UNIVERSITI TEKNOLOGI MARA

ACCURACY OF DIGITAL SINGLE LENS REFLEX (DSLR) CAMERA IN ACQUIRING FACIAL ANTHROPOMETRY OF MALAYSIAN MALAY

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Introduction: Anthropometry is defined as the scientific study of the measurements and proportions of the human body. To date, the most used methods for the acquisition of facial anthropometric parameters are direct method employing callipers and protractors tools which are time-consuming, or indirect methods employing 3D imaging systems which are expensive. Additionally, multiple studies were conducted in Malaysia for the acquisition of facial anthropometry. Most of those studies included younger participants. The objectives of this study were to assess the accuracy of Digital 2D-Photogrammetry as an indirect method at different aperture and distance to subject, obtain facial anthropometric norms of the Malaysian Malays using the indirect method, and investigate the association of those facial anthropometric norms to gender, age, weight and height.

Methodology: 24 participants were recruited to assess the accuracy of the Digital Single Reflex (DSLR) camera at different aperture and distance to subject. Then additional 240-Malay participants were recruited for the acquisition of 12 facial anthropometric parameters. Age, weight, and height were collected for all participants. Data Analysis was done by SPSS.

Results: Out of 4 DSLR camera settings, f/6.3 aperture with 2.0 meters distance to subject showed that majority of parameters were recorded with insignificant difference to control group. Considering the 240 (143-females, 97-males) participants of age range 17-73 years old, independent sample t-test indicated a significant gender dimorphism in 10 out of 12 parameters. One-way ANOVA analysis indicated that majority of the parameters are associated with age, weight, and height. General linear model indicated that facial height affected by height in males, while weight and height in females. Facial width was positively associated with weight in both genders. Increase of age resulted in increase in facial height and reduction in facial width in both genders..

Conclusion: DSLR camera could be a more cost and time-effective portable method for indirect anthropometry compared to the other methods. Additionally, gender dimorphism was observed in the Malaysian Malays with most of the anthropometric parameters. Weight mostly affected the horizontal facial parameters while height mostly affected the vertical facial parameters.

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