

Description of Knowledge Level of Prevention of Skin Hyperpigmentation in Adolescents

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ABSTRACT

Background: Sunlight is a source of energy that plays an important role in the life of all living things on earth. In addition to its positive effects, excessive exposure to high-intensity sunlight can cause skin hyperpigmentation, make skin dull and flaky, and can even increase the risk of skin cancer. Aim: To describe the level of knowledge on prevention of skin hyperpigmentation in adolescents. Methods: This research is a quantitative descriptive study with a cross-sectional study approach. The population and sample used were students of class XI at SMK Muhammadiyah 1 Purbalingga with a total sample of 80 people. Results: The majority of respondents were female as many as 43 at 53.8%. Meanwhile, seen from the age of the respondents in the age range of 15-17 years with a mean of 16.39 and a standard deviation of 0.515. The level of knowledge of respondents regarding the prevention of skin hyperpigmentation was mostly in the moderate category with a male percentage of 43.5% and female 56.5%, good category with a male percentage of 43.5% and female 56.5%, while less knowledge category with the percentage of men 50% and women 50%. Conclusion: The level of knowledge on preventing skin hyperpigmentation in adolescents is in the sufficient category.

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1. INTRODUCTION

Sunlight is a source of energy that plays an important role in the life of all living things on earth. In addition to its positive effects, excessive exposure to high-intensity sunlight can cause skin hyperpigmentation, make the skin dull and scaly, and can even increase the risk of skin cancer (Sinala & Salasa, 2019). The Sun's Ultra Violet (UV) rays have health benefits in helping the process of forming vitamin D needed by bones, but the sun's UV rays also have a negative impact on skin health. The sun's UV rays consist of 3 types, namely UV A, UV B and UV C rays (Minerva, 2019). UV light is a carcinogenic substance that has various negative effects such as redness, burning skin, loss of skin elasticity or skin turgor, and can trigger the growth of skin cancer (Pramesti, 2019).

UV rays have a wavelength of 100–400 nm and are divided into three types: UVA (315–400 nm), UVB (280–315 nm) and UVC (100–280 nm). UV C rays can be absorbed by ozone, water vapor, oxygen and carbon dioxide because the ozone layer absorbs shorter UV wavelengths more easily. In contrast to UV B rays which are only partially absorbed so they can still enter the earth but not UV A rays (Fadilah Mumtazah et al., 2020). UV exposure has been shown to play an important role in the development of melanoma, the most

dangerous of the three most common types of skin cancer. Recent studies have shown that UV radiation that damages the skin can change tumor suppressor genes, increasing the risk of damaged skin cells (Surya, 2019).

The skin is the outermost part of the human body that is most complex in protecting humans from environmental influences and is healthy when the outer layer of the skin containing more than 10% water is considered normal (Pratiwi.A, 2018). The skin basically has a defense mechanism against the sun's ultraviolet rays. The skin's defenses in the form of melanin (pigment) and proteins found in the outermost layer of the skin (stratum corneum) absorb UV rays, reducing the amount of light that penetrates the skin (Minerva, 2019). Exposure to UV rays in the deepest layers of the epidermis and dermis can damage elasticity and collagen tissue that unites skin tissue, causing premature aging (photoaging) (Sinala & Salasa, 2019).

According to Minerva (2019), hyperpigmentation is a common skin problem caused by excessive accumulation of melanin pigment. Indonesian skin types are classified as Fitzpatrick skin types 4 and 5, so the prevalence of hyperpigmentation in Indonesia is very high, prone to burns and always tan (dark). Sunburn is damage that occurs to the skin due to excessive interaction with UV rays and is the most obvious result with symptoms of redness (erythema) on the skin which can be accompanied by pain, hot or itchy. Tanning is a condition where the skin becomes darker due to sun exposure (Minerva, 2019).

