The Effect of Psikological Stress on the Scale of Primary Dysmenorrhea during Pandemic

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ABSTRACT: During the pandemic, activities through cyberspace can be a way to get entertainment. Nevertheless, for such a long time, virtual activities have also turned into new stressors. Sources of stress are life events, chronic tension and everyday problems (Malahayati, 2019). Stress also can interfere with the work of the endocrine system, causing irregular menstruation and pain during menstruation (Martini et al., 2014)). Menstruation is often followed by pain (dysmenorrhea) due to an increase in prostaglandin F2 due to a decrease in the hormones estrogen and progesterone. Prostaglandin F2 functions to stimulate mild rhythmic contractions of the myometrium (smooth muscle layer) of the uterus. Uterine contractions that are too strong due to excessive production of prostaglandin F2 are what cause dysmenorrhea. This study aims to analyze the effect of stress on the scale of primary dysmenorrhea during the pandemic. The method of the study is a quantitative study with an observational analytic design using a cross sectional approach, namely by taking stress data and primary dysmenorrheal scale at the same time and only taking data once. The result shows that Chi-Square p value = 0.0001, so it can be concluded that there is an influence between stress on primary dysmenorrhoea in which 27.6% experienced very severe stress with severe dysmenorrhoea. However, considering the limitations of this study, the researcher hopes that further studies will be carried out regarding the factors that cause stress and primary dysmenorrhea.

KEYWORDS: Stress level, Dysmenorrhea Scale, Covid-19 Pandemic

INTRODUCTION

During a pandemic like this, we hope that activities through cyberspace can be a way to get entertainment. Unfortunately, for such a long time, virtual activities have also turned into new stressors. Sources of stress are life events, chronic tension, and daily problems (Malahayati, 2019). Academic stress is a condition or condition in the form of physical, mental or emotional disorders caused by a mismatch between environmental demands and actual resources owned by students so that they are increasingly burdened with various pressures and demands from the campus. Responsibilities and high demands on students often make them feel burdened and stressed. Stress is an unexpected reaction that arises because of the high demands of the environment on a person, where the balance between strength and ability is disturbed or something that feels suppresses one's feelings (Simamora, 2019). The most common cause of stress in students is stress related to academics (Sari &Nurdin, 2015). Based on regional health research data, in Indonesia in 2014 there were 36.7-71.6% of students experiencing stress. Research (Agustin, n.d.) shows that of the 142 early-generation students, 39 respondents (27.5%) experienced mild stress, 84 respondents (59.2%) experienced moderate stress and 19 respondents (13.4%) experienced severe stress. It was found that high stress levels had more effect on people with primary dysmenorrhea than those without (Armadani et al., 2016).

Mental health problems that are increasing during this pandemic are stress, anxiety, and even depression. For students, this pandemic causes stress and anxiety related to changes in the lecture process and daily life. The Association of Indonesian Mental Medicine Specialists (PDSKJI) conducted a survey on mental health through an online self-examination through the PDSKJI website, namely http://pdskji.org/home. The results of the self- examination conducted by 4,010 respondents (71% women and 29% men) for five months (April-August 2020) showed that 64.8% of respondents experienced psychological problems with a proportion of 64.8% experiencing anxiety, 61.5% experienced depression, and 74.8% experienced trauma. Most psychological problems were found in the age group of 17-29 years and above 60 years. Another self-check was carried out on 1,552 respondents related to three psychological problems, namely anxiety, depression, and trauma. Most respondents were women (76.1%) with a minimum age of 14 years and a maximum of 71 years. A total of 64.3% of respondents experienced psychological disorders with a proportion of 63% experiencing anxiety and 66% experiencing depression (Cao et al., 2020).

