ISSN: 2692-5516

Research Article

Advances in Hematology and Oncology Research

Top Twelve Cancers in Jamaica 2008

Laten Andre Mclish

Physics Division, University of Technology, Kingston 6, Jamaica

*Corresponding Author
Laten Andre Mclish, Physics Division, University of Technology, Kingston 6, and Jamaica.

Submitted: 09 Jan 2023; **Accepted:** 16 Jan 2023; **Published:** 27 Jan 2023

Citation: Mclish, L. A. (2023). Top Twelve Cancers in Jamaica 2008. *Adv Hema Onco Res, 6*(1), 01-07.

Abstract

Objective: *To determine the top twelve cancers in Jamaica in the year 2008 and to examine the distribution of cancer of the endometrium as well as non-Hodgkin's lymphoma in 2008.*

Methods: *The study included all fourteen parishes. Data was obtained from the Jamaica Cancer Registry located in the Pathology Department of the University of the West Indies. Population denominators were obtained from the 2011 census taken by the Statistical Institute of Jamaica. The statistical package which was used to analyze the data was SPSS.*

Results: *The top twelve cancers were determined using the crude incidence rate (CIR). In descending order, the top twelve cancers were prostate cancer (36.6), cancer of the breast (25.7), cancer of the cervix (23.2), cancer of the lung (7.0), cancer of the endometrium (6.9), cancer of the colon (5.2), carcinoma primary unknown (4.4), non-Hodgkin's lymphoma (3.5), cancer of the stomach (3.0), cancer of the skin (2.6), cancer of the urinary bladder (1.8), cancer of the rectum (1.8) and cancer of the thyroid (1.1). It was also determined that cancer of the endometrium is mostly prevalent in the age group 55 years to 79 years and the highest probability of developing this cancer would be in the parishes of Kingston and St. Andrew and St. Catherine. In the case of non-Hodgkin's lymphoma, it is mostly prevalent in the age group 45 years to 64 years. In Jamaica in 2008 it was more dominant in females than males (male/female ratio, 0.83). Based on the crude incidence rate, the highest probability of developing this cancer occurred in the parishes of Kingston and St. Andrew and St. Catherine.*

Conclusion: *In mitigating against cancer, it is important to study the onset, the age groups affected as well as gender. It is also important to look at geographical locations to see the probability of developing a particular type of cancer. Once this is done then appropriate screening and safety protocols should be followed by the various health administrators.*

Introduction

Since the inception of the Jamaica Cancer Registry in 1958 the incidence of cancer in Jamaica has been monitored by reports being produced regularly [1]. These reports are based upon the incidence of cancer in males and females in Kingston and St. Andrew which forms the population base of the registry [1,2]. Gibson et al. (2008) determined that the leading sites of cancer were prostate, breast, large bowel, bronchus, cervix uteri and lymphoma [1]. They ascertained that in males prostate was the leading site in those aged 60 years and above, cancer of the lung for those aged 25-59 years [1]. They also determined that breast cancer was the commonest site in women aged 25 years and over. They reported that the majority of cases of both breast cancer and cancer of the cervix uteri occurred between the ages of 25 and 59 years. This present study has been undertaken to determine the top twelve cancers in Jamaica 2008 and to investigate the distribution of cancer of the endometrium and non-Hodgkin's lymphoma across all fourteen parishes in the year 2008.

Methods

Study Population

This research project consists of persons from all parishes in Jamaica. A map of Jamaica is shown in Figure 1 [3].

Figure 1: Map of Jamaica showing all the parishes

Data was obtained from the Jamaica Cancer Registry located in the Pathology Department of the University of the West Indies. The methodology of the registry has been previously stated [4,5]. Cases are registered from information gleaned from public and private hospitals and general practitioners in Kingston and St. Andrew then verified by pathologists at Jamaica Cancer Registry in accordance with standard techniques of registration [6].

Data Extraction

Variables that were obtained from the Jamaica Cancer Registry included cancer code, date of diagnosis, age at diagnosis, permanent residence, parish of birth, diagnosis, gender, smoker, source of case and date of death. The codes used for classification of the various types of cancers were cross-checked using the tenth edition of the International Statistical Classification of Diseases and Related Health Problems (ICD–10) [7]. Population denominators were obtained from the 2011 census taken by the Statistical Institute of Jamaica, Kingston, Jamaica [8].

