# NAMIBIA NATIONAL CANCER REGISTRY (NNCR)

## *"CANCER INCIDENCES IN NAMIBIA 2015 – 2017"*

**Data collected and entered by the Namibia National Cancer Registry (NNCR)**

Mrs Lizelle van Schalkwyk

Sr Sophy Lawrence & Sr Pontac

Dr Annelle Zietsman & DR AB May Cancer Care Centre

Namibian Oncology Centre

**As National Director: Namibia National Cancer Registry**

Mr Rolf Hansen

**Data analysis and report written by**

Mr Rolf Hansen

**Report reviewed by**

Prof D Maxwell Parkin, African Cancer Registry Network (AFCRN)

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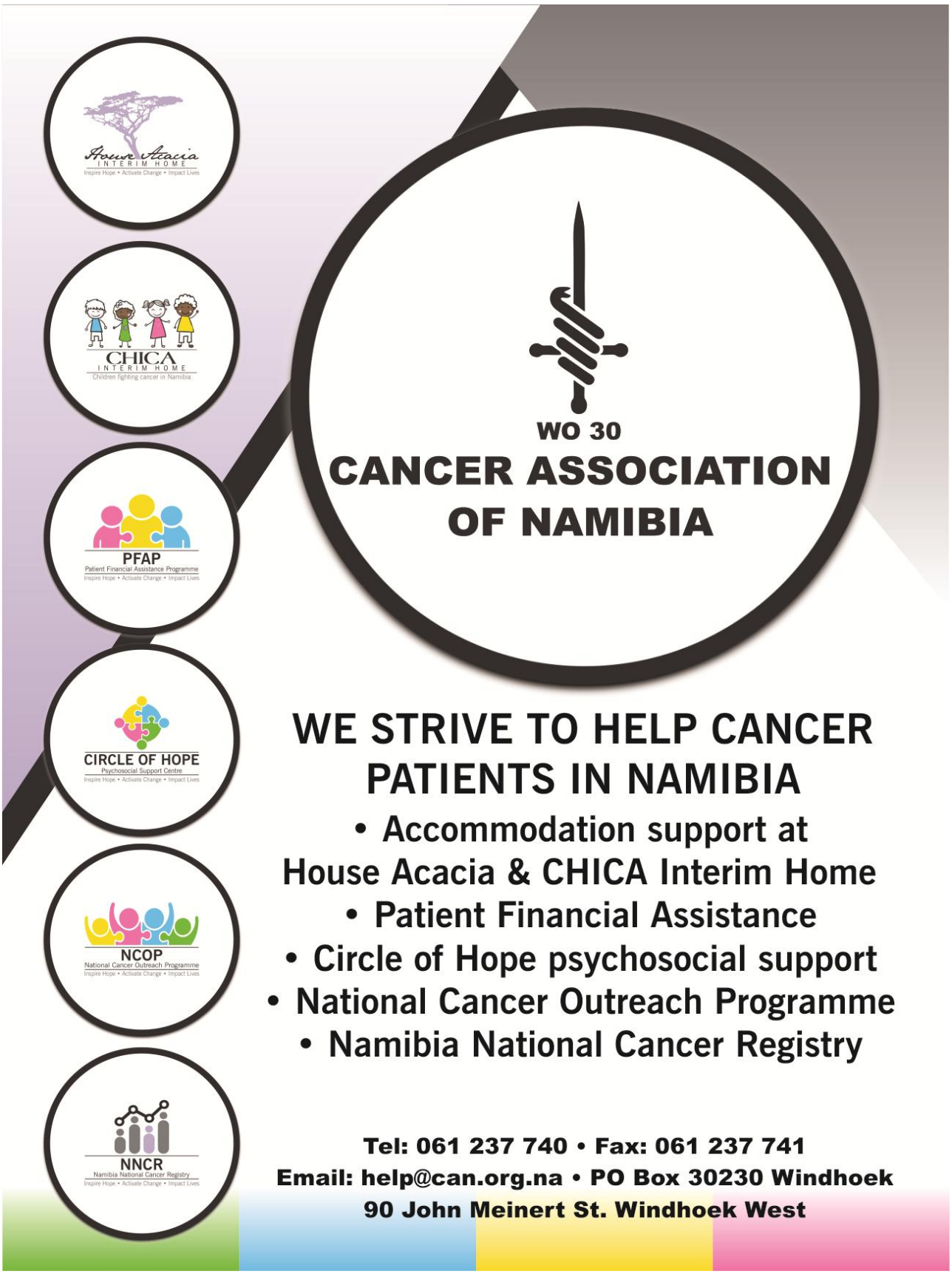
NNCR

Namibia National Cancer Registry

Inspire Hope • Activate Change • Impact Lives

CANCER ASSOCIATION OF NAMIBIA


House Acacia
INTERIM HOME
Inspire Hope • Activate Change • Impact Lives
CHICA
INTERIM HOME
Children fighting cancer in Namibia
PFAP
Patient Financial Assistance Programme
Inspire Hope • Activate Change • Impact Lives
CIRCLE OF HOPE
Psychosocial Support Centre
Inspire Hope • Activate Change • Impact Lives
NCOP
National Cancer Outreach Programme
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WE STRIVE TO HELP CANCER
PATIENTS IN NAMIBIA
• Accommodation support at
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• Patient Financial Assistance
• Circle of Hope psychosocial support
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• Namibia National Cancer Registry
Tel: 061 237 740 • Fax: 061 237 741
Email: help@can.org.na • PO Box 30230 Windhoek
90 John Meinert St. Windhoek West

# CONTACT INFORMATION

**Namibia National Cancer Registry (NNCR)**

90 John Meinert Street, Windhoek West

PO Box 30230, Windhoek`

Republic of Namibia

Tel: +264 (0)61 237740

Fax: +264 (0)61 237741

canreg@can.org.na

**a department within the Cancer Association of Namibia (WO30)**

90 John Meinert Street, Windhoek West

PO Box 30230, Windhoek

Republic of Namibia

Tel: +264 (0)61 237740

Fax: +264 (0)61 237741

help@can.org.na

**for more information visit www.can.org.na**

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# Word of Appreciation

The Cancer Association of Namibia and Namibia National Cancer Registry would like to thank the Ministry of Health and Social Services, Ministry of Home Affairs, all medical practitioners, medical and treatment centres, diagnostic centres and laboratories, and willing volunteers who have supported data collection in Namibia and for this publication. In particular, our appreciation is extended to Sr Lawrence and Sr Pontac who assist us on a consulting basis with data capturing, the colleagues at Dr AB May Cancer Care Centre of Windhoek Central Hospital, the Namibian Oncology Centre and the African Cancer Registries Network (AFCRN) for guidance and support.

**PARATUS & InTouch Interactive Media** –

The Cancer Association of Namibia, in proud collaboration with PARATUS and INTOUCH Interactive Media, joined forces to develop the first online electronic portal (http://can.intouch.com.na/) for the registration of cancer cases in Namibia.

The e-portal allows for easier, yet more comprehensive data capturing of cancer diagnosis and follow-up of patients. Our mission as Namibia National Cancer Regstry is to improve cancer surveillance in Namibia.
The traditional paper-based notification form does not become redundant, but NNCR is gradually transitioning to the electronic capturing system in order to facilitate more updated data throughput.

We sincerely thank PARATUS and Intouch Interactive Media for their wholehearted support in this project.

*"Paratus has been involved with the Cancer Association and the drive of cancer awareness for many years. Paratus and its employees, their families and close friends have either directly or indirectly been affected by the effects of cancer. Paratus believes that early diagnosis of cancer is vitally important. Data analysis and statistics are therefore prudent to effectively categorise cancer in order to consider preventative treatment and also provide the families with the support during treatment periods." - Andrew Hall, MD: Paratus Namibia*

PARATUS

Enquiries:
Sunette Burden
Marketing Manager
Paratus Namibia
sunette.burden@paratus.africa

+264 81 122 7620

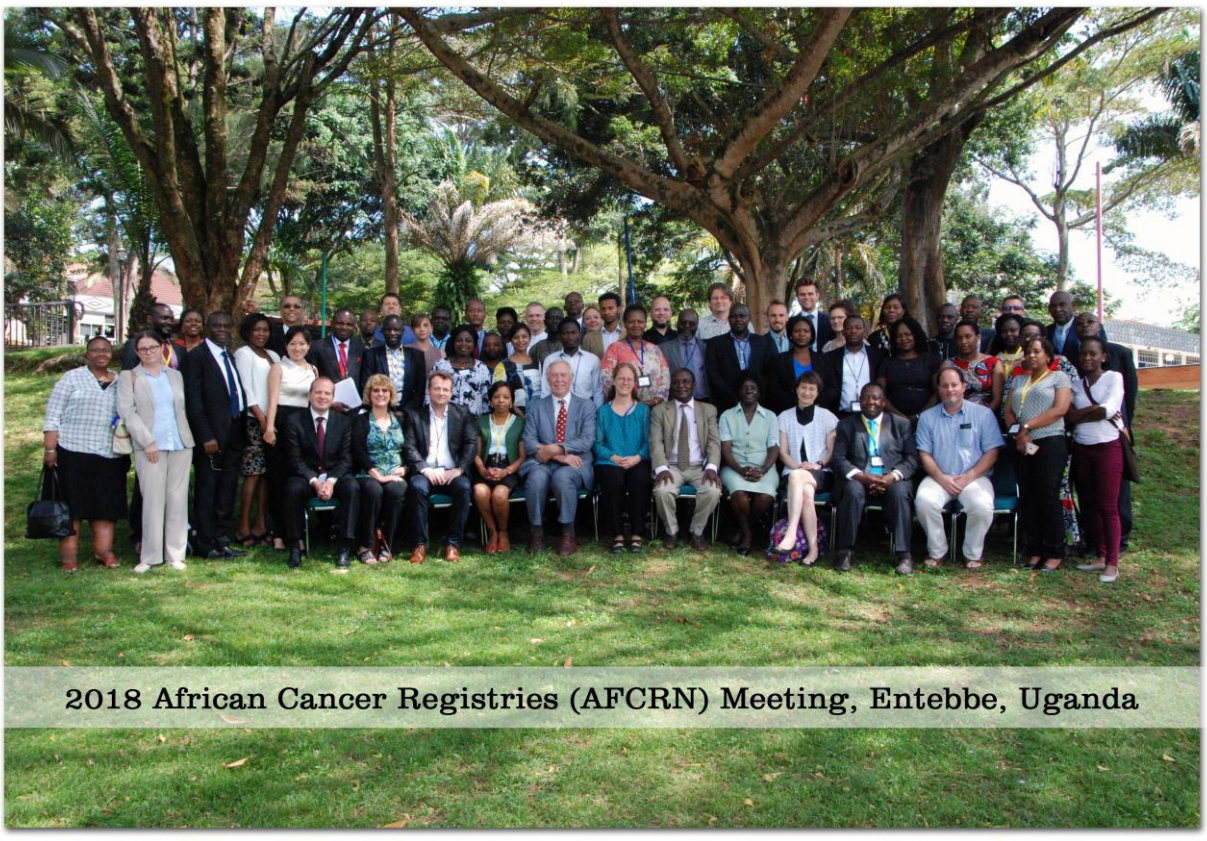
**African Cancer Registry Network (AFCRN) –**

The most recent annual African Cancer Registry Network meeting was funded by the Volkswagen Stiftung during October 2018 in Entebbe, Uganda, under the theme “African cancer epideliology meets infectology”.

A gap remains in linking cancer control and the still-existing high prevalence of infectious diseases in Africa. The aim of this conference was thus to to facilitate development of a consortium, including knowledgeable cancer experts from Sub-Saharan Africa and infectious diseases scientists; and to establish a research collaboration linking international experts to tackle the challenges of an increasing number of cancer patients in sub Saharan Africa who have underlying causative infectious diseases and who are simultaneously exposed to various tropical infectious diseases.

This conference set the ground for networking, assessment of information available, exchange of ideas and development of activities. It further established to developed new projects linking population-based data on cancer and infectious diseases in Africa to generate hypothesis and identify possible options for interventions.

The Namibia National Cancer Regstry commend and thank the AFCRN-team and donors who remain committed to research on cancer in Africa, and especially the development of cancer registries in Africa!



2018 African Cancer Registries (AFCRN) Meeting, Entebbe, Uganda

**Cancer Registry of Rhineland-Pfalz, Germany –**

During October 2018 the Namibia National Cancer Registry and the Cancer Registry of Rhineland-Pfalz in Germany embarked on a co-operative venture to exchange expertise and develop a mentorship programme whereby Namibia could benefit. This project was innititated by Prof Max Parkin of the AFCRN, in support of the AFCRN mandate to promote the development of quality output of African cancer registries.

Dr Sylke Zeißig, Prof Dr Annette Hasenburg, Minister Sabine Bätzing-Lichtenthäler, Rolf Hansen, Antje Swietlik

Rolf Hansen & Lizelle van Schalkwyk visited the German registry to get a better understanding of their systems, patient confidentiality laws and protection; while systems planning and new ideas on data capturing and presentation (evident in this report) was on the agenda.
The Namibian team met with the regional Minister of Health, Sabine Bätzing-Lichtenthäler where further support for the NNCR was established.

A further offer of knowledge exchange and skills transfer was established when Dr McCartney Möller of the Dr AB May Cancer Care Centre at Windhoek Central Hospital was invited to Mainz in order to expand his knowledge on staging and women's cancer care at the local Women's Clinic of the University Hospital in Mainz.

Future exchanges will see the German counterparts visiting with CAN in Namibia to share expertise through workshops, with medical students and oncology staff.

The Namibian National Cancer Registry thanks the Rhineland registry leadership, Antje Swietlik (Director) and Dr Sylke Zeißig (Medical Director) in addition to Prof Dr Annette Hasenburg (Director of the Women's Clinic of the University Hospital in Mainz) for the invitation and support bestowed towards Namibia and the NNCR.

Fltr: Dr Sylke Zeißig (Germany), Lizelle van Schalkwyk (NNCR), Rolf Hansen (NNCR), Antje Swietlik (Germany)

## Message from the Cancer Association of Namibia (CAN) and Namibia National Cancer Registry (NNCR)

Founded in 1968 the Cancer Association of Namibia (WO30) has continuously strived to strenghten the conditions related to fighting cancer in our country. The association remains actively engaged in creating awareness, educating and supporting Namibians afflicted by the disease.
Supporting data collection and presentation of a quality incidence report on cancer incidence in Namibia, is imperative as this allows for proper planning, budgeting and in effect – saving lives! Commitment on all levels in both public and private sector remains pivotal realizing this goal!

The Cancer Association of Namibia, as administrator of the Namibia National Cancer Registry, is therefore proud to present the sixth (6th) *Cancer Incidence in Namibia* report *(2015 – 2017)*. This document should ideally be read along with the other published reports to get a better underastanding of the disease movement and increase, the challenges faced in recording of quality data and how important planning is to make meaningful impact.

*Hand-over of the 2010-2014 incidence report by Rolf Hansen (CAN) to the Hon Dep Minister of Health and Social Services, Juliet Kavetuna*

From commentary, you will again realize there is still a lot of changes that can be implemented to ensure we deliver quality data outputs. However, I am proud to state that it is also very evident that our continuous efforts and dedication to upscale the national registry has paid off – we see more stable trends, cases numbers and comprarable data that can be matched against previous timelines and our SADC communities facing similar challenges both economic and social as ours.

Data collection is a very time-consuming and a costly process and, as a welfare organisation, we underscore the urgency of public and stakeholder engagement – not only in data support, but for funding of CAN's welfare arm as well. The association remains committed to our cause and NNCR remains a priority at all cost.

I would like to thank all stakeholders who play there part passionately and with full conviction – Mrs Lizelle van Schalkwyk who is our Technical Lead: NNCR; Sr Lawrence and Sr Pontac who worked endless hours of helping to find patient files and coding; and I particularlry acknowledge and thank the staff of the Dr AB May Cancer Care Centre and the

Namibian Oncology Centre, Namibian Institute of Pathology and the practice of Dr Hannes Holm who have unequivocally dedicated their support to this project.

Dr Maxwell Parkin (Prof Max as we fondly call him) and Ms Biying Lui of the African Cancer Registries Network (AFCRN) deserve a great round of applause for their commitment to data collection not only in Namibia, but Africa as a whole. Dr Freddy Bray at IARC deserves a special award for absolute patience while sharing and empowing with wisdom on epidemiology and CANREG5 – Thank you!

We visited new colleagues in Germany and forged a brilliant network of hope that sees our registry growing even stronger – learning alternative concepts and implementing better ideas in the mission to build the Namibian registry to a quality data hub that will impact lives and push for evidence-based change in cancer care policy.

In conclusion, I believe that this publication will help guide all parties involved in decision-making, advocacy and responsible citizenry (both private and corporate) to support the fight on cancer in Namibia. Whether it be by improving access to data through legislation that makes cancer a reportable disease in Namibia; or by supporting fundraising drives to the strengthen the cause – we all have our role to play.

**Rolf-Jürgen Hansen**
**Chief Executive Officer: Cancer Association of Namibia (WO30)**
**National Director: Namibia National Cancer Registry (NNCR)**

*"Collaborative networks of hope between nations allow us to exchange, grow and develop to the benefit of individuals who need us. We should always be reminded that these "individuals" are people - a mother, a son, a child, you or me that can be affected by cancer.*
*The Cancer Association of Namibia thank the Krebregister Rheinland-Pfalz and the Ministry of Health in this region for extending an invitation to out country to the betterment of our people"*
*- Mainz, Germany, 15 October 2018*

## Message from Dr Anel Zietsman, Dr AB May Cancer Care Centre and partner of the Namibia National Cancer Registry (NNCR)

## SUMMARY

This report summarises the results of an analysis of cancers reported to the Namibian National Cancer Registry from 2015 to 2017. A brief overview on updates of cases during 1995 – 2014 (previous published reports) and regional comparisons with fellow African registires is also addressed.

Between 2015 and 2017 a total of 10 375 cases of cancers (excluding C44 “other skin cancer”) were registered: 4 829 among men (47%) and 5 546 among women (53%).
A total of 1 894 “other skin cancer C44” (constituting 18% of all cancer cases) was reported.

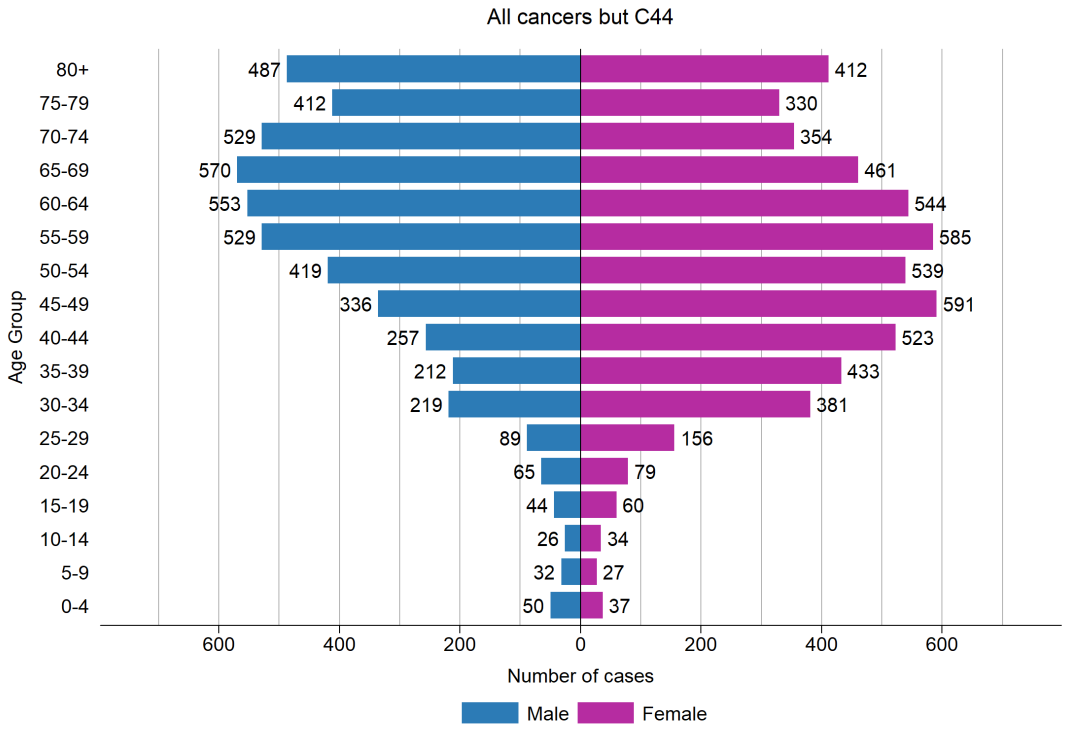
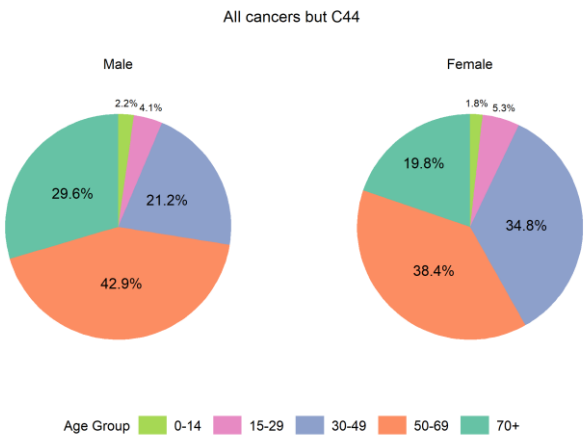


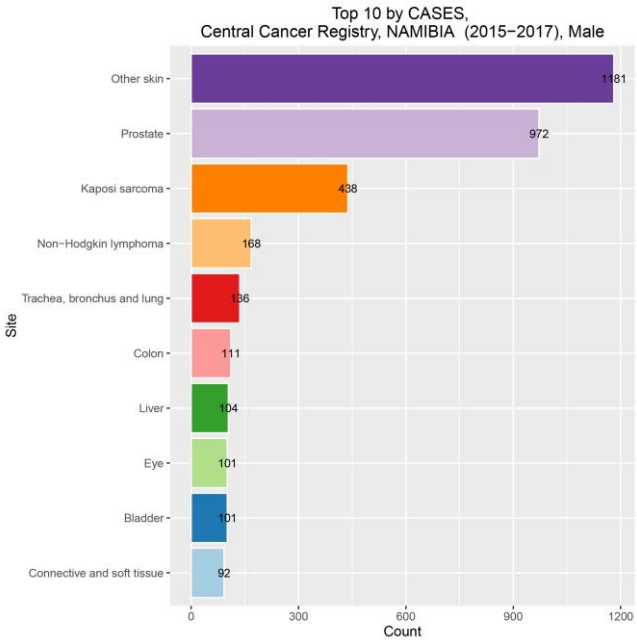

Fig 3a. Bar chart, distribution of cases by age group and sex

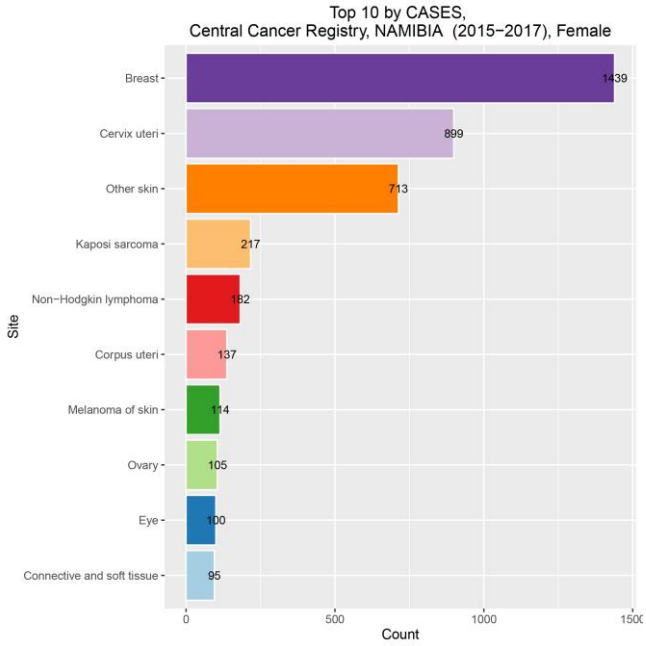



This represents an increase in incidence in both sexes compared to the previous reporting period (2010 - 2014) while the ranking of the most common types of cancer remained similar with the exception of a notable increase in the HIV-associated cancers (Kaposi sarcoma, Non-Hodgkin lymphoma and Eye cancer).

