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Enrichment: Journal of Multidisciplinary Research and Development

The Relationship of Stress Level to the Incidence of Pityriasis Capitis (Dandruff) in Students at SMK Panca Karsa Sungai Pinyuh

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ARTICLE INFO

Keywords:
Stress level, Pityriasis capitis, female student.

ABSTRACT

Stress is a condition that disturbs the balance of organisms that involves physiological or psychological tension caused by internal or external factors. Stress is one of the factors that can trigger the incidence of Pityriasis capitis. The stress level is closely related to the high activity of sebaceous glands, which changes the scalp's temperature and humidity. *To know the relationship between stress level and Pityriasis capitis (dandruff) incidence among female students of Vocational and Pre-Professional High School Panca Karsa Sungai Pinyuh. Observational analytic research with approach design research type cross-sectional. A total of 50 people were involved in this experiment. The Independent variable was stress level, and the dependent variable was Pityriasis capitis (dandruff) incidence among female students at Vocational and Pre-Professional high schools Panca Karsa Sungai Pinyuh. From 50 people, it was found that Pityriasis capitis occurred among respondents with an average stress level of about 42,9%. The results of the Kolmogorov-Smirnov comparative test showed a significance value of p = 0.591 (p> 0.05), indicating that there was no significant relationship between stress level and Pityriasis capitis (dandruff). There is no relationship between the stress level with the incidence of Pityriasis Capitis (dandruff) among female students at Vocational and Pre-Professional high schools Panca Karsa Sungai Pinyuh.*

INTRODUCTION

Stress is a condition of disruption of the balance of the organism involving physiological or psychological tension caused by internal or external factors. (Dorland, 2010) Stress can affect all ages, from children and adolescents to adults. The causes of stress at each age are very diverse, so the way to handle it differs at each age level (Mumpuni & Wulandari, 2010).

Stress is one of the factors that can trigger the incidence of *Pityriasis capitis*. *Pityriasis capitis* is one of the mild non-inflammatory skin disorders caused by the fungus *Pityrosporum ovale* in the form of refined and rough squamous (Djuanda, Hamzah, & Aisah, 2007). This disorder begins as small patches that affect the entire scalp (Manuel, 2010). Other names of Pityriasis capitis are dandruff, dandruff, and *Pityriasis simplex* (Saint-Leger, 1986).

The stress level is closely related to the sebaceous glandular's high activity, which results in changes in temperature and humidity on the scalp. On the scalp of patients with *Pityriasis capitis* or dandruff, there is an increase in the *Pityrosporum ovale* as much as 1.5 to 2 times the average amount (Park et al., 2012). Increased colonization of *Pityrosporum ovale* is also influenced by an increase in sebum from the sebaceous glands at puberty (Dawson Jr, 2007).

Pityriasis capitis is found in 50% of the global population post-pubertal and adolescence. *Pityriasis capitis* can also affect all ethnicities and genders but is rarely found in children, although it is usually mild (Putri, Natalia, & Fitriangga, 2020). The severity of dandruff is influenced by age, especially puberty and middle age (reaching the age of 20 years), and rarely occurs at the age of 50 years (Putri et al., 2020).

Pityriasis capitis has a relatively high number, especially in Indonesia, a tropical country with high humidity that allows for the growth of various plants and microorganisms well. One of the microorganisms that can grow well in Indonesia is fungi(Arifin, 2005). The prevalence of the Indonesian population suffering from dandruff, according to the *International Data Base*, US Census Bureau 2004, is 18.4% of 238 452 952 people and ranks fourth after China, India, and the US (Sinaga, Subakir, & WAHYUDI, 2012).

Vocational High School (SMK) is a form of formal education unit that provides vocational education at the secondary education level as a continuation of Junior High School (SMP), Madrasah Tsanawiyah (MTs), or other equivalent forms (Pendidikan Nasional, 2010). Vocational students are considered more rebellious, more easily depressed, and more pessimistic about the education and job prospects they will get in the future than high school students (Chintia, 2018).

This research will be aimed at SMK Panca Karsa Sungai Pinyuh, the only SMK located in Sungai Pinyuh. This vocational school has a good category "B" accreditation and has three majors: office administration, multimedia, and marketing.