Statistical Analysis

The statistical package which was used to analyze the collected data was SPSS and Microsoft excel. The data was initially stored in an excel database. The crude incidence rate (CIR) was also determined. It was calculated by dividing the total number of cases of cancer diagnosed in a specific population by the size of the population and then multiplying the result by 100000 [1,2].

Results

Table 1: The Top Twelve Cancers in Jamaica 2008

Type of Cancer	Frequency	Population Size	Crude Incidence Rate	Mean Age
Prostate Cancer	489	1334533	36.6	68.23 yr.
Cancer of the Breast	351	1363450	25.7	56.13 yr.
Cancer of the Cervix	317	1363450	23.2	45.64 yr.
Cancer of the Lung	190	2687983	7.0	65.43 yr.
Cancer of the Colon	139	2697983	5.2	63.73 yr.
Carcinoma Primary Unknown	120	2697983	4.4	59.99 yr.
Non-Hodgkin's Lymphoma	95	2697983	3.5	49.44 yr.
Cancer of the Endometrium	94	1363450	6.9	64.44 yr.
Cancer of the Stomach	81	2697983	3.0	64.64 yr.
Cancer of the Skin	69	2697983	2.6	60.77 yr.
Cancer of the Urinary Bladder	48	2697983	1.8	70.71 yr.
Cancer of the Rectum	48	2697983	1.8	70.65 yr.
Cancer of the Thyroid	31	2697983	1.1	50.39 yr.

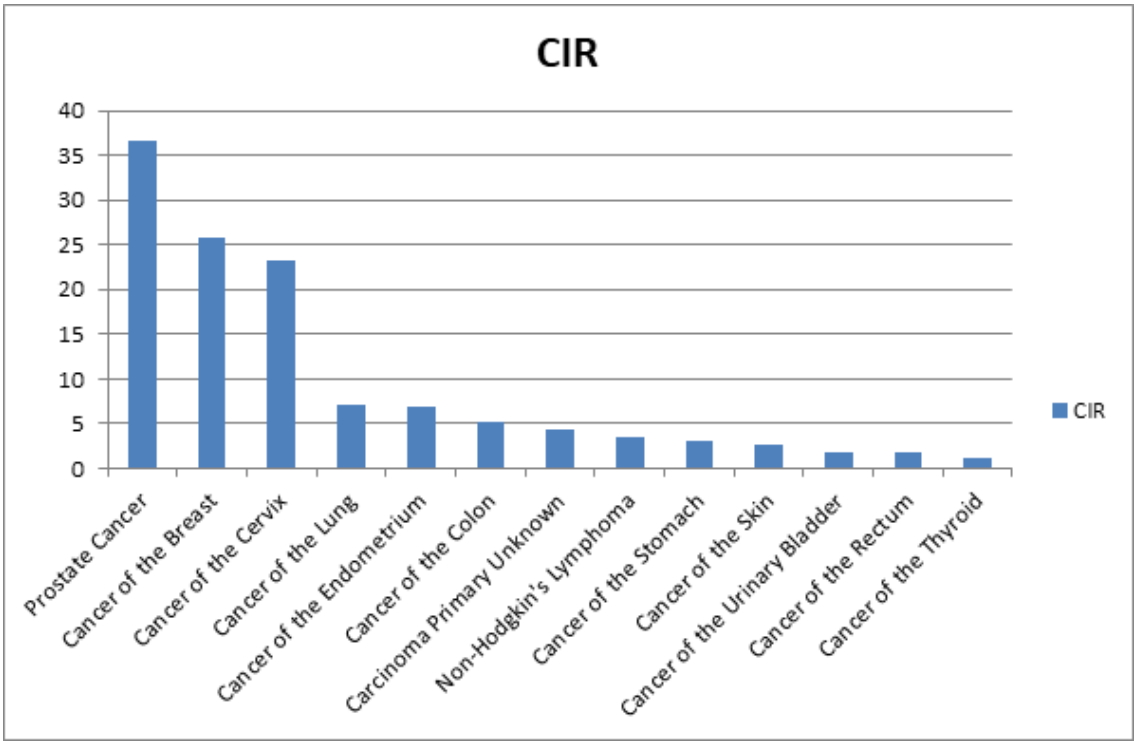

Figure 2: Bar chart showing the true order of the top twelve cancers in Jamaica in 2008, based upon the crude incidence rate (CIR)