Fig 3b. Pie chart, distribution of cases by age group and sex

C44 “Other Skin” cancers (commonly basal cell carcinoma and squamous cell carcinoma recorded) remain the top reported cancer, reporting 1 894 cases in total (1 181 male and 713 female). Kaposi’s sarcoma incidences have increased during this reporting period ranking in the top 3 most common cancers diagnosed in both sexes (438 cases in males and 217 cases in females).




## The top 5 cancers in Namibia by gender: 2015 – 2017 (Excuding C44 “Other Skin”)

| Cancer in males | Proportion of all cancers (%) | Proportion of all male cancers (%) | ASR / 100 000 | Cancer in females | Proportion of all cancers (%) | Proportion of all female cancers (%) | ASR / 100 000 |
|---|---|---|---|---|---|---|---|
| Prostate | 9.3 | 26.5 | 55.5 | Breast | 13.8 | 29.7 | 62.0 |
| Kaposi sarcoma | 4.0 | 11.9 | 18.6 | Cervix | 8.6 | 18.5 | 37.7 |
| Mouth & pharynx | 2.5 | 7.1 | 14.9 | Lymphoma | 2.1 | 4.0 | 8.3 |
| Lymphomas | 2.0 | 5.8 | 14.9 | Kaposi sarcoma | 2.0 | 4.5 | 7.4 |
| Colon, rectum, anus | 1.8 | 5.2 | 11.1 | Corpus & uterus NOS | 1.8 | 3.2 | 8.6 |

This report describes the overall occurrence of cancer and the leading cancers in Namibia. This data continues to form a basis for future research into risk factors for cancers in the Namibian population and for programme planning and advocacy.
It remains highly recommended that cancer be made a reportable disease/condition in Namibia to improve cancer statistics and research.

# INTRODUCTION: A global perspective

New global cancer data suggests that the global cancer burden has risen to 18.1 million cases and 9.6 million cancer deaths. The International Agency for Research on Cancer (IARC) estimate that one-in-five men and one-in-six women worldwide will develop cancer over the course of their lifetime, and that one-in-eight men and one-in-eleven women will die from their disease. The estimation is that by 2040 the annual incidence of cancer will be 29.5 million people. A number of factors appear to be driving this increase, particularly a growing and ageing global population and an increase in exposure to cancer risk factors linked to social and economic development. For rapidly-growing economies, the data suggests a shift from poverty- or infection-related cancers to those associated with lifestyles more typical in industrialised countries (UICC & WHO / IARC 2018)

Cancer is the most common cause of death in developed countries. However, estimations suggest that Asia and Africa have a higher proportion of cancer deaths (7.3% and 57.3% respectively) compared with their incidence (5.8% and 48.4% respectively). IARC suggests this trend is likely due to the higher frequency of cancer types associated with poorer prognosis, along with limited access to timely diagnosis and treatment. The 2018 data also suggests that countries with high Human Development Index (HDI) have 2-3 times higher cancer incidence than those with low or medium HDI. The leading cancers globally have also changed compared to 2012 data.

It remains difficult to precisely estimate the burden of cancer mortality in developing countries, due to lack of, and/or the poor quality of available data. However, it is estimated that 10% of deaths in developing countries are due to cancer, and given the aging of these populations, cancer incidence is increasing (WHO, 2002).

A cancer registry provides a framework for assessing and measuring the impact of cancer in communities and is important in the allocation of health resources. It is an essential surveillance device for measuring the effectiveness of any cancer control programme. The data produced furthermore provides a starting point for research into cancer causes and prevention.

# BACKGROUND: Namibia National Cancer Registry

## History of the Registry

The Namibia National Cancer Registry (NNCR) was started in 1995 and is now a population-based, national cancer registry, covering the entire population of Namibia.

Concern about potential cancer risks at a local uranium mine led to the registration of all cancers diagnosed by the only central pathology service in Namibia. The project was a cooperation between the Rössing Uranium Mince Company, the Namibian Ministry of Health and Social Services (oncology clinic: Windhoek Central Hospital) and the Cancer

Association of Namibia. The registry collected all cancer cases presented to the Windhoek state pathology laboratory (the only pathology laboratory in Namibia from 1979 to 1994).

From 1995 the Namibia National Cancer Registry commenced active registration of both pathology-based and clinical cases for all 13 regions (now 14 regions since 2013 with "Kavango East" and "Kavango West", while the "Caprivi" was renamed "Zambezi") of Namibia.
Cases that are diagnosed in Republic of South Africa are re-routed to the Namibian registry via a network of registries, which are technically supported by IARC.
The Registry aims to provide information that will ultimately lead to improved cancer prevention and control among the Namibian population.

## Location of registry

The registry is based at the head office of the Cancer Association of Namibia in the capital, Windhoek. Activities of the registry are overseen by the CEO of CAN, and the association has facilitated and provided staff support for the registration. Currently, no independent budget or resources are available for the registry.

At present, data collection takes place primarily at the Dr A.B. May Cancer Care Centre of Windhoek Central Hospital to which all state cancer patients are referred to for assessment and possible treatment. Majority of private cases are routed to the private Namibian Oncology Centre and all these cases are electronically submitted to the registry via a newly developed e-capturing system of the association.
Several private chemotherapy centres now also exist throughout the country that communicate cases to the NNCR on ad-hoc basis.

There are two primary pathology laboratories in the country, the state Namibian Institute of Pathology (NIP) and the private PathCare, in addition to several smaller laboratories that have been established in the last 5 years. The pathology reports from NIP include demographic data, but place of residence is noted in less than one third of cases. The annual cancer patient cases print-out received from PathCare only includes the age and sex.

Some case information of Namibians being diagnosed or treated in South Africa, is primarily received from private laboratories in Cape Town (RSA).
There is no permanent service of clinical haematology in Namibia, with the exception of ad-hoc services now provided by Namibian Oncology Centre on a monthly basis via South Africa consulting specialists visiting.

## Death registry & Case Follow-up

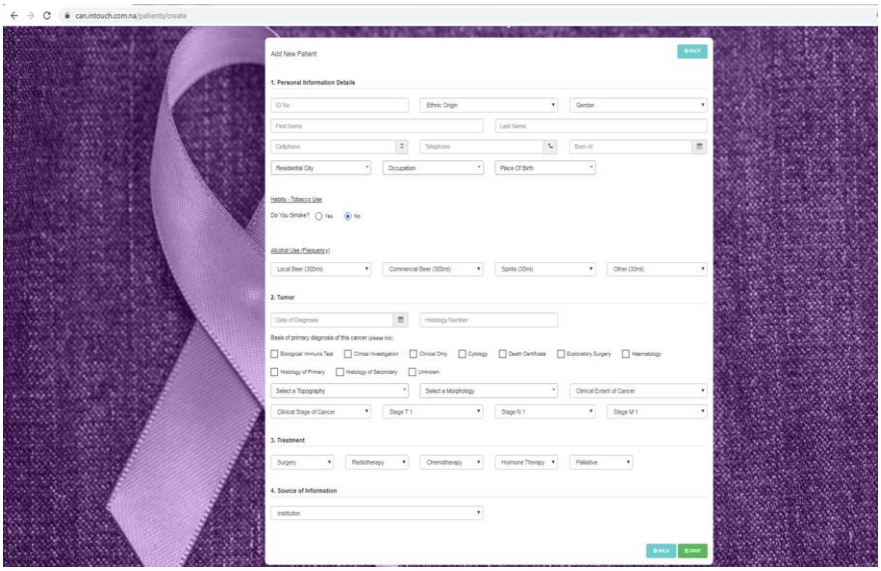
The civil registration of deaths, by cause, is the responsibility of the Ministry of Home Affairs. The registry has gained access to the new electronic death registry in 2018 only. The quality of information on the cause of death remains a concern as only an "alive" or "deceased" status is confirmed by the Ministry.

Follow-up with regard to all cases presented with contact details are conducted annually by telephone call and flow-algorithm to try and confirm patient status, treatment status and current location.

Case finding relies upon receipt of completed registration forms filled in by registered nurses employed as consutlants by CAN in the admissions unit of the Dr AB May Cancer Centre, while the Namibian Oncology Centre submits electronic reports. Copies of pathology reports are processed and coded manually. Currently, there is no active case finding due to lack of funding, with the exception of CAN staff reviewing patient files presented to the association for support through its Patient Financial Assistance Programme andthen cross-referencing these patients with cases presented to the registry to ensure these patient data is recorded.

## Software and Systems

PARATUS and InTouch Interactive Media has assisted CAN in the development of an online electronic portal for data submission, while CanReg5 software is used for data entry, check and outputs.
There has been no formal evaluation of registry quality.




Tumor site (topography) and histology (morphology) are recorded by CAN staff, according to the International Classifaication of Diseases for Oncology (ICD-O-3). Since 2010 ICD-10 has been used to code cancer site
Only selected staff are allowed access to registry data; the CanReg file is password protected and the registry office is kept locked.

Figure 1: Online patient data capturing system

## Sources of Finance

The International Association of Cancer Registries (IARC) and African Cancer Registries Network (AFCRN) cover some costs pertaining to the registry.
The Cancer Association of Namibia (WO30) funds all other registry activities.

## Publications

There are 5 previously published reports in this series (1989-1994; 1995-1998; 2000-2005; 2006-2009 and 2010-2014):

• Koehler S. Namibia's cancer atlas: 1989-1994. Namibian National Cancer Registry 1997.
• Stein L, sitas F, Zietsman A, Gariseb B, Rautenbach N, Pontac J and Johannesson I.

Cancer in Namibia 1995 – 1998, Namibia Cancer Registry 1999.
• Carrara H, Stein L, Sitas F, Zietsman A, Gariseb B, Rautenbach N, Pontac J, Johannesson I and Ferlay J. Cancer in Namibia 2000-2005, Namibia Cancer Registry, Windhoek 2009.
• Carrara H, Stein L, Sitas F, Zietsman A, Gariseb B, Rautenbach N, Pontac J, Rooi T, and Taapopi L. Cancer in Namibia 2006-2009, Namibia Cancer Registry, Windhoek 2011.
• Carrara H, Koegelenberg R, Hansen R, Zietsman A, Pontac J, Lawrence S, hHorn L, and Van Schalkwyk L. Cancer incidences in Namibia 2010 - 2014, Namibia National Cancer Registry, Windhoek, 2017.

A number of other publications and conference abstracts have been prepared, some mentioned are the contributions to the body of literature on:

• Cancer in Sub-Saharan Africa (IARC Scientific Publication No. 167, Edited by Parkin DM, Ferlay J, Jemal A, Borok M, Manraj SS, N'da GG, Ogunbiyi FJ, Liu B, Bray F)
• Cancer in Africa (Parkin et al., 2003; Parkin et al., 2008; Sitas et al., 2008, Ferlay et al, 2010 – the WHO/IARC database GLOBOCAN 2012).
• The Pain Experience and its management in cancer patients during hospitalization (in Namibia) Health SA Gesondheid Vol.5 No.4, RSA 2000 (ASB van Dyk, RN, LF Small, A Zietsman)

## Mandate, Mission and Objectives of the Namibia National Cancer Registry (NNCR)

Mandated by the Board of the Directors of the Cancer Association of Namibia, the NNCR, as a programme within the Cancer Associaiton of Namibia, aim to provide a database of information that will ultimately lead to improved cancer prevention and control in Namibian. We endeavour to not only enage patients to build quality data, but also to build best-practice models to help fight cancer in and reach out to cancer patients through CAN's support programmes and help patients as best possible if, and where, we can.

**We have tasked ourselves with the CAN Board-instructed mandate to:**

1) Monittor the incidence of cancer among the Namibian population on an ongoing basis;
2) Observe cancer trends to predict future cancer patterns in Namibia;
3) Provide information on the burden of cancer in different regions, and among different ethnic groups in Namibia;
4) Monitor the effects of cancer prevention programmes, early detection or screening, treatment and palliative care;
5) Provide information that will serve as a basis for research into cancer causes specific to the Namibian population.

**Our core Mission remains to:**

1) Act as network agent between all relevant stakeholders to access cancer cases.
2) Collect and analyse cancer incidences.
3) Process data and build reputable data output.
4) Report on incidences to fight cancer.
5) Provide quality output data to Ministry of Health and Social Services for planning.

**At no point may the patient confidential information be compromised. Data entered by relevant stakeholders remain the responsibility of Cancer Association of Namibia!*

**Our objectives are to answer these questions:**
1) How many persons have been diagnosed with cancer and what types (cancer incidence) in Namibia?
2) Which forms of cancer have increased, which forms have decreased?
3) What are the differences between women, men and childhood cancer with regard to patterns of cancer cases?
4) Do lifestyle factors contribute to cancer incidence in Namibia?
5) Do environmental factors contribute to cancer incidence in Namibia?
6) Does ethnicity contribute to cancer incidence in Namibia?
7) Do instruments of early cancer detection have an effect?
8) Do individual forms of cancer appear more often in certain regions of the country?
9) How many persons that have fallen ill in the past 5 years are living in a specific region?
10) What is the role of immune-deficient factors (i.e. HIV) on cancer incidence in Namibia?

## Namibia: A brief introduction

The registry covers the entire population of Namibia enumerated as 2 113 000 persons at the 2011 census. The map of Namibia (Figure 1) shows the 14 regions and the population density of each.

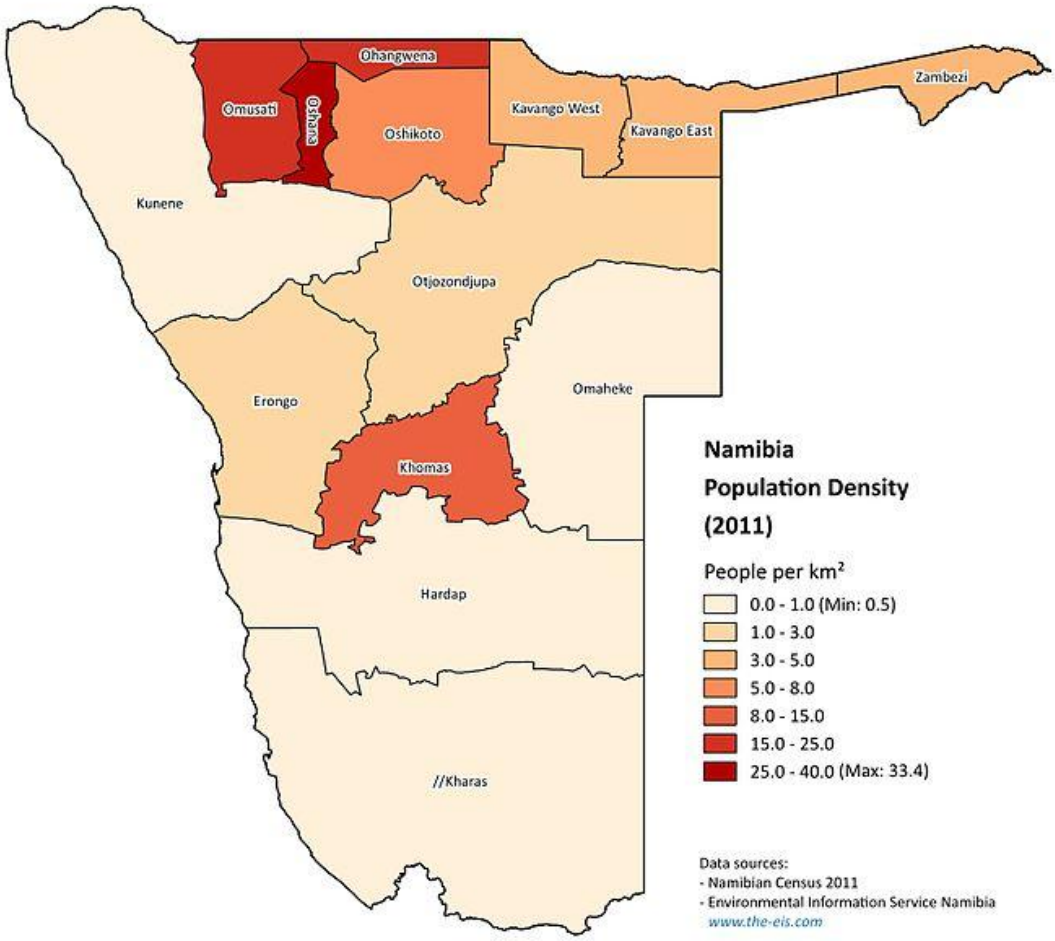



**Figure 2: Map of Namibia: regions and population density**

The Republic of Namibia, a southern African country shares borders with Angola and Zambia to the north, Botswana to the east, and South Africa to the south. It gained independence from South Africa in 1990 and its capital city is Windhoek.

With only roughly 2.5 inhabitants per square kilometre it is one of the most sparsely populated countries in the world. Namibia is one of Africa's most developed and stable countries. Mining and tourism form the backbone of Namibia's economy.

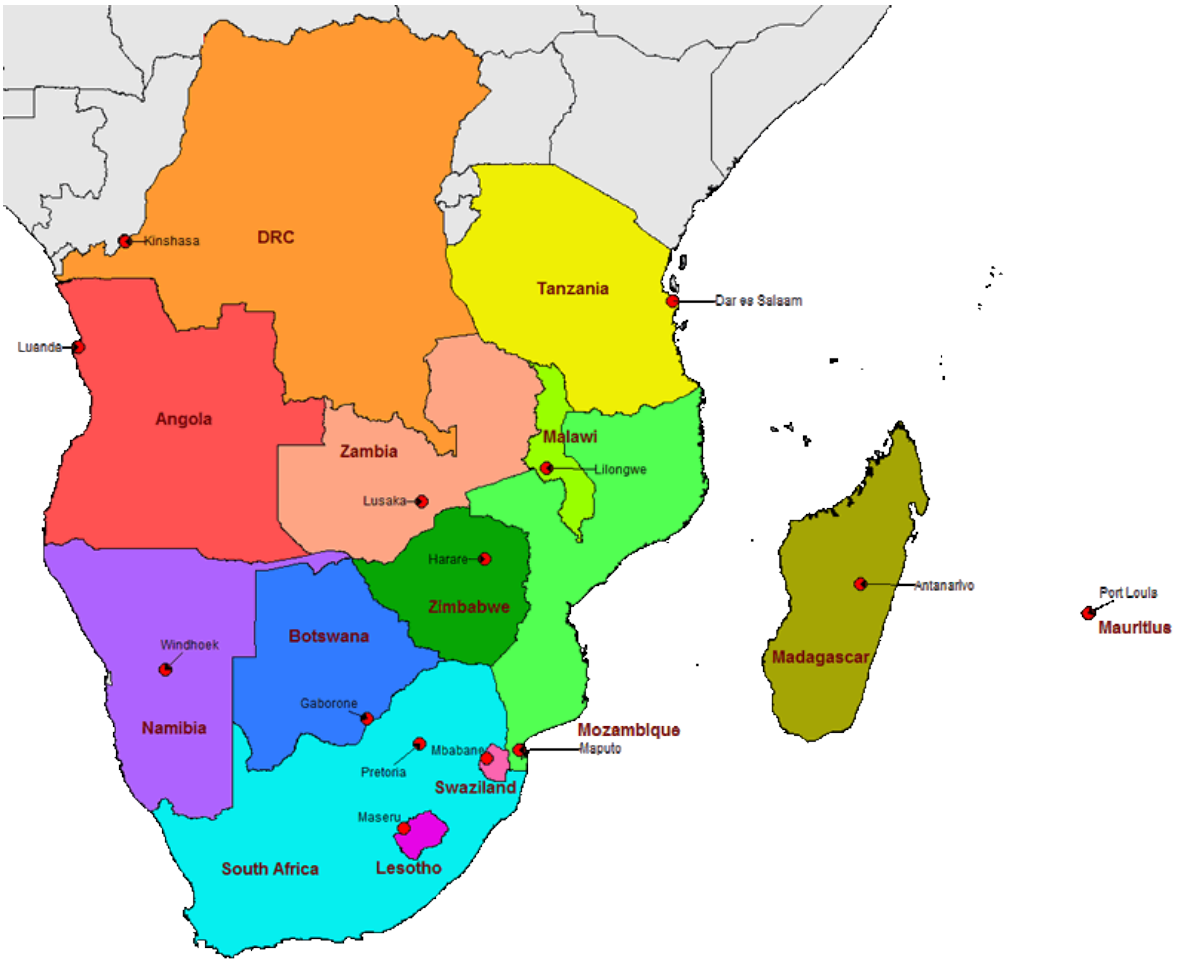



**Figure 3: Map of Namibia: regional in SADC situation**

The majority of the Namibian population is of indigenous African — mostly of Ovambo or Aavambo ?? ethnicity, which forms about half of the population — and is concentrated in the north of the country.
There are also the Herero and Himba people who speak a similar language.
In addition to the Black African majority, there are large groups of Khoisan (the Nama and San). Other Black Africans are descendants of refugees from Angola.

