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Research Article

# Knowledge and Behavior of the Tembung Village Community about Sunscreen to Prevent Melanoma

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**Abstract**
**Background:** Indonesia is one of the tropical countries in the world that is illuminated by the sun all year round. High sun exposure requires Indonesian people to be more concerned about skin protection, especially melanoma. The risk factor for melanoma is exposure to UV radiation so melanoma can be prevented by reducing exposure to UV rays, one of them by using sunscreen. The use of sunscreen with SPF 15+ every day can reduce the risk of developing melanoma by 50%. **Objective:** This study aims to obtain information about the level of knowledge and behavior of people in Tembung about the use of sunscreen to prevent melanoma. **Methods:** The research design used is descriptive research using a cross-sectional study. The Data was obtained through the distribution of online questionnaires with 100 people. Furthermore, the data obtained will be processed using SPSS. **Results:** 41 people had sufficient knowledge about melanoma, 67 people had less knowledge about sunscreen, and 38 people had good behavior. **Conclusion:** Most of people in Tembung have sufficient knowledge about melanoma, lack knowledge about sunscreen, and have a good behavior in using sunscreen.

**Keywords:** behavior, knowledge, melanoma, skin cancer, sunscreen

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## 1. Introduction

Indonesia is one of the tropical countries in the world that is illuminated by the sun all year round. High sun exposure obliges Indonesians to be more concerned about skin protection. This is also supported by the Indonesian ultraviolet (UV) index which is classified as a very high hazard risk category, namely 8-10 [1]. Based on a survey conducted on 7-14 September 2020 by the Central Statistics Agency regarding people's behavior during the COVID-19 pandemic, compared to before the adaptation of new habits, 24.63% of respondents leave the house more often [2].

Cancer is a large group of diseases that can appear in almost all organs and tissues of the body where abnormal cells begin to develop uncontrollably and invade parts of adjacent organs or spread to other tissues [3]. Skin cancers are generally classified into two types, Non-melanoma skin cancers (NMSCs) and melanomas. Among the two types of skin cancer, melanoma is the most aggressive and deadly form of skin cancer [4]. The incidence of melanoma worldwide has increased significantly in the last 50 years. According to Globocan 2018; 287,000 new cases of cutaneous melanoma were found in 2018 with an incidence rate of 3.1 per 100,000/year and a mortality rate of 0.63 per 100,000/year [5].

The etiology of melanoma is a complex interaction between genetic, epigenetic, and environmental risk

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factors. Melanoma is mainly caused by exposure to UV radiation in sensitive people and it is estimated that more than 85% of melanoma cases in Europe are caused by sun exposure. The results of genome sequencing confirmed that most mutations in melanoma were caused by UV radiation so that melanoma can be prevented by reducing exposure to UV rays. The use of sunscreen is considered one of the primary preventions and is a popular method [6]. The use of sunscreen has been shown to decrease the incidence of skin cancer, either NSMCs or melanoma. The Canadian Dermatology Association and the American Academy of Dermatology recommend the use of sunscreen to prevent skin cancer [7].

## 2. Methods

This study used a descriptive research design using a cross-sectional study by observational approach or collect data at a time to determine the description of knowledge and behavior of people in Tembung village about the use of sunscreen in preventing melanoma [8]. This research lasted from June to November 2022. This study was located in Tembung village with a population of 47,005 people who met the inclusion and exclusion criteria. The minimum sample size required using the Slovin formula with a margin of error of 10% so that the minimum sample size obtained in this study was 100 people.

## 3. Results

Characteristics of respondents used in this study are gender, age range, and education level.

**Table 1.** Distribution of Characteristics Respondents Based on Gender, Age, and Education Level

| Characteristics | n=100 | % |
|---|---|---|
| Gender | | |
| Male | 26 | 26 |
| Female | 74 | 74 |
| Age | | |
| 17-25 | 69 | 69 |
| 26-35 | 16 | 16 |
| 36-45 | 4 | 4 |
| 46-55 | 7 | 7 |
| 56-65 | 4 | 4 |
| Education Level | | |
| Primary School | 0 | 0 |
| Junior High School | 1 | 1 |
| Senior High School | 41 | 41 |
| Bachelor | 58 | 58 |
| Use of Sunscreen | | |
| Yes | 76 | 76 |
| No | 24 | 24 |

Based on table 1, the majority of respondents were female as many as 74 people (74%) while male as many as 26 people (26%). According to the age range, the highest frequency came from the age range of 17-25 years, as many as 69 people (69%), followed by 26-35 years as many as 16 people (16%), 46-55 years as many as 7 people (7%), and the age range of 36-45 years and 56-65 years, both of which had 4 respondents (4%). Based on the level of education, the majority of respondents have a college level of 58 people (58%), followed by senior high school education level of 41 people (41%), and junior high school as much as 1 person (1%). According to the use of sunscreen, most of the respondents have used sunscreen cream as many as 76 people (76%), while respondents who do not use sunscreen as many as 24 people (24%).

