



Sunscreen: Assessing Knowledge and Attitudes Towards Sunscreen Usage Among Students for Skin Cancer Prevention

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Article Info

Article history:

Received 17 September 2024

Received in revised form 12 November 2024

Accepted 1 December 2024

Keywords:

Ultraviolet
Sunscreen
Knowledge
Attitude
Skin Cancer

Abstract

Sunlight contains Ultraviolet Radiation (UVR) which can damage the skin layer and become a risk factor for skin cancer. The increase of ultraviolet index in Indonesia and the incidence of skin cancer encourages the use of sunscreen to maintain skin health. This study aims to determine the level of knowledge and attitude categories related to the use of sunscreen in students at SMA Negeri 2 Padalarang in 2023 as an effort to prevent skin cancer. This research is a descriptive categorical non-experimental quantitative approach with a cross sectional study design. The data collection technique used a questionnaire containing 18 knowledge measurement items and 12 attitude measurement items. Results of the 286 respondents only 11.19% of respondents had knowledge in the good category, 44.06% of respondents were in the sufficient category, and respondents who had a poor level of knowledge were 44.76% of respondents. The use of sunscreen in 286 respondents showed that 64.34% of respondents had a positive attitude, while 35.66% of respondents had a negative attitude in using sunscreen. The majority of respondents have insufficient knowledge about sunscreen as a prevention of skin cancer. Although the average attitude towards using sunscreen is positive, the main reason for using it is to prevent sunburn, dark spots, and facial aesthetics, not specifically for skin cancer prevention.

Introduction

Sunlight containing *Ultraviolet Radiation* (UVR) can be a risk factor for causing skin cancer and damaging the skin layer. In skin cancer conditions, there is damage to the *Deoxyribose Nucleic Acid* (DNA) strands, followed by an abnormal and rapid cell growth process. The impact is not only the skin layer and function are disturbed, but the aesthetics of the skin can also be disturbed because the abnormal cell growth can expand to other areas of the skin (Dummer et al., 2011; Xiong et al., 2021).

In 2022, an estimated 7,650 deaths were attributed to melanoma consisting of 5,080 cases in men and 2,570 cases in women in the world. Globally, the incidence of skin cancer in Asia ranks third and mortality ranks second (Sakir et al., 2022). In 2021, 23,753 cases of skin cancer were recorded in Asia, and 3,275 cases occurred in Southeast Asia, including Indonesia. Indonesia is located along the equator, which means sun exposure is high throughout the year (Wedayani & Hidajat, 2022). There are two types of skin cancer that are most common in

Indonesia, namely basal cell carcinoma (KSB) and squamous cell carcinoma (KSS), with cases of KSB in men more than women (Yahya et al., 2021; Kanoko et al., 2000).

In the Skin Cancer retrospective study at the Polyclinic of Skin and Venereal Health Sciences, Dr. M. Djamil Padang Hospital, the most skin cancer is KSB, with the demographics of male patients (53%) more than women (47%). Research by Eva Krishna Sutedja, et al. on the clinical picture of KSB pathology at the Dr. Hasan Sadikin Central General Hospital (RSHS) Bandung City in 2018 showed that the number of outpatient KSB patients at the Bandung City Hospital in the period January 2014-December 2017 was 32 cases with an average age of 58 years. In the study, it was found that the prevalence of KSB was highest in female patients (53.1%) while male patients were as many as 46.9% (Sutedja et al., 2021; Wilvestra et al., 2018).

The burden of skin diseases is defined as the effect of disease on the overall well-being of the population, which includes the adverse impact of skin diseases on physical health, psychological health, social functioning, *Quality of Life* (QoL), and economic well-being (Rigel et al., 2011; Jafferany & Pastolero, 2018; Cortés et al., 2022).

The use of sunscreen is a preventive measure that plays an important role as a chemical *photoprotector*, this is an easy way to protect the skin from the dangers of UVR, especially as an effort to prevent skin cancer (Gabros et al., 2019; Saraiya et al., 2004). Regular and correct use of sunscreen as additional skin protection is recommended and can reduce the risk of skin cancer (Sander et al., 2020). However, the purpose of use will be achieved if the use of sunscreen meets the convergence of three factors, including: regulations and standards for assessing, labeling sunscreen, and most importantly, the right behavior patterns by the community regarding the use of sunscreen (Burnett et al., 2012; Farberg et al., 2017; Egambaram et al., 2020).

The use of sunscreen in Indonesia is still relatively low, only around 2%. This is due to consumer complaints that sunscreen products feel uncomfortable, sticky and oily when applied. In addition, public knowledge and awareness about the importance of using sunscreen in daily activities is also lacking (Mumtazah et al., 2020; Fitch-Martin et al., 2018). In addition to skincare products generally being marketed to women, society has categorized Sun Protection Factor (SPF) as feminine through messaging that appeals to stereotypical female gender norms (Faza et al., 2022; Calder, 2023).

