



### MORTALITY OF SKIN CANCER IN IRAN

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**ABSTRACT:** Background: Cancer is the third most common cause of death in Iran. Skin cancer is the most common malignancy, and its incidence is rapidly increasing. Despite the magnitude of the public health burden, investigation of mortality has been limited. With regards to cancer mortality, data are important to monitor the effects of screening program, earlier diagnosis, demographic data and other prognostic factors. The aim of this study was to evaluate the mortality rates and trends from skin cancer in Iranian population during a period of almost a decade, i.e. from 1995 to 2004.

Methods: National death Statistic Reported by the Ministry of Health and Medical Education (MOH&ME) from 1995 to 2004, stratified by age group, sex, and cause of death are included in this study. Burden of Skin cancer was expressed as the annual mortality rates/100,000, general and/or per gender, and age group.

Results: The general mortality rate of skin cancer slightly increased during the years under study and skin cancer mortality was higher for older age and male.

Conclusion: Our study indicated remarkable increasing trends in skin cancer mortality. For skin cancer, since the rate of skin cancer screening is very low in Iran, it is recommended that in Iran, public program get started in order to control the mortality and burden of skin cancer in the future.

**Keywords:** Skin cancer; Mortality; Trend analysis; Iran.

### INTRODUCTION

Cancer is a major cause of morbidity and mortality, worldwide. According to the World Health Organization (WHO), the global burden of cancer is increasing, in the next 20 years (1). Skin cancer is one of the most common cancer types in most countries.

Melanoma and non-melanoma skin cancer are now the most common types of cancer in the white populations and the incidence of skin cancer has reached epidemic proportions (2). This cancer is most often attributed to solar ultraviolet exposure (3) and its incidence increases with age (4). The most cases occur mainly in sun-exposed regions including the face and the neck areas (3,5,6).

In the UK in 2010, there were 2,746 deaths from skin cancer, considering 2,203 from malignant melanoma and 546 from non-malignant melanoma (7).

In the United States there are more than one million annual cases of skin cancer (8). In western countries about 20-45 of all reported cancers per year are skin cancers respectively (6, 9-11).

Australia and New Zealand exhibits one of the highest rates of skin cancer incidence in the world, and Melanoma is the common type of cancer in people between 15-44 years in these countries (12).

Iranian study presents approximately 11 new cases of skin cancer per 100,000 and ultimately, its incidence in Iran is lower than western countries (13).

With regards to cancer mortality, data are important, together with other epidemiologic indicators such as incidence and survival, to monitor the effects of screening program, early diagnosis, other prognostic factors and also the risk in the population (14).

The aim of this study was to determine trends in Skin cancer mortality in the Iranian general population during a period of almost a decade, i.e. from 1995 to 2004.

## METHODS

National death Statistic Reported by the Ministry of Health and Medical Education (MOH&ME) from 1995 to 2000 (registered death statistics for Iranian population at the Information Technology & Statistic Management Center, MOH&ME) and from 2001 to 2004 (published by MOH&ME) (15-17) stratified by age group, sex, and cause of death (coded according to the 10th revision of the International Classification of Diseases [ICD-10]) are included in this analysis. Skin cancer [ICD-10; C43-44] was expressed as the annual mortality rates/100,000, overall, by sex and by age group (0-5, 5-14, 15-49 and  $\geq 50$  years of age). The populations of Iran in 1995-2004 were estimated by age group and sex using the census from 1996 conducted by Statistics Centre of Iran and its estimation according to population growth rate for years before and after national census (18).

## RESULTS

All death records due to Skin cancer from 1995 to 2004 are included in the analysis. The general mortality rate of Skin cancer dramatically increased during these years from 0.06 to 0.70 per 100,000 during the period under study (Table 1 and Figure1). Moreover Skin cancer mortality was higher for male in comparison to female (Table 1 and Figure 2). In men population, the rate of Skin cancer mortality increased from 0.06 (in 1995) to 0.90 (in 2004) per 100,000 but in women the rate increased from 0.05 to 0.48 in same years (Table 1). Also the mortality increased as age increased and the highest rate was observed for age higher than 50 years old (Table1).

**Table 1: Skin Cancer mortality rate and trend by sex and age group**

	<5 Years		5-14 Years		15-49 Years		$\geq 50$ Years		All ages		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1995	0.00	0.00	0.02	0.00	0.03	0.03	0.37	0.33	0.06	0.05	0.06
1996	0.00	0.00	0.00	0.01	0.08	0.08	0.095	0.57	0.16	0.11	0.14
1997	0.04	0.08	0.01	0.01	0.07	0.04	1.19	0.62	0.19	0.10	0.15
1998	0.04	0.04	0.00	0.00	0.08	0.11	1.15	1.03	0.18	0.19	0.19
1999	0.12	0.04	0.01	0.01	0.11	0.13	2.47	1.27	0.38	0.23	0.31
2000	0.10	0.04	0.05	0.02	0.11	0.09	2.53	1.11	0.38	0.18	0.29
2001	0.07	0.04	0.01	0.01	0.11	0.11	2.01	1.24	0.34	0.24	0.30
2002	0.00	0.00	0.00	0.10	0.20	0.20	4.3	2.90	0.66	0.69	0.59
2003	0.00	0.12	0.05	0.04	0.39	0.38	8.15	3.92	0.66	0.36	1.02
2004	0.09	0.23	0.00	0.00	0.23	0.21	6.07	2.70	0.90	0.48	0.70

