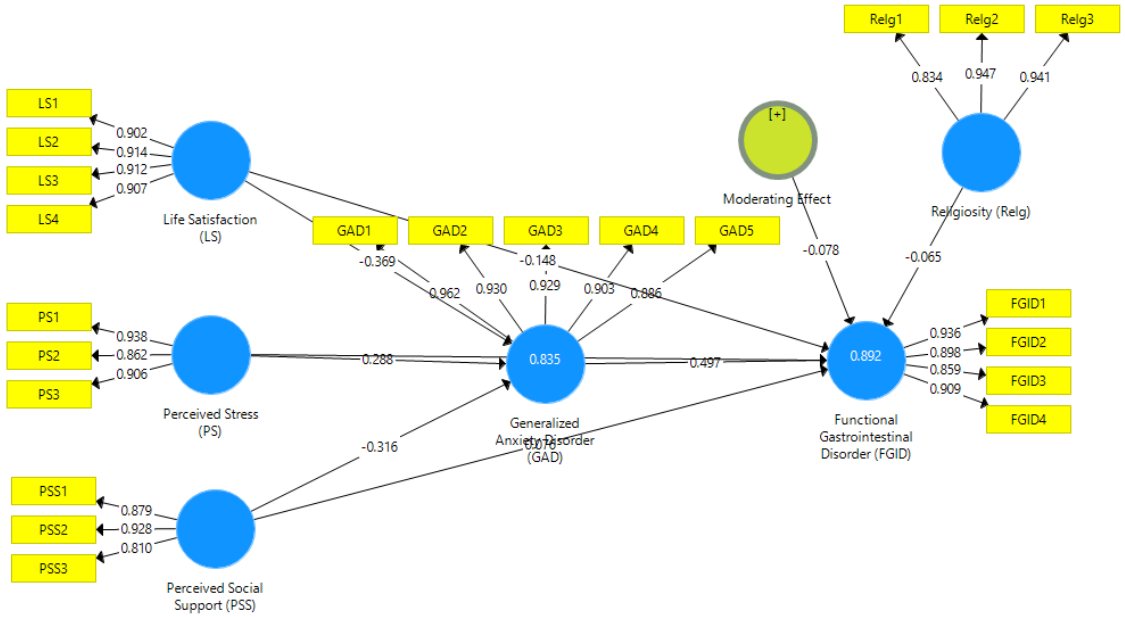

Figure 1. Evaluation Results of the Research Structural Model

Table 4. Convergent Validity Test Results

Variable	*Indicators*	*Loading Factor*	*Information*
Life Satisfaction (LS)	LS1	.902	Valid
	LS2	.914	Valid
	LS3	.912	Valid
	LS4	.907	Valid
Perceived Stress (PS)	PS1	.938	Valid
	PS2	.862	Valid
	PS3	.906	Valid
Perceived Social Support (PSS)	PSS1	.879	Valid
	PSS2	.928	Valid
	PSS3	.810	Valid
Generalized Anxiety Disorder (GAD)	GAD1	.962	Valid
	GAD2	.930	Valid
	GAD3	.929	Valid
	GAD4	.903	Valid
	GAD5	.886	Valid
Religiosity (Relg)	Relg1	.834	Valid
	Relg2	.947	Valid
	Relg3	.941	Valid
Functional Gastrointestinal Disorder (FGID)	FGID1	.936	Valid
	FGID2	.898	Valid
	FGID3	.859	Valid
	FGID4	.909	Valid

Note: FGID = Functional Gastrointestinal Disorder; GAD = Generalized Anxiety Disorder; PSS = Perceived Social Support; PS = Perceived Stress; Relg = Religiosity

Discriminant Validity

The discriminant validity test aims to test the difference between a variable and other variable (Hair et al., 2021). The criteria used to test discriminant validity are the Fornell-Lacker criteria. A variable can have adequate differentiation from other variables if it has a loading value that is different and higher than the loading value of other variables (Afthanorhan et al., 2021). The results of the discriminant validity test of the research variables can be seen in Table 5. Based on Table 5, each variable has a different loading value, so it can be said that each variable has adequate differentiation.

