

**Is the ozone hole putting you at risk for cancer?**

Rubaisha Saleem Jafri, Syeda Javeria Salman

*Dear Editor,* Forty years ago, scientists warned that a hole in the ozone layer could harm human health.

A dropping trend in the ozone layer was reported in 1985; a phenomenon which was called the Antarctic ozone hole. This depletion was caused by industrial chemicals mainly chlorofluorocarbons (CFCs) which were later banned under the Montreal Protocol. However, it has recently been confirmed that another ozone hole seven times larger; has been discovered over the tropics.<sup>1</sup>

A tyrosine-derived skin pigment, melanin protects against the damage caused by UVA and UVB rays. The ozone layer filters the most harmful type- UVC rays. With the depletion of this protective barrier, excessive UV ray exposure can lead to the development of melanomas during childhood and young adulthood, with an increased risk of squamous cell carcinomas in individuals older than 60.<sup>2</sup> The incidence of skin cancer worldwide has tripled since the 1970s, with a mortality rate of 0.7%,<sup>3</sup> while limited data from Karachi Cancer Registry (KCR) and DUHS cancer registry shows NMSC as being the fifth most diagnosed cancer, accounting to 8.9% of all cancers in males. According to the data published by WHO in 2020, the death toll reached 1539 or 0.11% in Pakistan. The age adjusted death rate was recorded as 1.16, increasing the skin cancer burden.<sup>4</sup> These numbers might not seem alarming as indicated by the same research; most cities have no contributions to this field, leading to a scarcity of 2.7 publications per year on skin cancer.<sup>4</sup> Hence further reduction in this layer could result in a greater incidence of malignant tumours, as well as premature skin ageing and the development of cataracts.

.....  
2nd Year MBBS Student, Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan.

**Correspondence:** Rubaisha Saleem Jafri. e-mail: rubaishasaleem@gmail.com  
ORCID ID. 0000-0002-1151-626X

Its about time that Pakistani citizens should take the following comprehensive measures:

1. Wear sun protective clothing.
2. Avoid artificial sources of UV exposure like skin tanning.
3. Use a broad-spectrum sunscreen (SPF 40 or higher).

Schools and other education institutes should conduct workshops highlighting the hazardous effects of UV rays should be conducted to raise awareness in children. In addition to this, the Government of Pakistan should enforce stronger policies for implementation of the Montreal Protocol, which has resulted in the prevention of an estimated 443 million cases of skin cancer and 63 million cases of cataracts for people in the US.<sup>5</sup>

**Disclaimer:** None.

**Conflict of interest:** None.

**Funding disclosure:** None.

**DOI:** <https://doi.org/10.47391/JPMA.7572>

**Submission completion date:** 26-08-2022

**Acceptance date:** 16-11-2022

**References**

1. Lu QB. Observation of large and all-season ozone losses over the tropics. *AIP Advances* 2022; 12: 075006.
2. Rauterberg A, Jung E. UV exposure, skin cancer and decrease in the ozone layer. *Ther Umsch* 1993; 50: 804-7.
3. Guerra K, Zafar N, Crane J. *Skin Cancer Prevention*. Treasure Island (FL): StatPearls Publishing; 2021.
4. Rehman SH, Majid B, Syed SA, Qureshi MA. Quantitative Analyses of Skin Cancer Research in Pakistan. *Pak J Med Sci* 2021; 37: 582-7.
5. Madronich S, Lee-Taylor J, Wagner M, Kyle J, Hu Z, Landolfi R. Estimation of Skin and Ocular Damage Avoided in the United States through Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer. *ACS Earth Space Chem* 2021; 5: 1876-88.