Menstruation is often accompanied by pain (dysmenorrhea) due to an increase in prostaglandin F2 due to a decrease in the hormones estrogen and progesterone. Prostaglandin F2 functions to stimulate mild rhythmic contractions of the myometrium (smooth muscle

layer) of the uterus. These contractions help expel menstrual blood from the uterine cavity through the vagina as menstrual blood. Uterine contractions that are too strong due to excessive production of prostaglandin F2 are what cause dysmenorrhea. Dysmenorrhea is difficult menstrual flow or painful menstruation. Menstrual pain is a symptom and not a disease (Armadani et al., 2016). Primary dysmenorrhea is menstrual pain that is found without obvious abnormalities in the genital organs. The nature of the pain is intermittent spasms, usually limited to the lower abdomen, but can spread to the waist and thighs. Along with pain, you can find nausea, vomiting, headaches, diarrhea, irritability, and so on (nuramida et al., 2019). Primary dysmenorrhea usually occurs in adolescence, which is about 2-3 years after the first menstruation and gets heavier after a few years until the age of 23-27 years, then begins to subside. Its frequency decreases with age and usually stops after delivery (nuramida et al., 2019).

According to (Armadani et al., 2016) when stressed, the body will produce excessive adrenaline, estrogen, progesterone, and prostaglandins. The effect of stress on irregular menstrual cycles involves the neuroendocrinological system as a system that plays a major role in female reproduction. Disorders of menstrual patterns involve integrative regulatory mechanisms that affect biochemical and cellular processes throughout the body, including the brain and psychology. The influence of the brain in hormonal reactions occurs through the hypothalamic - posterior pituitary - ovary pathway which includes multiple effects and feedback control mechanisms (FAJARINI, 2012)Stress can disrupt the work of the endocrine system, causing irregular menstruation and pain during menstruation (Cyntia, 2019). According to WHO in 2014 1,769,425 people (90%) women experienced dysmenorrhea with 10-15% experiencing severe dysmenorrhea. More than 50% of women with dysmenorrhea in every country (Malahayati, 2019). In the United States, the percentage incidence of dysmenorrhea is around 60% and in Sweden, it is around 72%. Meanwhile, in Indonesia, the prevalence of dysmenorrhea ranges from 45 – 95% among the productive age (Simamora, 2019). Meanwhile, according to (Armadani et al., 2016) the incidence of dysmenorrhea in adolescent girls 14-19 years in Indonesia is around 54.89%. In Surabaya, it was found that 50% of women experienced dysmenorrhea, 10% of whom had severe pain so they were unable to carry out daily activities for 1-3 days each month (Rita et al., n.d.).

Based on the data above, the researcher is interested in conducting research on the effect of stress on the primary dysmenorrheal scale for midwifery students at the Faculty of Medicine, Airlangga University during a pandemic with the hope that this research can be a source of information and as a basis or data for further development of midwifery research and can see and prove existing phenomena. in midwifery students with a fairly heavy burden of academic stress.

METHOD

This study is a quantitative study with an analytical observational design using a cross-sectional approach, namely by taking data on stress and dysmenorrhoea scales for Midwifery students, Faculty of Medicine, Airlangga University at the same time and only one time data collection. This research was conducted in July-September 2021 at the Faculty of Medicine, UniversitasAirlangga. Data collection in this study was carried out using a questionnaire distributed online in the form of a google form. Sampling using total sampling on the population that has met the inclusion and exclusion criteria. Respondents in this study found 225 female students with a total of respondents meeting the inclusion criteria. Characteristics of research subjects based on student dysmenorrhea, 7.1% or 16 female students experienced mild dysmenorrhea, 22.7% or 51 female students experienced moderate dysmenorrhea, and as many as 70.2% or 158 female students experienced severe dysmenorrhea.

The variables in this study consisted of the independent variables in this study, namely stress, which is pressure or something that feels pressing on the feelings of Midwifery students, Faculty of Medicine, Airlangga University during the pandemic, and the dependent variable in this study is the dysmenorrhea scale, namely a history of pain in the lower abdomen during menstruation. experienced by Midwifery students, Faculty of Medicine, UniversitasAirlangga during the pandemic.