Indonesia is a country that is right on the equator and has a tropical climate. Indonesia's location on the equator allows high-intensity solar radiation. Sun exposure can damage the skin through ultraviolet (UV) radiation (Fadilah Mumtazah et al., 2020). Indonesia is a tropical country and people have tan skin and often think that they can protect themselves with their skin pigment. The use of sunscreen in tropical climates is still recommended to reduce the penetration of UV rays into the skin. Knowledge of the types of sunscreen is also needed, not just understanding the importance of wearing sunscreen. Choosing the right type of sunscreen at the right time can also reduce the impact of sun exposure (Camelia, S.T., Zahroh, R.D. & Meithasari, 2020).

Research in Australia showed that 46% of respondents said they had experienced one or more burns due to sun exposure. Research in the United States in 2011 showed that around 68.7% of adolescents aged 11-29 years had experienced burns due to exposure to ultraviolet rays. Research in Greece shows that the incidence of summer burns in children to adolescents is 41.9% to 55.6%. People who have experienced the effects of sunburn have a relative risk of 2 times greater for developing skin cancer. Studies in the United States and Europe explain that the incidence of UV-induced burns is also influenced by race, gender, age, sunbathing or sunbathing habits, and outdoor activities (Pramesti, 2019).

The study in Taiwan explains that data on the effects of UV exposure in Asia are not yet available or studied. This study states that there is an increased risk of skin cancer in adolescents aged 15-24 years in Asia and who are exposed to UV in the long term. This study also shows that exposure to UV rays is more common in male adolescents due to higher levels of outdoor activities without adequate protection and shows that they are the most common group to experience the adverse effects of UV rays (Pramesti, 2019).

A study conducted by Dewiastuti & Hasanah (2016) involved 136 respondents (57.35%) from the Faculty of Medicine at UPN Veterans Jakarta aged 18-21. It was found that 78 female students experienced skin aging. The occurrence of premature aging of the skin of adolescents is caused by exposure to sunlight. Most people who experience premature aging are those who do not use sunscreen or use it incorrectly. Skin aging should not appear until the age of 28. Based on a study conducted by Fadilah Mumtazah (2020) it was concluded that UNAIR civil engineering students' knowledge about choosing the right sunscreen and about its use is still lacking. Knowledge of other efforts to protect and prevent the skin from the dangers of sun exposure apart from using sunscreen is good. From the study data it is known that there are 180 civil engineering students who have ever used sunscreen from 210 respondents. Appropriateness in the use of sunscreen is still lacking. So it is necessary to educate civil engineering students about the dangers of sun exposure and about sunscreen which includes the selection, application and how to clean the correct sunscreen.

There are not many studies regarding the level of knowledge about skin hyperpigmentation in adolescents, there is still no statistical data that describes the level of knowledge about hyperpigmentation of the facial skin so that researchers are interested in exploring the level of knowledge of facial skin hyperpigmentation in adolescents. This study aimed to determine the level of knowledge of adolescents on the prevention of skin hyperpigmentation. These prevention efforts also help improve the quality of skin health and can add information about skin diseases. Based on the results of interviews with several students of SMK 1 Muhammadiyah Purbalingga, it was found that 4 out of 11 children diligently used sunscreen/sun protection as a prevention from the adverse effects of sunlight, while others claimed not to use sunscreen due to lack of knowledge and other factors. Therefore, researchers are interested in examining the level of knowledge on preventing skin hyperpigmentation in students at SMK Muhammadiyah 1 Purbalingga in order to prevent skin hyperpigmentation in their teens.