Table 2: Frequency table showing grouped data of women diagnosed with endometrial cancer in Jamaica 2008

Age (yr)	Frequency
0 – 4	0
5 – 9	0
10 – 14	0
15 – 19	0
20 – 24	0
25 – 29	0
30 – 34	2
35 – 39	1
40 – 44	3
45 – 49	3
50 – 54	7
55 – 59	14
60 – 64	10
65 – 69	22
70 – 74	16
75 – 79	10
80 – 84	4
85 – 89	2
90 – 94	0
95+	0
TOTAL (N)	94

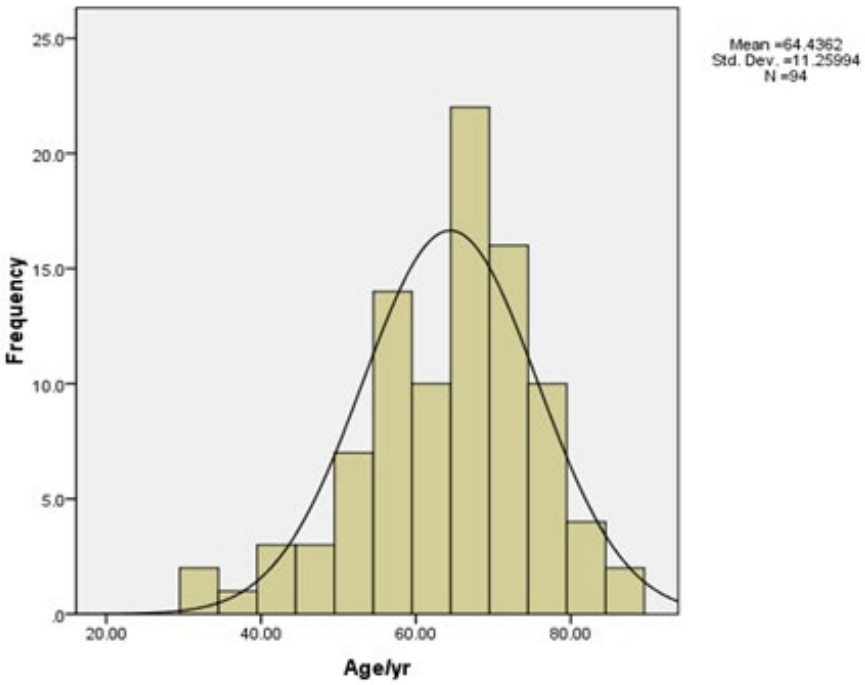

Figure 3: Histogram showing the distribution of cancer of the endometrium in Jamaica 2008

Table 3: Frequency table showing grouped data of persons diagnosed with Non-Hodgkin's Lymphoma in Jamaica 2008

Age/yr.	Frequency		
	Both Genders	Male	Female
0 – 4	1	0	1
5 – 9	2	1	1
10 – 14	2	0	2
15 – 19	0	0	0
20 – 24	2	2	0
25 – 29	9	4	5
30 – 34	5	1	4
35 – 39	5	2	3
40 – 44	7	3	4
45 – 49	15	8	7
50 – 54	6	4	2
55 – 59	10	6	4
60 – 64	12	5	7
65 – 69	5	1	4
70 – 74	4	3	1
75 – 79	6	2	4
80 – 84	3	1	2
85 – 89	1	0	1
90 – 94	0	0	0
95+	0	0	0
TOTAL (N)	95	43	52