The stress questionnaire consists of 42 questions with four answer criteria, namely the answer "never" is given a value (0), the answer "sometimes" is given a value (1), the answer "often" is given a value (2), the answer "always" is scored (3). Lovibond's DASS questionnaire did not categorize stress levels. However, there are several journals that use DASS to categorize DASS stress into several levels, including (AninditaAinun RP* et al., 2019) classifying stress into five, namely normal (0-18), mild (19-23), moderate (24-28), severe (29-33) , and very severe (>34). Meanwhile, Oseatiarla Arian Kinantie classifies stress into five levels, namely normal (0-7), mild (8-9), moderate (10-12), severe (13-16), and very severe (> 17). Therefore, the researcher used all the statements in the DASS questionnaire which was opened 42, the lowest score was 0 and the highest score was 126. The dysmenorrhoea scale questionnaire consists of 11 and is divided into 3 categories, namely questions 1-2 for mild dysmenorrhea, questions 3-5 for moderate dysmenorrhea, and questions 6-11 for severe dysmenorrhea.

RESULTS AND DISCUSSION

WHO has declared COVID-19 or SARS-CoV-2 a global pandemic as of March 2020. Following the physical distancing policy to prevent the spread of COVID-19 implemented in Indonesia, academic activities were shifted from face-to-face methods to online methods. The Minister of Education and Culture issued a Circular Letter of the Minister of Education and Culture Number 36962/MPK.A/HK/2020 which states that online learning from home is for students. This change resulted in students having to adapt to a new system that had several challenges in its implementation. Among them, the internet network and the number of

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internet quotas owned are required to be stable and sufficient, the delivery of lecture material is not as clear as face-to-face lectures, and academic schedules are delayed or delayed. In addition to problems that are directly related to the lecture process, there are also stressors from the students' daily lives themselves. The impact of the changes experienced by students during the COVID-19 pandemic has the risk of causing mental health problems.

(Lubis et al., 2021) stated that several universities in Indonesia felt they were not ready to use learning technology with online or remote systems. Some of the problems that arise are related to the online learning system in the form of student readiness, mastery of technology, short time, many tasks, number of quotas, and internet signal conditions. The policy of temporarily closing educational institutions with various supporting facilities, in the short and medium- term, has affected many students, especially students who live in areas with limited infrastructure and other supporting capacities who are increasingly feeling the digital divide. This is one of the causes of the increasing levels of stress and anxiety which are categorized on a mild, moderate, and severe scale experienced by students during the COVID- 19 pandemic.

Menstruation is the shedding of the endometrial lining of the uterus in the form of bleeding. Bleeding that occurs in the uterus takes place about 14 days after the ovulation period periodically (Try AyuPatmawati, 2020). The problem most experienced by women related to menstruation is dysmenorrhea or menstrual pain (Lestari, 2013)). Dysmenorrhea is an asymptomatic symptom such as abdominal pain, cramps, and back pain (Rosyida, 2019). Primary dysmenorrhea is menstrual pain that has been felt since menarche and most commonly occurs in women aged 20 to 30 years (Soesilowati&Annisa, 2016). Dysmenorrhea can interfere with comfort, especially for women who remain in school in a sick condition so that it can interfere with learning concentration (Sari &Nurdin, 2015).