Table 5. Discriminant Validity Test Results

	FGID	*GAD*	*LS*	*PSS*	*PS*	*Relg*
FGID	.901					
GAD	.919	.922				
LS	-.889	-.884	.909			
PSS	-.788	-.838	.832	.874		
PS	.881	.847	-.874	-.747	.903	
Relg	-.888	-.91	.897	.883	-.853	.909

Note: FGID = Functional Gastrointestinal Disorder; GAD = Generalized Anxiety Disorder; PSS = Perceived Social Support; PS = Perceived Stress; Relg = Religiosity

Table 6. Reliability Test Results for Research Variables

	Cronbach's Alpha
FGID	.922
GAD	.956
LS	.930
PSS	.844
PS	.886
Relg	.893

Note: FGID = Functional Gastrointestinal Disorder; GAD = Generalized Anxiety Disorder; PSS = Perceived Social Support; PS = Perceived Stress; Relg = Religiosity

Reliability

The research variable reliability test aims to test the reliability of variables in forming a structural model. In determining the reliability of research variables, the Cronbach's alpha value is used. A variable can be reliable if it has a Cronbach's alpha value above 0.7 (Hair et al., 2021). In Table 6, we can see the results of the research variable reliability test. Based on Table 6, it is known that all research variables have Cronbach's alpha values above 0.7, meaning that each variable can be said to have good reliability.

Inner Model

The inner model evaluation aims to evaluate the correlation between variables in the research structural model. There are two stages in evaluating the inner model, namely the hypothesis testing stage and the R-square value analysis stage (Hair et al., 2021).

Hypothesis Testing

The research hypothesis can be accepted if it has a t-statistic value above 1.96 and a probability value below 0.05 or 5% (Ghozali & Latan, 2015; Hair et al., 2021). In Table 7, we can see the results of the research hypothesis test.

Table 7. Hypothesis Test Results

Path Analysis	*Original Sample*	*Sample Average*	*SD*	*T Statistic*	*P Values*	*Hyphotesis Result*
LS => GAD	-.369	-.372	.048	7.687	.000	Hypothesis 1 Accepted
PS => GAD	.288	.287	.033	8.668	.000	Hypothesis 2 Accepted
PSS => GAD	-.316	-.314	.048	6.651	.000	Hypothesis 3 Accepted
GAD => FGID	.497	.493	.049	10.175	.000	Hypothesis 4 Accepted
LS => FGID	-.148	-.149	.047	3.174	.002	Hypothesis 5 Accepted
PS => FGID	.253	.255	.038	6.720	.000	Hypothesis 6 Accepted
PSS => FGID	.076	.074	.041	1.859	.064	Hypothesis 7 Rejected
Relg => FGID	-.065	-.066	.060	1.085	.279	Hypothesis 8 Rejected
Moderating Effect => FGID	-.078	-.077	.034	2.315	.021	Hypothesis 9 Accepted

Note: FGID = Functional Gastrointestinal Disorder; GAD = Generalized Anxiety Disorder; PSS = Perceived Social Support; PS = Perceived Stress; Relg = Religiosity

Based on Table 7, it is known that two hypotheses are rejected, namely the seventh hypothesis and the eighth hypothesis. This means that perceived social support and religiosity do not correlate with a person's FGID condition.

R-Square

The r-square value analysis aims to evaluate the simultaneous influence of several independent variables on the dependent variable (Purwanto, 2021). The results of calculating the r-square value of the research model can be seen in Table 8.

Table 8. R-Square Value of Research Model

	R Square	*Adjusted R Square*
FGID	.892	.891
GAD	.835	.834

Note: FGID = Functional Gastrointestinal Disorder; GAD = Generalized Anxiety Disorder

Based on Table 8, it is known that FGID has an R-square value of 0.892. This means that GAD, life satisfaction, perceived stress, perceived social support, and perceived stress determine 89.2% of FGID. Furthermore, the r-square value obtained by GAD is 0.835. This means that 83.5% of a person's GAD condition is determined by life satisfaction, perceived stress and perceived social support.

Discussion

Two of the nine hypotheses developed to address risk factors for GAD and FGIDs were rejected. The hypothesis that was rejected was the relationship between social support perceived by people with GAD and the occurrence of FGID in their episodes. This means that social support is not directly correlated with the occurrence of FGIDs in individuals with GAD. Meanwhile, the eighth hypothesis was also rejected, meaning that religiosity does not directly affect the occurrence of FGID in an individual. The rejection of the eighth hypothesis may be due to the lack of relevance of the theory to current conditions. That is, social support does not significantly affect a person's risk of experiencing FGID - and this is also the reason for the rejection of the ninth hypothesis in this study. The non-acceptance of the results of the ninth hypothesis is most likely due to the lack of relevance of the theory to current conditions. That is, the good or bad quality of one's religiosity does not significantly affect the risk of experiencing FGID.

