

Skin cancer risk factors among black South Africans — The Johannesburg Cancer Study, 1995–2016

Babongile C Ndlovu^{1,2,3}, Wenlong Chen², Lazarus Kuonza^{1,3}, Mazvita M Sengayi^{2,3}, and Elvira Singh^{2,3}

¹South African Field Epidemiology Training Program, National Health Laboratory Service, Johannesburg, South Africa

²National Cancer Registry, National Health Laboratory Service, Johannesburg, South Africa

³School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

ABSTRACT

Background: Skin cancer is the most frequently diagnosed malignancy at both global and regional levels. The black population is known to be at a lower risk of developing skin cancer. Despite protection by melanin, skin cancers still occur in black populations. The aim of this study was to identify risk factors associated with skin cancer among black South Africans (SA) presenting at selected tertiary hospitals in the Gauteng Province, 1995-2016.

Methods: The current study used data from the Johannesburg Cancer Study (JCS). JCS recruited adult (18+ years old), consenting, self-defined black SA patients newly diagnosed with cancer and attending public referral hospitals (Chris Hani Baragwanath, Hillbrow and Charlotte Maxeke Johannesburg Academic Hospital) in Johannesburg. Risk factor information on different cancers, including sexual and reproductive behaviour, alcohol use, smoking, sex, urbanicity, etc. were collected. A case control study was then conducted. Cases were those patients with a diagnosis of a skin cancer (non-melanoma skin cancer (NMSC) and/or melanoma skin cancer (MSC)) and controls were those without a cancer diagnosis. The following exposures were assessed; socio-demographic (sex, age, province of birth, rural/urban dweller in the province of birth, province of current residency, rural/urban dweller at current province of residency, and level of education), environmental (type of walls of the house the patient lives in, whether they cook indoors/ outdoors currently and in the past, type of cooking fuel used currently and in the past, and type of warming fuel used currently and in the past), behavioural (smoking status and snuff use), and HIV status. STATA MP version 15 was used to determine proportions of cases by; skin cancer major subtype, demographics, histological spectrum and anatomical site of distribution. A stepwise (backward elimination) logistic regression was done to identify risk factors associated with NMSC and MSC.

Results: Results showed that in this population more NMSCs (n=160) were diagnosed compared to MSCs (n=101). There was equal distribution of NMSCs between males and females. There were more females (60.4%, 61/101) with MSCs compared to males (39.6%,

40/101). The majority of both NMSC and MSC cases were reported in ages 51 to 60 years (27% of all skin cancers). The median age at NMSC diagnosis was the same in both sexes (50 years). The median age at MSC diagnosis was the same in both sexes (mid 50s). The NMSC histological spectrum and anatomical site of distribution showed that there were more squamous cell carcinomas (SCCs) (78/160 in females, and 72/160 in males) than basal cell carcinoma (BCC) subtypes. The SCC lesions were mostly found on the skin of the head and neck in males (51.4%, 38/72) and on the trunk in females (46.2%, 36/78). MSC was shown to affect the skin of the lower limbs in both males (67.5%, 27/40) and females (59.02%, 36/61). The logistic regression results showed that when age, current urbanicity, type of cooking fuel used currently, smoking, and HIV status were adjusted for; males had 2.04 odds of having NMSC (CI: 1.08-3.84, p=0.028) compared to females. When age, current urbanicity, place of cooking (indoors or outdoors) were adjusted for; males had 2.26 odds of having MSC (CI: 1.19-4.29, p=0.012) compared to females.

Conclusion: The black population was more affected by SCC than by BCC subtype of NMSCs. The SCC lesions were mostly found on the skin of the head and neck in males, and on the skin of trunk in females. Men were found to be at greater odds of being diagnosed with both NMSC and MSC compared to women. Living in a rural area, current smoking and being HIV positive were shown to have positive associations with NMSC outcome. Living in rural area and cooking outdoors were shown to have positive associations with MSC outcome. The current study recommends sun protection initiatives (use of protective clothing and sunscreen) when outdoors. Prevention of HIV infection and/or HIV immunosuppression and quitting smoking might help reduce the risk of NMSC. This study highlights the importance of skin cancer awareness campaigns especially in rural areas because people who live in rural areas had higher odds of both NMSCs and MSC.

Keywords: non-melanoma skin cancer; melanoma skin cancer; black population; South Africa