

Awareness, knowledge, and attitude toward nonmelanoma skin cancer and actinic keratosis among the general population of western Saudi Arabia

Reem N. Basyouni¹, Hussein M. Alshamrani¹, Sirin O. Al-Faqih²,
Sara F. Alnajjar¹, Fadi Ali Alghamdi³

¹College of Medicine, King Abdulaziz University, Jeddah, ²College of Medicine, Ibn Sina National College, Jeddah, ³Department of Dermatology, King Fahad Armed Forces Hospital, Jeddah, Saudi Arabia

ABSTRACT

Background: This study evaluated the levels of awareness, knowledge, and attitude, including sun-protection habits, toward basal cell carcinoma and actinic keratosis among the Saudi population. **Materials and Methods:** A cross-sectional study was conducted among the general population of Jeddah, Saudi Arabia using a 12-item survey concerning the knowledge and awareness of basal cell carcinoma and actinic keratosis, as well as associated preventive measures. A Chi-square test was used to determine associations among variables. **Results:** The majority of participants were unaware of basal cell carcinoma and actinic keratosis (80.7%), while 8.6% were aware of both, and 9.8% and 1% were aware of only basal cell carcinoma or actinic keratosis, respectively. The majority of participants who were educated up to high school level had no knowledge of either condition (96%, $P < 0.0001$). Among participants with high levels of awareness of basal cell carcinoma and actinic keratosis, medical practitioners were identified as the main source of information (72.5%, $P < 0.0001$, and 70.6%, $P < 0.0001$, respectively). The majority of participants whose knowledge of the relationship between sun exposure and skin cancer was insufficient also lacked sufficient awareness of either basal cell carcinoma or actinic keratosis (92.6%, $P < 0.0001$). The majority of participants (62.8%) declared using sunscreen “rarely”. **Conclusion:** This study showed a low level of knowledge about the risks associated with sun exposure and suitable protection methods, with only a small fraction of participants declaring a regular use of sunscreen. Public education campaigns are required to increase the awareness of cancer risks and protection methods among the Saudi population.

Keywords: Actinic keratosis, basal cell carcinoma, public awareness, public health, Saudi population, sunscreen

Introduction

Nonmelanoma skin cancer (NMSC), whose major subtypes are basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), is the commonest group of malignancies among fair-skinned populations. The incidence of NMSC has been increasing worldwide annually owing to a variety

of factors; however, exposure to sunlight, especially among Caucasian populations, has been reported as the most important risk factor.^[1-3]

BCC is the commonest type of NMSC, accounting for 75–80% of all NMSC cases. It is a slow-growing, locally invasive malignant epidermal tumor, which may take several forms, such as nodular, cystic, keratotic, superficial, and infiltrative (morphea and non-morphea form).^[4,5] It develops on sun-exposed areas such as the head and the neck.

Address for correspondence: Dr. Hussein M. Alshamrani,
College of Medicine, King Abdulaziz University, Jeddah,
Saudi Arabia.
E-mail: Hussein.m.edu@gmail.com

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SCC is the second commonest type of NMSC and may develop from actinic keratosis (AK), which is recognized as a common premalignant lesion. AK involves abnormal proliferation of keratinocytes and presents with red or brown papules or plaques with the rough, hyperkeratotic surface.^[6,7] The risk of AK progressing to invasive SCC has been estimated at 0.25–20%.^[8–10] However, some studies have suggested that 60% of all SCC cases are derived from AK. Previous studies have shown that gender and age might be risk factors for AK, which is more common among men than among women; moreover, a study conducted in Australia reported that 40–50% of AK patients were aged ≥ 40 years.^[11] Similar to BCC, AK develops on sun-exposed areas such as the head and the neck.

The incidence of NMSC is lower in countries located far from the equator; nevertheless, the number of cases annually reported has been increasing in all countries examined.^[9] The world's highest incidence of skin cancer has been recorded in Australia.^[12–14] In the United States, the incidence of NMSC has increased by 77% between 1992 and 2006.^[14]

Despite the increasing incidence of BCCs and AK worldwide, there is a paucity of evidence regarding these conditions among the Saudi population. To address this gap, this study evaluated the levels of awareness, knowledge, and preventive behaviors, including sun protection practices, regarding BCC and AK among the Saudi population.

Materials and Methods

This was a cross-sectional, survey-based study conducted among the residents of Jeddah in 2018. Jeddah, one of the biggest cities in Saudi Arabia, is located on the western coast of the country and has a population of nearly 4 million people. We interviewed and distributed the questionnaire to the general population of Jeddah in multiple locations and different districts of the city to guarantee a reasonable representation of the population, taking into account the densely populated northern and southern regions. The relevant institutional review board approved this study. The purpose of the study was explained to the participants, and verbal consent was obtained prior to participant enrolment. Men and women aged ≥ 18 years were eligible for this study.