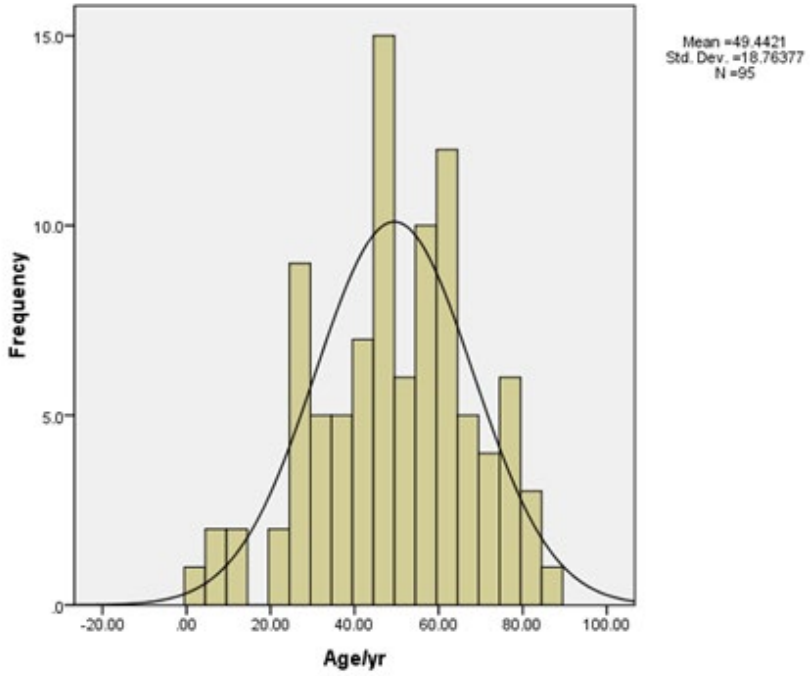

Figure 4: Histogram showing the distribution of Non-Hodgkin's Lymphoma in Jamaica 2008

Table 4: Comparing the Crude Incidence Rate of Cancer of the Endometrium for all Parishes in Jamaica 2008

Parish	Cancer Cases	Population Size	Crude Incidence Rate
St. Catherine	33	265860	12.4
Kingston and St. Andrew	40	343215	11.7
Manchester	7	94394	7.4
St. Thomas	3	46943	6.4
Trelawny	2	37062	5.4
St. Elizabeth	3	73675	4.1
Clarendon	5	121312	4.1
Hanover	1	34470	2.9
Portland	0	40450	0
Westmoreland	0	70422	0
St. Ann	0	85699	0
St. Mary	0	56586	0
St. James	0	93361	0

Table 5: Comparing the Crude Incidence Rate of Non-Hodgkin's Lymphoma for all Parishes in Jamaica 2008

Parish	Cancer Cases	Population Size	Crude Incidence Rate
Kingston and St. Andrew	46	662426	6.9
St. Catherine	28	516218	5.4
Clarendon	8	245103	3.3
Portland	2	81744	2.4
St. Thomas	2	93902	2.1
St. Elizabeth	3	150205	2.0
St. Ann	3	172362	1.7

Hanover	1	69533	1.4
St. Mary	1	113615	0.9
Westmoreland	1	144103	0.7
St. James	0	183811	0
Manchester	0	189797	0
Trelawny	0	75164	0

Discussion

Table 1 shows the result when the top cancers were determined in Jamaica in 2008 based upon number of cases. The highest ranked cancers were prostate cancer, cancer of the breast, cancer of the cervix and cancer of the lung. These results were similar to Gibson et al. (2010), who determined based upon frequency that prostate cancer, cancer of the breast, cancer of the large bowel and cancer of the bronchus were the leading cancers [2]. Similar results were obtained by Gibson et al. (2008) [1]. In Table 1 cancers ranked 10 to 12 were cancer of the skin, cancer of the urinary bladder, cancer of the rectum and cancer of the thyroid. Jahn, Giovanucci and Stampfer stated that several risk factors such as high body mass index, smoking, reduced lycopene intake have been observed to produce lethal or aggressive prostate cancer [9]. Blake et al. stated that prostate cancer was the commonest cause of cancer death in males [10]. According to the Pan American Health Organization (PAHO), the leading cancer types in the Americas are lung, prostate and colorectal cancers for men and breast, lung and cervical cancer for women [11]. WHO also determined that lung, prostate, colorectal, stomach and liver cancer are the most common cancer in men, while breast, colorectal, lung, cervix and thyroid are the most common among women [12]. In Table 1 however cancer of the liver did not make the top 12 list in 2008. In Table 1 cancers which developed earliest were indicated by the mean age. Three of these were cancer of the cervix, non-Hodgkin's lymphoma and cancer of the thyroid, their mean ages were 45.64 yr., 49.44 yr. and 50.39 yr. respectively. Cancers which developed much later in life were cancer of the urinary bladder, cancer of the rectum and prostate cancer, their mean ages were 70.71 yr., 70.65 yr. and 68.23 yr. respectively. A truthful reflection of the ranking can be obtained using the crude incidence rate (CIR). When this is done, cancer of the endometrium is no longer ranked 8 but 5 as indicated by the bar chart shown in Figure 2. Cancer of the colon would have fallen from 5 to 6 and carcinoma primary unknown from 6 to 7, non-Hodgkin's lymphoma from 7 to 8. All other cancers would maintain their ranking.