According to (Andiarna&Kusumawati, 2020), dysmenorrhea is pain in the pelvic area due to menstruation and an increase in the production of prostaglandins which starts 24 hours before menstruation and during menstruation until the first 12 hours after menstruation.According to (Armadani et al., 2016) in general, menstrual pain occurs due to rhythmic contractions of the myometrium ranging from mild to severe pain in the lower abdomen, buttocks, and spasmodic pain on the medial side of the thigh.Low levels of progesterone in the corpus luteum phase. The hormone progesterone inhibits uterine contractility, while the hormone estrogen stimulates uterine contractility. On the other hand, during menstruation, the endometrium produces prostaglandin F2, which causes smooth muscle contraction and pain. If excessive levels of prostaglandins enter the bloodstream, in addition to dysmenorrhea, it can also cause nausea, vomiting, diarrhea, and flushing (redness or a burning sensation). Organic abnormalities such as uterine retroflection (abnormal layout of the anatomical direction of the uterus), uterine hypoplasia (incomplete development of the uterus), cervical canal obstruction (obstruction of the birth canal), pedunculatedsubmucosalmyoma (benign tumor consisting of muscle tissue), and endometrial polyps. Psychological or psychological factors (stress). When stressed, the body will produce excessive adrenaline, estrogen, progesterone, and prostaglandins also closely related to psychological factors that can also reduce resistance to pain such as anemia and chronic disease. Allergic factors, the cause of allergies is menstrual toxins. According to research, there is a relationship between dysmenorrhea and urticaria (hives), migraines, and asthma.

During menstruation, sloughed endometrial cells release prostaglandins. Prostaglandins are a group of hormone- like compounds consisting of essential fatty acids. Prostaglandins stimulate the muscles of the uterus (womb) and affect blood vessels; commonly used to induce abortion or birth causing uterine ischemia (decreased blood supply to the uterus) through contraction of the myometrium (muscle wall of the uterus) and vasoconstriction (narrowing of blood vessels). Elevated levels of prostaglandins have been shown to be found in the menstrual fluid of women with severe dysmenorrhea. These levels do increase, especially during the first two days of menstruation. Vasopressin (also called antidiuretic hormone, a hormone secreted by the posterior lobe of the pituitary gland that functions to constrict blood vessels and reduce urine output) also has a similar role.Elevated levels of prostaglandins are found in the endometrial fluid of women with dysmenorrhea and cause pain. A threefold increase in endometrial prostaglandins occurs from the follicular phase to the luteal phase with a further increase occurring during the menstrual period. The increase in prostaglandins in the endometrium following the decrease in progesterone at the end of the luteal phase causes increased myometrial tone and excessive uterine contractions.Leukotriene (a product of arachidonic acid metabolism that causes smooth muscle contraction in the inflammatory process and increases pain sensitivity in uterine fibers). Significant amounts of leukotrienes have been found in the endometrium of women with primary dysmenorrhea who do not respond to prostaglandin antagonist therapy.Posterior pituitary hormone, vasopressin plays a role in myometrial hypersensitivity, reduces uterine blood flow, and pain in patients with primary dysmenorrhea. The role of vasopressin in the endometrium is related to the synthesis and release of prostaglandins. Primary dysmenorrhea has now been associated with behavioral and psychological factors. Although these factors are not yet fully accepted they can be considered if medical treatment fails (Try AyuPatmawati, 2020).

There are several risk factors that cause primary dysmenorrhea, including family history, age < 30 years, early menarche age (< 12 years), longer menstrual cycle, nullipara, low body mass index, low socioeconomic status and lifestyle. (diet, stress and smoking) (Nada Ismalia, 2017). Research conducted (Rahmatanti et al., 2020)found that there were differences between the lifestyles of young women with and without primary dysmenorrhea. It was explained that a lifestyle in the form of infrequent physical activity, stress and smoking both as active and passive smokers exist in women with primary dysmenorrhea.

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Table 1. Respondent characteristics

Characteristics	Total	%
Age		
18-19 years	66	29,3
20-21 years	115	51,1
> 22 years	44	19,5
Age of Menarche		
<12 years	63	28
12-13 years	134	59,6
>14 years	28	12,4
Menstrual Period		
<3 day	63	28
3-7 day	134	59,6
>7 day	28	12,4
Stress Level		
Normal	91	40,4
Light	25	11,1
Currently	29	12,9
Critical	16	7,1
Awfully	64	28,4
Dismenorea Scale		
Light	16	7,1
Currently	51	22,7
Heavy	158	70,2