2. RESEARCH METHOD

The method used is descriptive quantitative with a cross sectional study approach. The population and sample are 80 students of class XI at Muhammadiyah 1 Purbalingga Vocational School. Data were taken from 21 July 2022 to 2 August 2022. The sampling technique used in this study was simple random sampling. Inclusion criteria for this study were students of class XI TKJ 1, XI TKJ 2, Accounting 1 and students of SMK Muhammadiyah 1 Purbalingga who were willing to be respondents. Exclusion criteria for this study were students with sensitive skin types and class XII students at SMK Muhammadiyah 1 Purbalingga. The data analysis used was univariate analysis. Univariate analysis was carried out to determine the characteristics of the respondents and the score of each respondent was determined based on the results of a knowledge questionnaire. a univariate model can be a number of measurements, a measure of central tendency, a measure of dispersion/deviation/variability, a representation of the data, or a representation of the slope of the data. results can be displayed numerically or processed into percentages, ratios and prevalence. measures of central tendency include calculating the mean, median, quartiles, deciles, percentiles and mode. variance measures include the number of ranges, mean deviation, variance, standard deviation and coefficient of variance. To measure the presentation of knowledge to students, the following formula is used:

$$P = \frac{f}{N} \times 100\%$$

Description :

P = percentage

f = frequency of respondents

N = total number of respondents

100 = fixed number

3. RESULT AND DISCUSSION

a. Characteristics of Respondents

Table 1. Frequency Distribution of Sex and Age Characteristics

Characteristic	N	%
Gender		
Male	37	46,3
Female	43	53,8
Age		
Mean ± SD	16,39 ± 0,515	
Min – max	15 – 17	
	years old	

Based on table 1. it is known that the majority of respondents, namely 43 women, amounted to 53.8%. Meanwhile, seen from the age of the respondents in the age range of 15-17 years with a mean of 16.39 and a standard deviation of 0.515.

b. Description of Knowledge Level on Prevention of Skin Hyperpigmentation in Adolescents

Table 2. Distribution of Knowledge Level Description of Prevention of Skin Hyperpigmentation in Adolescents at SMK Muhammadiyah 1 Purbalingga

Variable	n	% M		Total n%	Mean ± SD	Min - Max	
		n	F				
Knowledge							
Good	16	50	16	50	100	8,06 ± 0,948	7 – 10
Fair	20	43,5	26	56,5	100	5,15 ± 0,759	4 – 6
Less	1	50	1	50	100	3.00 ± 0,000	3 – 3

Based on table 2. it can be seen that the level of knowledge of respondents regarding the prevention of skin hyperpigmentation is mostly in the moderate category with the percentage of men being 43.5% and women being 56.5%.

Table 3. Description of Standard Deviation Values of Knowledge Level on Prevention of Skin Hyperpigmentation in Adolescents

No.	Question	Mean \pm SD	Min – Max	False	True
1.	Below are the dangers of UV rays for health, which one is not correct?	0,33 \pm 0,471	0 – 1	54	26
2.	One of the bad effects of UV rays is hyperpigmentation. Where does hyperpigmentation occur?	0,99 \pm 0,112	0 – 1	1	79
3.	One of the signs of hyperpigmentation is?	0,76 \pm 0,428	0 – 1	19	61
4.	Internal factors for the occurrence of hyperpigmentation are except?	0,28 \pm 0,449	0 – 1	58	22
5.	One of the skin disorders caused by hyperpigmentation is melasma. The following are external factors that cause melasma, except?	0,55 \pm 0,501	0 – 1	36	44
6.	A sign of hyperpigmentation is?	0,98 \pm 0,157	0 – 1	2	78
7.	To prevent hyperpigmentation are the following except?	0,90 \pm 0,302	0 – 1	8	72
8.	Sunscreen is a product that contains sun protection factor (SPF) which can prevent hyperpigmentation. The correct use of sunscreen is on?	0,28 \pm 0,449	0 – 1	58	22
9.	Activities that can reduce the effectiveness of sunscreen performance so that it is necessary to use water resistant sunscreen are?	0,40 \pm 0,493	0 – 1	48	32
10.	How to prevent hyperpigmentation can also be done by diligently consuming ?	0,81 \pm 0,393	0 – 1	15	65

Based on table 3. it was found that the acquisition of scores at each point can be concluded as follows: on question point 1 the majority of respondents answered correctly as many as 56 answers, question point 2 the majority of respondents answered correctly as many as 79 answers, question point 3 the majority of respondents answered correctly as many as 61 answers, points 4 the majority of respondents answered 58 wrong answers, point 5 the majority of respondents answered correctly 44 answers, point 6 the majority of respondents answered correctly 78 answers, point 7 the majority of respondents answered correctly 72 answers, point 8 the majority of respondents answered wrong 58 answers, point 9 the majority of respondents answered wrong as many as 48 answers, point 10 the majority of respondents answered correctly as many.

