Evaluating the geographic distribution of cervical cancers diagnosed at two tertiary hospitals in Gaborone, Botswana

Tara Friebel Klingner1, Rebecca Luckett2,3,4, Lisa Bazzett-Matabele2,5, Tlotlo B Ralefala4, Mercy Nxuba Nassali2, Doreen Ramogola-Maistre1, Memory Ivochora5, Nandita Mitra1, Douglas Wiebe1, Timothy R. Rebbeck1, Anne Marie McCarthy1¶, Surbhi Grover7¶*

Evaluating the geographic distribution of cervical cancers diagnosed at two tertiary hospitals in Gaborone, Botswana

We thank Princess Marina Hospital, Gaborone Private Hospital, the Botswana Ministry of Health, and the Centers for Disease Control and Prevention for their constant support, and all our patients, who made this study possible.

METHODS

BACKGROUND

Cervical cancer (CC) is the leading cause of cancer incidence and mortality in Botswana. Botswana is a low resource setting in sub-Saharan Africa characterized by a large geographic area and a dispersed population with a population of approximately 2.4 million people. Botswana has one CC treatment facility located in the capital city of Gaborone. Geographic Information systems (GIS) are a powerful epidemiologic tool for understanding variability in health patterns that can help identify areas in need of public health intervention.

Purpose

To determine if the spatial distribution of cervical cancer cases being diagnosed at two tertiary hospitals in Gaborone is random.

To identify villages in Botswana with low rates of cervical cancer cases being diagnosed and treated in Gaborone that could potentially benefit from public health interventions.

RESULTS

Results: Local Moran’s I identified 83 villages as HH clusters, 75 as LL clusters, 25 HL outliers, and 61 LH outliers.

Legend

Not Significant
High-High Cluster
High-Low Outlier
Low-High Outlier
Low-Low Cluster

Conclusions

We identified a clustered distribution of CC rates across Botswana among 1033 women diagnosed with CC at 2 tertiary hospitals in Gaborone between January 2015 and June 2020. We identified statistically significant high and low clusters, as well as outliers, of CC rates among villages. Individual characteristics of CC cases, such as age, HIV status, proximity to Gaborone were different among the clusters. HH clusters identified located within close proximity to PMH, while LL clusters were located further away in the north-western rural area of Botswana. LL areas may benefit from public health interventions, i.e. education and screening.

Acknowledgements

We thank Princess Marina Hospital, Gaborone Private Hospital, the Botswana Ministry of Health, and the Centers for Disease Control and Prevention for their constant support, and all our patients, who made this study possible.

tfriebel@upenn.edu
Twitter: @tara_friebel