In the table above, it can be seen that the respondent's data description is based on age, age of menarche, duration of menstruation, stress level, and dysmenorrhea scale during the pandemic. It can be seen that the age range of respondents ranging from 18 years to 25 years, the majority of respondents aged 20-21 years as many as 115 respondents. Age is very influential on the occurrence of stress, usually, teenagers to early adulthood are very susceptible to stress, (nuramida et al., 2019)and the majority of respondents getting their first menstruation (menarche) at the age of 12-13 years as many as 134 respondents. This indicates that the majority of respondents experience menarche at an age that is considered mature. First menstruation (menarche) at the age of >12 years can reduce risk factors for health problems because menarche at an early age has been shown to be associated with various health problems and even causes of premature death (LulukKhusnul D, 2018). While the characteristics of the duration of menstruation most respondents are 3-7 days as many as 134 respondents. Menstruation is longer than usual (7 days), menstruation causes longer uterine contractions resulting in more frequent uterine contractions, and more prostaglandins are secreted. Excessive production of prostaglandins causes pain, while continuous uterine contractions cause the blood supply to the uterus to stop and dysmenorrhea occurs.

Of the 225 respondents, 40.4% did not experience stress, but most experienced stress with various levels, as many as 28% experienced very severe stress. The numbers are quite surprising and it is necessary to understand that stress is an unpleasant condition where it can cause physical and psychological pressure on individuals (Sari &Nurdin, 2015). Meanwhile, according to (LulukKhusnul D, 2018), everyone must have experienced stress and anxiety at least once in their life. The difference is, stress is the body's response to threats in random situations that could harm you. Anxiety is your reaction to stress. While depression is a mental illness characterized by a worsening of mood, feelings, stamina, appetite, sleep patterns, and concentration levels of the sufferer. Depression is not a sign of weakness or character flaw. Depression is also not to be confused with feelings of sadness or grief, which usually get better over time although in some cases, depression can be triggered by ongoing grieving or severe stress. Stress and depression affect the same way, but the symptoms of depression are much more intense and overwhelming and last for at least two weeks or more. Depression causes drastic changes from great moods to feelings of hopelessness, despair, and even not wanting to continue living (Livana, Mubin, &Basthomi, 2020).

According to (Kojo et al., 2021), although there are some overlapping characteristics between stress, depression, and anxiety disorders, these three emotional upheavals come from very different places. The stress we experience in our daily lives is related to feeling frustrated and overwhelmed. Meanwhile, anxiety disorders and depression can be rooted in worries, fears, and hopelessness that have no definite cause. Although all of them may be triggered by many factors, including genetics, brain biology & chemistry, life trauma, to chronic ongoing stress. The primary difference between the three is a sense of helplessness. When you are stressed and anxious, you will understand what you are dealing with. is a challenge that is encountered everyday (even if it happens randomly)

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for example work deadlines, financial bills, or household matters. But sometimes, what is stressful can also be from within, triggered by an overactive imagination or not thinking clearly. Stress and anxiety will disappear when we create priorities and deal with them one by one. In the end, you have to be able to find a solution based on each problem and get back up and running through the day. Meanwhile, living with an anxiety disorder or depression makes it powerless to know what to worry about. The reaction is the problem. Both of these psychological disorders occur continuously without having to respond to certain experiences or situations. Both also tend to last a long time (often months or even years). Both can greatly limit our functioning as humans. we may feel tired constantly and lose motivation/enthusiasm to do activities such as work, socialize, or drive a vehicle like other people.

most of the respondents experienced severe dysmenorrhea as many as 158 respondents. Etymologically, dysmenorrhea comes from the word dys which means difficult, painful, abnormal; meno means month; rhea which means flow or current. Thus, dysmenorrhea is briefly defined as difficult menstrual flow or painful menstruation (Wulandari et al., 2018) According to (Zhu et al., 2020) dysmenorrhea is a pain in the pelvic area due to menstruation and increased production of prostaglandin substances that begins 24 hours before menstruation and during menstruation until the first 12 hours after menstruation. Meanwhile, according to (Armadani et al., 2016) dysmenorrhea is menstrual pain such as cramps and centered in the lower abdomen

