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## **THE RELATIONSHIP BETWEEN URIC ACID LEVEL AND THE MENTAL HEALTH STATUS, DAS TO THE SOCIETIES IN WEST-MELONGUANE, TALAUD**

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**Abstract:** Gout disease was a crystals accumulation on the joint due to the high level of uric acid. The increase of uric acid might occur due to consuming food with a high purine and alcoholic drink. Besides attacked and gave a negative impact on physical health, gout disease will affect mental health such as psychological and psychosocial as well. The sufferers' inability to control the pain will affect their mental health such as anxiety, stress, and depression. This study aimed to figure the relationship between the level of uric acid and the mental health status, depression, anxiety, and stress (DAS) of the societies in West-Melonguanese, Talaud. The method was used a quantitative with description correlation design by Pearson Product Moment sample's test from 52 respondents according to the criteria. This study was taken a place in West-Melonguanese. The data were collected through questionnaires of mental health inventory (MHI) and DAS. The result of the correlation test did not show a significant result between the mental health status to the DAS and gout disease in West-Melonguanese, Talaud, seen from the p-value = 0.771, whilst between the DAS and the level of uric acid shows a significant result, seen from the p-value = 0.005. According to this study, can be concluded that there are no significant correlations between mental health status and the level of uric acid, whilst the DAS variable had significant correlations at a low level.

**Keywords:** Gout disease, Mental health status, DAS

### **INTRODUCTION**

Talaud Islands, the Region in the North Sulawesi Province Indonesia, with its capital city is Melonguane, and its original tribe is Talaud, where it still sticks with the preserved cultures by its societies. One of the cultures that were still done is the “thanksgiving” or “*Syukuran*” through enjoying the foods, drinks, and also alcoholic drinks such as the *cap tikus* and *saguer*.

The lifestyles that are still maintained until nowadays affect the health conditions, so that might cause gout disease (Wahyu Widyanto, 2017).

According to (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, 2018) stated that the non-communicable disease in North Sulawesi was standing in 10<sup>th</sup> place of national-level including arthritis. The prevalence of the joint disease in North Sulawesi Province were as much as 8.35%. Profil Kesehatan Talaud (Talaud, 2019) stated that the last of three years (since 2017 since 2019) were not founded the data related to the prevalence of arthritic-gout disease in Talaud Islands Region, but according to the data that refer to Profil Kesehatan Kabupaten Talaud in 2013, showed the joint disease that occurred was as much as 12.6%.

Gout disease was a crystals accumulation on the joint due to the high level of uric acid. The increase of uric acid might occur due to consuming food with a high purine and alcoholic drink. It will affect pain in the joints, such as the toes, wrists, fingers, elbows, knees beside the pain that is felt by gout can also cause joints to become swollen, inflamed, hot, and stiffness (Nurhamidah & Nofiani, 2015). Gout, besides attack and affect physical health also might be affecting mental health, such as psychological and psychosocial. On the gout sufferer, their inabilities to control the pain will impact mental health such as anxiety, stress, and depression (Bobaya, 2016). Mental health was the level of psychological prosperity that was commonly categorized into stress and depression. So that when they were in a stable emotional condition, they could be positively thinking. In contrast to the condition when they were in an unstable emotional condition, it will make a bad impact on their mental health such as low-esteem, stress, or even an anxiety (Dewi, 2012)

On the condition of pain into stiffness, tiredness and weakness might be caused to the daily activities' disruption. The pain that was encountered might cause anxieties, stress, and also depression, which was the disruption of human function related to the subconscious affected to sad feelings and its inclusions, such as the change of dietary habits and appetites, psychomotor, concentrations, anhedonia, tiredness, hopeless and helpless feelings, also suicides (Lutfu & Maliya, 2018).

Another fact according to the Kesehatan Nasional report shows that gout disease is one of the diseases with the highest sufferer in Indonesia according to (Alfarisi, 2018). The gout disease sufferers have a 22.5% level of anxiety. According to the study that was conducted. Anxiety was neurotic helplessness, insecurities, not-well enough, and less ability to deal with the demands of realities (environment), difficulties, and daily life's stress. Someone's rate of stress might affect the metabolism and triggered to encounter gout disease (Saleh & Karneli, 2020). Stress is a condition caused by the transaction between the individual to the environment that might arise the gap of perceptions between the demands from the biological resources, psychological and social diseases that were often encountered by the older is gout disease, due to the increase of uric acid for the highly consumed of food contained purine (Ramadhan et al., 2019).