There are also two smaller groups of people with mixed racial origins, called "Coloureds" and "Basters", who together make up 6% of the population. Caucasians of Portuguese, Dutch, German, British and French ancestry make up about 6% of the population.

Most of Namibian caucasiuans and nearly all those of mixed race are Afrikaans speakers and share similar origins, culture, religion and genealogy as the White and Coloured populations of neighbouring South Africa. A smaller proportion of whites, approximately 30,000, trace their origins directly back to German settlers and maintain German cultural and educational institutions.
Figure 1 shows the map of Namibia and the geographic regions used in this report.

**Photo 1: Dr AB May Cancer Care Centre – Windhoek Central Hospital (State cancer care centre)**


**Photo 2: Namibian Oncology Centre (private cancer care centre)**

# MATERIALS AND METHODS

## Data collection by the Namibia National Cancer Registry

The NNCR attempts to record, for each cancer patient, the first name and surname, date of birth or approximate age, I.D. number, gender, marital status, ethnic origin, current residential address, place of birth, tobacco and alcohol use, reproductive history (for females), date of diagnosis of cancer, histology number, tumour site and histology, clinical stage of disease, basis of diagnosis, treatment given, vital status, and date and cause of death.

Until late 2010 data from the cancer registration form were entered into CanReg4 Software (Cooke et al., 2001; Cook et al., 2005). The data were migrated to CanReg5 (http://canreg.iarc.fr) in late 2010 and the data were validated and duplicates were identified using check and conversion programs for cancer registries (Ferlay et al., 2005). Tumour site and histology were coded using ICD-0-3 (2) (Fitz et al., 2001) at the time of data entry, but were converted to ICD-10 for the tabulation of cases. Since 2010 ICD-10 has been used to code cancer site.

## Sources of information for the registry

There are two large state hospitals in Windhoek: Central Hospital (which includes the Dr AB May Cancer Care Centre) and Katutura Hospital, and a referral hospital in each region of the country. There is a local, but not fully operational state cancer centre in Oshakati Intermediate Hospital.
In addition, there there are five private hospitals in Windhoek (Roman Catholic, Rhino Park, Medi-Clinic, Paramount and Lady Pohamba).

The Namibiann Oncology Centre (NOC) is a specialized private cancer treatment facility that opened in Windhoek in 2015 – the first of its kind for Namibia. This centre hosts the only Linear Accelerator (LINAC) unit (and second only radiotherapy unit apart from the dated Cobalt unit at the Ministry of Health) in Namibia.

At present, primary data collection takes place at the Dr AB May Cancer Care Centre and the Namibian Oncology Centre to which all cancer patients are supposed to be sent for assessment and possible treatment if state or private.
Paramount Hospital, GVI Oncology in Namibia and several smaller chemotherapy-only treatment centres also serve as data collection and patient referral points.

There are 2 main pathology laboratories in the country, the state Namibian Institute of Pathology (NIP) and the private, PathCare. Some information on cases from Namibia is also received from the laboratory in Cape Town (Dr Hannes Holm), while various smaller private laboritories have also set-up during the last 3 years and report cases to the registry.

The pathology reports from NIP include demographic data, but place of residence is noted in less than one third of these. The print-out received from PathCare does not include personal details, only the age and sex of the subject. For this reason, completeness of data remains of great concern, and the registry and Cancer Association of Namibia have been actively engaged with the Ministry of Health and Social Services on the finalisation and implementation of a National Cancer Control Plan and advocated to have cancer declared a reportable disease in this country.

In addition, active case finding throughout the vast country should be urgently implemented, but due to lack of funding, this remains a dubious challenge.
There is no service of clinical haematology, with the excpetion of consulation services that visit the Namibian Oncology Centre on a monthly basis as needed.

## Death registry

Civil registration of deaths, by cause, is the responsibility of the Ministry of Home Affairs. Permission for access to copies of certificates of cancer cases was granted from 2016 only. This is because a new electronic registry and databank is finally in place. The quality of information as to cause of death is not known.

## Methods of registration

Case finding relies upon receipt of registration forms, completed by nursing staff in the admissions unit of AB May Cancer Centre, NOC and copies of pathology reports, as described above. Currently, there is no active case finding and follow-up in Namibia, unless conducted by staff of the Cancer Association of Namibia on an ad-hoc basis. Lack of funding in this regard hampers this part of the project, as only the Cancer Association of Namibia and some donors who agree on the urgency of data pertaining to incidence reports cover all costs pertaining to the NNCR.

## Data management

The registry is housed at the Cancer Association of Namibia in a dedicated office. A desktop computer is used for data entry employing the specialised cancer registration software running in a Microsoft Windows environment.
CanReg5 is employed. Prior to data analysis, the data were exported as a comma-separated-values dataset and these data were checked using the IARC check and conversion programs. This generated a set of data that were manually checked by registry staff that updated the data in CanReg5 for analysis.

# DATA ANALYSED IN THIS REPORT

## Years analysed

The data collected by the NNCR consists of 434 79 cancer cases, recorded from 1969 to 2017. Between 1969 and 1994, the number of cases recorded per year ranged from 1 to 402. Data from 1989 to 1994 was analysed in the first report (Koehler, 1997). Active registration of both pathology-based and clinical cases was only started in 1995. A total of 5 141 cases[1] were recorded in the period from 1995 to 1998, approximately 1 285 cases per year. In 1999 only 534 cases were recorded, thus these data were not included in any of the reports.
The subsequent report covered the period from 2000 to 2005 and included 5 009 cases, an average of approximately 834 cases per year (Carrara et al, 2009). Next was a report covering the period 2006 to 2009 during which a total of 6 363 cases, an average of 1 591 cases each year was analysed (Carrara et al, 2011).
This was followed by the 2017 report covering the years 2010 to 2014 that showed a more stable and reliable reflection with a total of 11 248 cases or a 5-year period, an average of approximately 2 250 cases per year (Carrara et al, 2017).

The current report represents the most complete and reliable reflection of cancer incidence for the Namibian population between 2015 and 2017. A total of 10 375 malignant neoplasms were recorded among the Namibian population during this three-year period, and with an average of 3 458 cancers per year (2 250 average cases per year for previous reporting period), an increase of almost 54% on the previous reporting period is noted.

## Variables examined

Variables used in the analysis of the data from 2015 to 2017 included age (calculated from date of birth), gender, current region of residence, ethnicity, date of diagnosis of cancer, tumour site and histology, and basis of diagnosis. The variables describing tobacco and alcohol use, as well as female reproductive history, have improved since the previous report and will be examined further in another publication.

## Population denominators

The population at risk for the period 2015 - 2017 used for incidence calculations was the mid-period data for 2012, this was provided by the Namibian Central Bureau of Statistics based on projected population estimates modelled on the census data of 2011 (Republic of Namibia, Central Bureau of Statistics, 2014). The annual population at risk for the whole of Namibia for the period 2012 is shown in Figure 8. No official updated estimations can be confirmed for use from the agency this the 2012 census and 2014 update is used.

[1] Previous reports in this series may contain minor differences in numbers resulting from ongoing correction of the dataset.

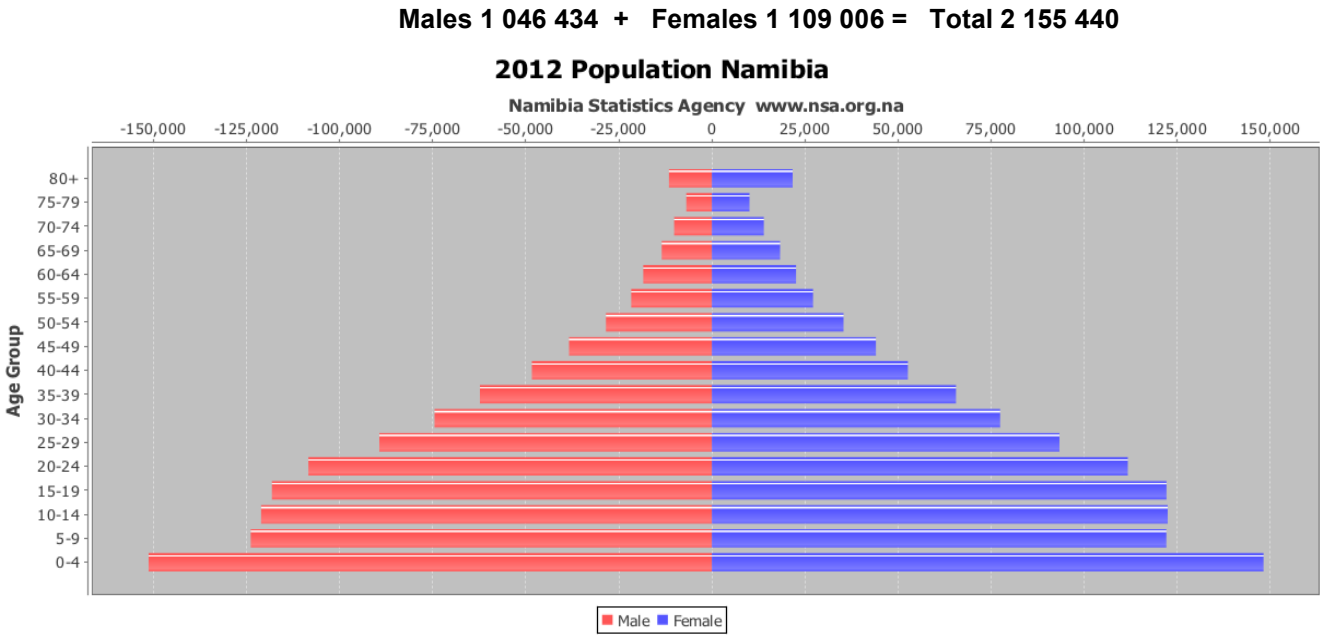



**Figure 4: Population of Namibia (2012, middle of analysis period)**

## DATA ANALYSIS AND PRESENTATION

### The Database

The data was analysed in Windhhoek, Republic of Namibia Namibia, by the National Cancer Registry, a departmern of the Cancer Associaiton of Namibia (WO30) employing CanReg5 (http://www.iacr.com.fr/CanReg5) for data entry, management and analysis on software running on MS Windows platform.

Incidence rates were calculated for the whole of the Namibian population in 3-year age groups. The upper age group was set at 80 and above. Age standardisation was performed by the direct method, using the world standard population (Parkin et al., 1997).

### Confidentiality

The registry adheres to the guidelines of the IACR/IARC (2004) with respect to the preservation of confidentiality in connection with or during the process of collection, storage, use and transmission of identifiable data. Requests for the release of data should be made in writing to the registry; requests for data involving identification of individual subjects require special permission, involving appropriate safeguards for confidentiality.

# STATISTICAL METHODS

## Age-specific rate

The age-specific rate is calculated simply by dividing the number of cancer deaths observed in a given age category during a given time period by the corresponding number of person years in the population at risk in the same age category and time period. For cancer, the result is usually expressed as an annual rate per 100,000 person-years.

## Age-standardisation rate

An age-standardised rate (ASR) is a summary measure of the rate that a population would have if it had a standard age structure. Standardization is necessary when comparing several populations that differ with respect to age because age has a powerful influence on the risk of dying from cancer. The ASR is a weighted mean of the age-specific rates; the weights are taken from population distribution of the standard population. The ASR is also expressed per 100,000.

## Cumulative risk

Cumulative mortality is the probability or risk of individuals dying from the disease during a specified period. For cancer, it is expressed as the number of new born children (out of 100, or 1000) who would be expected to die from a particular cancer before the age of 75 or (65 or 70) if they had the rates of cancer observed in the period in the absence of competing causes. Like the age standardised rate, it permits comparisons between populations of different age structures.

## Incidence

Incidence data is expressed as the number of cases of a given type of cancer diagnosed during a time period. In this study the crude incidence rate correspond to the calculation:

$$\frac{\text{(New cases of cancer in Year X to Year Z) x 100 000}}{\text{(Population of Namibia Year X to Year Z)}}$$

This calculation provides the mean annual number of cases per 100 000 inhabitants.
To allow for campariosn of cancer incidence in regions with different population distributions, the cummulitive incidence rate is calculated.

Cancer incidence by sex and 3-year age group were generated using CanReg5 software. Frequencies of cancer by ethnic group and region were generated manually in CanReg5 and collated into tabular format using Microsoft Excel. Occurrence rates could only be calculated for males and females for the whole of Namibia, as population denominators in 3-year age groups were not available for different ethnic groups, or geographic regions by sex. Consequently only frequency tables are presented to summarise the available results for ethnic group and geographic region. Rate calculations for ‘all cancers’ and ranking of cancers exclude ‘other skin’ (ICD10-C44), which is standard practice in cancer registry reports, and allows for international comparisons.

# INCIDENCE REPORT

NNCR
Namibia National Cancer Registry
Inspire Hope • Activate Change • Impact Lives

# RESULTS OVERVIEW

## Overall burden of cancer in Namibia 2015 - 2017

A total of 10 375 malignant neoplasms were recorded among the Namibian population during this three-year period, and with an average of 3 458 cancers per year (2 250 average cases per year for previous reporting period), an increase of almost 54% on the previous reporting period is noted.

Of these 10 375 cases, the split was: 4,829 among men (47%) and 5,546 among women (53%). During the previous reporting period (2010 – 2014) the number of cases amongst males were 45.6% and females 54.4%.

Number of cases per year (excluding C44 and pending cases)

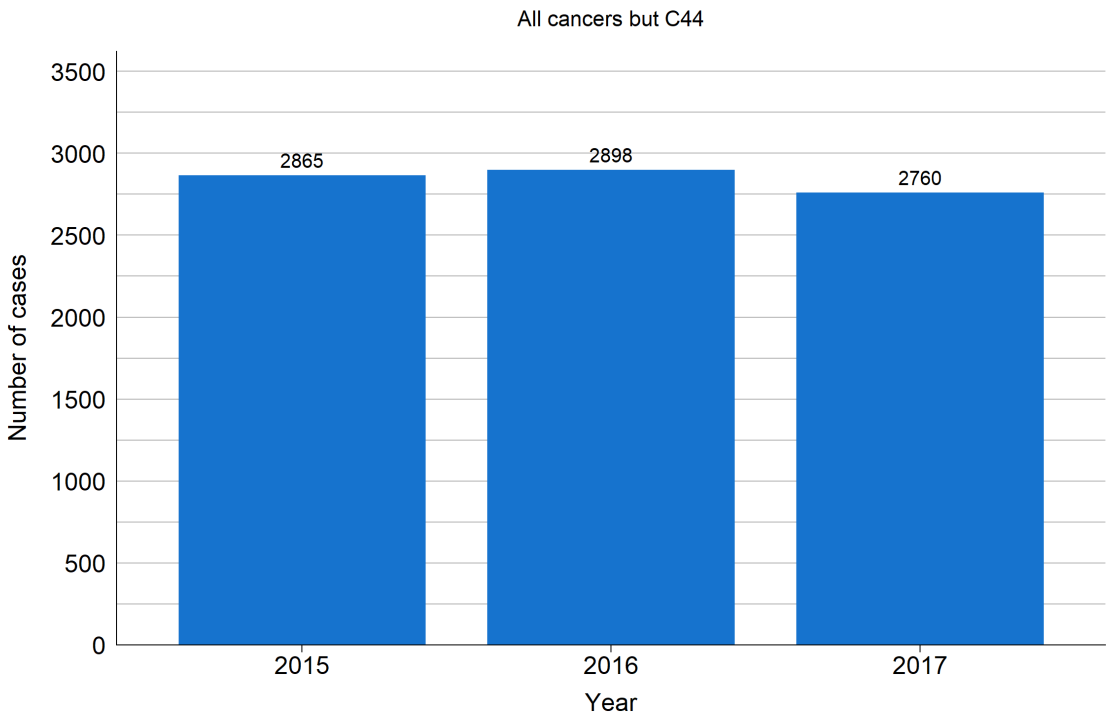



Fig 4. Number of cases by year

## The most commoc cancers, by sex

In men, prostate is the most commonly diagnosed malignancy with 972 cases, followed by mouth & pharynx (260 cases).
In women, breast is the most commonly diagnosed malignancy with 1 434 cases, followed by cervix (895 cases).

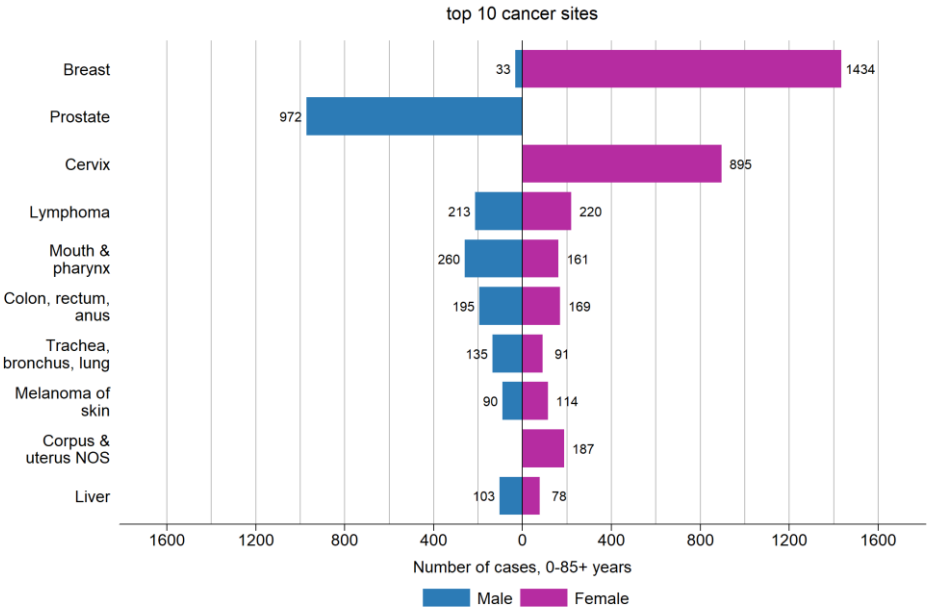



Fig 5a. Top 10 cancers, both sexes (Number of cases)

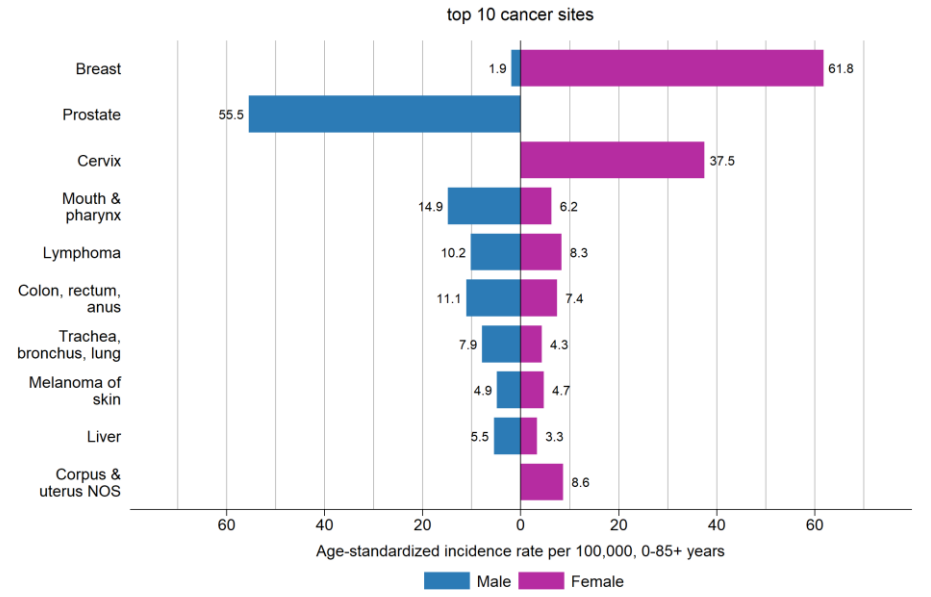
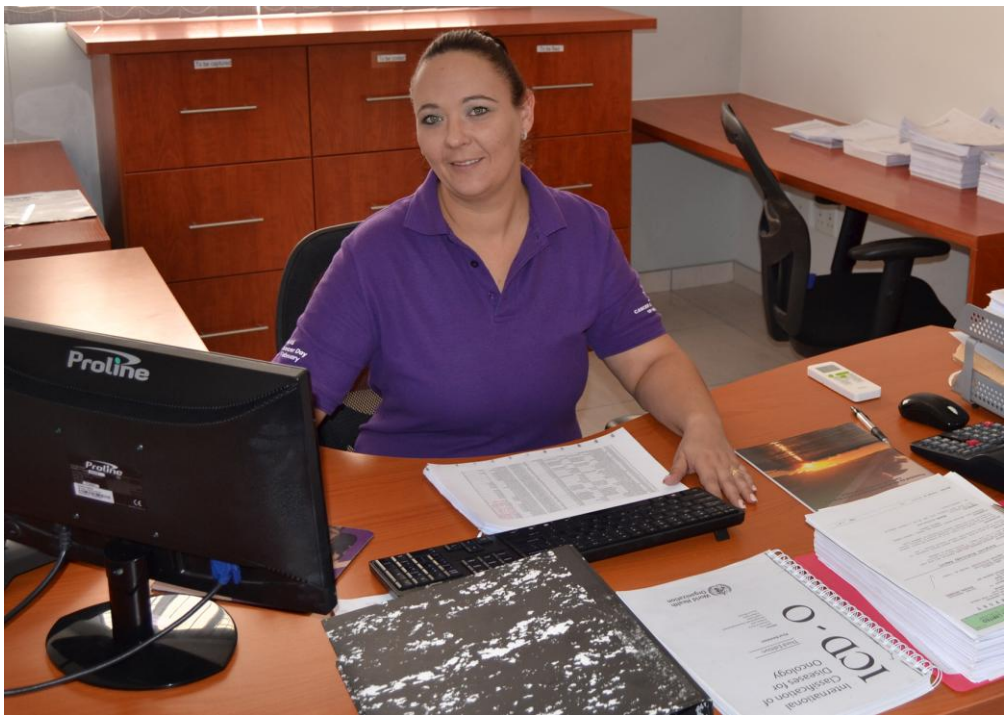


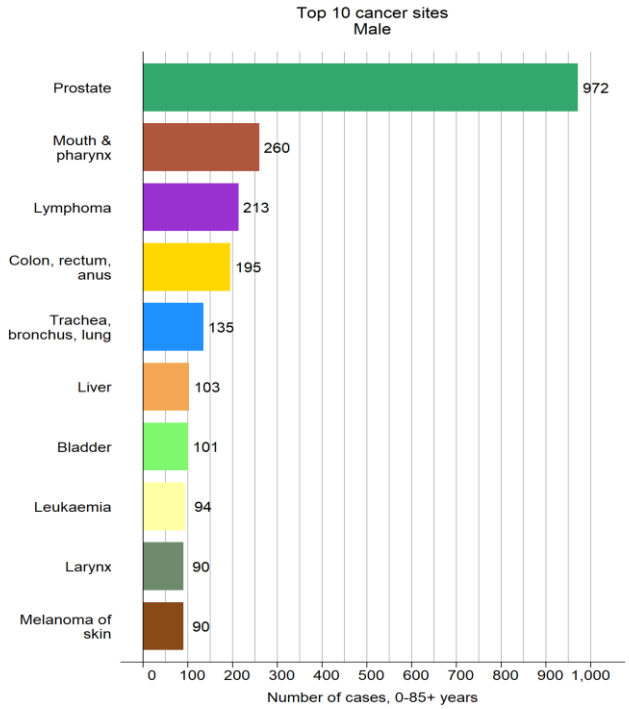

Fig 5b. Top 10 cancers, both sexes (Age-standardized rate per 100,000)

Overall, the incidence of all cancers including non-melanoma skin in males was 153.8 per 100 000 and in females was 146.3 per 100 000. Excluding non-melanoma skin cancers, the incidence of cancer overall in males was 144.2 per 100 000 and in females was 138.7 per 100 000.
This represents an increase in incidence in both sexes compared to the previous reporting period (2010-2014) when the ASR in males and females, excluding non-melonoma skin cancer, was 144.2 per 100 000 and 138.7 per 100 000 respectfively. The 2005-2009 report indicates the ASR in males and females excluding non-melanoma skin cancer as 90.2 per 100 000 and 100.7 per 100 00 respectively.
The ranking of the most common types of cancer remained similar with the exception of a notable increase in the HIV-associated cancers (Kaposi sarcoma, Non-Hodgkin lymphoma and Eye cancer).