Table 2 shows the distribution of cancer of the endometrium based on age. From the table it can be deduced that the onset of this cancer begins about 30 years and the highest number of cases occurs in the age group 65 to 69 years, thereafter the number of cases gradually decreases. These results agree with Mahboubi et al. (1982), who stated that endometrial cancer is usually a disease associated with postmenopausal women, mostly in the 6th and 7th decades [13]. A similar result was also obtained by Gibson et al. (2010) who determined that corpus uteri (cancer of the endometrium) cases were very high in the age group 60 to 74 years, thereafter deceasing [2].

Figure 3 illustrates a histogram showing the age distribution of cancer of the endometrium. It is also negatively skewed having a value of -0.746.

Table 3 shows the age distribution of non-Hodgkin's lymphoma. This type of cancer was seen to be more prevalent in females than males in Jamaica 2008. This does not agree with Thandra et al. (2021) who stated that non-Hodgkin's lymphoma (NHL) is more common among men, those greater than 65 years old [14]. Thandra et al. also stated that NHL is the seventh most prevalent cancer and has the sixth highest mortality among cancers in the US [14]. Mitterlechner et al. (2006) stated that NHL more frequently affected men (male/female ratio, 1.52). Mean age of occurrence were 61 and 66 years for men and women respectively [15]. This was however not the case shown in Table 3. In Jamaica in 2008 the mean age of occurrence were 49.9 and 49 years for men and women respectively. Table 3 also showed that the highest number of cases occurred in the age group 45 years to 64 years. The age distribution was also demonstrated using a histogram in Figure 4. Gibson et al. (2008) showed that the largest occurrence of non-Hodgkin's lymphoma took place in the age group 25 to 59 years [1]. These results overlap with what was deduced from Table 3.

The incidence of cancer of the endometrium was compared across all parishes using the CIR. The results can be seen in Table 4. It can be seen that the probability of developing cancer of the endometrium in Kingston and St. Andrew as well as St. Catherine is more than 2 times that of St. Elizabeth and Clarendon. St. Thomas is also a parish to be noted as it was ranked forth based upon the CIR. In these top 5 parishes factors such as obesity, late menopause and familial disposition may be causing the development of cancer of the endometrium [13].

Table 5 compares the probability of developing non-Hodgkin's lymphoma across all fourteen parishes. Kingston and St. Andrew being treated as one since they are so closely interwoven. The top six parishes in descending order based upon the CIR were Kingston and St. Andrew (6.9), St. Catherine (5.4), Clarendon (3.3), Portland (2.9), St. Thomas (2.1) and St. Elizabeth (2.0). Some risk factors would include familial disposition, occupational exposures among farm workers or painters as well as obesity and vitamin D deficiency [14].

Limitations

In 2008 and earlier there were two major cancer treatment centres in Jamaica for the public. These were Kingston Public hospital in Kingston and Cornwall Regional hospital in St. James. The ma-

chines they had at that time were cobalt machines. Hence many cases would be referred to Kingston Public hospital from other parishes or to Cornwall Regional hospital. This would depend on the proximity and the accessibility, meaning the length of the waiting list. Staff at the Jamaica Cancer Registry only gets data from hospitals and private sources in Kingston and St. Andrew Jamaica. Hence some patients from the western end of the island such as the parishes of St. James, Westmoreland, Trelawny and Hanover would not be recorded based upon the present practise. Hence these would contribute to errors in the data from parishes in those regions of the island. In Kingston at that period there was the Radiation Oncology Centre of Jamaica which was established in 2001. This is a private centre for the treatment of cancer. Hence the limitation here would be your socioeconomic status. There would also be persons who would seek alternative ways to treat their cancer.