The objective of this study is to find out the relation of the uric acid level to the mental health status, DAS (Depression, Anxiety, Stress) of the Western-Melonguanese societies in Talaud.

## **METHODS**

The method was used in this study is a descriptive quantitative correlation using a cross-sectional closure. The data sampling method was conducted in West-Melonguanese, Talaud Islands, North Sulawesi from June to August 2020. The populations in this study were 152 people in 2020, and the targets in this research were all of the gout sufferers located in West-Melonguanese, Talaud Islands. The total of the taken samples were 52 people that met the criteria of inclusion and willing to be the respondents. The criteria of inclusion in this study were the respondent that had diagnosed by a doctor being suffered the gout disease, one of the origins of Talaud tribes that seen from three of the line of descent. The variables that were being studied are independent variables, such as health status, the level of anxieties, stress, depression, while the dependent variable was uric acid.

The data collection instrument that was used in this study is using a self-evaluation questionnaire entitled Mental Health Inventory (MHI) which had been adapted and refined into Bahasa (Indonesian language) (Lantang et al., 2019) which consists of 6 indicators which are divided into two, which are negative indicators (anxiety, depression, and loss of behavior/emotional control), as well as positive indicators (positive effects in

general, emotional bonding and life satisfaction). The DASS 42 Depression Anxiety Stress questionnaire consists of 3 indicators, which are depression, anxiety, and stress which have modified and have been doing the content validity with its validity value of 0.499-0.813 and a reliability value of 0.90 and a personal data sheet for gout sufferers, along with a uric acid measurement kit. The questionnaire is a standardized questionnaire that had modified and had been doing the content validity with its validity value of 0.499-0.813 and a reliability value of 0.90 for the DASS 42 questionnaire (Destia, Nur & Setiawan, 2016) and the MHI questionnaire was stated valid with a correlation coefficient of 0.33 -0,713.

All of the involved respondents are agreed on the approval sheets. Ethical Clearance No. 300/PE/KEKP/UKSW/2020. The univariate analysis encompassed the gender, ages, and the examination of uric acid level, whilst the bivariate analysis was done by using the Pearson Product Moment test on the independent variable, which was the mental health status and DAS.

## **RESULTS**

The result of this study was including the respondent's profiles that consist of ages, gender, uric acid's level, latest educational level, profession, medical record, family's disease history. Then, the mental health inventory in general, the sixth of sub-indicators (anxiety, depression, loss of behavior/ emotional control, common positive impact, emotional bonding, and life's satisfaction), DAS in general, the three of sub-indicators are depression, anxiety, stress, and also the Pearson Product Moment test's result between mental health inventory (MHI) and gout disease; DAS and gout disease.

### **The Respondent's Profiles**

According to the research result that was conducted on 52 of respondents through the questionnaires and interviews, could interpret the respondent's characteristics that were consist of the ages, gender, uric acid level (normal and abnormal), latest educational level, profession, the previous medical records, and family's medical history as follows:

**Table 1.1: Respondent's Characteristic Distribution**

<b>Respondent's Characteristic</b>	<b>n = 52</b>	<b>%</b>
<b>Ages Classifications</b>		
Youngest-Adult (26-35 years old)	3	5
Oldest-Adult (36-45 years old)	5	10
Youngest-Old (46-55 years old)	14	27
Middle-Old (56-65 years old)	15	29
Oldest-Old (> 66 years old)	15	29
<b>Gender</b>		
Male	17	40
Female	35	60
<b>Level of Uric Acid</b>		
Normal	2	4
High	50	96
<b>Tribe</b>		
Talaud	52	100
Christian	52	100
<b>Latest Educational Level</b>		
Elementary School	13	25
Junior High School	12	23
Senior High School	25	48
Bachelor	2	4
<b>Profession</b>		
Retired	1	2
Entrepreneur	4	7,6
Farmer	30	57,6
Housewife	17	32,6
<b>Previous Medical Record</b>		
None	26	50
Gout	14	27
Hypertense	8	15,3
Hypertense & Gout	4	7,6
<b>History of Family's Disease</b>		
None	43	82,6
Gout	2	4
Hypertense	7	13,4

According to table 1.1, the majority of respondents are women at 46-60 years old, with the latest education level was senior high school, and most of them are housewives and farmers. Those who have medical records are 26 people.