Tables 1 and 2 show the frequencies, incidence rate per 100 000 in 5-year age groups, crude rate, proportions of all cancers, cumulative rates (0-64), cumulative rates (0-74) and age standardised rates (ASR) by site and gender for the period 2015 to 2017.
Tables 3, and 4 show cancer frequencies and proportions by ethnic group for males and females respectively. Tables 5 and 6, show cancer frequencies and proportions by geographic region of residence for males and females, respectively. Tables 7 and 8 show the number and proportions for the basis of cancer diagnosis by sex. Appendix 1 shows the cancer frequencies by site and gender in single calendar years of observation for 2010, 2011, 2012, 2013 and 2014. This shows less variation in this 5-year reporting period compared to the previous 4-year reporting period (2005-2009), but the incidence of cancer was still substantially higher in 2014 than in each of the years from 2010-2013. Of all the data collected thus far, the numbers reported here are likely to be the most accurate reflection of the annual burden of cancer in Namibia.

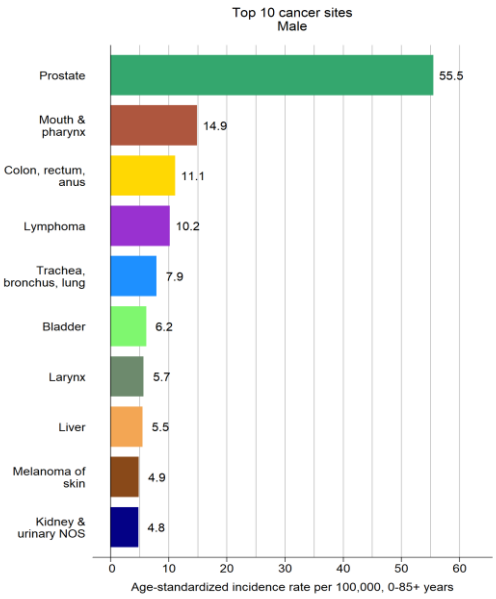


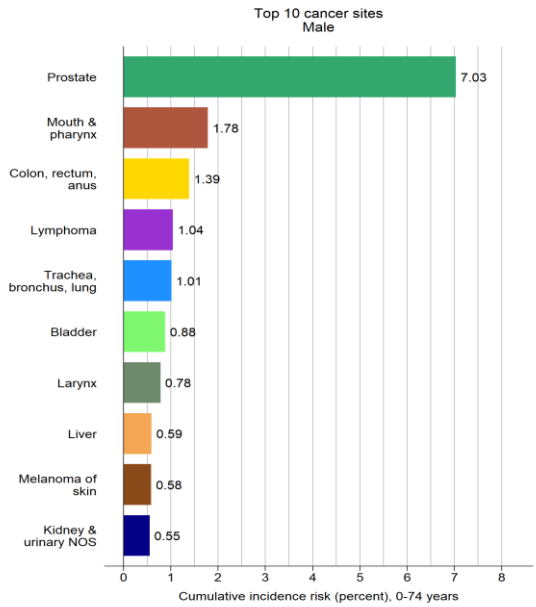
## LEADING CANCERS AMONGST MALES




The three most frequent cancer among men between 2015 and 2017 was prostate cancer (972 cases) (23.6%, ASR 37.6), followed by Mouth & pharynx (260) and Lymphoma (213), [2]

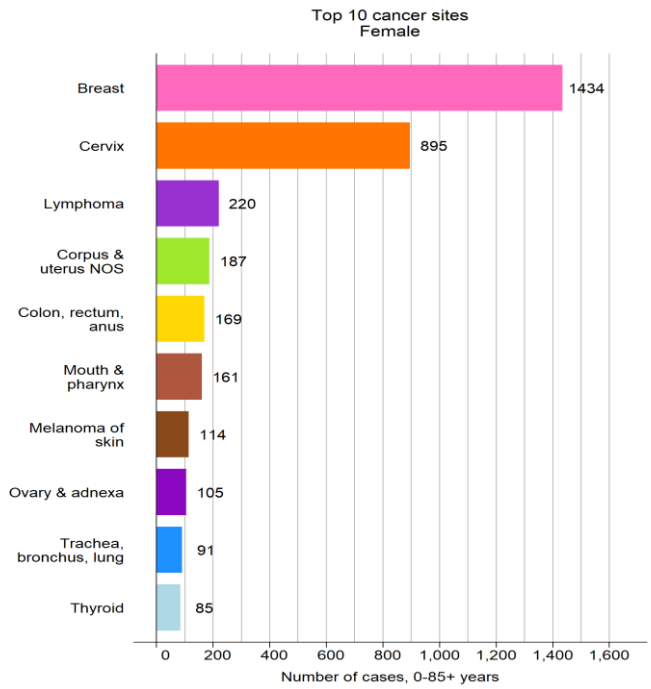
INSERT DISCUSSION



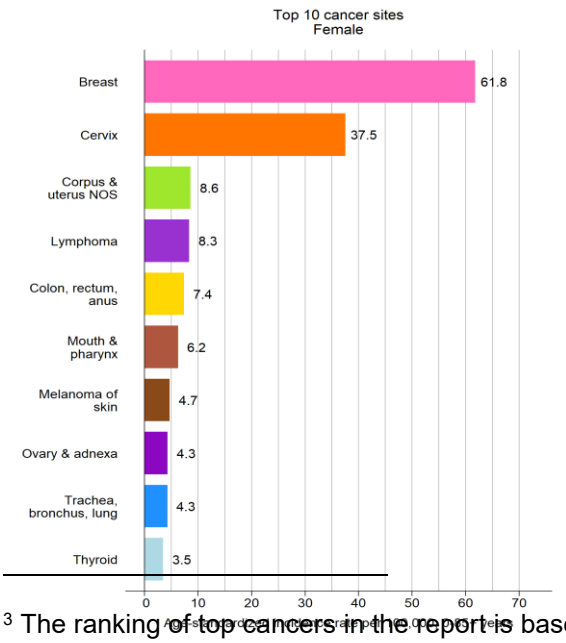



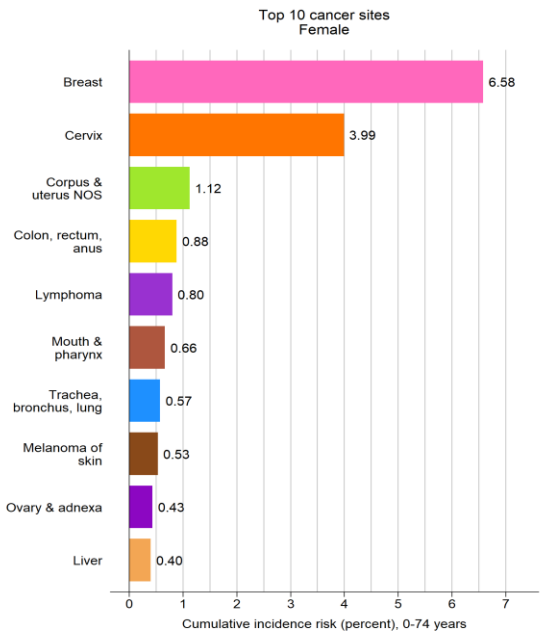

)ased on age standa

## LEADING CANCERS AMONGST FEMALES




The predominant cancer in women was breast cancer (27.3%, ASR 40.2), followed by cancers of the cervix (19.4%, ASR 27.2), Kaposi sarcoma (8.8%, ASR 10.1), eye (4.0%, ASR 4.8), ovary (3.0%, ASR 4.3), colon, Non-Hodgkin lymphoma (2.8%, ASR 3.4), corpus uteri (2.1%, ASR 3.3) and lung / trachea / bronchus (1.8%, ASR 2.9) cancers. [3]




[3] The ranking of top cancers in the report is based on age star bar chart is on abosolute numbers

## COMPARITIVE DISCUSSIONS: Leading cancers among Namibians

### Age-specific incidence rates (most common sites) by sex

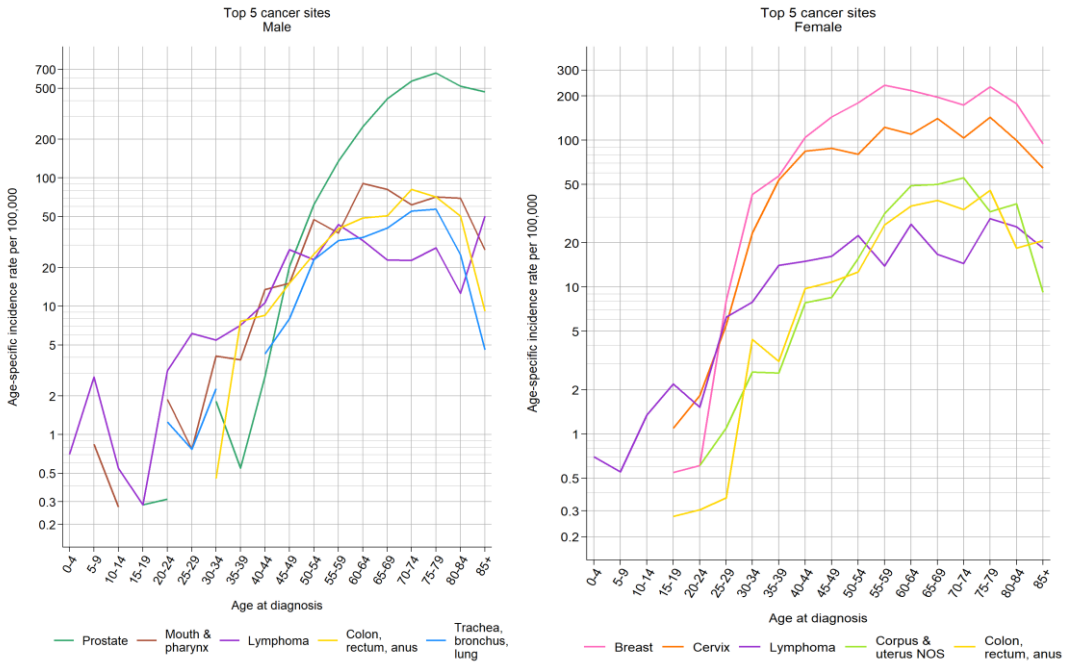
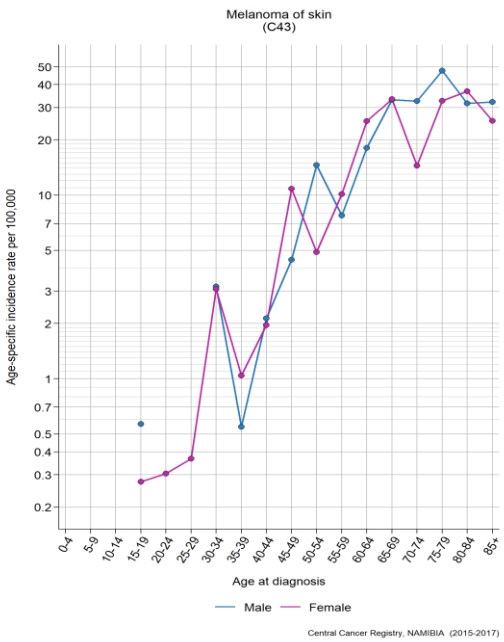



Fig 9. Age-specific incidence rates

### Skin Cancers (Melanoma C43 and Other Skin C44)

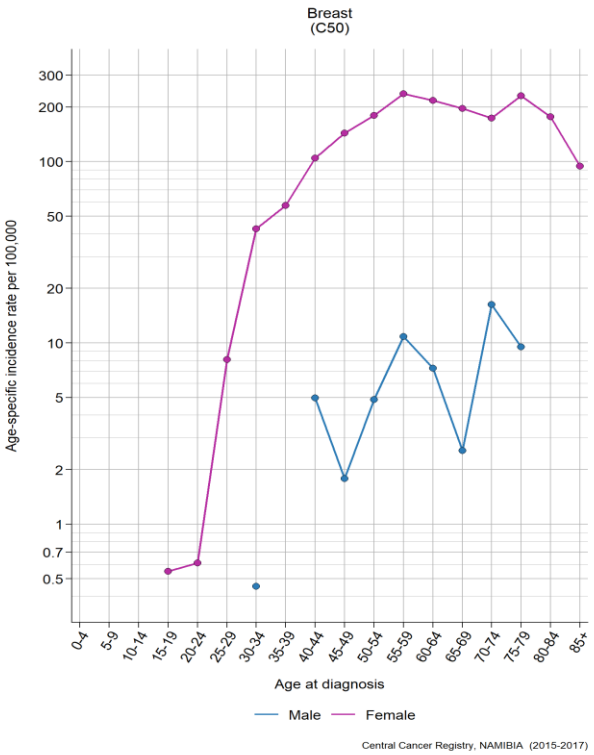
Skin cancer remains the most common cancer, comprising at least a quarter of all new cancer diagnoses in Namibia. There are several types: malignant melanoma, which can prove fatal, and non-melanoma skin cancers (main types: squamous cell carcinoma and basal cell carcinoma) which are rarely fatal. Non-melanoma skin cancers are about 10 times as common as malignant melanomas, but because of current registration practices globally their true number is significantly underestimated world-wide. The NNCR aims to record these cases nonetheless, as skin cancer prevalence is high in the country, and coupled with stigmas attached to the



disease, often non- or late diagnosed posing greater treatment difficulties. In order to educate the Namibian population the NNCR and CAN remain focussed on collecting data.

## Breast Cancer

Cervical cancer was the second most common cancer among women with 1118 diagnoses (19.4% of all cancers in females) in the period beginning in 2010 and ending in 2014. The ASR for cervical cancer was 27.2 per 100 000 representing an almost two-fold increase since the previous reporting period when the ASR was 15.6 per 100 000. The annual incidence of cervical cancer increased with increasing age, from 0.2 per 100 000 in women aged 20-24 peaking at 122.8 per 100 000 in women aged 75-79 years.

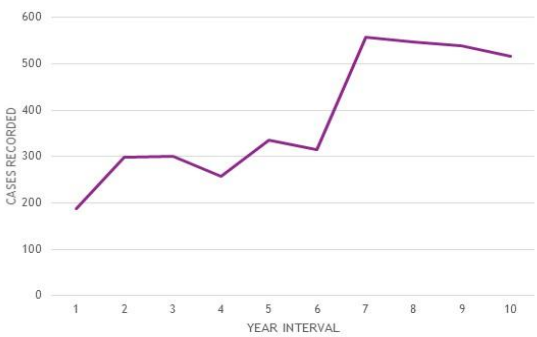



Breast cancer was the most common cancer in most regions in Namibia, Omaheke (39.0%), Hardap (37.2%), Erongo (35.8%), Otjozondjupa (34.4%), Karas (32.6%), Khomas (30.2%), Omasuti (25.7%), Oshana (24.9%) and Kavango (22.1%) regions, and the second most common cancer in Oshikoto (24.4%), Kunene (21.4%), Ohangwena (21.0%) and Caprivi (12.7%) regions.

# Breast Cancer Cases report to NNCR

2008 - 2017 (*cases that have adequate data to open and register a case file)

| | | |
|---|---|---|
| 2008 | Yr 1 | 188 |
| 2009 | Yr 2 | 299 |
| 2010 | Yr 3 | 300 |
| 2011 | Yr 4 | 257 |
| 2012 | Yr 5 | 335 |
| 2013 | Yr 6 | 315 |
| 2014 | Yr 7 | 558 |
| 2015 | Yr 8 | 546 |
| 2016 | Yr 9 | 539 |
| 2017 | Yr 10 | 516 |




HPV & Cervix CA HEAT MAP:

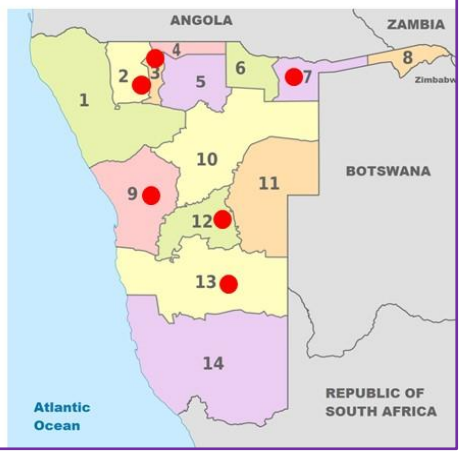
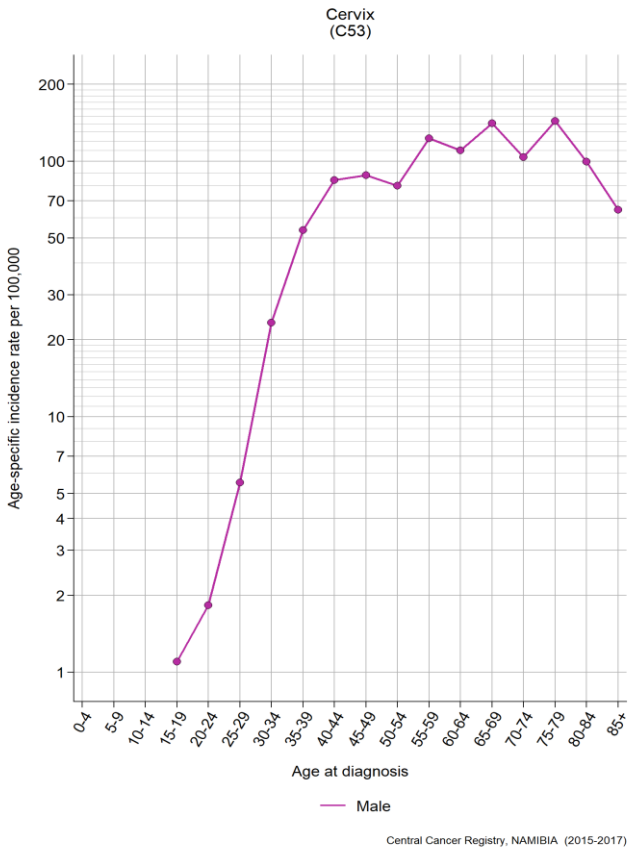



Fig. Breast Cancer Heat Map

## Cervical Cancer



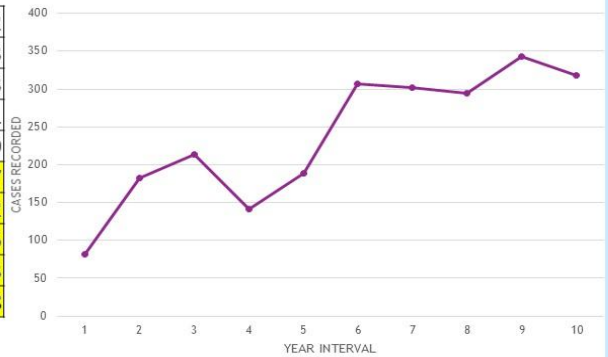

Cervical cancer was the second most common cancer among women with 1118 diagnoses (19.4% of all cancers in females) in the period beginning in 2010 and ending in 2014. The ASR for cervical cancer was 27.2 per 100 000 representing an almost two-fold increase since the previous reporting period when the ASR was 15.6 per 100 000. The annual incidence of cervical cancer increased with increasing age, from 0.2 per 100 000 in women aged 20-24 peaking at 122.8 per 100 000 in women aged 75-79 years.

Cervical cancer was either the leading cancer or in the top three cancers in all ethnic groups, ranging from 4.8% of female cancers in White women to 33.1% among Caprivian women. Cervical cancer was among the top two cancers in each region comprising between 9.9% of cancers in the Erongo region and 38.7% of all cancers in the Caprivi region.