Table 2. Distribution of stress frequency on dysmenorrhea

Variable	Dismenorea			Total	P-Value
Stress	Light	Currently	Heavy		
Normal	9 (4,0%)	39 (17,3%)	43 (19,1%)	91 (40%)	
Light	5 (2,2%)	4 (1,8%)	16 (7,1%)	25 (11,1%)	
Currently	1 (0,4%)	6 (2,7%)	22 (9,8%)	29 (7,4%)	0,0001
Critical	0 (0,0%)	1 (0,4%)	15 (6,7%)	16 (7,1%)	
Awfully	1 (0,4%)	1 (0,4%)	62 (27,6%)	64 (28,4%)	
Total	16 (6,6%)	51 (22,7%)	158 (70,2%)	225 (100%)	

Stressors faced by students in addition to changes in learning methods include economic concerns, concerns about family and self-health, academic delays, limited social interaction, reduced employment opportunities, and other factors in students' personal lives. This is in accordance with several previous studies which state that students are faced with a large number of stressors including internal and external demands. Stressors faced by students include economic problems, worries about an uncertain future, social problems and opportunities, expectations for themselves, distance from parents and relatives, and other personal problems. Academic factors also contribute to potential stress, for example due to changes in learning styles from secondary school to higher education, lecture assignments, target achievement values, and academic achievement. Increased stress levels among students can result in decreased academic achievement and can affect the physical and mental health of students. Stress and anxiety during the COVID- 19 pandemic is determined by several factors that affect the speed and way a person adapts, such as personality, age, experience, learning process, physical condition, and environment. One's adaptability also plays a role in preventing stress and anxiety and determines how one determines how to deal with negative feelings that arise when faced with challenges or pressures (Fauziyyah et al., 2021).

Efforts to prevent stress on students that can be done by the university are by organizing interesting and communicative learning processes such as voice notes or teaching videos, relaxed and flexible online meetings, and being able to use email and social media. The campus can also provide adequate health facilities or carry out institutional collaboration with health facilities to detect and/or handle COVID-19 cases or be supportive for the mental/psychological health needs of the academic community (Wang et al., 2020). There are several ways to deal with the increased stress and anxiety experienced by students during this pandemic, according to (Sari &Anggraini, 2020) there are three main steps that can be taken. First, it is advisable to equip yourself with sufficient knowledge about COVID-19. Second, find out about your own health condition through self-screening. Third, determine attitudes and steps according to current health conditions. One way to reduce stress is to start talking about the feelings you are experiencing with the closest person or someone you can trust to help

(Lubis et al., 2021) also mentions that the way to reduce anxiety symptoms due to this pandemic is to do self-care. Self-care includes a variety of ways to take care of yourself physically, emotionally, and mentally. Some types of self- care that are recommended for everyone are sleep well, do physical activity, and meet nutritional needs. Various efforts can be made to deal with this problem, both from students, universities, and the government. Students can do things that can prevent and reduce stress and anxiety, such as

exercise or physical activity, get enough rest, do hobbies, keep socializing even though virtually, and if stress or anxiety feels heavy and disturbing, do not hesitate to tell people who trust or seek professional help. Suggestions that can be given to students' families are to be able to apply a healthy home environment, both physically and psychologically, to reduce stress for family members. The university is also responsible for the mental health of its students, so that it can contribute by paying attention to the mental health condition of students and providing counseling services or other mental health-related assistance from psychologists/psychiatrists for the university community. As for the government, it is also recommended to focus more on mobilizing resources on mental health problems which have increased considerably during this pandemic to realize effective handling efforts.