The Padalarang District area in 2021 has 80 small to large industries, this indirectly affects daily outdoor activities where 5,041 residents of Padalarang Village work in the industrial sector.

SMAN 2 Padalarang has carried out various learning strategy innovations, one of which is the program introduced by the Ministry of Education and Culture, namely *the Outdoor Learning Process* (OLP) and through various extracurricular activities, this encourages students' interest to develop outside the classroom so that students can avoid boredom. According to Esti Setiawati et al. (2023) The use of OLP learning strategies is effective in improving student cooperation, motivation, and learning outcomes. However, OLP can also be one of the risk factors for increased sun exposure, both directly and indirectly (Setiawati et al., 2023). This study aims to determine the level of knowledge and attitudes of sunscreen use among students at SMAN 2 Padalarang as an effort to prevent skin cancer in 2023.

Methods

This study is categorical descriptive research using a non-experimental quantitative approach with a cross sectional study design, observed using a questionnaire to measure knowledge and attitudes to determine the use of sunscreen in students. This research was carried out in September 2023 at SMAN 2 Padalarang, Padalarang District, West Bandung Regency. The population observed in this study is all students at SMAN 2 Padalarang. The research sample

is students who at the time of sampling are still actively learning and willing to participate in the research by filling out *informed consent*.

The total sampling technique was used in this study which used a questionnaire instrument based on *Google form* which contains the respondent's status formula, measurement of knowledge level, and measurement of attitudes in the use of sunscreen. The collected primary data was then analyzed descriptively using SPSS software and *Google Sheets*. This research has been declared feasible and received Ethical Clearance by the Research Ethics Commission of Padjadjaran University with Ethical Approval Letter No.1013/UN6. KEP/EC/2023 and meets the principles of bioethics, namely: *Autonomy, beneficial, respect of human dignity, respect for privacy, and Justice*.

Result and Discussion

Table 1. Characteristics of Respondents

Characteristic	n	%
Gender		
Men	85	29,70%
Women	201	70,30%
Class Origin		
XXIX	106	37,01%
XII	288	32,02%
Distance from Home to School		
<3 Kilometers	183	64%
>3 Kilometers	103	36%
Transportation to School		
Walking	36	13%
Cars	6	2,1%
Motorcycles	148	52%
Public Transport	96	33,6%
Travel Time to School		
<30 minutes	215	75%
>30 minutes	71	25%
Employment Status		
Work and school	3	1%
Not working, just going to school	103	36%
Routine activities outside of school hours	180	63%

Based on table 1, it was found that the participation of female respondents was greater than that of male respondents with a total of 286 respondents. Class X students are the most students who participated in this study. As many as 64% of respondents had a distance of <3 kilometers from home to school with 75% of students going to school spending <30 minutes. Private motorcycles are the most popular mode of transportation represented by 103 respondents. From the table above, it is also known that the data on respondents' activities is known, where 1% of respondents work while attending school, 63% of respondents do routine activities outside of school hours such as helping parents sell, soccer practice, and others. Meanwhile, 36% of respondents only go to school.

Table 2. Knowledge Level Categories

Knowledge	Frequency (f)	Percentage (%)
Good	32	11,9%
Enough	126	44,06%
Less	128	44,76%
Total	286	100%

Based on table 2, out of a total of 286 respondents, only 32 respondents (11.19%) had knowledge in the good category, 126 respondents (44.06%) in the sufficient category, and respondents who had a low level of knowledge amounted to 128 (44.76%) respondents.

Table 3. Categories of Attitudes to Use *Sunscreen*

Attitude	Frequency (f)	Percentage (%)
Positive	184	64,34%
Negative	102	35,66%
Total	286	100%

Based on table 3, a total of 184 (64.34%) respondents had a positive attitude in using sunscreen, while 102 (35.66%) respondents had a negative attitude in using sunscreen.

Discussion

Of the 286 respondents, women were more willing and interested in participating in this study than male respondents. This may be due to the stereotype of sunscreen as feminine skin care, in line with the opinion of Psychiatrist W.Scot where skin care products are generally marketed to women and the public has grouped Sun Protection Factor (SPF) as something feminine through messages that attract gender norms stereotyped by women such as packaging and advertisements that use female actors or the placement of sunscreen products in the sales area to women's special products (Laham, 2020).

According to Osterwalder et al. (2014), there are some common misconceptions about sunscreen that add to the confusion. One of them is the misconception that sunscreen with SPF 60 lasts twice as long as sunscreen with SPF 30. The study is in line with the results of this study, where as many as 242 respondents chose the wrong answer, namely the higher the SPF value, the longer the sunscreen protection.

As many as 84.27% of respondents showed good knowledge regarding the reuse of sunscreen after activities that reduce the effectiveness of sunscreen. However, a total of 42.31% of respondents still do not know the time to reuse sunscreen every two hours. This is in line with the results of Vergilio's research that 41.37% of respondents in his study reapplied sunscreen and only 4.9% of respondents reapplied sunscreen 3 times a day.

