Thirty-Year Trends in Incidence and Age-Distribution of Prostate Cancer in Kingston and St Andrew, Jamaica, 1978–2007

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ABSTRACT

Objective: *To investigate the trends in incidence and age-distribution of prostate cancer in Kingston and St Andrew (KSA), Jamaica, over the 30-year period 1978–2007.*
Methods: *From published Jamaica Cancer Registry (JCR) data, we extracted age-standardized rates of prostate cancer for the six 5-year reporting periods that comprised the 30-year study span, and from the archived files of the JCR, the patient ages at diagnosis for all prostate cancer cases recorded over the 30-year period were extracted. The results were compared with data from other black populations.*
Results: *The incidence of prostate cancer in KSA, Jamaica, is lower than that in black men in the United States and United Kingdom. The KSA incidence showed a progressive increase since the 1983–1987 reporting period, and the greatest 5-year percentage increases were seen over the period 1983 to 1997. Men in the 60–74-year age group were the commonest contributors to prostate cancer total in all 5-year periods examined, and between 1988 and 2007, there were increases in the proportionate contributions from the 25–59 and 60–74-year age groups, and a decrease in contribution from men aged 75 years and older.*
Conclusion: *The incidence of prostate cancer in KSA, Jamaica, has been progressively increasing since 1983, and there has been a concomitant increase in the proportionate contribution from younger men. Continued increase is likely over the next several years, but KSA currently appears to be a relatively low-risk region for prostate cancer, compared to black populations in developed Western countries.*

Keywords: Incidence trends, Jamaica, prostate cancer

Treinta años de Tendencias en la Incidencia y Distribución por Edad del Cáncer de Próstata e en Kingston y Saint Andrew, Jamaica, 1978–2007

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RESUMEN

Objetivo: *Investigar las tendencias en la incidencia y distribución por edad del cáncer de próstata en Kingston y Saint Andrew (KSA), Jamaica, por un período de 30 años, 1978–2007.*
Método: *De la publicación de Registro de Cáncer de Jamaica (JCR), se extrajeron datos de tasas estandarizadas por edad del cáncer de próstata durante los seis períodos quinquenales que comprenden el espacio de 30 años del estudio, y de los archivos del JCR, se registraron las edades de los pacientes en el momento del diagnóstico en todos los casos de cáncer de próstata, por espacio de 30 años. Los resultados se compararon con los datos de otras poblaciones negras.*
Resultados: *La incidencia del cáncer de próstata en KSA, Jamaica, es menor que la existente entre la población masculina negra de Estados Unidos y el Reino Unido. La incidencia en KSA mostró un aumento progresivo a partir del período reportado de 1983–1987, y los más grandes aumentos de porcentaje en 5 años, fueron vistos en el periodo de 1983 a 1997. Los hombres en el grupo etario de 60–74 años fueron quienes más comúnmente contribuyeron a engrosar el total de total de cáncer de próstata en todos los periodos quinquenales examinados, y entre 1988 y 2007, se produjeron aumentos en las contribuciones proporcionales de los grupos etáreos de 25–59 y 60–74 años, así como una disminución en la contribución de los hombres de 75 años o más.*

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Conclusión: *La incidencia de cáncer de próstata en KSA, Jamaica, ha estado aumentando progresivamente desde 1983, y ha habido un aumento concomitante en la contribución proporcional de los hombres más jóvenes. Es probable que en el curso de los próximos años continúe un aumento progresivo, pero KSA parece ser una región relativamente de bajo riesgo en lo que se refiere al cáncer de próstata, en comparación con las poblaciones negras de los países occidentales desarrollados.*

Palabras claves: *Tendencias de la incidencia, Jamaica, cáncer de próstata.*

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INTRODUCTION

While, on a global scale, lung cancer remains the commonest cancer and the commonest cause of cancer death (1), prostate cancer has become the most frequent incident cancer in males in several countries (1), including the United States of America (2) and the United Kingdom (3). It has also been reported that black American men exhibit the highest incidence of prostate cancer in the world (1). In Jamaica, a Caribbean island nation composed predominantly (91.6%) of black individuals (4), prostate cancer is not only the leading cancer in men (5) but also the commonest cause of cancer death in this gender (6).

This study provides further insight into the epidemiology of prostate cancer in Jamaica, by analysing trends in the incidence and age distribution of this cancer in Jamaica over a 30-year period, and comparing the figures with those in other black populations within the Caribbean, England and United States of America (USA). The black population in England is composed largely of Caribbean and African migrants (7), while in the USA it is composed of "people having origins in any of the black ethnic groups of Africa" (8). This includes foreign-born individuals, of whom Caribbean migrants comprise 60% (8).