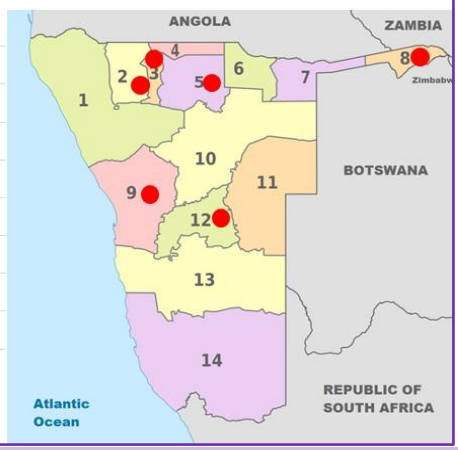
# Cervical Cancer Cases report to NNCR

2008 - 2017 (*cases that have adequate data to open and register a case file)

| | | |
|---|---|---|
| 2008 | Yr 1 | 82 |
| 2009 | Yr 2 | 183 |
| 2010 | Yr 3 | 213 |
| 2011 | Yr 4 | 141 |
| 2012 | Yr 5 | 189 |
| 2013 | Yr 6 | 307 |
| 2014 | Yr 7 | 302 |
| 2015 | Yr 8 | 295 |
| 2016 | Yr 9 | 343 |
| 2017 | Yr 10 | 318 |




**HPV & Cervix CA HEAT MAP:**

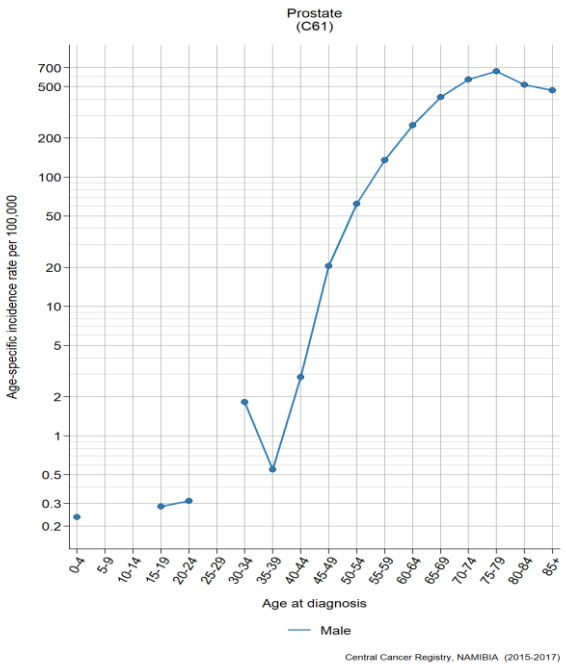



## Prostate cancer

Cancer of the prostate was the most common cancer among males during the period beginning in 2010 and ending in 2014. A total of 1128 cases were reported, comprising 23.6% of all male cancers. The annual ASR for prostate cancer was 37.6 per 100 000, an almost 2-fold increase compared to the previous reporting period (ASR 23.5). Incidence increased with age from 1.6 per 100 000 at age 30-34 to 546.5 per 100 000 for men aged 75-79.

Cancer of the prostate was the leading cancer for the Tswana (35.0%), Baster (33.9%), Herero (29.1%), Coloured (22.1%), White (19.9%), Nama (15.5%) and San/Bushman (11.8%) ethnic groups.

This cancer was among the five leading male cancers in almost all regions and was the most frequent cancer in males in the Oshana (32.2%), Khomas (31.4%), Kunene (25.9%), Omaheke (25.0%), Hardap (19.0%), Ohangwena (18.1%) and Karas (18.0%) regions.




## 2. Kaposi sarcoma

Kaposi Sarcoma (KS) was the third most common cancer among women in this five-year reporting period. A total of 507 cases were reported, comprising 8.8% of all female cancers. The ASR was 10.1 per 100 000 up from 6.8 per 100 000 in the previous reporting period (2006-2009) and 4.1 in the prior reporting period (2000-2005). Annual incidence according to age showed a bell-shaped curve, increasing with age and peaking at 32.5 per 100 000 women among those who were aged 30 to 34 years and then decreasing in older women.

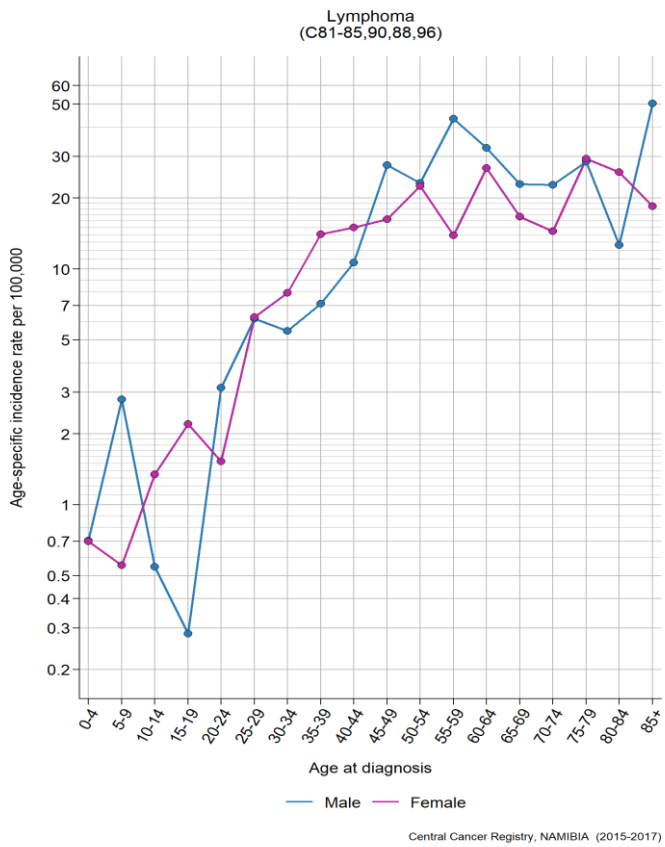
A total of 882 cases of Kaposi sarcoma (KS) were reported from 2010 to 2014, comprising 18.4% of all cancer cases in males during this five-year period. The overall ASR for KS was 22.0 per 100 000, having increased from 16.3 per 100 000 in the previous reporting period. The highest incidence occurred among males aged between 40 and 44 years (ASR 62.4 per 100 000).

KS was in the top five most common female cancers in the Tswana (17.6%), Caprivian (13.2%), Ovambo (12.1%), Kavango (10.8%), Herero (5.1%), Baster (4.4%), Damara (3.2%) and Coloured (2.0%) ethnic groups.

It was also among the three most common cancers in all of the regions of Namibia, it ranged between 4.5% (Erongo) and 14.5% (Kavango) of all cancers. In Khomas and Kavango regions it ranked fourth most common cancer among Namibian women

On average, during this five-year period, KS was the leading cancer among males in the Ovambo (24.1%), Caprivi (19.8%) and Kavango (10.1%) ethnic groups. KS was furthermore among the five leading cancers in males in all ethnic groups examined, except for the White, Baster, Coloured, San / Bushman and Nama ethnic groups. It should be noted that very few cancers were recorded in the San / Bushman and Tswana ethnic groups overall.

KS was the leading cancer in males in almost all regions of Namibia; Kavango (34.3%), Caprivi (31.6%), Oshikoto (26.1%), Omusati (23.9%), Otjozondjupa (23.7%), Ohangwena (18.1%), Erongo (14.2%) and Hardap (9.8%) regions, and among the five leading cancers in other regions.

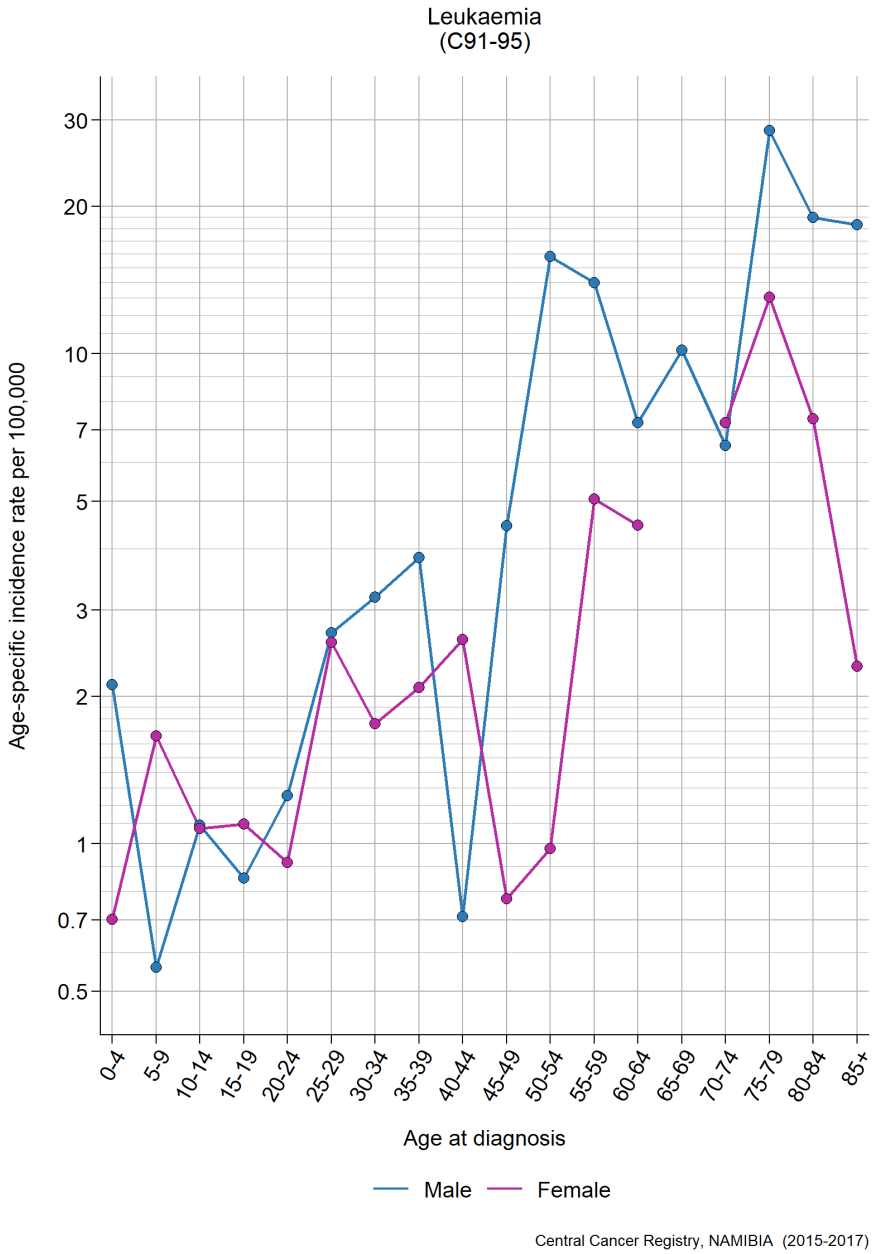



## Lymphoma

Non-Hodgkin lymphoma (NHL) ranked third among cancers in Namibian males for the period 2010 to 2014 (231 cases reported, comprising 4.8% of all cancers). The ASR for NHL in males was 6.3 per 100 000, having almost doubled since the previous reporting

period. Within age groups, the annual incidence per 100 000 tended to increase with age from 1.5 in males aged 0-4, up to 23.6 in males aged 70-74 years.

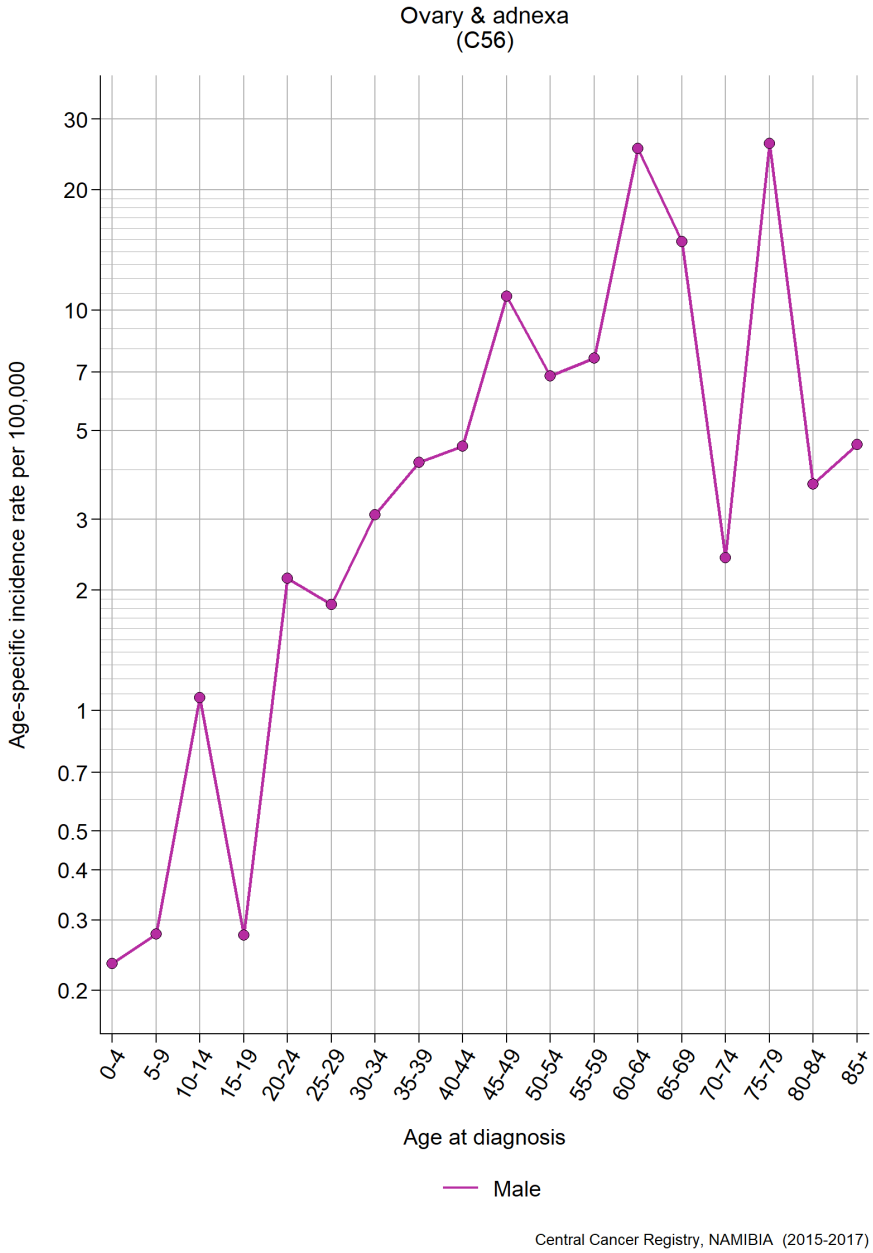
## Leukaemia




Appendix fig 21. Leukaemia: Age-specific incidence rate per 100,000

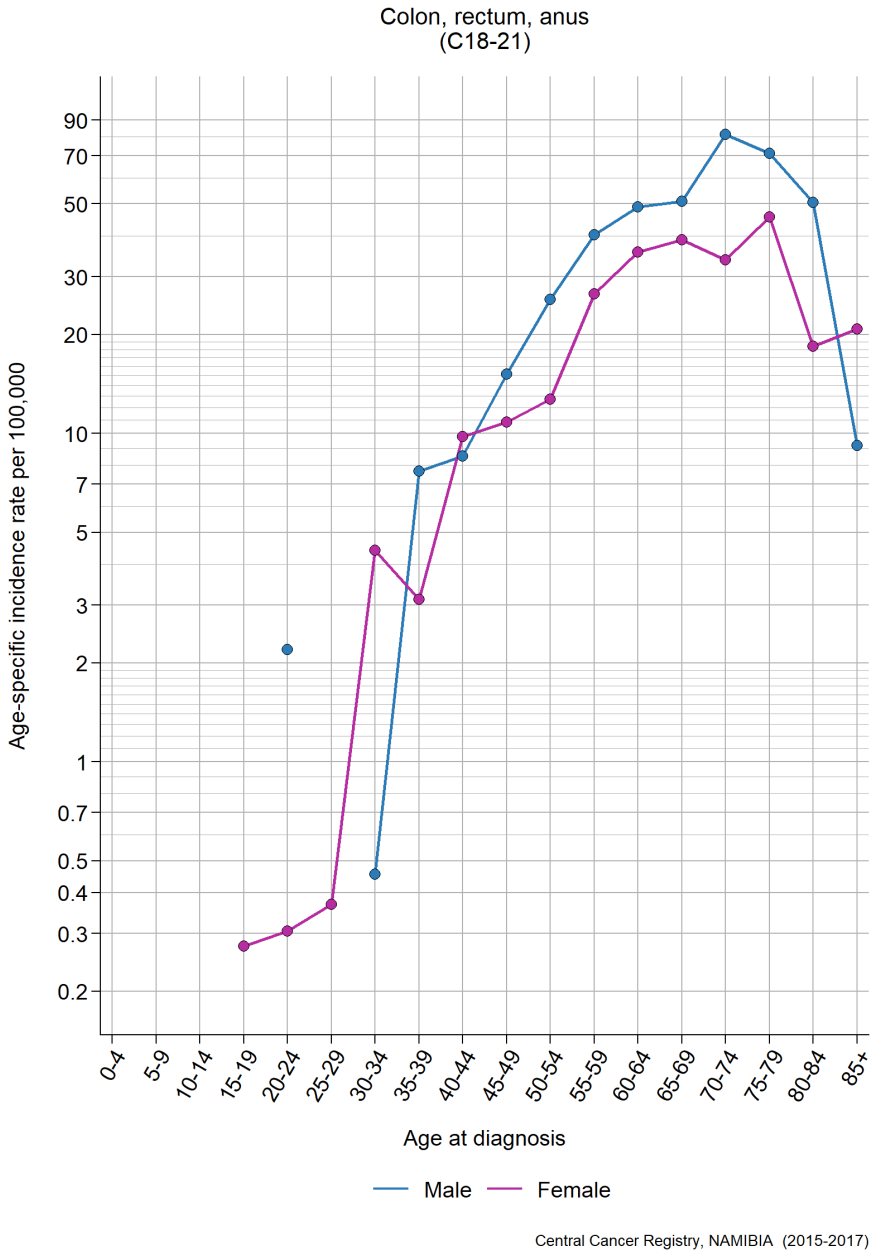
## Ovarian Cancer

Cancer of the ovary was the fifth most common cancer among Namibian women during the period 2010 to 2014. A total of 175 cases were reported, comprising 3.0% of all female cancers. The ASR for ovarian cancer was 4.3 per 100 000, having increased from an ASR of 2.9 in the previous reporting period. Annual incidence increased with age, peaking at 20.1 per 100 000 in women aged 70-74 years.



