

Original Article

Association between stature, ocular biometry and refraction in an adult population in rural Myanmar: the Meiktila eye study

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ABSTRACT

Purpose: To study the association between adult stature and ocular biometric parameters and refraction.

Methods: In a population-based cross-sectional ophthalmic survey of 2418 adults (≥ 40 years old) living in the rural villages in central Myanmar, height and weight were measured using a standardized protocol, and body mass index was calculated. Non-cycloplegic refraction and corneal curvature were determined by an autorefractor. Ultrasound pachymetry was performed and ocular biometry, including axial length, anterior chamber depth, lens thickness and vitreous chamber length were measured using A-mode ocular ultrasonography.

Results: Height and weight were significantly correlated with age, gender and all the ocular biometric parameters, except lens thickness. After adjusting for age and gender, taller and heavier persons had eyes with longer axial length, deeper anterior and vitreous chambers, and flatter and thicker corneas than shorter persons. Height was not significantly correlated with refraction, and heavier persons tended to be less myopic ($P < 0.001$). Multivariate linear regression models revealed consistent results with the findings for association between height, weight and ocular biometry and refractive error.

Conclusions: Adult stature is independently associated with vitreous chamber length and corneal radius in this Burmese population. Heavier persons were slightly hyperopic.

Key words: adult stature, Myanmar, ocular biometry, refraction.

INTRODUCTION

Association between body stature and myopia has been indicated by investigators in the early twentieth century. Keith¹ was one of early investigators of this view, which was supported by the others^{2–4}. More recently, a number of studies reported a positive association between height, axial length (AL) and myopia.^{5–7} In Labrador, Johnson *et al.* found a positive relationship between height and myopia and several ocular dimensions.⁵ Teikari, in a case–control study from Finland, reported that myopic male subjects were taller compared with the non-myopic male subjects.⁶ In contrast, a study on Israeli military recruits found that persons with severe myopia were slightly shorter and weighed less than those with mild myopia.⁷

There are few studies reporting this relationship in Asian populations. Positive relationship between height and myopia as well as AL was established in school children in Singapore.⁸ Wong *et al.*⁹ also found that taller Singapore adults were more likely to have longer globes and deeper anterior chambers. Heavier persons tended to have more hypermetropic refractions.

The Meiktila Eye Study (MES) was a large, cross-sectional, population-based study of inhabitants 40 years of age and over in the Meiktila District of central Myanmar. This is one of the few population-based studies to collect both ocular biometric and refractive data. Here, we report the relationship in this population between stature and ocular biometry and refraction.

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