SUBJECTS AND METHODS

The files of the Jamaica Cancer Registry for the 30-year period from 1978–2007 were reviewed. The Jamaica Cancer Registry was established in 1958 to record the incidence of cancer in Jamaica, using the Kingston and St Andrew region (approximately 27% of the total national population) as the population base. The registry has, since its inception, published regular 5-year reports of the incidence of cancer in Kingston and St Andrew. We extracted the age-standardized rates of prostate cancer that were published over the six 5-year periods that comprised the 30-year study span, in order to evaluate the trends in incidence, and also extracted patient age at diagnosis from the registry data for those cases recorded as prostate cancer over the 30-year period. This was used to calculate the proportionate distribution of prostate cancer among different age groups.

The results were compared with those for the Caribbean region and for black men in England and the USA.

RESULTS

Figure 1 shows the incidence of prostate cancer in Kingston and St Andrew, Jamaica, for the last reporting period (2003–2007) compared with the incidence rates in black men within the Caribbean region (9), United Kingdom (10, 11) and the USA (12). The highest incidence rate is seen among black men in the USA and the lowest incidence rate is the overall figure given for the Caribbean region.

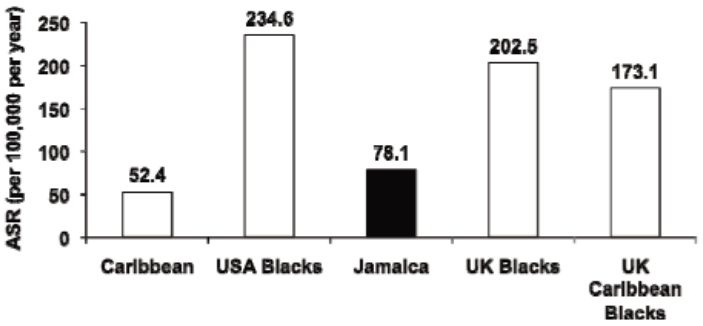
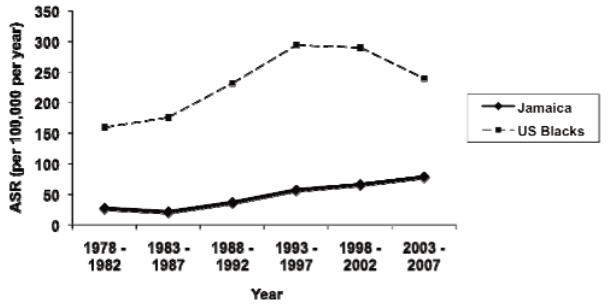


Fig. 1: Age-standardized rates (ASRs) of prostate cancer in Kingston and St Andrew, Jamaica, 2003 – 2007, compared with the average prostate cancer ASR in the Caribbean region in 2002 (9), and prostate cancer ASRs in US Black men, 2003 – 2007 (12), UK (England) Black men, 2002 – 2006 (10) and UK (England) Black Caribbean men, 1995–2001 (11).

The trends in age-standardized rates of prostate cancer in Jamaican men and black Afro-American men (13) over the 30-year period from 1978–2007, are shown in Fig. 2A. The incidence rates in both groups show progressive increases over the 30-year period, except for a decrease between the 1978/1982 and 1983/1987 periods in Jamaica. Figure 2B shows the percentage changes between consecutive 5-year periods. For those time periods that showed increases, the highest percentage changes were seen in the 1983/1987–1988/1992 (73.9%) and 1988/1992–1993/1997 (56.7%) intervals, while lower percentage changes were documented in 1993/1997–1998/2002 (16.1%) and 1998/ 2002–2003/2007 (19.2%).

The age distribution of prostate cancer in Jamaican men over the period 1978–2007 is shown in Fig. 3. In each 5-year block, the greatest proportion of cases was seen in the 60–74- year age group. Over the 20-year period from 1988 to 2007, there was a small, gradual increase in the propotionate contribution from men in the age groups 25–59 and 60–74 years, except for an unexplained decrease in the 25–59-year age group, between 1988–1992 and 1993–1997. Over the same time period, there was a gradual decrease in the proportionate contribution from men aged 75 years or older.

A



B

Year ranges	Percentage change (%)
1978/1982 – 1983/1987	-21.9
1983/1987 – 1988/1992	73.9
1988/1992 – 1993/1997	56.7
1993/1997 – 1998/2002	16.1
1998/2002 – 2003/2007	19.2

Fig. 2: A: Age-standardized rates (ASRs) of prostate cancer, Kingston and St Andrew, Jamaica, 1978–2007 and US Black men, Observed SEER 9 incidence, 1975–2006 (13). (Rates given above for US Black men are those reported for the years at the mid-points of the year ranges used in the figure above). B: Five-year percentage changes in prostate cancer ASR from 1978 – 2007 for Jamaican men.

