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Skin cancer knowledge, attitudes, beliefs, and prevention practices among medical students: A systematic search and literature review☆

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ABSTRACT

Background: As future physicians, medical students will play an important role in the prevention of skin cancers by becoming directly involved in skin cancer prevention education and counseling patients about the hazards of ultraviolet light.
Objective: We assessed the skin cancer-related knowledge, attitudes, beliefs, and prevention practices reported in previous studies of medical students.
Methods: The search for relevant articles was performed in four electronic databases: PubMed (Medline), Cumulative Index to Nursing and Allied Health, ERIC, and PsycINFO. Studies were included if they met the following criteria: 1) targeted medical students; 2) assessed sun avoidance, sun protection, skin self-examination, and/or indoor tanning behaviors; 3) were published in peer-reviewed journals; and 4) complete data were available for extraction.
Results: A total of 21 studies are included in this review. Important findings include moderate-to-high levels of skin cancer knowledge and low levels of both sunscreen and ultraviolet light knowledge. The attitudes and knowledge of medical students reflect a low level of concern with regard to the perceived importance of skin cancer compared with other forms of cancer despite a high level of concern for the importance of skin cancer prevention. Furthermore, this review demonstrated that medical students fail to protect themselves routinely from the sun and have a high interest in tanning bed use.
Conclusion: This review demonstrates the need to educate medical students about skin cancer and skin cancer preventive behaviors. New strategies and educational campaigns should be developed to communicate better information on skin cancer morbidity, mortality, and prevention to medical students. This will pay dividends by improving the practice of these future physicians in all specialties.

Contents

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Introduction

The incidence of skin cancer is very high in many countries. It represents the most commonly diagnosed cancer in the United States, with 5.4 million nonmelanoma skin cancer cases treated annually (Rogers et al., 2015). Melanoma, one of the most serious forms of skin cancer, has the ability to metastasize and become life-threatening (Isvy et al., 2012). In 2017, it was estimated that 87,110 new cases of melanoma will be diagnosed in the United States and 9730 individuals are expected to die from this disease (American Cancer Society [ACS], 2017a).

In Australia, skin cancer accounts for 75% of all cancers. Furthermore, Australia has the world's highest age-standardized rate of melanoma, more than 12 times the average world rate in 2008 (Doran et al., 2016; Trakatelli et al., 2016). Throughout Europe, approximately 100,000 new cases of melanoma are diagnosed annually with 22,200 melanoma deaths per year (Cancer Research UK, 2014).

Solar and artificial ultraviolet (UV) exposure is the most significant preventable cause of skin cancer (Greinert and Boniol, 2011). Adequate methods of primary prevention help reduce the development of new skin cancer cases. The American Skin Cancer Society (2017) recommends the following primary strategies to prevent excess UV radiation exposure: 1) seek shade when out in the sun, especially in the middle of the day when UV radiation is strongest (between 10:00 a.m. and 4:00 p.m.); 2) wear protective clothing outside (i.e., long-sleeved shirts and long pants or long skirts); 3) use wide-brimmed hats; 4) use sunscreen with a sun protection factor of 30 or higher; and 5) avoid the use of tanning beds. Recommended secondary skin cancer prevention methods include the promotion of early detection, regular skin self-examinations (SSE), and professional skin examinations (Mahon, 2003). The combination of these approaches has been shown to decrease the burden and reduce the incidence, morbidity, and mortality of skin cancer (Greinert and Boniol, 2011).

A number of cancer organizations have developed social media, broadcast, and local educational programing to raise skin cancer awareness and promote preventative measures (ACS, 2017b; Cancer Council Australia, 2016; Cancer Research UK, 2014; Skin Cancer Foundation, 2017). However, physicians and other health care professionals serve as key sources of health information for millions of individuals (Liu et al., 2001). As future physicians, medical students will play an important direct role in the prevention of skin cancer by becoming involved in skin cancer prevention educational activities and counseling patients about the hazards of UV light (Isvy et al., 2013). Their skin cancer knowledge, attitudes, beliefs, and prevention practices are therefore important in decreasing the future burden of skin cancer. For this reason, we reviewed and assessed the skin cancer–related knowledge, attitudes, beliefs, and prevention practices previously reported among medical students.

To the best of our knowledge, no review of this kind has been previously conducted. The resulting data will hopefully be beneficial in establishing the current knowledge base in these areas, identifying knowledge gaps, and informing the design and implementation of future skin cancer prevention interventions that target medical students.

Methods

Eligibility criteria

Studies were included based on the following criteria: 1) study participants were students who were working on their doctorate in medicine; 2) the studies were included in the PubMed (Medline), Cumulative Index to Nursing and Allied Health (CINAHL), ERIC, and PsycINFO databases; 3) the studies measured at least one of the following variables: Sun avoidance, sun protection, SSE, and/or indoor tanning behaviors; 4) all study designs were considered; 5) both English and non-English studies were considered; 6) there was no restriction on the date of publication; 7) the studies were published in peer-reviewed journals to the best of the reviewers' knowledge; and 8) the studies contained complete data for extraction.

Studies were excluded on the basis of the following criteria: 1) duplicate studies; 2) incomplete or ongoing studies; 3) literature reviews; 4) conference abstracts; 5) studies that focused clinical features or treatment of skin cancer; 5) studies that did not sample students who were pursuing a doctorate in medicine; and 6) studies that were not included in the PubMed (Medline), CINAHL, ERIC, and PsycINFO databases.

Literature search strategy

The search for relevant articles was performed in four electronic databases: PubMed (Medline), CINAHL, ERIC, and PsycINFO. To avoid missing any important studies, we conducted additional searches using Google Scholar. Two independent reviewers performed the literature search, and the search was not limited by a time frame. Combinations of the following keywords were used: "sun protection", "skin Cancer", "sunscreen use", "melanoma", "skin self-examination", "skin cancer screening", "indoor tanning" "knowledge", "awareness", "attitudes", "beliefs", "perceptions", "practice", "behaviors", "prevention", "safety", screening", and "medical students".

The studies were reviewed to eliminate any duplicates and ensure that the inclusion criteria were met. Titles, abstracts, and full texts were reviewed to determine the inclusion and exclusion criteria. The reference lists of the primary literature were reviewed and checked to obtain any additional related studies. Finally, researchers performed a screening of all included literature studies to ensure that all work met the predefined eligibility criteria. Any questions with regard to the eligibility criteria were resolved between the two reviewers.

Two independent reviewers read through the full articles and extracted the data needed from the articles. All medical students included in the sample size were confirmed to be students who were working on their doctorate in medicine. The extracted data were crosschecked by both reviewers, and any discrepancies were discussed until a consensus was reached.

Results

A total of 231 citations were identified through electronic search engines. After eliminating duplicates, a total of 167 articles remained

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