## **Mental Health Inventory**

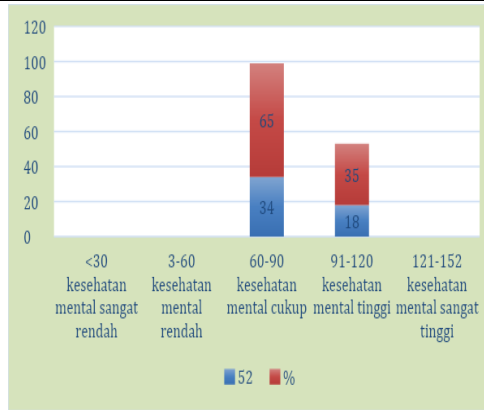


Diagram 2.1 Mental Health Inventory

According to diagram 2.1, was obtained that the respondents who suffer gout disease are 34 people with a good-enough of mental health.

Table 2.2 Negative Distribution of Respondent’s Mental Health Indicator

<b>Negative Mental Health Indicator</b>			
Variable	Category	n = 52	%
Anxiety	Low	3	6
	Moderate	27	52
	High	22	42
Depression	Low	7	13,4
	Moderate	28	54
	High	17	32,6
Loss Emotional Control Behavior/	Low	2	4
	Moderate	30	57,6
	High	20	38,4

According to table 2.2 was obtained that the level of anxiety, depression, and loss of emotional/behavior control at the moderate level.

Table 2.3 Positive Distribution of Respondent’s Mental Health Indicator

<b>Positive Mental Health Indicator</b>			
Variable	Category	n = 52	%

Common Positive Impact	Low	0	0
	Moderate	0	0
Emotional Bonding	High	52	100
	Low	0	0
Life Satisfaction	Moderate	0	0
	High	52	100
	Low	1	2
	Moderate	20	38,4
	High	31	59,6

According to table 2.3, was obtained that the common positive impact, emotional bonding, and life satisfaction at a high level.

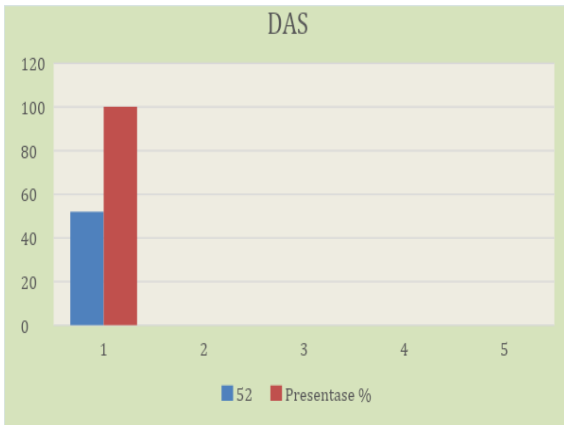


Diagram 3.1 DAS

According to diagram 3.1, was obtained that the level of depression, anxiety, and stress at a normal level in the West-Melonguanese Region.

Table 3.2: The Distribution Based on 3 DAS Domain in West-Melonguanese Region

Level	Depression	52	%
Normal	0-9	52	100
Light	10-13	0	0
Moderate	14-20	0	0
Severe	21-27	0	0
Awful	> 28	0	0
			0
Level	Anxiety	52	%

Normal	0-7	52	98
Light	8-9	1	2
Moderate	10-14	0	0
Severe	15-19	0	0
Awful	>20	0	0
<b>Level</b>	<b>Stress</b>	<b>52</b>	<b>%</b>
Normal	0-14	52	100
Light	15-18	0	0
Moderate	19-25	0	0
Severe	26-33	0	0
Awful	>34	0	0

According to table 3.2, was obtained that the level of depression, anxiety, and stress on the respondents are at a normal level.