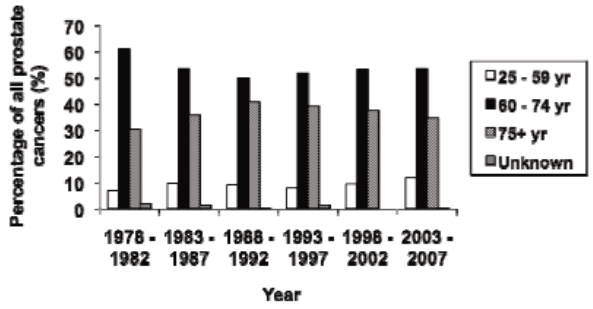


Fig. 3: Age distribution of prostate cancer, Kingston and St Andrew, Jamaica, 1978–2007.

DISCUSSION

Comparisons of the incidence rates from the USA with other populations in which prostate cancer has been studied in black men, show that the incidence is highest in black men from the USA and United Kingdom, whether of Caribbean heritage or not, and low in Jamaica and the wider Caribbean. The aetiology of prostate cancer has not been elucidated but the global variation in its incidence is not unlike that of other common cancers which demonstrate high incidence and low incidence areas (1). Further, the high incidence of prostate cancers in Caribbean migrants to the United Kingdom may be demonstrating the phenomenon whereby migrants from low-incidence countries adopt the cancer incidence pattern of the high incidence country to which migration has occurred, as has been documented with other common cancers (14–17). There has been a steady rise in the incidence of prostate cancer in Jamaican men since the 1983–1987 reporting period. This may be partially due to the effect of prostate specific antigen (PSA) testing, as serum testing for PSA first became available in Jamaica in 1983. This trend of increased prostate cancer incidence following the introduction of PSA testing is similar to that recorded in previous studies (18–21) and is explained by the fact that screening allows for the earlier detection of cancers and also brings to clinical recognition some "subclinical" prostate cancers (19, 22) – those that would not have caused clinical manifestations. These cancers remain confined to the gland indefinitely and are often discovered at postmortem examination as incidental findings. In unscreened individuals, such cancers would have been undiagnosed and therefore excluded from cancer statistics. Some researchers have estimated that the inclusion of these cancers as a result of screening, accounts for a 1.6% excess in prostate cancer registrations (22).

The 5-year percentage increases in prostate cancer incidence in Jamaica were greatest in the 15 years following the introduction of PSA testing. This is, again, in keeping with the introduction of a screening mechanism that allows for the earlier detection of cancers, and the detection of clinically silent cancers, thus increasing the total number of cancers diagnosed within a given interval. Whereas, in the earlier years, the time periods examined represented a change from unscreened to "somewhat screened" populations, the later time periods involved screened populations, in which the effect of a screening test on incidence would be smaller. This may partially explain the smaller percentage changes documented in the later time periods, and is consistent with previous studies that have shown that "first-time" PSA tests cause more significant increases in incidence than subsequent tests (20, 21). The observed trends suggest that prostate cancer incidence rates in Kingston and St Andrew should continue to increase in the future, but that these increases will likely be in the order of the smaller percentage changes seen in the later time periods, provided that newer, more sensitive methods of prostate cancer detection are not introduced.

In all 5-year periods examined, the 60–74-year age group showed the highest percentage contribution to the total number of prostate cancers, and men aged 65 years or over accounted for approximately 75% of all cases. This is similar to the pattern documented in black men in the United Kingdom, where the majority of prostate cancers (72.8%) are seen in men over the age of 65 years (10). Although the majority of cancers in this study occurred in older men, the phenomenon of earlier diagnosis resulting from screening was, nonetheless, evident. This was manifested by increases in the proportionate contribution of the younger age groups (25–59

and 60–74 years) with time, and a decrease in the contribution from those men aged 75 years or older.

The incidence of prostate cancer in Jamaica has been increasing steadily over the past several years, with an increase in the proportionate contribution from younger men. This appears to be at least partially due to the effect of PSA testing, and the incidence is therefore likely to continue to increase over the next several years. Despite these increases, Jamaica currently appears to be a relatively low-risk area for prostate cancer, in comparison to the developed countries of the Western world.