Based on the basic knowledge measurement questionnaire and the four components of knowledge, it is known that most students at SMAN 2 Padalarang have heard the basic knowledge about sunscreen and skin cancer, but their knowledge still needs to be enriched by increasing their knowledge of how to apply sunscreen properly and correctly. In addition, it was also found in this research data that as many as 88.5% of respondents did not know about SAKURI (Self-Skin Check) which is actually an important and easy skin examination and can be done by ordinary people.

The results of measuring the level of knowledge of students at SMAN 2 Padalarang, West Bandung Regency are in line with the research of (Sinaga, 2020) at SMAN 1 Aek Songsongan, Asahan Regency which found that only 36.21% was in the good category. When compared to (Fitriani, 2022) research at SMAN 6 Tambun Selatan, DKI Jakarta, the results of this study show worse scores. In his research, the majority of students at SMAN 6 Tambun Selatan Jakarta had quite good knowledge (64.1%). The overview of the level of knowledge from these studies may be related to the location of the school where SMAN 6 Tambun Selatan, DKI Jakarta is located in the capital of Indonesia while SMAN 2 Padalarang, West Bandung Regency is 103.94KM from the National Capital and SMAN 1 Aek Songsongan, Asahan Regency is 137.57KM from the capital of North Sumatra Province. This is in line with and is also related to the journal of Darsini et al. (2019) where many influencing factors include the environment and socio-cultural system.

One of the components in attitude is the cognitive component depicted in table 3. This aspect in the attitude measurement questionnaire is represented by question items number two to three. In item number two, as many as 78.32% of respondents use sunscreen to prevent skin cancer, as it is known that the regular and correct use of sunscreen as additional skin protection is recommended and can reduce the risk of skin cancer. However, as many as 53.50% of respondents use sunscreen only once when they want to go to school.

In question number 3 in table, it is known that 53.50% use sunscreen only when going to school. This is confirmed in the question item in Table 4.17 which shows the distribution of behavioral component attitude *assessments*, where as many as 66.43% use sunscreen regularly, as it is known that the regular and correct use of sunscreen as additional skin protection is recommended and can reduce the risk of skin cancer. However, in question number seven, as many as 68.18% of respondents did not use sunscreen again every two hours. According to the *American Academy of Dermatology* and *the American Cancer Society*, the use of sunscreen must be reapplied every two hours. Then it was found that as many as 30.77% of respondents did not use sunscreen 15-30 minutes before activities and 15.73% of respondents who considered sunscreen not important to apply before going to school. This shows that the use of sunscreen does not meet the convergence of 3 factors, one of which is the habit of using it correctly.

In line with the background of research institutions on the Islamic aspect, the researcher sees based on the data obtained that as many as 92% of respondents make halal products as a factor in choosing products when buying sunscreen. In terms of *reapplying* sunscreen after ablution, 42% of respondents did it, 32% of respondents sometimes reused it after ablution, and only 26% did not reuse sunscreen. This can be a risk factor for declining work and the effectiveness of sunscreen that needs to be realized by students. In addition, it was found that 80.4% of respondents chose chemical photoprotectors such as sunscreen over physical photoprotectors such as umbrellas or hats. This can be due to the fact that chemical photoprotectors are more practical to bring to school when compared to physical ones.

In Fitriani (2022) research at SMAN 6 Tambun Selatan Jakarta, the majority of students at SMAN 6 Tambun Jakarta had a negative attitude (59.2%). The results of the student attitude category in the study when compared to this study show that the attitude of students at SMAN 2 Padalarang is better. In this study, it was found that as many as 64.34% of students at SMAN 2 Padalarang, West Bandung had a positive attitude, which is also in line with the research of (Sinaga, 2020) at SMAN 1 Aek Songsongan where a total of 53.45% showed a very good attitude. This is in contrast to research by Wu et al. (2022), which found that rural communities use less sunscreen and shade than urban communities. The results showed different patterns of sun protection behavior among these students, perhaps due to different sources of information and levels of knowledge. In this research at SMAN 2 Padalarang it was also found that the majority of students use sunscreen for aesthetic reasons; Preventing dark spots and burnt skin, with as many as 65.4% of students getting information about sunscreen from social media, most ⁵⁸ *influencers* on social media promote sunscreen only for general aesthetic purposes including preventing burnt skin and dark spots.

Conclusion

The majority of students at SMAN 2 Padalarang have insufficient knowledge regarding the use of sunscreen for skin cancer prevention in 2023 while the level of attitude shows a positive category. Although the reason for its use is more focused on skin aesthetics than cancer prevention. The data also showed that female respondents tended to have better knowledge and attitudes than male respondents.

Conflict of Interest

There is no conflict of interest in this study.

Acknowledgments

The highest gratitude to dr. Mutiara Nabilla Jusuf, M.Kes.AAAM as the vice dean III of FK Unpas and the head of research dr. Fitri Utami, Sp.DVE. as a member of the final project research that helps and facilitates the writing of this paper.

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