Conclusion

This study was able to confirm the top 12 cancers in Jamaica in 2008 using the CIR. It was possible, to infer that proper screening protocols have to be developed where screening occurs earlier in life for cancers such as non-Hodgkin's lymphoma, cancer of the cervix and cancer of the thyroid. In the case of cancer of the rectum, cancer of the urinary bladder and prostate cancer this can occur later in life. It was also established that in certain parishes individuals are more prone to develop cancer of the endometrium and non-Hodgkin's lymphoma than in others. It is therefore important that health administrators plan based on these findings.

Ethical Approval

Ethical approval was not requested because data was treated anonymously.

Acknowledgement

I wish to thank Professor Mitko Voutchkov for his continued guidance. I also wish to express posthumous thanks to Professor Barrie Hanchard who provided insightful suggestions and access to the Jamaica Cancer Registry located in the Pathology Department of the University of the West Indies.

Synopsis

This study determined the top twelve cancers in Jamaica in 2008. The distribution of Non-Hodgkin's Lymphoma and Cancer of the Endometrium was additionally done.

References

1. Gibson, T. N., Blake, G., Hanchard, B., Waugh, N., & McNaughton, D. (2008). Age-specific incidence of cancer in Kingston and St Andrew, Jamaica, 1998–2002. West Indian Med J, 57(2), 81-89.
2. Gibson, T. N., Hanchard, B., Waugh, N., & McNaughton, D. (2010). Age-Specific Incidence of Cancer in Kingston and St Andrew, Jamaica, 2003-2007. West Indian Medical Journal, 59(5), 456-464.
3. https://maps-jamaica.com/map-of-jamaica-parishes-and-capitals
4. Bras, G. (1966). Cancer incidence in Jamaica, Kingston and St Andrew 1958–1963. Cancer incidence in five continents, 1, 84-89.
5. Brooks, S. E., & Wolff, C. (1991). Age-specific incidence of cancer in Kingston and St. Andrew, Jamaica. Part I: 1978-1982. The West Indian Medical Journal, 40(3), 127-128.
6. Skeet, R. G. (1991). Cancer registration: principles and methods. Quality and quality control. IARC scientific publications, (95), 101-107.
7. The International Statistical Classification of Diseases and Related Health Problems (ICD-10), 10th edition.
8. http://statinja.gov.jm/Census/PopCensus/Populationbyfiveyearsagegroup.aspx
9. Jahn, J. L., Giovannucci, E. L., & Stampfer, M. J. (2015). The high prevalence of undiagnosed prostate cancer at autopsy: implications for epidemiology and treatment of prostate cancer in the Prostate-specific Antigen-era. International journal of cancer, 137(12), 2795-2802.
10. Blake, G., Hanchard, B., Mitchell, K., Simpson, D., Waugh, N., Wolff, C., & Samuels, E. (2002). Jamaica cancer mortality statistics, 1999. The West Indian Medical Journal, 51(2), 64-67.
11. https://www.paho.org/hq/index.php?option=com_content&view=article&id=11616:world-cancer-day-2016&Itemid=42340&lang=en
12. https://www.who.int/cancer/en/
13. Mahboubi, E., Eyler, N., & Wynder, E. L. (1982). Epidemiology of cancer of the endometrium. Clinical obstetrics and gynecology, 25(1), 5-17.
14. Thandra, K. C., Barsouk, A., Saginala, K., Padala, S. A., Barsouk, A., & Rawla, P. (2021). Epidemiology of non-Hodgkin's lymphoma. Medical Sciences, 9(1), 5.
15. Mitterlechner, T., Fiegl, M., Mühlböck, H., Oberaigner, W., Dirnhofer, S., & Tzankov, A. (2006). Epidemiology of non-Hodgkin lymphomas in Tyrol/Austria from 1991 to 2000. Journal of clinical pathology, 59(1), 48-55.