REFERENCES

1. Boyle P, Levin B eds. World cancer report 2008. Lyon: International Agency for Research on Cancer; 2008.
2. Surveillance Epidemiology and End Results. National Cancer Institute, US National Institutes of Health. Table 1.24: Age adjusted SEER incidence rates and trends for the top 15 cancer sites males by race/ ethnicity. http://seer.cancer.gov/csr/1975_2006/browse_csr.php? section=1 &page=sect_01_table.24.html Last accessed on June 09, 2010.
3. Cancer incidence in males – UK statistics 2007. Cancer Research UK. http://info.cancerresearchuk.org/cancerstats/incidence/males/index.htm. Last accessed on June 09, 2010.
4. Population Census 2001, Jamaica Vol. 1: Country Report. Statistical Institute of Jamaica, Kingston, Jamaica, 2001.
5. Gibson TN, Blake G, Hanchard B, Waugh N, McNaughton D. Age-specific incidence of cancer in Kingston and St Andrew, Jamaica, 1998–2002. West Indian Med J 2008; **57:** 81–9
6. Blake G, Hanchard B, Mitchell K, Simpson D, Waugh N, Wolff C et al. Jamaica cancer mortality statistics, 1999. West Indian Med J 2002; **51:** 64–7.
7. UK Census 2001. Office for national statistics. http://www.statistics.gov.uk/cci/nugget.asp?id=273. Last accessed May 12, 2010.
8. McKinnon JD, Bennett CE. We the people: Blacks in the United States. Census 2000 special reports. US Census Bureau 2005. http://www.census.gov/prod/2005pubs/censr-25.pdf. Last accessed May 12, 2010.
9. Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. CA Cancer J Clin 2005; **55:** 74–108.
10. Cancer incidence and survival by major ethnic group, England, 2002 – 2006. National cancer intelligence network. Cancer Research UK. http://publications.cancerresearchuk.org/WebRoot/crukstoredb/CRUK_PDFs/CR-UKNCIN_ETHNIC.pdf. Last accessed on May 12, 2010.
11. Ben-Shlomo Y, Evans S, Ibrahim F, Patel B, Anson K, Chinegwundoh F et al PROCESS study group. The risk of prostate cancer amongst black men in the United Kingdom: the PROCESS cohort study. Eur Urol 2008; **53:** 99–105. Epub 2007 Mar 1.
12. SEER Stat Facts Sheet: Prostate, 2003 – 2007. Surveillance Epidemiology and End Results (SEER) http://seer.cancer.gov/statfacts/html/prost.html. Last accessed on June 09, 2010.
13. Cancer statistics review, 1975 – 2006, prostate, Fig 23.6. Obserevd SEER 9 incidence, Black, Male, All ages. Surveillance Epidemiology and End Results. http://seer.cancer.gov/csr/1975_2006/browse_csr.php?section=23&page=sect_23_zfig.06.html#table3.
14. Flood DM, Weiss NS, Cook LS, Emerson JC, Schwartz SM, Potter JD. Colorectal cancer incidence in Asian migrants to the United States and their descendants. Cancer Causes Control 2000; **11:** 403–11.
15. Liao CK, Rosenblatt KA, Schwartz SM, Weiss NS. Endometrial cancer in Asian migrants to the United States and their descendants. Cancer Causes Control 2003; **14:** 357–60.
16. Nelson NJ. Migrant studies aid the search for factors linked to breast cancer risk. J Natl Cancer Inst 2006; **98:** 436–8.
17. Lee J, Demissie K, Lu S-E, Rhoads GG. Cancer incidence among Korean-American immigrants in the United States and native Koreans in South Korea. Cancer Causes Control 2007; **14:** 78–85.
18. Potosky AL, Miller BA, Albertsen PC, Kramer BS. The role of increasing detection in the rising incidence of prostate cancer. JAMA 1995; **273:** 548–52.
19. Pashayan N, Powles J, Brown C, Duffy SW. Incidence trends of prostate cancer in East Anglia, before and during the era of PSA diagnostic testing. Br J Cancer 2006; **95:** 398–400.
20. Legler JM, Feuer EJ, Potosky AL, Merrill RM, Kramer BS. The role of prostate-specific antigen (PSA) testing patterns in the recent prostate cancer incidence decline in the United States. Cancer Causes Control 1998; **9:** 519–27.
21. Jacobsen SJ, Katusic SK, Bergstralh EJ, Oesterling JE, Ohrt D, Klee GG et al. Incidence of prostate cancer diagnosis in the eras before and after serum prostate-specific antigen testing. JAMA 1995; **274:** 1445–9.
22. Pashayan N, Powles J, Brown C, Duffy SW. Excess cases of prostate cancer and estimated overdiagnosis associated with PSA testing in East Anglia. Br J Cancer 2006; **95:** 401–5.