The survey consisted of 12 questions concerning knowledge and awareness of BCC and AK as well as suitable preventive measures. Demographic variables of interest included gender, age, and education level attained. Categorical variables, including primary variables, were described using a frequency table. Statistical Package for Social Sciences Windows Version 21 (SPSS-21) was used for analysis.

Results

A total of 2443 individuals were surveyed (68.2% female). Age distribution within the sample was as follows: 73.6% of participants were 18–34 years old, 16.1% were 35–49, and 10.4% were ≥ 50 .

Regarding the level of education attained, 45.1% and 41% were still in college and college graduates, respectively. Overall, 13.8% of participants were educated up to high school level.

History of sunburn and knowledge of NMSC

Few of the participants (14%) reported having been sunburnt in the previous year. In the study sample, 3 participants were diagnosed with skin cancer in the previous year, while 56.2% were worried about skin cancer. When asked about their knowledge of BCC and AK, the majority of participants declared that they were unaware of BCC or AK (80.7%); 8.6% were aware of both conditions; and 9.8% and 1% were aware of BCC or AK, respectively. The majority of participants educated up to high school level had no knowledge of either condition (96%, $P < 0.0001$) [Table 1].

Physicians were the main source of information regarding BCC or AK among the study participants. Participants with the highest levels of awareness of BCC and AK received their information from doctors (BCC: 72.5%, $P < 0.0001$; AK: 70.6%, $P < 0.0001$) [Table 2]. Moreover, most of them state that if they need to know more about BCC and AK, they will ask and consult their doctors (64.8%).

Detection of skin cancer

Only 1.6% of participants were able to demonstrate having been checked for skin cancer by their doctor; half of them requested the physician to examine their skin, while the others were examined at their doctors' initiative. The majority of the participants, regardless of their BCC or AK awareness, had not been examined for skin cancer (98.4%).

Awareness of skin cancer causes

The majority (73%) of the participants were aware of the correlation between sun exposure and skin cancer. However,

Table 1: Respondents' knowledge of basal cell carcinoma (BCC) and actinic keratosis (AK)

| | Survey items | Response Count (n=2443) | Percentage |
|--|--------------|-------------------------|------------|
| Self-reported awareness | BCC only | 239 | 9.8 |
| | AK only | 22 | 1 |
| | BCC and AK | 211 | 8.6 |
| | Neither | 1971 | 80.7 |
| Main source of information on BCC | Media | 112 | 4.6 |
| | Doctors | 396 | 16.2 |
| | Friend | 29 | 1.2 |
| Main source of information on AK | None | 1906 | 78 |
| | Media | 89 | 3.6 |
| | Doctors | 199 | 8.1 |
| The preferred source of information on both conditions | Friend | 33 | 1.4 |
| | None | 2122 | 86.9 |
| | Media | 730 | 29.9 |
| | Doctors | 1584 | 64.8 |
| | Friend | 129 | 5.3 |

Table 2: Association between the level of knowledge of BCC or AK and sources of information. Values are presented as n (%)

| | Aware of BCC only | Aware of AK only | Aware of both | Aware of neither | P | Total |
|-------------------------------|-------------------|------------------|---------------|------------------|---|---------|
| Sources of information on BCC | | | | | | <0.0001 |
| Media | 35 (31.3) | 3 (2.7) | 26 (23.2) | 48 (42.9) | | 112 |
| Doctors | 197 (49.7) | 1 (0.3) | 153 (38.6) | 45 (11.4) | | 396 |
| Friends | 4 (13.8) | 1 (3.4) | 5 (17.2) | 19 (65.5) | | 29 |
| None | 3 (0.2) | 3 (0.9) | 27 (1.4) | 1859 (97.5) | | 1906 |
| Sources of information on AK | | | | | | <0.0001 |
| Media | 9 (10.1) | 11 (12.4) | 28 (31.5) | 41 (46.1) | | 89 |
| Doctors | 16 (8) | 6 (3) | 149 (74.9) | 28 (14.1) | | 199 |
| Friends | 1 (3) | 4 (12.1) | 4 (12.1) | 24 (72.7) | | 33 |
| None | 213 (10) | 1 (0.04) | 30 (1.4) | 1878 (88.5) | | 2122 |

57.5% stated that there was no association between skin cancer and moderate tanning. The majority of participants unaware of the relationship between sun exposure and skin cancer were also unaware of either BCC or AK (92.6%, $P < 0.0001$).