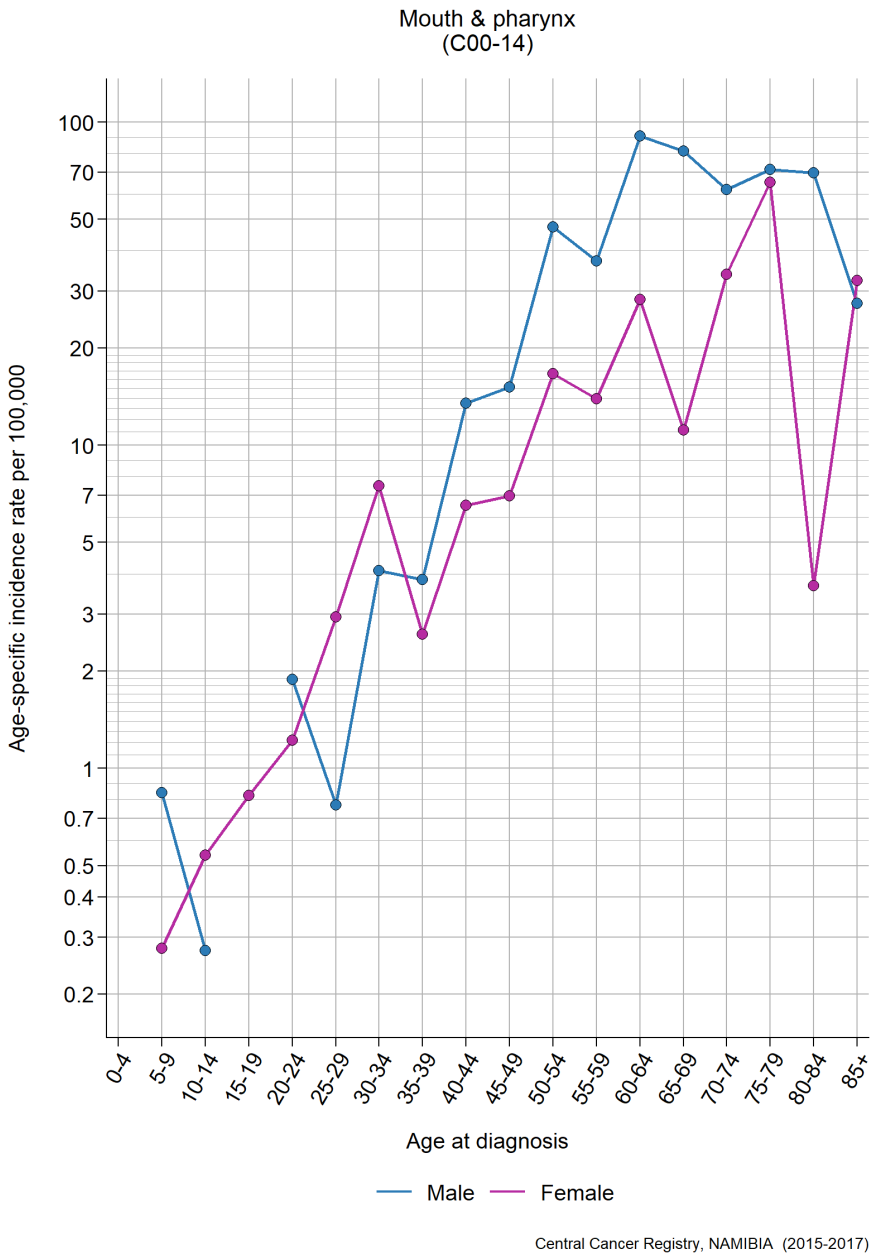

Appendix fig 13. Ovary & adnexa: Age-specific incidence rate per 100,000

## Colorectal Cancers



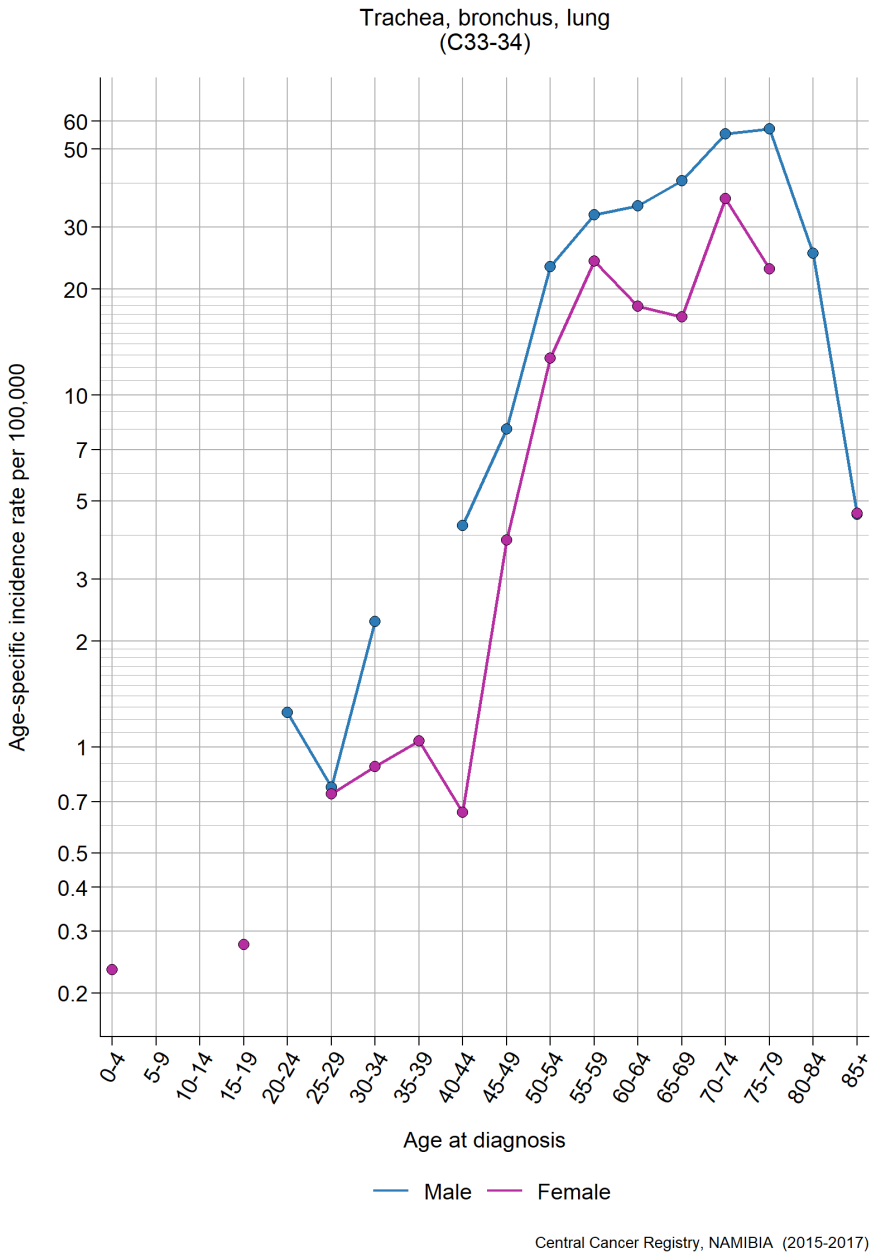

Appendix fig 4. Colon, rectum, anus: Age-specific incidence rate per 100,000

## Mouth & Pharynx Cancers




Appendix fig 1. Mouth & pharynx: Age-specific incidence rate per 100,000

## 5. Lung/trachea/bronchus cancer




Appendix fig 8. Trachea, bronchus, lung: Age-specific incidence rate per 100,000

Cancer of the lung/trachea/bronchus was the fifth most common cancer in Namibia in this reporting period, 2010 to 2014. A total of 161 cases were reported, comprising 3.4% of all male cancers. The ASR for cancer of the lung/trachea/bronchus was 5.9 per 100 000, up from 5.1 in the previous reporting period. The incidence increased with increasing age, from 1.9 per 100 000 in those aged 35-39 years, up to 46.0 per 100 000 in those aged 65-69 years.

Cancer of the lung/trachea/bronchus was the second most frequent cancer in White males (10.6%), and in the top five cancers among Coloured (9.8%), Nama (8.4%) and Baster (6.0%) ethnic groups.

Cancer of the lung/trachea/bronchus was the second most common cancer in Karas (11.6%) and among the five most common cancers in the Hardap (8.2%), Erongo (7.5%) and Otjozondjupa (6.0%) regions.

## Other notable cancers in males

Cancer of the larynx appeared as the sixth most common cancer among males in Namibia with a total of 147 cases reported during the period 2010 to 2014 (3.1% of all male cancers; ASR 5.3 per 100 000). The incidence of laryngeal cancer increased with age and was highest in those aged 75-79 years, with an ASR of 49.4 per 100 000. Although laryngeal cancer ranked as the sixth most common cancer overall among males, it appeared among the five leading cancers among the Nama (7.7%), Damara (7.0%) and Baster (3.9%) ethnic groups.

Colon cancer was the third most common cancer among White males (9.5%) and fifth most common among Coloured males (4.9%). Colon cancer was the seventh most common cancer among male Namibians with a total of 129 cases and and ASR of 4.2 per 100 000.

Liver cancer was the eigth most common cancer among males in Namibia comprising 2.6% of male cancers with an ASR of 4.0 per 100 000. Liver cancer was among the top five cancers among the Kavango (5.3%), Coloured (4.9%) and Ovambo (2.9%) ethnic groups

Among the Ovambo Kaposi sarcoma, prostate, eye, Non-Hodgkin lymphoma (ASR 3.1) and liver cancers were the five leading cancers in males accounting for 28.6%, 24.1%, 6.1%, 4.8% and 2.9% of all cancers respectively.

Among White males, cancers of the prostate, lung/trachea/bronchus, colon, Non-Hodgkin lymphoma and melanoma of the skin were ranked the leading cancers, accounting for 19.9%, 10.6%, 9.5%, 6.0% and 5.0% of all male cancers respectively.

**Figure 20: Age-specific Incidence rates per 100 000 in 2010-2014, Ovary (C56)**

Ovarian cancer was among the five most common cancers among Herero (5.1%), Coloured (4.8%), Damara (3.6%) and Caprivian (3.2%) women.

Regionally, ovarian cancer appeared among the five leading cancers in Otjozondjupa (6.6%), Kunene (5.4%), Omaheke (4.8%), Karas (4.3%), Erongo (4.1%), Oshana (3.3%) and Oshikoto (2.7%) women.

## Other notable cancers in females

Non-Hodgkin lymphoma was the sixth most common cancer among females between 2010 and 2014, comprising 2.8% of all cancers in women, ASR 3.4 per 100 000 – up from 2.3 in 2006-2009, and showed a trend of increasing incidence according to age group, the peak incidence occurred in women aged 75-79 years of age (ASR 15.8 per 100 000).

Corpus uteri cancer was the seventh most common cancer among women overall (2.1% of all cancer in women, ASR 3.3 per 100 000 – up from 2.2 per 100 000 in 2006-2009) and showed a trend of increasing incidence with increasing age, peaking in women aged 65-69 years old (ASR 28.4 per 100 000).

Cancer of the lung/trachea/bronchus was the eigth most common cancer among women accounting for 1.8% of all cancers and ASR of 2.9 per 100 000 women, compared with 2.3 per 100 000 in 2006-2009. Lung cancer was the fourth most common cancer among White and Coloured women accounting for 4.4 and 4.0% if all cancers in these women.

Melanoma of the skin was the fourth most common cancer among Kavango women comprising 5.5% of cancers in these women. Melanoma of the skin was also the fifth most common cancer among white women, comprising 4.4% of all cancers in these women.

Colon cancer was the second most common cancer among White women comprising 5.9% of cancers in this group. Cancer of the mouth was the fifth most common cancer among Ovambo women, comprising 1.3% of cancers in this group.

## CHILDHOOD CANCERS (0 to 14 years)

Table 2 shows incidence of childhood cancer, classified according to the International Classification of Childhood cancer (ICCC-3) (Steliarova-Foucher et al, 2005).

| ICCC3 | | Number of cases | | | | | | Rates per million | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-4 | 5-9 | 10-14 | All | M/F | % total | 0-4 | 5-9 | 10-14 | crude | ASR |
| I | Leukaemias | 10 | 7 | 8 | 25 | 1.1 | 12.1 | 11.7 | 9.7 | 10.8 | 10.8 | 10.8 |
| I | Lymphomas | 5 | 11 | 6 | 22 | 1.2 | 10.7 | 5.9 | 15.3 | 8.1 | 9.5 | 9.6 |
| I | CNS neoplasms | 1 | 2 | 3 | 6 | 1.0 | 2.9 | 1.2 | 2.8 | 4.1 | 2.6 | 2.5 |
| I | Neuroblastoma | 4 | 5 | 0 | 9 | 0.3 | 4.4 | 4.7 | 7.0 | 0.0 | 3.9 | 4.1 |
| I | Soft tissue sarcomas | 17 | 12 | 13 | 42 | 1.3 | 20.4 | 19.9 | 16.7 | 17.6 | 18.2 | 18.2 |
| V | Retinoblastoma | 22 | 5 | 0 | 27 | 0.8 | 13.1 | 25.8 | 7.0 | 0.0 | 11.7 | 12.2 |
| V | Renal tumors | 16 | 5 | 2 | 23 | 1.6 | 11.2 | 18.7 | 7.0 | 2.7 | 10.0 | 10.3 |
| V | Hepatic tumors | 2 | 0 | 3 | 5 | 0.0 | 2.4 | 2.3 | 0.0 | 4.1 | 2.2 | 2.1 |
| V | Malignant bone | 0 | 2 | 8 | 10 | 1.5 | 4.9 | 0.0 | 2.8 | 10.8 | 4.3 | 4.0 |
| X | Germ cell tumors | 1 | 1 | 4 | 6 | 0.0 | 2.9 | 1.2 | 1.4 | 5.4 | 2.6 | 2.5 |
| X | Other | 3 | 3 | 6 | 12 | 0.7 | 5.8 | 3.5 | 4.2 | 8.1 | 5.2 | 5.1 |
| | Unknown | 6 | 6 | 7 | 19 | 1.7 | 9.2 | 7.0 | 8.4 | 9.5 | 8.2 | 8.2 |
| | All | 87 | 59 | 60 | 206 | 1.1 | 100.0 | 101.9 | 82.1 | 81.3 | 89.2 | 89.5 |

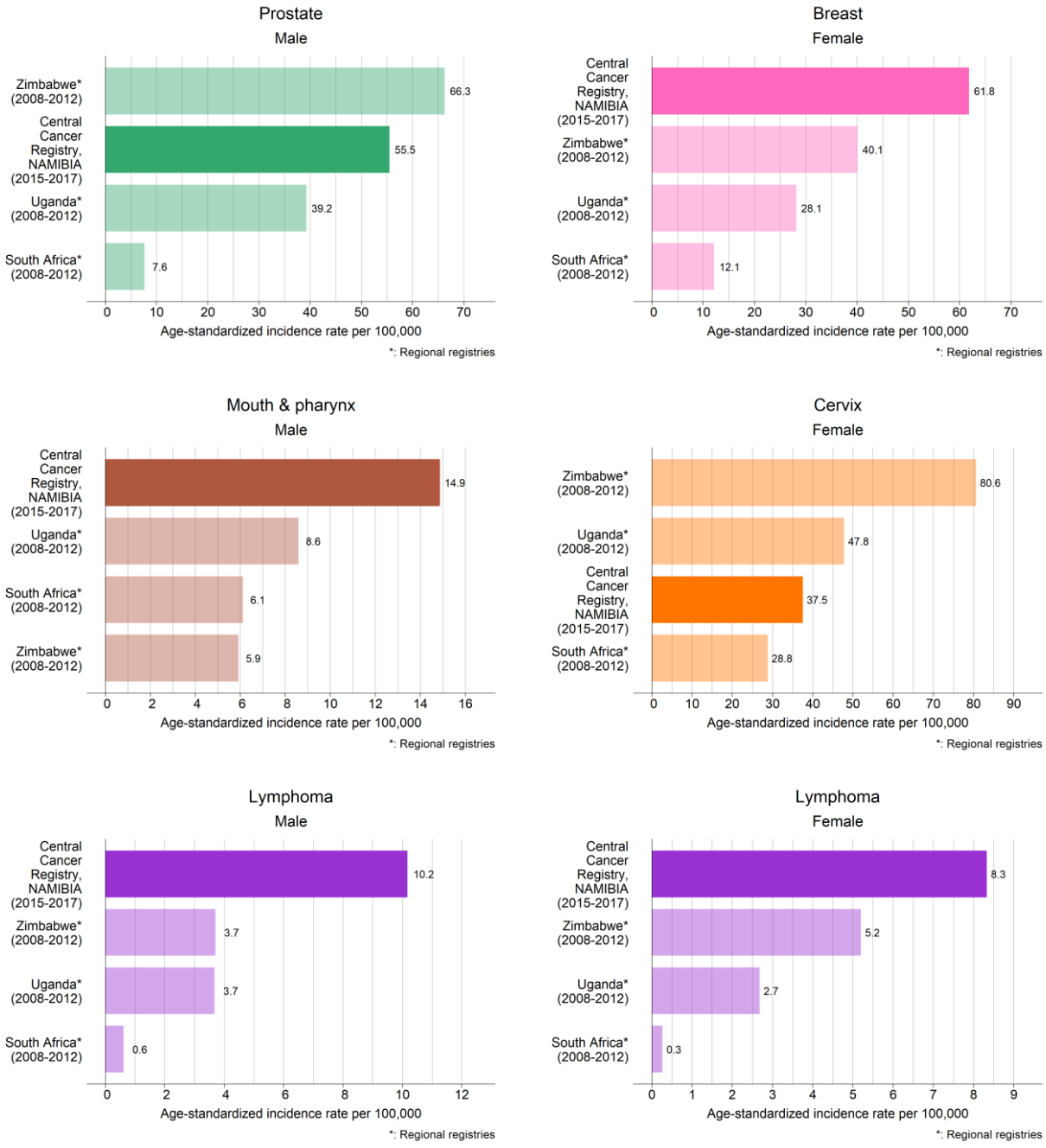
Table 2.

A total of 206 cancer cases were recorded in children (defined as a person below the age of 15) during the three-year period 2015 to 2017. Most cases (87) were recorded in the infant (0-4 year old) age group, with retinoblastoma being the most common. Consdering all childhood cancer cases reported (0 – 14 years) soft tissue sarcomas remain the most prevalent throughout.

During the previous reporting period the joint most common cancer in male children was kidney cancer, then Non-Hodgkin lymphoma, followed by eye cancer (retinoblastoma). Among female children eye cancer remains the most prevalent between the previous and crrent reporting periods.

## COMPARISON OF SUMMARY RATES WITH OTHER REGISTIRES (regional)

Figure 10 shows a comparison of the age-standardised incidence rates in Central Cancer Registry, NAMIBIA (2015-2017) with those observed in South Africa (2008-2012), Uganda (2008-2012) and Zimbabwe (2008-2012) (CI5 X, 2013).



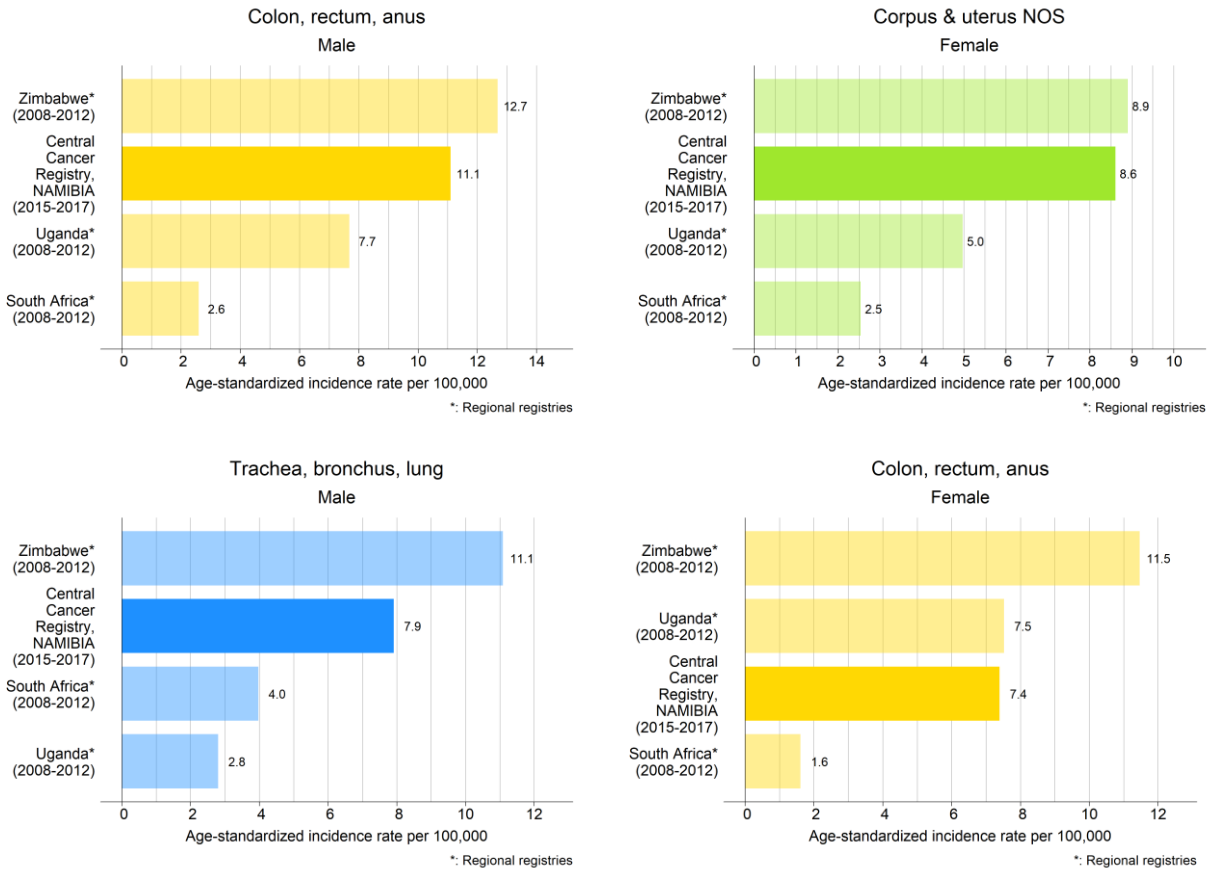



Fig 10. Comparison with other registries

# DISCUSSION

## Basis of Diagnosis (DCO / Clinical / MV) by site

The proportion of all cancers that were histologically verified between the previous and current reporting period was 94.8% vs 98.8%. This represents a substantial increase compared to the previous reporting period when these proportions were 86,4% and 82,6% and 94.8% respectively. The cancer most likely to be dignosed on death certificate only was Kaposi sarcoma, 16.1% in males and 15.4% in females.

Cases recorded by Death Certificates Only (DCO) has remained problematic for the registry due to access of data. An agreement between the registry and the Ministry of Home Affairs has been reached since the implementation of the new electronic data system of the home ministry and in late 2019 access to death certificates with possible primary cause of death as cancer was granted. All cases that are not traceable for follow-up are now annually communicated to the home ministry system to check if patient is still alive of deceased.

Table 1 shows the percentage of cases at the major sites that were registered on the basis of information from a death certificate only (DCO) and with morphological verification (MV) - that is, based on cytology or histology (of the primary tumor, or a metastasis).

| Cancer site | ICD-10 | No. Cases | % total | Basis of diagnosis | | |
|---|---|---|---|---|---|---|
| | | | | % DCO | % Clinical | % M.V |
| Mouth & pharynx | C00-14 | 421 | 6.5 | 0.0 | 0.5 | 99.5 |
| Oesophagus | C15 | 110 | 1.7 | 0.0 | 0.9 | 99.1 |
| Stomach | C16 | 114 | 1.8 | 0.0 | 0.0 | 100.0 |
| Colon, rectum, anus | C18-21 | 364 | 5.6 | 0.0 | 0.3 | 99.7 |
| Liver | C22 | 181 | 2.8 | 0.0 | 9.4 | 90.6 |
| Pancreas | C25 | 48 | 0.7 | 0.0 | 10.4 | 89.6 |
| Larynx | C32 | 100 | 1.5 | 0.0 | 1.0 | 99.0 |
| Trachea, bronchus, lung | C33-34 | 226 | 3.5 | 0.0 | 2.2 | 97.8 |
| Melanoma of skin | C43 | 204 | 3.2 | 0.0 | 0.0 | 100.0 |
| Breast | C50 | 1467 | 22.7 | 0.0 | 0.0 | 100.0 |
| Cervix | C53 | 895 | 13.8 | 0.0 | 0.3 | 99.7 |
| Corpus & uterus NOS | C54-55 | 187 | 2.9 | 0.0 | 0.0 | 100.0 |
| Ovary & adnexa | C56 | 105 | 1.6 | 0.0 | 5.7 | 94.3 |
| Prostate | C61 | 972 | 15.0 | 0.0 | 0.6 | 99.4 |
| Testis | C62 | 32 | 0.5 | 0.0 | 0.0 | 100.0 |
| Kidney & urinary NOS | C64-66,68 | 149 | 2.3 | 0.0 | 6.7 | 93.3 |
| Bladder | C67 | 158 | 2.4 | 0.0 | 0.0 | 100.0 |
| Brain & central nervous system | C70-72 | 53 | 0.8 | 0.0 | 17.0 | 83.0 |
| Thyroid | C73 | 100 | 1.5 | 0.0 | 0.0 | 100.0 |
| Lymphoma | C81-85,90,88,96 | 433 | 6.7 | 0.0 | 3.0 | 97.0 |
| Leukaemia | C91-95 | 152 | 2.3 | 0.0 | 0.0 | 100.0 |
| All sites | All | 6471 | 100.0 | 0.0 | 1.2 | 98.8 |

Table -

## Limitations

The annual number of cancer cases reported between 2015 and 2017 appears to have stabilised between 2300 and 2600 cases. Previous reporting between 2010 and 2014 showed stabilization in variability already, while, there is definitely less varibility than in the 2006 – 2009 reporting period where the annual number of cases varied between 1100 and 2800.
This suggests vigilance in standardising cancer registration procedures are paying dividends and the data reported here for 2015 to 2017 more likely reflect the true annual burden of cancer in Namibia. Stability in reported numbers and estimated ASRs is imperative for clear interpretation of cancer trends over time.

## Increasing burden of cancer in Namibia

The significant increase in the overall incidence of cancer (excluding non-melanoma skin cancers) in both males and females in Namibia from 100.7 per 100 000 to 144.2 per 100 000 in males, and from 90.2 per 100 000 to 138.7 per 100 000 in females from the previous reporting period needs o be explored carefully. It is likely that the NNCR is now better collating all the cancer data in the country having been running the registry since 1995.