**Table 2.** Frequency Distribution of the Level of Knowledge of Respondents about Melanoma

| Level of Knowledge about Melanoma | Frequency (n) | Percentage (%) |
|---|---|---|
| Good | 38 | 38 |
| Fair | 41 | 41 |
| Poor | 21 | 21 |
| Total | 100 | 100 |

Based on table 2, the average level of knowledge of respondents about melanoma skin cancer is sufficient with the number of 41 people, followed by good category as many as 38 people (38%), and less category as many as 21 people (21%).

**Table 3.** Frequency Distribution of the Level of Knowledge of Respondents about Sunscreen

| Level of Knowledge about Sunscreen | Frequency (n) | Percentage (%) |
|---|---|---|
| Good | 13 | 13 |
| Fair | 20 | 20 |
| Poor | 67 | 67 |
| Total | 100 | 100 |

Based on table 3, the majority of people in Tembung village still have a lack of knowledge about sunscreen, as many as 67 people (67%). While the sufficient knowledge as many as 20 people (20%) and good knowledge as many as 13 people (13%).

**Table 4.** Frequency Distribution of the Level of Behavior of Respondents

| Tingkat Perilaku | Frekuensi (n) | Persentase (%) |
|---|---|---|
| Baik | 36 | 36 |
| Cukup | 31 | 31 |
| Kurang | 33 | 33 |
| Total | 100 | 100 |

## 4. Discussion

Based on research conducted on Tembung Village Community, 41% of respondents have a sufficient level of knowledge about melanoma skin cancer. Research comparing Australian and Scottish people to melanoma shows that the level of knowledge, care, and behavior of the Australian community is better than the Scottish community. This is due to the fact that the prevalence of melanoma in Australia is much higher than in Scotland [9]. Exposure to UV radiation is a major cause in developing cutaneous malignant melanoma (CMM). However, UV light is not the only risk factor that plays a role in forming CMM. Genotoxic, inflammatory, and immunosuppressive agents play a role in the initiation, progression, and metastasis of a CMM [10].

The results of research on the level of public knowledge about sunscreen, show that there are still many people who do not know information about sunscreen. This is evidenced by 67% of respondents having a lack of knowledge, even though 76% of all respondents have used sunscreen creams. According to a study conducted by Maghfiroh in 2020 in Pendawa Village, Lebaksiu District, 47% of respondents have a sufficient level of knowledge about sunscreen [11]. Another study conducted on the parents of Dharma Wanita Tosaren 2 Kindergarten Tirtoudan village, showed that the average value of respondents before the holding of counseling (pre-test) is 25. The survey also stated that 67% of respondents who did not use sunscreen did not know the benefits of using sunscreen creams [12]. This proves that there are still many people who do not get information and education about sunscreen, both in terms of usefulness, types, and how to apply it.

The active ingredients of sunscreens are divided into two forms, mineral sunscreens such as zinc or titanium oxide, and the most commonly used are chemical sunscreens. Mineral sunscreens are stable, work

immediately after application, and block UVB radiation while chemical sunscreens take 20 minutes before they work by absorbing UVB radiation [13].

Based on the results of research on the level of behavior of respondents to the use of sunscreen in preventing melanoma, the majority of respondents have good knowledge with a percentage of 36%. This result is in accordance with a study conducted by Tanuwidjaja in 2021 on students of the Faculty of Medicine, Pelita Harapan University, who showed a level of good behavior with a percentage of 52.1% [14]. However, this acquisition is slightly different when compared to the results of a study conducted by Payung et al. in 2022 at Mulawarman University, which showed the majority of respondents, namely as many as 39.7% had a moderate level of behavior [15].

In 2011, the Food and Drug Administration (FDA) issued new regulations regarding sunscreen products. The main change is that the FDA requires sunscreen products to have a broad-spectrum label which means they are able to ward off UVA and UVB radiation and have an SPF > 15 which not only protects against sunburn, but also reduces the risk of skin cancer and premature aging. Sunscreens that do not contain a broad spectrum with SPF < 15 are associated with skin cancer and skin aging [13-15].

## 5. Conclusion

Based on the results of the research, it can be concluded that the majority of the community in Tembung Village has used sunscreen cream. The level of knowledge about melanoma among most community members falls into the sufficient category. However, the overall understanding of sunscreen cream remains relatively low. In terms of behavior, most respondents demonstrate positive practices related to melanoma skin cancer and the use of sunscreen. Furthermore, many of the respondents are aware of the role sunscreen plays in preventing melanoma.

## 6. Data Availability Statement

The datasets generated and analyzed during the current study are not publicly available due to privacy and ethical considerations but are available from the corresponding author upon reasonable request.

## 7. Ethical Statement

This study was approved by the Ethics Committee for Health Research at Universitas Sumatera Utara.

## 8. Author Contributions

All authors contributed to the design and implementation of the research, data analysis, and finalizing the manuscript.

## 9. Funding

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## 10. Conflict of Interest

Authors declares no conflict of interest.

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