The bivariate analysis was aimed to found out the relation between the health status to depression, anxiety, and stress to the gout disease sufferers in West-Melonguanese Region, Talaud.

Table 4.1: Relationship Between the Status of Mental Health to Depression, Anxiety, Stress and Gout Disease

Variable	(Correlation Analysis of Pearson Product Moment Test)	Interpretation (a=0,05)
Level of Uric Acid and MHI	$r= 0.032$ $p\text{-value}=0,771$	Insignificant
Level of Uric Acid and DAS	$r= 0.386$ $p\text{-value}=0,005$	Significant

Based on the Pearson Product Moment test's result, was founded an insignificancy between the mental health status to the gout disease in West-Melonguanese Region, Talaud, with  $p\text{-value} = 0.771$ , whilst the test's result between DAS and gout disease shows the significant result, with  $p\text{-value} = 0.005$  despite it has a low correlation level.

## DISCUSSIONS

### The Respondent's Profile



According to the result of this study on the respondent's profile in West-Melonguanese, the majority of respondents are at 40-60 years with the latest educational level in senior high school and worked as housewives and farmers. The lately mentioned medical records are hypertense and diabetes mellitus (DM). The gout disease's sufferers in West-Melonguanese are mostly women, due to the increase of uric acid level after entering the menopause stage. Age is one of the factors that might cause gout disease, for at the menopause stage was encountered the decrease of the body's function (Yuliana et al., n.d.). It can be occurred due to the degenerative processs and might affect the decrease of kidney functions. The decreased function of the kidney may secrete the uric acid, so that caused the accumulation of uric acid in the joints.

### **The Mental Health's Status**

The respondents in West-Melonguanese Region that was suffering the gout disease are feeling unstressed to their current exccessed conditions such as anxiety, depression, and loss of behavior/ emotional control on themselves. The respondents who are encountered with these conditions are still done their daily activities such as gardening, cleaning the house, and another else. The respondent's mental health is mentioned as enough because they might cope with the anxieties or even the stress quickly related to the disease they were suffered. Most of the respondents stated that they do positive thinking about their disease. They were also got support from their relatives and social, such as close-friend, or even societies. So that the disease was not causing mental pressure. People with good mental health can control their own selves and other activities, so that they feel secure, peaceful, and happy in any conditions. The existing supports were made the respondents having a life's satisfaction and a high positive impact on their own (Hamid, 2017).

The respondents in West-Melonguanese Region have a high positive impact on the gout disease. It might be affected by their own selves and deal with their conditions, so that they have a feeling of happiness, and being loved by the people around. The gout disease for them was merely usual things that been encountered, and it was not affected by their current mental health condition. Although they were only had a senior high school background, they can filter the good information related to the gout disease or even the way to cope with it. The prevention of the disease will be well-headed to those are who have more knowledge. That knowledge might be

found from many resources, such as health counseling (Songgigilan & Kundre, 2019)

The place where the respondents are living affected the way of them to think positively. A good environment contributes to a big positive impact on the respondent's personal life such as the support from the societies, and also their relatives so that the respondents were felt being cared for. That positive impacts were also affected by themselves, family's support, partner, and their colleagues. The support that had received were the dominant factors that the most affecting respondent on the act and thinking positively, also its self-acceptance (Angraini et al., 2018).

According to the research, the respondents were having high emotional bonding. It might be affected to the environments where they were living, due to the existence of the environmental supports, it makes the respondents are keeping on being optimistic, and they have always thanked their conditions so that they might be adapted to the current conditions. Those who are suffering the gout disease are always thinking that they will be gotten well soon, and rarely burdened with their current conditions, instead of felt that their daily life was in happiness without any stress. Although they knew that the uric acid level is above normal, it doesn't affect their mental, because they might be able to cope with it by the supports given by their close-relatives.

The family supports might be helped the respondents to adapt to their disease, and the supports that had given by their relatives or the other people might become a huge impact on their mental health status due to the ability to control the emotions, decrease the anxieties, and has a huge impact to their own selves. The existence of social support caused the individuals are felt being honored, cared for, and loved so that could reduce the stress that burdens them, in the other hand, social support could make the patients are stress-less on facing the disease (Edwar P. Sarafino, 2010).