DISCUSSION

a. Characteristics of respondents

Based on table 1. it is known that the majority of respondents, namely 43 women, amounted to 53.8%. Meanwhile, seen from the age of the respondents in the age range of 15-17 years with a mean of 16.39 and a standard deviation of 0.515. Puberty is the initial stage that occurs in adolescence which is marked by the development of complete physical and sexual maturity which is marked by changes in primary and secondary sex characteristics (Thahir, 2020). Adolescence is divided into four parts, namely: (1) preadolescence or prepuberty (10-12 years), (2) early adolescence or puberty (12-15 years), (3) middle adolescence (15-18 years), and (4) late adolescence (18-21 years). Early adolescence to late adolescence is what is called adolescence (Nurhayati T, 2016).

Based on the results of the questionnaire, it was found that the majority of female students were 43 respondents aged 16 years. Teenage girls at this age pay more attention to appearance as they want to look more attractive and beautiful than teenage boys. Adolescence is a period where hormonal growth can affect a person's appearance. Changes in the human body that often occur are the growth of pimples, enlarged pores on the face, and tanned skin due to many outdoor activities without skin protection. A person accepts that his physical image is influenced by the social and cultural environment. In addition, the assessment of physical image is also different for each gender. Women have a source of self-concept that comes from their physical condition and popularity, while men's self-concept comes from their aggressiveness and strength (Ninary, 2018).

This research is in line with research conducted by Khairina (2017). Most of the respondents were 16-year-old women, 94 people (33.5%), while 13-year-old women represented the fewest survey samples, namely 2 people (0.7%). Ningsih (2018) obtained the results of the frequency distribution for the age group of respondents who were 17-24 years old, namely 62 people (100%). This is because that age is puberty and at that age you want to look prettier by using instant facial whitening creams.

Nevia (2021) research conducted in Pasuruan Village as many as 34 young female respondents obtained the result that the knowledge of young women was in the low category of 14 people 41.2% that knowledge in using facial whitening cosmetics was very minimal because young women chose and using cosmetics without reasonable consideration, for example easily tempted by talks and invitations from friends. Based on a friend's story, it affects the attitude of a young woman who will act according to her friend's advice.

Research conducted by Meteb & Almezani (2018) in Saudi Arabia as many as 6032 people participated in this study, 3447 of whom (57.1%) were women. It was found that almost half of the respondents (47.9%) were aged between 20-30 years, more than half of the participants (61.9%) were single, around (59%) were students, (15.8%) respondents were office workers. Regarding the distribution of skin color, a higher percentage of respondents had medium skin color (57.6%) followed by light skin color (26.7%) then dark skin color (15.7%). Several participants had dermatological problems, in which (35.3%) had acne scars, (26.7%) had pigmentation, had chloasma (11.2%) and (5.5%) had freckles.

b. An overview of the level of knowledge on prevention of skin hyperpigmentation in adolescents

Based on table 2. it states that the level of knowledge of respondents regarding the prevention of skin hyperpigmentation is a category of good knowledge with a percentage of men 50% and women 50%, a fair category with a percentage of men 43.5% and women 56.5%, while the category of knowledge less with the percentage of men 50% and women 50%.