The tripling of the rates of eye cancers in females and the doubling of the rates of prostate, Non-Hodgkin lymphoma and eye cancer in males, and breast and cervical cancer and Kaposi sarcoma in female is a major concern.

## Cancers associated with Human Immunodeficiency Virus infection

The prevalence of Human Immunodeficiency Virus (HIV) among pregnant women in Namibia reached its peak of approximately 22.0% in 2002 and has since appeared to steadily decline to 17.8% in 2008 and 16.9% in 2015 (Ministry of Health and Social Services Surveillance Report of the 2012 National HIV Sentinel Survey, Republic of Namibia, November 2014). The occurrence of HIV associated cancers has therefore, as in many other high HIV prevalence African countries, increased over time. Declining incidence of HIV associated cancers is likely to lag behind declining HIV prevalence and incidence estimates, and the impact of improving access to HIV treatment on cancer patterns is yet to be noted in Namibia. Kaposi sarcoma dropped from most common to the second most common cancer among males and remained the third most common in females in 2010 to 2014 compared with 2006-2009. Kaposi sarcoma, as a proportion of all cancers, has shown small decreases in both sexes in the most recent reporting period, but in both cases the ASR has increased. Non-Hodgkin lymphoma was the fifth most common cancer in males and the sixth most common in females in 2006 to 2009 and in 2010 to 2014 was now the third most common cancer in males and remained the sixth most common cancer in females, but the proportion of all cancers and the ASR that NHL represents has increased. Eye cancer increased its ranking and is now the fourth most common cancer among males

and females in Namibia. The proportion of HIV associated cancers has unsurprisingly shown a trend of increase over time.

The appearance of cancers with an infectious aetiology, such as KS, NHL and eye cancers among the leading cancer sites is undoubtedly linked to the HIV/AIDS epidemic. Since the advent of HIV, KS has become the leading cancer in men, and the second leading cancer in women, in Zimbabwe and most central and east African countries. Those aged 15 to 44 (the most sexually active age group) are most affected. The human herpes virus 8 (HHV-8) / Kaposi sarcoma associated herpes virus (KSHV), is the necessary causal agent in the development of KS. The relationship between HIV and HHV8 in causing Kaposi sarcoma has now been well described. Other known risk factors for KS include increasing age and male sex.

The current incidence rates for KS in Namibia are however still likely to be an underestimation of the true rates. Firstly, biopsies are usually only performed for patients with a single lesion or very early lesions, or if the doctor is inexperienced in recognising KS. Many KS patients are already so ill that they are treated supportively and no biopsies are performed. In addition, patients from peripheral areas with advanced illness are treated supportively and are unlikely to be referred to the sentinel areas. The registry would therefore not record these cases. It should however be noted that the histological verification of KS has increased substantially from below 40% in the previous reporting period to approximately 84% in the current reporting period, with concomitant declines in clinical diagnosis from approximately 60% to less than 1% in 2010-2014.

If the HIV epidemic progresses in Namibia as it has in other African countries, then the incidence of KS will increase dramatically in coming years. Other cancers that are likely to increase because of HIV immunosuppression include non-Hodgkin lymphoma and, possibly, conjunctival (eye) cancers (Newton et al. 2002). It is unclear whether cervical cancer and other female genital cancers, which also have a viral aetiology, will increase in incidence as a result of HIV. However, an HIV prevention programme, if effectively implemented, should ultimately reduce the incidence of HIV-related cancers in men, women and children (International Collaborative Group on HIV and Cancer, 2000). Effective rollout of antiretroviral treatment for HIV will also likely reduce the incidence of HIV-associated cancers. The surveillance of cancer patterns in Namibia, particularly within different regions and ethnic groups, would form an essential part of such a programme.

## Prostate cancer

Prostate cancer has replaced Kaposi sarcoma as the most common cancer among males overall in the period 2010 to 2014, and the incidence has increased from 23.5 per 100 000 in the previous reporting period (2005-2009) to 37.6 per 100 000 in 2010 - 2014. Prostate cancer was among the five most frequent cancers in almost all ethnic groups and regions examined. Prostate cancer is one of the leading cancers in men worldwide. Incidence rates vary from 1 to 100 per 100 000 in different areas of the world, suggesting that regional factors play a role in its aetiology. Risk factors for prostate cancer include diets high in fat and low in vegetables. There is suspicion that infections may play a role, but the agent(s) responsible have not been identified. In many western countries, the incidence of prostate

cancer is increasing, possibly due to the increasing use of prostate specific antigen (PSA) as a screening tool. Further investigation is warranted to explore reasons for the recent increase in incidence of prostate cancer, and to determine risk factors for prostate cancer specific to Namibia.

## Tobacco and alcohol related cancers

Cancers of the oral cavity, larynx and oesophagus were among the leading cancers in Namibian males and females. Internationally, tobacco smoking and alcohol consumption are the main risk factors for these cancers, with the two factors combined having a multiplicative effect on risk. Lung cancer was also among the five leading cancers in certain ethnic groups (Coloured, Baster and Nama). The main cause of lung cancer is tobacco smoking, for which there is a clear dose-response effect, related to both duration of smoking and amount smoked.

Tobacco is a risk factor for cancer both in its smoked and chewed form, and in the form of oral snuff. Chewing the areca (betel) nut is a dominant risk factor for oral cancer in certain communities worldwide, including in Southern Africa. Pipe-smoking is a risk factor for lip cancers. It is essential to monitor amounts and types of alcohol and tobacco consumption by Namibians with particular cancers, so that risk factors specific to this population can be determined, and preventative programmes instituted.

Oral cancers and oesophageal cancer tended to decline during the period covered by this report. The declines may be due to as yet undefined changes in alcohol use or smoking habits. The male to female ratios for tobacco and alcohol related cancers in Namibia were 5.3, 3.0, 3.0 and 2.0 for cancers of the larynx, oesophagus, tongue and lung respectively. These ratios may reflect different patterns of tobacco and alcohol use among males and females, however further study is required to clarify the risk factors.

Additional risk factors exist for these cancers in different ethnic / regional groups, e.g. exposure to fungal toxins (oesophageal cancer), domestic and industrial pollution (larynx and lung) and ultra-violet radiation (lip). The relative importance of different risk factors for alcohol and tobacco related cancers needs to be determined for each population group in Namibia. Given the prominence of cancers of the upper aero digestive tract among certain ethnic groups, it would be important to investigate the existence of unusual risk factors for these cancers among Namibians.

## Female-specific cancers

Breast cancer and cervical cancer were the two most common cancers among women in all ethnic and regional groups in Namibia. The ASR of both these cancers increased significantly in this reporting period relative to 2006 - 2009.

Risk factors for female breast cancer include early menarche, late age at first childbirth, a high-fat diet and certain genetic mutations, including BRCA1/2. Other possible risk factors include high alcohol consumption and the use of certain post-menopausal hormone

replacement therapies. Public health campaigns that encourage women to present early to hospital for a breast exam could reduce mortality from this disease.

Risk factors for cervical cancer include infection with certain types of human papillomaviruses (HPV), early initiation of sexual intercourse, a history of multiple sexual partners (or a partner with multiple sexual partners), a history of sexually transmitted infections, cigarette smoking and long-term use of oral contraception. Lower socio-economic status has been associated with a higher risk of developing cervical cancer, possibly due to lack of access to good health care and Papanicolaou ('Pap-smear') tests. Although only a small proportion of women infected with HPV develop cervical cancer, recent studies have shown that women who have used hormonal contraceptives on a long-term basis (more than five years) are more likely to develop cancer of the cervix than those with less contraceptive use. Cervical cancer screening programs have been demonstrated to reduce the incidence of this cancer, and it is recommended that such a programme be implemented in Namibia. HAS THIS BEEN DONE? Cervical cancer rates among all race groups should be closely monitored as the HIV epidemic progresses. Furthermore, rollout of the HPV vaccine is likely to lead to significant reductions in cervical cancer.

Ovarian cancer was the fifth most common cancer among Namibian women. Risk factors for ovarian cancer include certain genetic mutations (BRCA1/2), delayed age at first pregnancy, lower parity, and a high-fat diet. Current users of oral contraceptives appear to be protected, although post-menopausal women who are on long-term hormone replacement therapy may be at increased risk. No cost-effective screening methods are currently available. As with the other cancers discussed, it would be important to obtain detailed information on these patterns of use that are specific to subgroups within Namibia that are associated with these female cancers.

## Colon cancer

Colon cancer was the seventh most common cancer among Namibian men, and the tenth most common cancer among women. Risk factors for colorectal cancer include high-fat/low-fibre diets, inflammatory bowel disease, and a family history of colon cancer (particularly among first-degree relatives). High dietary folate has been shown to be protective. Rates of colorectal cancer are higher in western countries than in developing countries.

## Basal and squamous cell skin cancers

For the purposes of this report, basal and squamous cell carcinomas of the skin (BCC and SCC; categorised as 'other skin') were excluded from rate calculations for 'all cancers', as well as frequency rankings of cancers. This is standard practice in cancer registry reports, thus this format allows international comparisons to be made. These lesions are often treated at outpatient facilities or doctors' rooms without histological confirmation, and rates are therefore underestimated. Despite these limitations, these non-melanoma skin cancers were the third most common cancer overall among males (27.1%, ASR 9.6 per 100 000) and the fourth most common among females (6.1%, ASR 7.6) in Namibia, a dramatic decrease in both sexes compared to the previous reporting period (2006-2009). IS THIS SIMPLY BEING UNDER-REPORTED NOW? Risk factors for these cancers include fair

skin, albinism, and short, intense sun exposure; these cancers are therefore, as anticipated, most common among whites. Given the high incidence and known risk factors, it is important to highlight these cancers in preventative and educational public health programmes.

## Cancers among children

It is uncertain whether the data used for this report were complete with respect to childhood cancers, despite the large increases noted compared to the previous reporting period. In addition to typical childhood cancers such as kidney cancer and eye cancer, HIV associated cancers such as eye, Non Hodgkin lymphoma and Kaposis sarcoma were among the top six cancers in both males and females aged less than 15 years. These together accounted for 32.3%, and 32.0% of cancers among males and female children respectively.

# RECOMMENDATIONS

This report has highlighted the leading cancers in Namibian males and females overall, and examined cancer frequencies in the different ethnic groups and geographic regions.

Calculation of incidence rates by gender, population group, ethnic group and region is important, as disease patterns differ due to differences in susceptibilities and exposures in different groups (e.g. genetic susceptibilities, socio-economic status, diet, alcohol and tobacco use). In addition, differences between groups help to identify inequalities in service delivery or utilisation. However, for this report, it was only possible to calculate incidence rates for the whole of Namibia (males and females), as population size estimates by 5-year age groups were not available for the different ethnic groups, or for regions.

The annual number of cases of cancer reported to the NNCR requires careful monitoring to examine peaks and troughs and to ensure that good quality cancer statistics can be provided and trends in cancer incidence be meaningfully interpreted.

Since these data are required for the development of cancer control programmes and advocacy, and to improve the cancer statistics for Namibia, it is recommended that cancer be made a reportable condition.

It is furthermore recommended that this report be used to guide the investigation of risk factors for the leading cancers in Namibia since key risk factor data is available in the NNCR database.

## Accurate collection of regional data

During the analysis of the data it became apparent, as it had in the previous report, that cancer occurrence appeared to be much higher in Khomas than in other regions. It was ascertained that, if no address was stated on the histology report, the address was taken to be Windhoek, and coded as Khomas region. We strongly recommend that, in the future, missing data be recorded as such, and that efforts are made to accurately record region of residence. If this is done, and population denominators become available in 5-year age groups by sex, incidence rates can be calculated accurately for regions. Collecting such data correctly will in future highlight regional differences in cancers, which will help in determining risk factors and inform prevention programmes.

## Provision of population statistics by ethnic group

Examining cancer incidence by ethnic group is extremely important in cancer epidemiology, as different ethnic groups have different genetic susceptibilities to cancer, and are exposed to different environmental and behavioural risk factors. They therefore display different cancer patterns, which require public health interventions tailored to specific ethnic groups.

Patterns such as these can only be accurately determined if age standardised incidence rates are calculated; however estimates of the numbers of people in each grouping are required for such calculations. It is therefore strongly recommended that such figures be obtained for future cancer registry reports and that the NNCR advocate the Namibian Central Bureau of Statistics to collect and provide these data in the next census. A minimal requirement would be population estimates for 'white', 'black' and 'mixed' ethnic groupings.

## REVIEW NOTE: Dr D Maxell Parkin – African Cancer Registry Network

INSERT MAX NOTES and RECOMEDATIONS

## CONCLUSION

The NNCR has been successful in producing a data set that indicates the overall occurrence of cancer in Namibia. This data has highlighted the increasing burden of cancer in Namibia as well as the leading cancers, which should form a basis for research into risk factors for cancer specific to the Namibian population. Refinement of the data collection process and access to more detailed population statistics will hopefully allow more detailed reports to be produced in the future. Nevertheless, the current report indicates that the NNCR is an essential resource and an asset to the public health system.

# TABLES / REFERENCE DATA

Reference data exctracted from CanReg5 – Namibia Central Cancer Registry / Namibia National Cancer Registry. 23.01.2020

## Incidence per 100 000 by Age Group (years) / Female / Namibia

| SITE | ALL AGES | AGE UNK | 0- | 5- | 10- | 15- | 20- | 25- | 30- | 35- | 40- | 45- | 50- | 55- | 60- | 65- | 70- | 75- | 80- | 85+ | CRUDE RATE | (%) | CUM 0-64 | CUM 0-74 | ASR | ICD (10th) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lip | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 0.9 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.27 | 0.2 | 0.02 | 0.02 | 0.3 | C00 |
| Tongue | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0.5 | 1.3 | 2.3 | 5.9 | 3.8 | 7.4 | 0 | 14.5 | 13 | 0 | 4.6 | 1.04 | 0.7 | 0.11 | 0.18 | 1.5 | C01-02 |
| Mouth | 70 | 1 | 0 | 0 | 0.3 | 0.5 | 1.2 | 0.7 | 1.3 | 0.5 | 2 | 3.1 | 3.9 | 3.8 | 13.4 | 9.3 | 4.8 | 45.6 | 3.7 | 25.4 | 2.14 | 1.4 | 0.16 | 0.23 | 2.5 | C03-06 |
| Salivary glands | 23 | 0 | 0 | 0 | 0.3 | 0.3 | 0 | 0 | 2.6 | 0.5 | 2 | 1.5 | 2.9 | 1.3 | 0 | 0 | 7.2 | 3.3 | 0 | 2.3 | 0.7 | 0.5 | 0.06 | 0.09 | 0.8 | C07-08 |
| Tonsil | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 2 | 0 | 4.5 | 0 | 2.4 | 3.3 | 0 | 0 | 0.24 | 0.2 | 0.03 | 0.05 | 0.4 | C09 |
| Other oropharynx | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.9 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0 | 0.01 | 0.1 | C10 |
| Nasopharynx | 13 | 1 | 0 | 0.3 | 0 | 0 | 0 | 0.7 | 0.9 | 0 | 1.3 | 0 | 0 | 2.5 | 3 | 0 | 2.4 | 0 | 0 | 0 | 0.4 | 0.3 | 0.05 | 0.06 | 0.5 | C11 |
| Hypopharynx | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0.01 | 0.01 | 0.1 | C12-13 |
| Pharynx unspecified | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 0 | 1.3 | 0 | 0 | 2.4 | 0 | 0 | 0 | 0.09 | 0.1 | 0.01 | 0.02 | 0.1 | C14 |
| Oesophagus | 44 | 1 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 1 | 0 | 2.3 | 2.9 | 8.8 | 6 | 9.3 | 4.8 | 29.3 | 14.7 | 6.9 | 1.34 | 0.9 | 0.11 | 0.18 | 1.8 | C15 |
| Stomach | 53 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.7 | 0 | 0.5 | 3.3 | 4.6 | 5.9 | 3.8 | 6 | 13 | 14.5 | 26.1 | 7.4 | 4.6 | 1.62 | 1.1 | 0.13 | 0.26 | 2.3 | C16 |
| Small intestine | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | 1 | 2.5 | 1.5 | 3.7 | 7.2 | 0 | 0 | 0 | 0.31 | 0.2 | 0.03 | 0.08 | 0.5 | C17 |
| Colon | 93 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0 | 1.3 | 2.1 | 5.2 | 5.4 | 8.8 | 24 | 19.3 | 16.7 | 12.1 | 32.6 | 11 | 4.6 | 2.84 | 1.9 | 0.33 | 0.48 | 4.2 | C18 |
| Rectum | 62 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.4 | 2.6 | 1 | 3.3 | 4.6 | 2.9 | 1.3 | 11.9 | 18.5 | 16.9 | 13 | 3.7 | 16.1 | 1.89 | 1.3 | 0.14 | 0.32 | 2.5 | C19-20 |
| Anus | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 1.3 | 0.8 | 1 | 1.3 | 4.5 | 3.7 | 4.8 | 0 | 3.7 | 0 | 0.43 | 0.3 | 0.05 | 0.09 | 0.7 | C21 |
| Liver | 78 | 0 | 0.2 | 0 | 0 | 0 | 0.9 | 0.7 | 2.6 | 1 | 0.7 | 7 | 9.8 | 11.4 | 13.4 | 13 | 19.3 | 16.3 | 11 | 6.9 | 2.38 | 1.6 | 0.24 | 0.4 | 3.3 | C22 |
| Gallbladder etc. | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 | 1.5 | 3.9 | 3.8 | 4.5 | 1.9 | 4.8 | 0 | 0 | 2.3 | 0.52 | 0.4 | 0.07 | 0.11 | 0.8 | C23-24 |
| Pancreas | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.3 | 2 | 1.3 | 7.4 | 0 | 9.6 | 9.8 | 3.7 | 2.3 | 0.61 | 0.4 | 0.06 | 0.11 | 0.9 | C25 |
| Nose, sinuses etc. | 11 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0.4 | 0 | 0 | 1.3 | 0.8 | 0 | 3.8 | 0 | 3.7 | 0 | 0 | 0 | 0 | 0.34 | 0.2 | 0.03 | 0.05 | 0.5 | C30-31 |
| Larynx | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 | 3.9 | 0 | 1.5 | 1.9 | 4.8 | 0 | 0 | 2.3 | 0.31 | 0.2 | 0.03 | 0.06 | 0.5 | C32 |
| Trachea, bronchus and lung | 91 | 0 | 0.2 | 0 | 0 | 0.3 | 0 | 0.7 | 0.9 | 1 | 0.7 | 3.9 | 12.7 | 24 | 17.9 | 16.7 | 36.2 | 22.8 | 0 | 4.6 | 2.78 | 1.9 | 0.31 | 0.58 | 4.3 | C33-34 |
| Other thoracic organs | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 | 2.1 | 0 | 2.3 | 1 | 2.5 | 1.5 | 1.9 | 9.6 | 3.3 | 0 | 0 | 0.58 | 0.4 | 0.05 | 0.11 | 0.8 | C37-38 |
| Bone | 52 | 0 | 0 | 0.3 | 1.1 | 2.7 | 0 | 0.7 | 3.1 | 1 | 1.3 | 4.6 | 2.9 | 3.8 | 3 | 13 | 4.8 | 0 | 3.7 | 0 | 1.59 | 1.1 | 0.12 | 0.21 | 2 | C40-41 |
| Melanoma of skin | 114 | 1 | 0 | 0 | 0 | 0.3 | 0.3 | 0.4 | 2.6 | 1 | 2 | 10.8 | 4.9 | 10.1 | 25.3 | 33.4 | 14.5 | 32.6 | 36.8 | 25.4 | 3.48 | 2.3 | 0.29 | 0.53 | 4.7 | C43 |
| Other skin | 713 | 0 | 0.2 | 0 | 0.8 | 0.5 | 1.2 | 4.8 | 15.8 | 18.2 | 24.1 | 40.2 | 52.8 | 83.4 | 105.6 | 150.1 | 188 | 234.5 | 165.6 | 145.2 | 21.78 | 14.7 | 1.74 | 3.43 | 28.9 | C44 |
| Mesothelioma | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0.01 | 0.01 | 0.1 | C45 |
| Kaposi sarcoma | 217 | 2 | 0.7 | 0 | 1.3 | 1.1 | 4.6 | 8.1 | 17.6 | 23.9 | 22.2 | 17 | 2 | 7.6 | 6 | 5.6 | 14.5 | 3.3 | 3.7 | 2.3 | 6.63 | 4.5 | 0.57 | 0.67 | 7.4 | C46 |
| Connective and soft tissue | 95 | 0 | 0.5 | 0.3 | 0.5 | 2.2 | 0.9 | 1.1 | 6.2 | 5.2 | 2.6 | 3.9 | 4.9 | 8.8 | 11.9 | 13 | 12.1 | 13 | 7.4 | 11.5 | 2.9 | 2 | 0.24 | 0.37 | 3.5 | C47,C49 |
| Breast | 1439 | 5 | 0 | 0 | 0 | 0.5 | 0.6 | 8.1 | 42.7 | 57.3 | 104.4 | 143.8 | 179.9 | 236.4 | 217.2 | 196.4 | 173.5 | 231.3 | 176.6 | 94.5 | 43.96 | 29.7 | 4.97 | 6.83 | 62 | C50 |
| Vulva | 57 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.4 | 1.8 | 2.6 | 9.1 | 8.5 | 2.9 | 7.6 | 6 | 0 | 2.4 | 6.5 | 11 | 4.6 | 1.74 | 1.2 | 0.2 | 0.21 | 2.3 | C51 |
| Vagina | 43 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 1.8 | 1 | 2.6 | 3.1 | 6.8 | 7.6 | 4.5 | 7.4 | 7.2 | 9.8 | 3.7 | 2.3 | 1.31 | 0.9 | 0.14 | 0.21 | 1.9 | C52 |
| Cervix uteri | 899 | 4 | 0 | 0 | 0 | 1.1 | 1.8 | 5.5 | 23.3 | 53.6 | 84.1 | 88.1 | 80.2 | 122.6 | 110.1 | 140.8 | 103.6 | 143.3 | 99.3 | 64.5 | 27.46 | 18.5 | 2.87 | 4.09 | 37.7 | C53 |
| Corpus uteri | 137 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.7 | 2.6 | 2.6 | 4.6 | 6.2 | 6.8 | 24 | 31.2 | 44.5 | 41 | 19.5 | 36.8 | 9.2 | 4.19 | 2.8 | 0.4 | 0.82 | 6.2 | C54 |
| Uterus unspecified | 50 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.4 | 0 | 0 | 3.3 | 2.3 | 8.8 | 7.6 | 17.9 | 5.6 | 14.5 | 13 | 0 | 0 | 1.53 | 1 | 0.2 | 0.3 | 2.4 | C55 |
| Ovary | 105 | 0 | 0.2 | 0.3 | 1.1 | 0.3 | 2.1 | 1.8 | 3.1 | 4.2 | 4.6 | 10.8 | 6.8 | 7.6 | 25.3 | 14.8 | 2.4 | 26.1 | 3.7 | 4.6 | 3.21 | 2.2 | 0.34 | 0.43 | 4.3 | C56 |
| Other female genital organs | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 1.5 | 3.9 | 1.3 | 0 | 1.9 | 2.4 | 3.3 | 0 | 0 | 0.34 | 0.2 | 0.04 | 0.06 | 0.5 | C57 |
| Placenta | 2 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0.1 | C58 |
| Kidney | 58 | 0 | 1.4 | 1.1 | 0.3 | 1.1 | 1.5 | 0.4 | 1.8 | 1.6 | 2 | 6.2 | 2 | 3.8 | 14.9 | 3.7 | 2.4 | 0 | 3.7 | 0 | 1.77 | 1.2 | 0.19 | 0.22 | 2.3 | C64 |
| Renal pelvis | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C65 |
| Ureter | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C66 |
| Bladder | 57 | 0 | 0 | 0.3 | 0 | 0 | 0.3 | 0.4 | 0.9 | 2.6 | 2 | 3.9 | 6.8 | 10.1 | 6 | 11.1 | 4.8 | 16.3 | 22.1 | 2.3 | 1.74 | 1.2 | 0.17 | 0.25 | 2.3 | C67 |
| Other urinary organs | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 1.9 | 0 | 0 | 0 | 0 | 0.06 | 0 | 0.01 | 0.02 | 0.1 | C68 |
| Eye | 100 | 3 | 2.6 | 1.4 | 0 | 0.3 | 1.2 | 1.8 | 6.2 | 6.2 | 5.2 | 8.5 | 12.7 | 6.3 | 1.5 | 3.7 | 0 | 3.3 | 11 | 2.3 | 3.05 | 2.1 | 0.28 | 0.3 | 3.5 | C69 |
| Brain, nervous system | 22 | 0 | 0.2 | 0.3 | 0.8 | 0.5 | 0 | 0.7 | 0.9 | 0.5 | 1.3 | 2.3 | 1 | 0 | 3 | 1.9 | 2.4 | 0 | 0 | 0 | 0.67 | 0.5 | 0.06 | 0.08 | 0.8 | C70-72 |
| Thyroid | 85 | 0 | 0 | 0 | 0 | 0.3 | 0.9 | 1.8 | 3.1 | 7.3 | 5.2 | 8.5 | 10.8 | 12.6 | 10.4 | 5.6 | 2.4 | 9.8 | 0 | 2.3 | 2.6 | 1.8 | 0.3 | 0.34 | 3.5 | C73 |
| Adrenal gland | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C74 |
| Other endocrine | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03 | 0 | 0.01 | 0.01 | 0.1 | C75 |
| Hodgkin disease | 12 | 0 | 0 | 0 | 0.5 | 0.3 | 0.3 | 0.4 | 1.3 | 0.5 | 1.3 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.37 | 0.2 | 0.03 | 0.03 | 0.4 | C81 |
| Non-Hodgkin lymphoma | 182 | 1 | 0.7 | 0.3 | 0.8 | 1.9 | 1.2 | 5.9 | 6.2 | 12.5 | 13 | 15.5 | 20.5 | 12.6 | 16.4 | 13 | 4.8 | 22.8 | 18.4 | 13.8 | 5.56 | 3.8 | 0.54 | 0.63 | 6.9 | C82-85,C96 |
| Immunoproliferative diseases | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C88 |
| Multiple myeloma | 27 | 0 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0.4 | 1 | 0.7 | 0 | 2 | 1.3 | 10.4 | 3.7 | 9.6 | 6.5 | 7.4 | 4.6 | 0.82 | 0.6 | 0.08 | 0.15 | 1.1 | C90 |
| Lymphoid leukaemia | 18 | 0 | 0.5 | 1.1 | 0 | 0.5 | 0 | 0.7 | 0.4 | 1 | 0 | 0 | 0 | 1.3 | 1.5 | 0 | 4.8 | 3.3 | 0 | 0 | 0.55 | 0.4 | 0.04 | 0.06 | 0.6 | C91 |
| Myeloid leukaemia | 37 | 0 | 0 | 0.3 | 1.1 | 0.5 | 0.9 | 1.5 | 1.3 | 1 | 2.6 | 0.8 | 1 | 3.8 | 3 | 0 | 2.4 | 9.8 | 7.4 | 2.3 | 1.13 | 0.8 | 0.09 | 0.1 | 1.2 | C92-94 |
| Leukaemia unspecified | 3 | 0 | 0.2 | 0.3 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.09 | 0.1 | 0 | 0 | 0.1 | C95 |
| Myeloproliferative disorders | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | MPD |
| Myelodysplastic syndromes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | MDS |
| Other and unspecified | 341 | 2 | 0.7 | 1.1 | 0.3 | 0.3 | 2.1 | 4 | 7.9 | 8.8 | 19.6 | 26.3 | 34.2 | 55.6 | 52.1 | 68.6 | 60.3 | 48.9 | 44.2 | 23.1 | 10.42 | 7 | 1.07 | 1.72 | 14.7 | O&U |
| **All sites** | **5565** | 21 | 8.6 | 7.5 | 9.1 | 16.5 | 24.1 | 57.4 | 166.7 | 225.4 | 341.1 | 456.9 | 526.9 | 739.5 | 809.4 | 854.3 | 853.2 | 1074.8 | 721.2 | 497.9 | 170 | 114.7 | 17.01 | 25.58 | 230.7 | ALL |
| **All sites but C44** | **4852** | 21 | 8.4 | 7.5 | 8.3 | 15.9 | 22.9 | 52.6 | 150.8 | 207.2 | 317 | 416.7 | 474.1 | 656.1 | 703.7 | 704.2 | 665.2 | 840.3 | 555.6 | 352.7 | 148.22 | 100 | 15.27 | 22.15 | 201.8 | ALLbC44 |