According to the sub-indicators of life's satisfaction, the respondents are going with a high of life's satisfaction. This study founded that the majority of respondents are having a high life satisfaction, although they encountered gout disease. The gout disease sufferers' life satisfaction was being assessed from how big is their self-acceptance or felt satisfied with

their health condition and never looked to the shortage on their own bodies due to the diseases. The respondents stated that they were being satisfied with their current condition, because of the supports that been given to them by their relatives or other people, and they were felt being cared for.

The current condition of being suffered gout disease not affect them to make low self-esteem, or disrupt their mental health. The respondents stated that they were still being loved, expected, and being cared for by people around, and never feeling hopeless by their condition, instead stated that they were happy. Someone's life satisfaction might be increased through showing an optimistic deportment and able to interpret their life, so that might be able to help them to adapt to the encountered disease (Fonseca et al., 2014).

### **Depression, Anxiety, and Stress (DAS)**

Respondents can accept their health condition on their older ages. The older ages might cause the respondent to feel hopeless, moreover with their decreasing performance, and encountered gout that will impact on their daily activities, such as working. In contrast, the respondents who are in West-Melonguanese are accepting their own health conditions, even encountered gout and have to leave for work and doing socialization to the societies. Getting older is a natural growth that will be encountered of someone, the older of ages might affects the problems on physical, biological, or even mental that can be seen from the non-communicable disease, such as gout (Diantari & Kusumastuti, 2013). The respondents also stated that they are feeling satisfied with their physical conditions those are getting older and not feeling disturbed or stressed to the encountered disease (gout).

Respondents in West-Melonguanese have been getting used to the pain that repeatedly arose, but it didn't make them depressed, anxious, or even stress. There are some of the answers based on the questionnaires, that they always regard it in a positive way, and never regarded as a burden for them. Those are who thinking that was a bad condition, it will usually affect the mental and caused them to be upset easily, sad, or even offended if somebody talks about their condition. However, those respondents who are understand based on medical records, will no impact on mental health. The self-acceptance of their own conditions objectively might be affected

the acceptance of bad or even good things on themselves ((Judha et al., 2010).

The majority of respondents were not being depressed due to the age factor so that they just regard it as a usual occurrence and tend to ignore their conditions. Respondents who are suffering the gout disease are not being upset. Instead, they are enjoying their life and feeling happy. It could be happened due to their self-acceptance, family, or even the society's supports to their conditions, nevertheless they were still needed the support from people around. That social support had a main role to increase self-esteem, stress-effect prevention, and might give the contribution to a better psychological status (Hendry, 2013).

Through the support that had been given made the respondent is not feeling sad, not disappointed in their own selves, being excommunicated, and even hopeless, indeed they said they are happy. The mentioned supports were formed as giving care, information related to the disease (how to cure the pain). The social support might help the individual to cope with their own problem effectively and might be increased the physical and mental health. (Cha et al., 2012).

his study shows that most of the respondents who suffer from gout disease in the West-Melonguanese Region are not being anxious because the respondents are able to increase their abilities to cope with the disease, such as the pain that arose suddenly. The respondents said they were not feeling restless, and they are thinking that they will be better instead. Those are who had thinking positively or being optimistic are affected by the supports and their self-acceptance of the disease (Keliat, 2011)

Respondents that were involved, stated that they are not feeling stress because they do have a huge positive influence in their life. They stated that they were got support along with their closest people, such as family, by suggesting to examine during suffering the disease. It makes the respondents never feel lonely, never feels left out, the respondent does not feel that they were in a bad condition. The results of this study can be seen from the answers that were given by the respondents, they always think positively about the disease and always feel needed and cared for by family members so that respondents have a greater positive influence than a negative one. The social supports that were obtained from their closest

relatives might be impacted someone to think positively and be able to prevent anxiety, according to gout sufferers as written by Lieberman (Azizah, 2011).

