

PEDOBAROGRAPHIC MEASUREMENT AMONG MALAY POPULATION IN PAHANG: A PRELIMINARY STUDY

Muhd Haidar N, Aminudin CA, Adham A, Nik F
Orthopaedic Department, IIUM Medical Centre

INTRODUCTION:

Pedobarography or plantar foot pressure has been widely used in managing foot-related diseases in developed countries for the past 2 decades¹². However in Malaysia, it is still at its infancy. Studies showed that the normal values are not affected by gender and body mass index (BMI), but vary between one race to another^{3,4}. Currently, to the best of author's review, there is no standard value available for Malaysian or Southeast Asia population. This study is designed to measure pressure values observed in the normal foot of Malay population in Pahang and its difference between different gender and BMI.

METHODS:

400 feet of healthy Malay subjects, age between 18-70 years old with no existing lower limb and spine pain or problem are measured using Emed-q100 pedobarography platform device. An average reading is taken from 5 measurements to reduce biasness.

RESULTS:

56.5% are female. The BMI is subcategorized into normal (44.5%), overweight (31.5%), and obese (24%). The mean max peak pressure (MPP) is 509kPa (SD 167). There is no significant difference among gender and BMI. Most (38.5%, n=154) of the peak pressure area (PPA) are observed in 1st metatarsal and big toe region (1MH&T), followed by 2nd metatarsal head (2MH) (34.3%, n=137), 3rd metatarsal head (16%, n=64), 4th and 5th metatarsal heads (6.8%, n=27), and hindfoot (4.5%, n=18).

Table 1 showing MPP (PPA) to gender and BMI

	F/(x2)	p-value
Gender	0.000/	0.985/

	(3.156)	(0.532)
BMI	1.895/ (36.96)	0.152/ (<0.001)

There is a shift of PPA between BMI groups. In normal BMI group, 48.3% are in 1MH&T region while in overweight and obese groups, 42.1% and 43.8%, respectively are in 2MH. This difference is statistically significant (χ^2 (df=8)=36.963, $p<0.001$). Otherwise, there was no significant difference between PPA and gender.

Table 2 showing the most frequent PPA in different BMI groups

BMI	1MH&T	2MH
Normal	48.3%	23.6%
Overweight	28.6%	42.1%
Obese	33.3%	43.8%

DISCUSSIONS:

The mean MPP pressure among Malay population from this study is 509kPa (SD 167). This result can serve as an early reference for further plantar pressure studies among Malaysian population.

CONCLUSION:

The most common PPA is 1MH&T. However there is a shift in overweight and obese groups to the 2MHT.

REFERENCES:

1. Bus et al. Clin Biomech. 2004;19(6):629-638.
2. Deutsch et al. Phys Ther. 2008;88(10):1196-1207.
3. Frykberg et al. Dia Care. 1998;21(10):1714-1719.
4. Stolwijk et al. PLoS one 2013.