Based on the description above and the lack of research showing the relationship between stress and the incidence of Pityriasis capitis (dandruff), it is necessary to research the relationship between stress levels and the incidence of *Pityriasis capitis* (dandruff) in female students at SMK Panca Karsa Sungai Pinyuh.

METHOD

The design used in this study is observational analytics with a *cross-sectional* type research design approach. The research time allocation starts in December 2018 - June 2020. The research was conducted at SMK Panca Karsa Sungai Pinyuh. The inclusion criteria in this study are registered as a student at SMK Panca Karsa Sungai Pinyuh, willing to be a research respondent, a student who does not wear hijab, and having personal *hygiene* good (washing vines >2x / week).

While the exclusion criteria in this study were not willing to be research respondents, not present at the time of sampling, and female students wearing hijab, the number of samples in the study was 50. The instruments used in this study were DASS questionnaire sheets, anamnesis, and direct scalp observation examination.

RESULTS AND DISCUSSION

Table 1. Characteristics of respondents

Characteristic	Number (of people)	*Pityriasis capitis* (ketombe)		Stress Level					Percentage
		(+)	(-)	Normal	Light	Keep	Heavy	Very Heavy	
Age (years)									
15 years	4	3	1	2	1	1	0	0	8
16 years old	14	9	5	5	4	4	1	0	28
17 years old	21	17	4	9	6	5	1	0	42
18 years old	7	3	4	3	1	2	0	1	14
19 years old	3	2	1	2	1	0	0	0	6
20 years	1	1	0	0	1	0	0	0	2
Total	50	35	15	21	14	12	2	1	100
Class									
XI	23	15	8	8	5	8	2	0	46
XII	27	20	7	13	9	4	0	1	54
Total	50	35	15	21	14	12	2	1	100

The number of research subjects was 50 people. The subjects of the study were grouped according to age and class characteristics. The age range in the study ranged from 15 years to 20 years, which is the general age range for female students at SMK Panca Karsa Sungai Pinyuh. The youngest age in the study was 15 years old, and the oldest was 20 years old. The group of study subjects with the most extensive distribution was 17-year-olds with 21 people (42%). The research subjects who had the most extensive distribution were class XII students, as many as 27 people (54%).

Table 2. Physical Examination Results

Characteristic	Number (of people)	Presented
Skuama		
Already	35	70
Do not	15	30
Total	50	100
Hair Loss		
Already	40	80
Do not	10	20
Total	50	100
Redness		
Already	5	10
Do not	45	90
Total	50	100
Oily Hair		
Already	35	70
Do not	15	30
Total	50	100
Inflammatory		
Already	0	0
Do not	50	100
Total	50	100

The square, hair loss, redness, and oily hair characterize the physical examination results. The study subjects found squama on physical examination as many as 35 people (70%). Study subjects who experienced hair loss as many as 40 people (80%). The study subjects had redness on the scalp as many as five people (10%). The study subjects experienced oily hair, as many as 35 people (70%), and none of the study subjects experienced inflammation on the physical examination results.

Table 3. Overview of Stress Levels of Research Subjects with Pityriasis Capitis

		Pityriasis capitis (ketombe)		Total
		(+)	(-)	
Stress Level	Normal	15	6	21
	Mild Stress	12	2	14
	Moderate stress	6	6	12
	Severe stress	2	0	2
	Very Severe Stress	0	1	1
	Total	35	15	50

Description of the stress level of research subjects with Pityriasis capitis 15 female students were declared normal (42.9%), 12 female students were declared to experience mild stress (34.3%), six female students were declared to experience moderate stress (17.1%), two female students were declared to experience severe stress (5.7%), and none experienced very severe stress.

Results and Discussion of Bivariate Analysis

Table 4. The Relationship Between Stress Levels and the Incidence of Pityriasis Capitis (dandruff)

		Pityriasis capitis (ketombe)		Total	*P-value*
		(+)	(-)		
Stress Level	Normal	15	6	21	0,591
	Mild Stress	12	2	14	
	Moderate stress	6	6	12	
	Severe stress	2	0	2	
	Very Severe Stress	0	1	1	
	Total	35	15	50	

The results of this study showed no significant relationship between the level of stress on the incidence of Pityriasis capitis (dandruff) in female students at SMK Panca Karsa Sungai Pinyuh with a significant data value of 0.591 ($p > 0.05$).