Based on filling out the questionnaire, it can be seen that the question "one of the adverse effects of UV light is hyperpigmentation, on which part of the body does hyperpigmentation occur?" the majority of respondents answered correctly, to the question "one of the adverse effects of UV rays is hyperpigmentation, on which part of the body does hyperpigmentation occur" the majority of respondents answered correctly, to the question "one of the signs of hyperpigmentation is?" the majority of respondents answered correctly, to the question "the internal factors for hyperpigmentation are except?" the majority of respondents answered incorrectly, to the question "one of the skin disorders due to hyperpigmentation is melasma. All of the following are external factors that cause melasma, except?" the majority of respondents answered correctly, to the question "a sign of hyperpigmentation is?" the majority of respondents answered correctly, to the question "to prevent

hyperpigmentation are the following except?" the majority of respondents answered correctly, to the question "sunscreen is a product that contains a sun protection factor (SPF) which can prevent hyperpigmentation. The right use of sunscreen is on? the majority of respondents answered incorrectly, on the question "activities that can reduce the effectiveness of sunscreen performance so that it is necessary to use water resistant sunscreen is?" the majority of respondents answered incorrectly, on the question "how to prevent hyperpigmentation can also be done by diligently consuming?" the majority of respondents answered correctly.

The results of filling out the questionnaire can show that knowledge about the dangers of UV light, the factors that cause hyperpigmentation, how to use the right sunscreen as a preventive measure is still inadequate. So it is necessary to educate adolescents about the dangers of UV rays and their prevention. Wiwi (2015) states that knowledge is everything that is known based on human experience itself, and knowledge increases according to the process of experience lived. According to Pramesti (2019), a person's level of knowledge is influenced by various factors. Factors that influence knowledge are education, experience, age, and sources of information.

Research conducted by Tuahta (2021) regarding "Description of the Level of Knowledge, Selection and Use of Whitening Cosmetics in USU Faculty of Medicine Students" showed that the most female students used whitening cosmetics, 81 people, at 56.3%. The reason for female students using the most whitening cosmetics was to remove black spots on the skin of 38 people by 46.9%. Most of the female students' sources of information regarding whitening cosmetics were obtained from social media with 125 answers of 33.8%. The most knowledge of female students regarding whitening cosmetics was in the medium category of 80 people at 55.6%. The attitude of female students in choosing whitening cosmetics was mostly in the category of being able to choose 111 people by 77.1%. The actions of female students in using whitening cosmetics were mostly in the good category 45 people by 55.6%. Research conducted by Prawika (2019) showed that 70% of female students in the 2016-2017 medical faculty at Duta Wacana Christian University had a moderate level of knowledge about hyperpigmentation of facial skin.

This research is not in line with research conducted by Yunita & Erwiyani (2022) regarding the level of knowledge of students at the Ngudi Waluyo University Health Faculty about sunscreen which is in the good category, which has a percentage of 78.63. The use of sunscreen in students of the Faculty of Health, University of Ngudi Waluyo, is in the sufficient category, which has a percentage of 68.91%. Knowledge about the dangers of UV light exposure in the Knowledge Level Evaluation of Ngudi Waluyo University Health Faculty Students is in the good category, which has a percentage of 87.22%.

4. CONSLUSION

The results of the research and description of the discussion based on the answers from the questionnaire regarding knowledge of skin hyperpigmentation prevention at Muhammadiyah 1 Purbalingga Vocational School can be concluded as follows:

1. The majority of respondents, namely 43 female sex, amounted to 53.8%. Meanwhile, seen from the age of the respondents in the age range of 15-17 years with a mean of 16.39 and a standard deviation of 0.515.
2. The level of knowledge of respondents regarding the prevention of skin hyperpigmentation is in the category of good knowledge with a percentage of men 50% and women 50%, a good category with a percentage of men 43.5% and women 56.5%, while the category of knowledge is lacking with a percentage of men -50% male and 50% female.
3. Knowledge about the dangers of UV rays, the factors that cause hyperpigmentation, how to use the right sunscreen as a preventive measure is still lacking. So it is necessary to educate adolescents about the dangers of UV rays and their prevention.

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