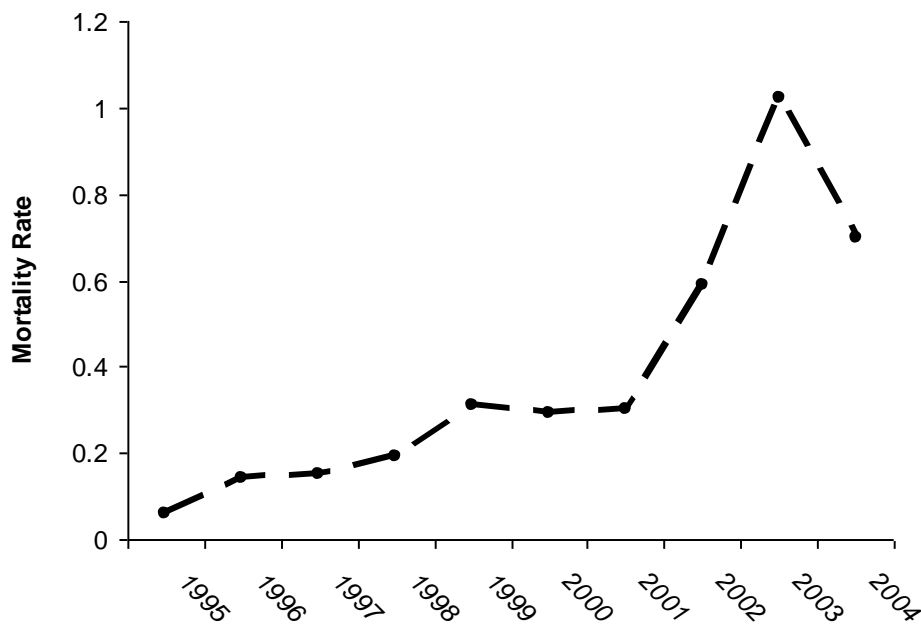


Figure1: Trend of Skin Cancer mortality during the period 1995-2004

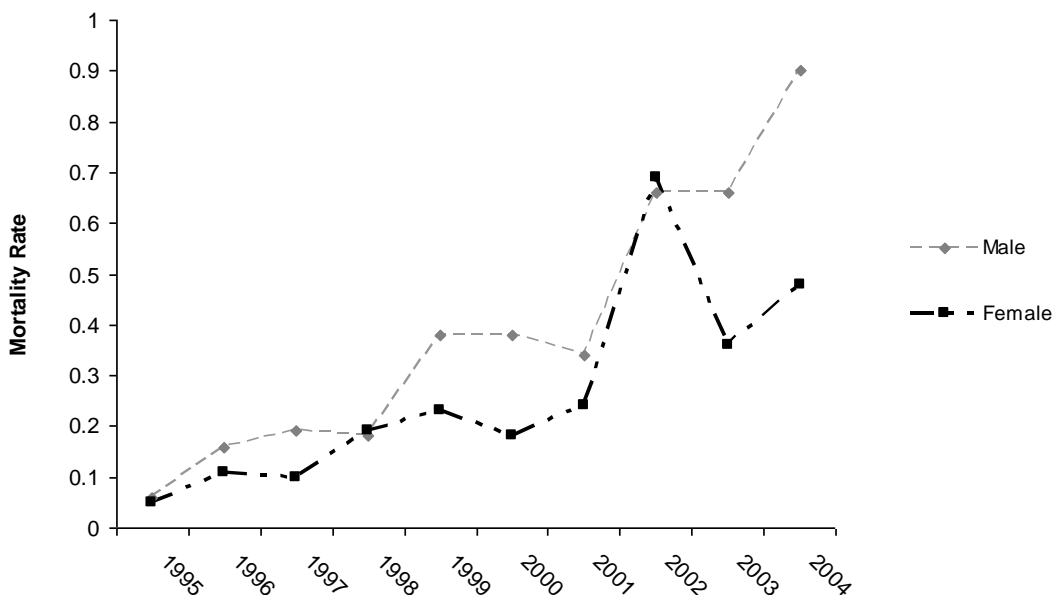


Figure2: Trends of Skin Cancer mortality during the period 1995-2004 by sex

### DISCUSSION

This study provides comprehensive projections for mortality rates due to Skin cancer based on the national registry data, indicating remarkable increasing trends in Skin cancer mortality in the period under study. According to WHO, annually 2-3 million new cases and 66000 deaths happened due to this malignancy (19) and the incidence is increasing worldwide (20). New Zealand, Australia and Norway have the highest rate of Skin cancer mortality in the world based on the global burden of diseases and injury in 2002 (21).

Although the mortality is rising worldwide (20), the rate of its mortality varies in different countries. In countries such as Spain, Mexico and the Netherlands, the rate of Skin cancer mortality has been increased, whereas other countries, including the UK, Canada, USA and Australia, reported stabilization or decreasing (22-24, 25). This study indicated an increasing till 2003 and then decreasing in 2004 and maybe the trend would be stabilized as similar as these countries.

It seems that, the mortality of Skin cancer is higher in western countries, comparing to Asian's. Besides, this rate is higher in men (25). Our results indicated a higher mortality in men, compared to women too.

Sunscreen is effective and thus recommended to prevent melanoma (26) and squamous cell carcinoma (27). There is insufficient evidence either for or against screening for skin cancers (28).

This study revealed an increasing trend of Skin cancer burden in Iranian population and the results will help to understand the direction of the Skin cancer mortality in Iran and can assist the health policy makers to evaluate planning and strategies to decrease the burden of this cancer in future.

A limitation of this study is underestimating of mortality for cancers in Iran due to poor registry (15). Also we didn't access to crude data for all ages in order to give age-standardized mortality rates for international comparison. But the results may be useful to health practitioners and policy makers in monitoring and projecting future rates.

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