This result is different from the research conducted by Diana Yusfiandriani Dewi(Dewi, 2019); his research concluded a relationship between stress level and the incidence of *Pityriasis sicca*. The results explained that students experienced stress accompanied by Pityriasis sicca by 83.6% and without *Pityriasis sicca* by 16.4%.

The results of this study also do not fit the theory that stress can cause *Pityriasis capitis* (dandruff). Stress can increase scalp sebum production by activating the hypothalamic-adrenal-pituitary (HPA axis) as one response to stress. Activation of the HPA axis leads to the release of *the Corticotropin Releasing Factor* (CRF), the primary endocrine system in times of stress. The release of CRF by the hypothalamus stimulates the pituitary gland. The pituitary gland will secrete *Adreno-Corticotropic Hormone* (ACTH), stimulating increased sebaceous gland production (Steigleder & Maibach, 1993). *Malassezia* mushrooms break down sebum, liberating some fatty acids from triglycerides. *Malassezia* mushrooms consume specific saturated fatty acids necessary for proliferation, leaving unsaturated fatty acids (Dawson Jr, 2007).

Turner et al. (Turner, Hoptroff, & Harding, 2012) state that psychological stress is a factor that aggravates the condition of *Pityriasis capitis* (dandruff). It has been found that the incidence and severity of dandruff begin to subside once the underlying causes of stress are addressed and resolved. So, if a person suffers from dandruff, it is essential to deal with stress. Stress levels can be reduced through exercise, meditation, and so on (Yarova, Molchanova, Ablezova, Bagdasarova, & Willmann, 2013).

This research is in line with the results of research conducted by Cintya (Fa'izah, Flora Ramona, & Dewi, 2016), Hasanah (Sari, 2020), and Joshua (Joshua, 2018). The three studies concluded no relationship between stress levels and the incidence of *Pityriasis capitis* (dandruff) even though the three studies had differences in the sample. Research conducted by Cintya on the subject of SMA-IT dormitory student Nur Hidayah Kartasura. Research conducted by Hasanah on the research subjects of level II students of the Medical Study Program of Sebelas Maret University. Research conducted by Joshua on the research subjects of students of the Faculty of Medicine, Andalasan University, class of 2017.

Isaiah and Karthikeyan (Isaiah & Karthikeyan, 2015) state that several factors influence the incidence of dandruff, including increased sebum production in the sebaceous glands, individual susceptibility factors, environmental factors (environmental temperature and humidity), stress, and excessive growth of *Pityrosporum ovale* fungi on the scalp.

According to research conducted by Gaitanis Georgios et al. (Gaitanis, Magiatis, Hantschke, Bassukas, & Velegraki, 2012) through *the journal The Malassezia Genus In Skin* and *Systemic Disease* states that dandruff is more common in environments that have high humidity and heat. This research was conducted during hot and humid weather so that it can be a suitable habitat for fungal growth. Indonesia is a humid and hot country because Indonesia is a country traversed by the equator. The climate in Indonesia has a temperature of 22-35ºC with a humidity of 65-90%. The climate in Indonesia creates suitable conditions for the growth of *Malassezia* fungal colonies.

In this study, there was no significant relationship between the level of stress and the incidence of *Pityriasis capitis* (dandruff) in female students at SMK Panca Karsa Sungai Pinyuh. The results of this study are caused by other factors that researchers have yet to observe and study, such as *personal hygiene*, hormonal, consumption of high-fat foods, drug use, and heredity.

CONCLUSION

There was no relationship between the level of stress and the incidence of Pityriasis Capitis (dandruff) in students at SMK Panca Karsa Sungai Pinyuh with the incidence of Pityriasis capitis (dandruff) in students at SMK Panca Karsa Sungai Pinyuh as much as 70% totaling 35 students and the stress level of research subjects with Pityriasis capitis (dandruff) in students at SMK Panca Karsa Sungai Pinyuh were predominantly classified as normal stress category.

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