Furthermore, the accepted hypothesis shows that life satisfaction is negatively and significantly correlated with GAD conditions. This means that the higher a person's level of life satisfaction, the less likely that person is to experience anxiety. This is in accordance with the latest research throughout 2021-2022, which found that someone with high levels of anxiety tends to be dissatisfied and grateful with their life (Lopes & Nihei, 2021; Zapata, 2022). Furthermore, the accepted research hypothesis also shows that perceived stress is negatively and significantly correlated with the GAD experienced by a person. This means that the higher the level of stress a person feels, the more susceptible the person will be to experiencing GAD. Someone who feels stressed tends to be restless and has difficulty relaxing. This condition can also cause excessive anxiety. This is in accordance with previous research, which shows that perceived stress is prone to causing someone to experience GAD (Wang et al., 2022; C. Xu et al., 2020). Apart from that, the accepted research hypothesis also shows that perceived social support is proven to have a negative and significant correlation with the GAD experienced by a person. Perceived social support can come from special people, family and friends. Someone who feels social support tends to feel safe, comfortable and optimistic in living. This condition can prevent someone from experiencing GAD. This supports previous findings, which show that the social support a person feels can prevent and reduce anxiety (Kshtriya et al., 2020).

The accepted hypothesis also shows that GAD and perceived stress are positively correlated with the FGID condition experienced by a person. This means that the higher the level of stress and GAD in a person, the more susceptible that person will be to experiencing FGID. Stress and GAD can increase abdominal muscle tension. This condition triggers

discomfort in the chest and stomach, resulting in poor digestion. The results of this study support previous findings, which show that stress and anxiety disorders have the potential to cause FGID in a person (Salehi, 2022; Sundas et al., 2022). Apart from that, the accepted research hypothesis also shows a negative and significant correlation between life satisfaction and the FGID condition experienced by a person. Someone with a high level of life satisfaction tends to have positive feelings and easily relax. This condition can prevent someone from FGID. This is in accordance with research conducted by Weerts et al. (2019), who found that someone with a high level of life satisfaction tends to avoid various physical illnesses, such as digestive tract disorders.

Religiosity, which previously did not correlate significantly with FGID conditions, was able to moderate the relationship between GAD and FGID conditions. This means that religiosity can strengthen or weaken the relationship between GAD and FGID in a person. A person with GAD can avoid the condition of FGID if they have a high level of religiosity. High religiosity can create positive psychological conditions in a person. This condition can prevent health problems in a person. Therefore, someone who experiences GAD needs to have high religiosity, so as to avoid the condition of FGID. This is in accordance with research by Axelrod and Saps (2020) which found that religiosity can moderate the relationship between other variables and FGID conditions.

Implications

The results of this research have implications for the development of counseling models and media that aim to prevent and overcome FGID conditions caused by GAD and other determinant factors. This research also has implications for developing counseling, psychology, and psychosomatic medicine. Apart from that, this research also has implications as a reference for practitioners in counseling, psychology, and medicine in intervening with clients or patients who experience FGID.

Limitations and Suggestions for Future Research

The limitation of this research is that it only analyzes five variables that influence a person's FGID condition. Apart from that, this research was only conducted in Indonesia. Future research is expected to be able to analyze other variables that influence a person's FGID condition. Furthermore, it is hoped that future research can be carried out in various countries and across continents.

CONCLUSSION

FGID conditions can be influenced by GAD conditions, life satisfaction, perceived stress, perceived social support, and religiosity. Of these five variables, there are three factors that determine a person's FGID condition, namely GAD, life satisfaction, and perceived stress. This research shows that perceptions of social support do not correlate with the condition of FGID Muslim university students. Furthermore, religiosity also does not correlate with the condition of FGID Muslim university students. However, religiosity is a moderating variable in the influence of GAD conditions on the FGID conditions of Muslim university students. Counselors must consider the determining factors of a person's FGID condition in helping clients or patients who experience FGID.

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AUTHOR CONTRIBUTION STATEMENT

ZA contributed to conceptualization, data analysis, and manuscript writing. AH contributed to conceptualization, data analysis, collecting data, and manuscript writing. AW contributed to data analysis and manuscript writing. CE contributed to data analysis and manuscript revision. MS contributed to data analysis. HY contributed to data analysis. EB contributed to data analysis.

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