Respondents who have encountered gout tend to feel stressed that caused by the swelling, redness with pain around the joints, but its mobility was caused by its disease, so that impacted into stress (Janosik, 2020). It could occur because of the absence of supports from their family or other people so that they can't be positive in thinking instead of always do negative thinking about their health condition that might cause stress. Stated that stress was an unspecific body response to the burden, such as health conditions. This study was not analogous to the research that was conducted in West-Melonguanese, which stated that they did not encounter stress, because they might resolve the disease by leaving for the Healthcare Center or by consuming traditional medicines. A Low level of educational background, didn't affect them to receive the information related to the disease, from relatives, other people, or health services (Yosep, 2010).

### **The Correlation of Mental Health Inventory and Gout Disease Results**

The results of the correlation test showed an insignificant relationship between mental health status and gout because the mental health inventory (MHI) did not measure the physical health of the respondents. Respondents who are in West-Melonguanese Barat, although they were encountered gout disease, they say it does not have a big effect on their mental health, it can be seen from the respondents' answers, they always have happy feelings which are affected by the surrounding environment such as support from their closest relatives. Feelings of happiness, such as respondents felt that their days are feeling joyful and feel being valued, loved, and cared for. Respondents also stated that they always get information related to gout and how to cope with it from their family, other people, and health services even though the respondent's education is high school level, but they can filter information well. The obtained information can help to increase the knowledge and behavior towards someone related to Green's disease in (Soekidjo Notoatmodjo, 2012). Some of the respondents stated that they consumed traditional medicine to reduce uric acid levels and relieve pain such as soursop leaves, binahong leaves, lemongrass stalks. Apart from traditional medicine, respondents also used

medicines from Healthcare Center. Traditional medicine is very influential in overcoming increased uric acid (Helvi, 2018).

The culture in Talaud could affect the older respondent's behavior. They were usually ignored their health condition such as gout disease, and tend to mention that it was a usual occurrence due to the age factor. They were still could do their daily activities such as cleaning the house and gardening. The respondents are majority Christian so that they did positively in thinking, thanked, and not being stressed about the current condition, and they never been regard that gout disease is a burden to them. Stated that people with good self-acceptance or able to accept their conditions, so that will be formed a positive mind and behavior to the encountered conditions so that they could be optimistic through the conditions (Utami, 2012).

### **The DAS and Uric Acid Level Test's Results**

On the result of the correlation test of the DAS variable and gout disease, there was a significant relationship, whilst it had a low correlation due to the disease that had encountered from last two or four years later so that the respondents had got used cope into, and DAS when the level of uric acid was increased. Although there some of the respondents had lost behavior/ emotional control due to the sudden pain that arose, it might disrupt the daily activities. Pain is a mixture of physical, emotional, and behavioral reactions (Wiroto TS, 2013). The emotional behavior felt by the respondents didn't last for a long time, for the respondents had known how to cope with the disease, by consuming the traditional medicines or head for the Healthcare Center to do some examinations. Stated that the respondents who are suffering the chronic kidney disease and gout encountered a loss of control/ emotional (Lufianti & Mustakhim, 2018).

### **CONCLUSION**

The correlation test results were not showing the significance between health mental and gout disease. Whilst the relationship between DAS and uric acid level shows the significance, despite it was merely a low level of a relationship due to the gout disease that suffered by the respondents in the West-Melonguane Region had occurred a long period so that the respondents might be coped with the disease and DAS when it was relapsed.

### **Recommendation**

This study is still facing the limitation for had not discussed entirely related to the relationship between uric acid level and mental health, and DAS to the societies in the West-Melonguanese Region. It was caused due to the response's limitations from the respondents, which this study used a quantitative method. The data collections were done through the questionnaires so that the answers were not deeply explained. For further researchers are expected to use a qualitative method, so that able to obtain more accurate information.

### **Conflict of Interest**

The authors declare that there is no conflict of interest.

### **Author Contribution**

For research conceptualization, methodology, formal analysis, data curation, R.E.R and D. Writing original draft preparation, O.K; supervision, Writing-Review and Editing, R.E.R. Data curation, D., O.K . All authors read and approved the final version to be submitted for publication. All authors have read and agreed to the published version of the manuscript.

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