

**MAGNITUDE OF ASTIGMATISM AMONG ADULTS ATTENDING
THE REFRACTION UNIT AT MUHIMBILI NATIONAL HOSPITAL
EYE CLINIC**

By

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**A dissertation submitted in partial fulfillment of the requirement for the degree of
Master of Medicine (Ophthalmology) of the Muhimbili University of Health and Allied
Sciences.**

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation titled: “**Magnitude of astigmatism among adults attending the refraction unit at Muhimbili National Hospital eye clinic**”, in partial fulfillment of the requirements for the degree of Master of Medicine (Ophthalmology) of the Muhimbili University of Health and Allied Sciences.

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DECLARATION

AND

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I, **Dr. Anuradha Baria**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

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DEDICATION

To my beloved parents Smt. Usha and Sri. Babulal Baria.

And to my beloved daughter Sneha Chaitanya.

ABSTRACT

Background: The magnitude of astigmatism among adults is not only high but also has a wide variation worldwide.^{12, 13, 33} The symptoms associated with morbidity of astigmatism pose many challenges in patient's performance. If astigmatism remains uncorrected, it may be associated with poor quality of life, employment prospects, productivity and general health. Uncorrected refractive errors especially astigmatism causes frequent hospital visits with unnecessary expenditure for individuals and governments at large. In many developing countries including Tanzania, there is insufficient data on its magnitude among adults.

Methods: A cross-sectional study was conducted between June and December 2011 to determine the magnitude of astigmatism among adults attending the refraction unit at Muhimbili National Hospital eye clinic. A total of 1250 patients aged 18 years and above attending refraction unit were enrolled. Both presenting and best corrected visual acuities were taken using Snellen's chart. After thorough evaluation by ophthalmologist, those patients suspected to have refractive error were refracted objectively and subjectively using self illuminated retinoscope and refinement respectively. Cylindrical powers were refined first by the use of Jackson's cross cylinder at the appropriate axis followed by spherical refinement by fogging technique. Any error, stigmatic (spherical) or astigmatic (cylindrical) of $\frac{1}{4}$ diopter or more was considered an error and included in the analysis. This exercise was done by principal investigator in collaboration with a senior optometrist. Statistical computer software (SPSS v.13.0) package was used for data analysis and processing.

Results: A total of 2495 eyes were studied. The prevalence of refractive error was 79.7%. The mean age of the study subjects was 52 years. Most patients were in age group 18–27 which accounted for 21.56% of study population. Male to female ratio was 0.8:1. Emmetropia was found in 20.3% subjects. Astigmatism ranked the second among refractive errors. Hypermetropia was the commonest refractive error (43.4%) and myopia (17.4%) the least. Among those who were found to have astigmatism, 55% were females and 45% were males. Most patients had secondary education (46%) and were found to be in age group 18 – 47 years ($\chi^2 = 138$, $df = 18$, $p = 0.000$). Mixed astigmatism was the commonest type (43.1%), followed

by simple astigmatism (30.4%) and compound astigmatism (26.4%). Compound astigmatism occurred more significantly among males (36.9%) while mixed astigmatism was more common (53.1%) among females ($\chi^2 = 44.5$, $df = 4$, $p = 0.000$). The proportion of patients with mixed astigmatism decreased with increasing age. This finding was statistically significant ($\chi^2 = 33.5$, $df = 12$, $p = 0.001$). Majority of patients with compound astigmatism had impaired vision ($\chi^2 = 65.0$, $df = 4$, $p = 0.0001$). Most patients (95.8%) improved with correction from impaired vision and blindness to normal vision. Patients with mixed astigmatism were the most symptomatic. The commonest symptoms were decreased vision, easy ocular fatigability and headache.

Conclusion: There is high prevalence of refractive error including astigmatism at MNH.

Recommendations:

1. Population based studies are required to obtain more accurate results that could reflect the prevalence of astigmatism in particular and refractive errors in general for the Dar es Salaam population.
2. More refractive services should be made available at various areas for easy access. There is a clear need for “Vision 2020” to strengthen its strategies in achieving this as it will minimize the morbidity due to symptoms of astigmatism.

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ABBREVIATIONS

CHA	Compound hyperopic astigmatism
CMA	Compound myopic astigmatism
df.....	degree of freedom
MA	Mixed astigmatism
MNH	Muhimbili National Hospital
SHA	Simple hyperopic astigmatism
SMA	Simple myopic astigmatism
WHO	World Health Organisation