## Incidence per 100 000 by Age Group (years) / Male / Namibia

| SITE | ALL AGES | AGE UNK | 0- | 5- | 10- | 15- | 20- | 25- | 30- | 35- | 40- | 45- | 50- | 55- | 60- | 65- | 70- | 75- | 80- | 85+ | CRUDE RATE | (%) | CUM 0-64 | CUM 0-74 | ASR | ICD (10th) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lip | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.5 | 0 | 0 | 0 | 1.2 | 1.6 | 3.6 | 12.7 | 3.3 | 4.8 | 0 | 9.2 | 0.49 | 0.4 | 0.04 | 0.12 | 0.9 | C00 |
| Tongue | 65 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0.5 | 2.8 | 2.7 | 21.9 | 14 | 18.1 | 12.7 | 3.3 | 9.5 | 44.2 | 4.6 | 2.12 | 1.8 | 0.31 | 0.4 | 3.7 | C01-02 |
| Mouth | 83 | 1 | 0 | 0 | 0 | 0 | 0.6 | 0 | 2.3 | 0.5 | 3.6 | 6.2 | 14.6 | 9.3 | 38 | 30.5 | 13 | 19 | 12.6 | 4.6 | 2.71 | 2.3 | 0.38 | 0.6 | 4.9 | C03-06 |
| Salivary glands | 20 | 0 | 0 | 0.6 | 0.3 | 0 | 0.6 | 0.4 | 0 | 1.6 | 1.4 | 1.8 | 0 | 3.1 | 3.6 | 2.5 | 0 | 9.5 | 0 | 0 | 0.65 | 0.5 | 0.07 | 0.08 | 0.9 | C07-08 |
| Tonsil | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 1.4 | 1.8 | 2.4 | 1.6 | 10.9 | 7.6 | 19.5 | 0 | 6.3 | 9.2 | 0.88 | 0.7 | 0.1 | 0.23 | 1.6 | C09 |
| Other oropharynx | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0 | 0 | 0 | 3.3 | 9.5 | 6.3 | 0 | 0.16 | 0.1 | 0 | 0.02 | 0.2 | C10 |
| Nasopharynx | 19 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 | 0.5 | 4.3 | 1.8 | 3.6 | 3.1 | 1.8 | 2.5 | 3.3 | 0 | 0 | 0 | 0.62 | 0.5 | 0.08 | 0.11 | 1 | C11 |
| Hypopharynx | 19 | 0 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.6 | 1.6 | 7.2 | 10.2 | 9.8 | 14.3 | 0 | 0 | 0.62 | 0.5 | 0.06 | 0.16 | 1.2 | C12-13 |
| Pharynx unspecified | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.1 | 7.2 | 2.5 | 6.5 | 4.8 | 0 | 0 | 0.33 | 0.3 | 0.05 | 0.1 | 0.7 | C14 |
| Oesophagus | 67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.4 | 6.2 | 8.5 | 20.2 | 10.9 | 22.9 | 16.3 | 61.8 | 31.6 | 0 | 2.19 | 1.8 | 0.24 | 0.43 | 3.9 | C15 |
| Stomach | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 5 | 0 | 7.3 | 20.2 | 18.1 | 20.3 | 19.5 | 9.5 | 31.6 | 9.2 | 1.99 | 1.7 | 0.26 | 0.46 | 3.6 | C16 |
| Small intestine | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0 | 0 | 0 | 2.4 | 0 | 0 | 0 | 0 | 9.5 | 12.6 | 0 | 0.26 | 0.2 | 0.02 | 0.02 | 0.3 | C17 |
| Colon | 111 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 | 3.3 | 4.3 | 9.8 | 13.4 | 21.7 | 32.6 | 33.1 | 61.8 | 38 | 19 | 0 | 3.62 | 3 | 0.43 | 0.9 | 6.6 | C18 |
| Rectum | 64 | 0 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.5 | 2.7 | 3.6 | 3.6 | 9.7 | 18.6 | 12.7 | 17.8 | 9.8 | 23.8 | 31.6 | 4.6 | 2.09 | 1.7 | 0.26 | 0.4 | 3.5 | C19-20 |
| Anus | 20 | 0 | 0 | 0 | 0 | 0 | 1.3 | 0 | 0 | 1.6 | 0.7 | 1.8 | 2.4 | 0 | 3.6 | 0 | 9.8 | 9.5 | 0 | 4.6 | 0.65 | 0.5 | 0.06 | 0.11 | 0.9 | C21 |
| Liver | 104 | 1 | 0.7 | 0 | 0.8 | 0 | 0 | 0.8 | 4.1 | 2.2 | 3.6 | 13.4 | 13.4 | 21.7 | 27.2 | 10.2 | 19.5 | 47.5 | 12.6 | 0 | 3.39 | 2.8 | 0.44 | 0.59 | 5.5 | C22 |
| Gallbladder etc. | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 0 | 0 | 1.2 | 1.6 | 3.6 | 0 | 0 | 4.8 | 0 | 0 | 0.23 | 0.2 | 0.04 | 0.04 | 0.4 | C23-24 |
| Pancreas | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.1 | 2.7 | 3.6 | 6.2 | 12.7 | 2.5 | 16.3 | 4.8 | 0 | 4.6 | 0.91 | 0.8 | 0.14 | 0.23 | 1.7 | C25 |
| Nose, sinuses etc. | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.9 | 0.5 | 0.7 | 0.9 | 0 | 0 | 1.8 | 0 | 6.5 | 4.8 | 0 | 0 | 0.29 | 0.2 | 0.02 | 0.06 | 0.4 | C30-31 |
| Larynx | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.5 | 0 | 1.8 | 17 | 31 | 25.3 | 40.7 | 39 | 28.5 | 25.3 | 0 | 2.94 | 2.5 | 0.38 | 0.78 | 5.7 | C32 |
| Trachea, bronchus and lung | 136 | 1 | 0 | 0 | 0 | 0 | 1.3 | 0.8 | 2.3 | 0 | 4.3 | 8 | 23.1 | 32.6 | 34.4 | 40.7 | 55.3 | 57 | 25.3 | 4.6 | 4.44 | 3.7 | 0.54 | 1.02 | 8 | C33-34 |
| Other thoracic organs | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0.9 | 0 | 0 | 2.7 | 1.2 | 0 | 1.8 | 0 | 0 | 19 | 6.3 | 4.6 | 0.46 | 0.4 | 0.03 | 0.03 | 0.6 | C37-38 |
| Bone | 79 | 1 | 0.2 | 0.3 | 1.9 | 1.7 | 2.2 | 3.1 | 4.5 | 1.1 | 2.1 | 4.5 | 4.9 | 4.7 | 3.6 | 15.3 | 16.3 | 4.8 | 12.6 | 22.9 | 2.58 | 2.2 | 0.18 | 0.34 | 3.2 | C40-41 |
| Melanoma of skin | 90 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 | 3.2 | 0.5 | 2.1 | 4.5 | 14.6 | 7.8 | 18.1 | 33.1 | 32.5 | 47.5 | 31.6 | 32.1 | 2.94 | 2.5 | 0.26 | 0.58 | 4.9 | C43 |
| Other skin | 1181 | 1 | 0 | 0.3 | 0 | 1.1 | 2.2 | 1.5 | 15.5 | 21.4 | 36.2 | 61.4 | 108.3 | 224.8 | 258.9 | 462.8 | 487.5 | 541.9 | 606.8 | 238.5 | 38.52 | 32.3 | 3.66 | 8.42 | 66.6 | C44 |
| Mesothelioma | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | 2.5 | 0 | 4.8 | 6.3 | 0 | 0.13 | 0.1 | 0.01 | 0.02 | 0.2 | C45 |
| Kaposi sarcoma | 437 | 7 | 0.5 | 0.8 | 0.5 | 4.8 | 2.5 | 7.3 | 29.1 | 41.1 | 49.7 | 36.5 | 34.1 | 51.2 | 30.8 | 22.9 | 45.5 | 47.5 | 50.6 | 45.9 | 14.25 | 11.9 | 1.47 | 1.82 | 18.6 | C46 |
| Connective and soft tissue | 92 | 0 | 0.7 | 0.6 | 1.4 | 0.3 | 0.6 | 1.2 | 2.3 | 1.6 | 2.8 | 6.2 | 8.5 | 15.5 | 14.5 | 33.1 | 29.3 | 28.5 | 6.3 | 13.8 | 3 | 2.5 | 0.28 | 0.59 | 4.8 | C47,C49 |
| Breast | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 5 | 1.8 | 4.9 | 10.9 | 7.2 | 2.5 | 16.3 | 9.5 | 0 | 0 | 1.08 | 0.9 | 0.15 | 0.24 | 1.9 | C50 |
| Penis | 62 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.8 | 1.8 | 1.6 | 6.4 | 13.4 | 8.5 | 4.7 | 5.4 | 15.3 | 19.5 | 14.3 | 0 | 0 | 2.02 | 1.7 | 0.21 | 0.39 | 3.3 | C60 |
| Prostate | 972 | 1 | 0.2 | 0 | 0 | 0.3 | 0.3 | 0 | 1.8 | 0.5 | 2.8 | 20.5 | 62 | 134.9 | 249.9 | 414.5 | 568.8 | 656 | 518.3 | 467.9 | 31.71 | 26.5 | 2.37 | 7.29 | 55.5 | C61 |
| Testis | 32 | 0 | 0 | 0.8 | 0 | 0.6 | 0 | 2.3 | 3.6 | 1.6 | 4.3 | 0.9 | 1.2 | 1.6 | 0 | 0 | 0 | 4.8 | 0 | 0 | 1.04 | 0.9 | 0.08 | 0.08 | 1.1 | C62 |
| Other male genital organs | 8 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0 | 0 | 0 | 0 | 0.9 | 0 | 1.6 | 0 | 2.5 | 3.3 | 0 | 12.6 | 0 | 0.26 | 0.2 | 0.02 | 0.04 | 0.4 | C63 |
| Kidney | 82 | 0 | 3.1 | 0.6 | 0.3 | 0 | 0 | 0.4 | 0.9 | 0.5 | 2.8 | 8 | 13.4 | 20.2 | 16.3 | 17.8 | 13 | 14.3 | 12.6 | 0 | 2.67 | 2.2 | 0.33 | 0.49 | 4.3 | C64 |
| Renal pelvis | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0.07 | 0.1 | 0.02 | 0.02 | 0.1 | C65 |
| Ureter | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.4 | 1.6 | 0 | 0 | 6.5 | 0 | 0 | 0 | 0.16 | 0.1 | 0.02 | 0.05 | 0.3 | C66 |
| Bladder | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0.5 | 2.8 | 4.5 | 12.2 | 23.3 | 27.2 | 40.7 | 65 | 28.5 | 25.3 | 18.3 | 3.29 | 2.8 | 0.35 | 0.88 | 6.1 | C67 |
| Other urinary organs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C68 |
| Eye | 101 | 1 | 3.3 | 0.3 | 0 | 0.6 | 0.3 | 2.3 | 3.2 | 9.3 | 8.5 | 13.4 | 8.5 | 9.3 | 7.2 | 0 | 13 | 14.3 | 0 | 4.6 | 3.29 | 2.8 | 0.33 | 0.4 | 4.3 | C69 |
| Brain, nervous system | 31 | 0 | 0 | 0.6 | 0.3 | 0.3 | 0.6 | 0 | 1.4 | 0.5 | 2.1 | 6.2 | 4.9 | 3.1 | 1.8 | 5.1 | 3.3 | 4.8 | 0 | 0 | 1.01 | 0.8 | 0.11 | 0.15 | 1.5 | C70-72 |
| Thyroid | 15 | 0 | 0 | 0 | 0 | 0.6 | 0.3 | 0 | 1.8 | 0.5 | 0 | 0.9 | 0 | 1.6 | 0 | 2.5 | 3.3 | 9.5 | 0 | 4.6 | 0.49 | 0.4 | 0.03 | 0.06 | 0.6 | C73 |
| Adrenal gland | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.8 | 2.5 | 0 | 0 | 0 | 0 | 0.07 | 0.1 | 0.01 | 0.02 | 0.1 | C74 |
| Other endocrine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | C75 |
| Hodgkin disease | 9 | 0 | 0 | 0.3 | 0 | 0 | 0.3 | 0 | 0.9 | 0.5 | 0 | 0 | 0 | 1.6 | 1.8 | 0 | 0 | 0 | 0 | 9.2 | 0.29 | 0.2 | 0.03 | 0.03 | 0.3 | C81 |
| Non-Hodgkin lymphoma | 168 | 0 | 0.7 | 2.5 | 0.5 | 0.3 | 2.8 | 5.8 | 4.5 | 6 | 7.1 | 25.8 | 15.8 | 24.8 | 25.3 | 17.8 | 16.3 | 19 | 12.6 | 36.7 | 5.48 | 4.6 | 0.61 | 0.78 | 7.8 | C82-85,C96 |
| Immunoproliferative diseases | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0 | 0 | 2.5 | 0 | 0 | 0 | 0 | 0.07 | 0.1 | 0.01 | 0.02 | 0.1 | C88 |
| Multiple myeloma | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0.5 | 3.6 | 1.8 | 6.1 | 17.1 | 5.4 | 2.5 | 6.5 | 9.5 | 0 | 4.6 | 1.11 | 0.9 | 0.17 | 0.22 | 1.9 | C90 |
| Lymphoid leukaemia | 51 | 0 | 1.2 | 0.6 | 0.8 | 0.3 | 0.3 | 0.4 | 1.8 | 2.2 | 0 | 2.7 | 9.7 | 6.2 | 1.8 | 7.6 | 3.3 | 28.5 | 12.6 | 9.2 | 1.66 | 1.4 | 0.14 | 0.19 | 2.2 | C91 |
| Myeloid leukaemia | 39 | 0 | 0.7 | 0 | 0.3 | 0.6 | 0.9 | 2.3 | 1.4 | 1.6 | 0.7 | 1.8 | 4.9 | 6.2 | 5.4 | 2.5 | 0 | 0 | 6.3 | 9.2 | 1.27 | 1.1 | 0.13 | 0.15 | 1.6 | C92-94 |
| Leukaemia unspecified | 4 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.2 | 1.6 | 0 | 0 | 3.3 | 0 | 0 | 0 | 0.13 | 0.1 | 0.02 | 0.03 | 0.2 | C95 |
| Myeloproliferative disorders | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | MPD |
| Myelodysplastic syndromes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | MDS |
| Other and unspecified | 225 | 2 | 0.2 | 0.6 | 0 | 0.3 | 0.9 | 3.5 | 5.9 | 8.2 | 4.3 | 16.9 | 30.4 | 32.6 | 39.8 | 73.7 | 52 | 80.8 | 56.9 | 68.8 | 7.34 | 6.1 | 0.72 | 1.36 | 11.8 | O&U |
| **All sites** | **4843** | **18** | **11.7** | **9** | **7.1** | **12.5** | **20.4** | **34.3** | **99.1** | **116.1** | **182.6** | **298.2** | **509.7** | **818.4** | **999.5** | **1449.4** | **1719.3** | **1958.5** | **1637** | **1045.8** | **157.97** | **132.3** | **15.65** | **31.55** | **260.2** | **ALL** |
| **All sites but C44** | **3662** | **17** | **11.7** | **8.7** | **7.1** | **11.4** | **18.2** | **32.7** | **83.7** | **94.7** | **146.3** | **236.8** | **401.4** | **593.7** | **740.6** | **986.6** | **1231.8** | **1416.6** | **1030.2** | **807.3** | **119.45** | **100** | **11.99** | **23.13** | **193.6** | **ALLbC44** |

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**The following summary measures have been used in tables:**

- *Site* – a shortened version of the full ICD-10 title describes each site or site grouping
- *All ages* – the total number of cases by site and for all sites
- *Age unk* – the number of cases of unknown age by site
- *0-*, 5-, 10-… – the age groups for which incidence data is presented
- *Crude rate* – the crude average annual incidence rate, based on the total number of registrations by site
- *%* - The proportional frequency of each site to the total of all sites excluding ICD10 C44 (Other skin)
- *CUM 0-64* – the sum over each year of age of the age-specific incidence rates, taken from birth to age 64
- *CUM 0-74* – the sum over each year of age of the age-specific incidence rates, taken from birth to age 74
- *ASR(W)* – the world age-standardized incidence rate by site
- *ICD(10th)* – the ICD-10 code(s) corresponding to the site or group of sites given in the left hand column