Cancer prevention and protective behavior

When questioned about the methods of preventing skin cancer, 76% of participants declared that they took precautions against sun exposure, such as using sunblock, limiting time spent in the sun, and wearing suitable clothing, including a hat. However, 24% of participants reported that they did not follow any sun-protective measures. The commonest method used was reduction in total time spent in the sun (43%) and using sunblock (41%). When the participants were questioned about the usage of sunscreen, 62.8% stated that they rarely or never used sunscreen.

Discussion

This study evaluated the level of awareness, knowledge, and preventive behaviors regarding BCC and AK among the Saudi population. This study showed that even among participants unaware of risks associated with sunlight exposure, sun protection behaviors were common, resulting in low rates of skin cancer in this population. There are many reasons that Jeddah citizens use sun-protective methods. The residents of Jeddah are likely to follow sun protection recommendations as temperatures in the region range from 20°C to 42°C; local winters are short and warm and are followed by long, sweltering summers, which encourage sun protection. Nevertheless, despite the low prevalence of BCC and AK in Saudi Arabia, knowledge about the levels of skin cancer was also low, which is in contrast to countries where the incidence of BCC and AK is high, where public awareness of these conditions tends to be high as well. In fact, high rates of NMSC were reported in Australia (25%) and the United States (10%), in contrast to Europe, where the corresponding prevalence was $\leq 3\%$.^[15] In these studies, 30% of the surveyed population was aware of BCC, while 7% had knowledge about AK, and a small fraction of respondents were aware of both

conditions.^[15] In the present study, almost 10% of participants were aware of BCC, 1% was aware of AK, and 8.6% were aware of both conditions. These findings indicate that disease knowledge among a particular population is proportional to the prevalence of the disease in that population. Examples include residents of the United States and Australia, where high levels of awareness correspond to relatively high incidence rates.^[15]

This study distinguished that individuals had poor knowledge about BCC and AK, and physicians were reported to be the main source of skin cancer information. This could be explained by the fact that Saudi people trust their physician more than they trust the media, which do not focus on skin cancer awareness. However, in countries whose populations had greater knowledge about skin cancer than the residents of Saudi Arabia, such as Australia or the United States, the media was reported as the primary source of information.^[15] This evidence suggests public awareness campaigns should involve the media. Moreover, in other countries, health literacy among the general public is increased through, for example, skin cancer awareness campaigns that have been popular in countries such as the United States and Australia.^[4,16]

Sunblock is a well-documented method of preventing skin cancer.^[17,18] It has been reported to reduce the carcinogenic effects of sunlight on human skin by reducing the amount of UV radiation that can penetrate the skin by reflecting, absorbing, or dispersing sunlight.^[19] As a result, sunblock can protect against sunlight-associated damages.^[20] However, in the present study, sunblock use was rare. Similarly, in countries where the disease knowledge was high (such as the United States or Australia), sunblock use was limited.^[15] Regular sunblock use should be encouraged, especially in countries with high exposure to sunlight. The general public should be educated about the effects of long-time sunlight exposure and the advantages of sunblock.^[21-24]

Other methods of protection against sunlight include wearing protective clothing, for example, a hat. In Saudi Arabia, men wear thoub, which is an ankle-length garment and traditional

clothing choice for men, while women wear the abaya, which is a traditional clothing choice for women that covers the whole body, except the head, feet, and hands. These methods of sun protection have been shown to be equally or more effective at lowering the risk of sunburn than sunblock.^[25] NMCs are increasing worldwide. Methods to decrease BCC and AK by protection from the sun are simple, but not widely used in populations with limited awareness of these conditions. While this study is specific to Saudi Arabia, its results have implications for other countries.

In conclusion, our study showed a low level of knowledge about the risks associated with sunlight exposure and the benefits of following sunlight protection methods. Furthermore, this study revealed that adherence to sun protection recommendations is generally insufficient among adults, with only a small fraction of the study sample reporting the use of sunscreen. Awareness of skin cancer among the Saudi population should be increased, along with the knowledge of suitable prevention methods. Refined assessment of current levels of knowledge among communities is critical to developing effective public health programs in order to increase adherence to skin cancer protection recommendations. Follow-up on population-specific effects of these interventions is needed to assess the effectiveness of these efforts.

The primary care physicians are the first-line of managing skin conditions and skin diseases are the most common reason for the clinic visit. Hence, family physicians may encounter patients with skin manifestation, it is crucial to recognize these conditions early and make timely referral to dermatology. This will help in making a proper diagnosis and better prognosis. Therefore, primary physicians need to have a high index of suspicion for skin diseases. In addition, epidemiological studies assessing the awareness of population are important for family and community physicians.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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