Stress can produce a variety of responses that can be useful as indicators and measuring tools of stress in individuals. The stress response can be seen in various aspects, namely physiological, adaptive, and psychological responses. Physiological responses in the form of brain interpretation and neuroendocrine responses; adaptive response in the form of General Adaption Syndrome (GAS) and Local Adaption Syndrome (LAS) stages. Psychological responses can be constructive or destructive behavior (Priyanti et al., 2014). The physiological response to stressors is a protective and adaptive mechanism to maintain the body's homeostatic balance. It is a series of neural and hormonal events that have both short and long term consequences for the brain and body. In the stress response, afferent impulses will be captured by the sensory and internal organs to the brain's nerve center and then forwarded to the hypothalamus. Then it is integrated and coordinated with the response needed to return the body to a state of homeostasis (Priyanti et al., 2014). If the body is not able to adapt to these changes, it can lead to disturbances in the body's balance (Putri et al., 2020). Neural and neuroendocrine pathways under the control of the hypothalamus are activated. Then there will be secretion of the sympathetic nervous system followed by the secretion of sympathetic- adrenal-modular, and finally when stress is still present in the hypothalamic-pituitary system it will be activated (Priyanti et al., 2014). The central nervous system secretes norepinephrine and epinephrine to increase the sympathetic-adrenal-medullary response in stressful conditions. This response causes different effects or reactions in each body system (Wulandari et al., 2018).

When a person experiences stress, a neuroendocrine response (hormonal response) occurs which stimulates the hypothalamus to produce Corticotrophin Releasing Hormone (CRH). CRH then travels to the pituitary gland and triggers the release of Adrenocorticotrophic hormone (ACTH). ACTH is released into the bloodstream and causes the cortex of the adrenal glands to increase their release of hormones (cortisol, glucocorticoids, gonadocorthyroidism). These hormones inhibit the secretion of Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH) so that follicle development is disrupted. This causes the synthesis and release of progesterone to be impaired. Low progesterone levels increase the synthesis of prostaglandins F2ά and E2. The imbalance between prostaglandins F2ά and E2 with prostacyclin (PGI2) causes an increase in PGF2ά activation. Increased activation causes ischemia of the myometrial cells and increased uterine contractions. An excessive increase in contractions causes dysmenorrhea. Meanwhile, the increase in prostaglandins when the endometrium is in the secretory phase causes pain during menstruation (Hendrik, 2006).

According to (Zhu et al., 2020), when stressed, the body will produce excess hormones such as adrenaline, estrogen, progesterone, and prostaglandins. The increase in the hormone estrogen can increase uterine contractions, causing pain. The increase in adrenaline causes the body's muscles to tense up, including the uterine muscles, resulting in decreased perfusion to the endometrial tissue so that the blood vessels are pinched by the uterine muscles which causes reduced oxygen supply and ischemia. The increase in the hormone adrenaline also causes the heart rate to increase so that cardiac output increases and there is a constriction of blood vessels. Blood vessels rich in oxygen stimulate the uterus to contract during menstruation. These contractions cause the blood supply to the uterus to stop for a while and increase the sensitivity of the nerve endings to pain, causing pain (Zhu et al., 2020). Because lectures are carried out entirely at home, students don't have much space to move and activities are low and more monotonous. Staring at a laptop screen all day will certainly cause fatigue to lead to stress. As for stress, due to academic demands during the COVID-19 pandemic, which forced students to adapt quickly, was one of the causes, so most of the students experienced stress. Stress can disrupt the work of the endocrine system, causing dysmenorrhea.

This study aims to determine the effect of stress on the dysmenorrhea scale of midwifery students at the Faculty of Medicine, Airlangga University. Based on the results of the study, most of the respondents experienced very severe stress with severe dysmenorrhea, namely 62 female students (27.6%) and only 9 female students (4.0%) who were not experiencing stress and did not experience dysmenorrhea. The results of the Chi-Square test between stress and dysmenorrhea stated that there was an influence between stress and dysmenorrhea, the P-Value = 0.0001.

This research is in line with research (Oktavani, 2017), conducted on 300 university students of North Sumatra which showed that there was a relationship between stress and the incidence of dysmenorrhea, and research conducted by (Malahayati, 2019), stated that the cause of dysmenorrhea is a psychological factor, one thing is stress. . Stress is an individual's response to a situation or event that can threaten the individual. Stress can disrupt the work of the endocrine system so that it can cause irregular menstruation and dysmenorrhea.

Research (Wang et al., 2020), suggests that psychological disorders such as depression, anxiety, and stress may have a two-way relationship with dysmenorrhea. On the other hand, experiencing recurring menstrual pain every month can increase the risk of experiencing depression, anxiety, or stress, and vice versa. In some cases, experiencing this psychological disorder worsens the

safety of menstrual pain. Experiencing depression and dysmenorrhea at the same time can alter the perception of pain relief and reduce the response to treatment.

Pharmacological efforts that can be done by giving analgesic drugs as pain relievers. According to Bare &Smeltzer (Lestari, 2013), pain management experienced by individuals can be through pharmacological interventions, collaboration with doctors or other primary care providers for patients. These drugs can reduce pain and inhibit the production of prostaglandins from traumatized and inflamed tissues that block pain receptors from being sensitive to previous painful stimuli, examples of non-steroidal anti-inflammatory drugs are aspirin, ibuprofen. Handling of primary dysmenorrhea is (Lestari, 2013)by giving treatment and advice. Administration of analgesic drugs that are often given are preparations of a combination of aspirin, fansetin, and caffeine. Patent drugs circulating in the market include novalgin, ponstan, acetaminophen and so on. Hormonal therapy, the goal of hormonal therapy is to suppress ovulation, is temporary to prove that the disorder is really primary dysmenorrhea. This goal can be achieved by giving one type of combined contraceptive pill. Therapy with non-steroidal anti-prostaglandin drugs Endomethacin, ibuprofen, and naproxen, in approximately 70% of patients can be cured or experience a lot of improvement. Treatment can be given before menstruation starting one to three days before menstruation and can be the first day of menstruation. and dilatation of the cervical canal 327 Dilation of the cervical canal can provide relief because it can facilitate the discharge of blood with menstruation and the prostaglandins in it. Presacralneurectomy (cutting of the sensory nerves between the uterus and the central nervous system) coupled with ovarian neurectomy (cutting of the sensory nerves to the infundibulum ligament) is a last resort, if other attempts fail.

According to (Lestari, 2013), there are two treatments for dysmenorrhea including pharmacological and non- pharmacological management. Non-Pharmacologically According to (Hendrik, 2006), non-pharmacological pain management consists of: Stimulation and cutaneous massage Massage is a general cutaneous stimulus of the body, often centered on the back and shoulders. Massage can make the patient more comfortable because massage makes muscle relaxation. Ice and heat therapy, ice therapy can reduce prostaglandins that enhance the sensitivity of other subcutaneous and pain receptors at the site of injury by inhibiting the inflammatory process. Heat therapy has the advantage of increasing blood flow to an area and may also reduce pain by speeding healing. Transectaneus Electrical Nerve Stimulation (TENS). Distraction, distraction is a distraction from things that cause pain, for example singing, praying, telling pictures or photos on paper, listening to music and playing a game. Relaxation, relaxation is a relaxation or release technique tension. Simple relaxation techniques consist of slow, rhythmic abdominal breaths (deep breathing relaxation techniques. for Example: deep and slow breathing, and imagination).Most of the women do not treat their dysmenorrhea and there are some who do limited treatment such as only applying eucalyptus oil or balm on the painful area, resting in bed, and taking painkillers on the market without consulting a doctor.

CONCLUSION

Most of the female students experience stress and dysmenorrhea, and significant results were found in this study so that it can be concluded that there is a significant relationship between stress on the primary dysmenorrheal scale. Because lectures are carried out entirely at home, students don't have much space to move and activities are low and more monotonous. Staring at the screen all day will certainly cause fatigue to lead to stress. As for the stress due to academic demands during the covid-19 pandemic which forced students to adapt quickly, that was one of the causes so that most of the students experienced stress. Stress can disrupt the work of the endocrine system, causing dysmenorrhea.

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