UNIVERSITI TEKNOLOGI MARA

BONE DENSITY AMONG PHARMACY STUDENT AND THEIR RELATIONSHIP WITH LIFESTYLE FACTORS AND OTHER DETERMINANTS THAT CONTRIBUTE TO THE LOW BONE DENSITY

NOGEE ANNE BINTI ISHAK

Dissertation submitted in partial fulfillment of requirements for the degree of
Bachelor of Pharmacy (Hons.)

Faculty of Pharmacy

July 2016

TABLE OF CONTENT

Acknowledgement

Bismillahirrahmanirrahim.

First of all, I would like to thank my lovely supervisor Prof. Dr. Zabidah binti Ismail for her guidance, patience and supports during this study. I would also like to thank Dr. Maryam bt Mohamad from Faculty of Medicine who helped me in modifying and consulting on questionnaire that I had in this study. Aside from that, not to forget my research partner Nur 'Amirah binti Hisham and Syarifah Nabilah binti Syed Nabawi for their cooperation in giving time and ideas helping. It means a lot to me.

Besides that, I would like to thank my father, Ishak bin Ismail and my little sister Sha Sha Nabila binti Ishak for their advice and encouragement. Special thanks to all volunteer who have participated in this study, my friend, Muhammad Amirul Fahmi who always advised me as I was writing, lecturers and everyone who helped and supported me directly or indirectly throughout this study. Lastly, I dedicate my dissertation to my late mother,]

who had disciplined my childhood and giving me such a big inspirations and motivation in completing this study.

ABSTRACT

There is lack of data on bone density status among Bumiputera in Malaysia especially in young adult. This study is to determine the bone density among pharmacy students and its relationship with lifestyle and other determinations that contribute bone loss. Bone mineral density (BMD) was determined by using quantitative ultrasound (QUS) at the calcaneal region. Anthropometry, lifestyle habits and family history were also determined by using questionnaire adapted from several sources includes International Osteoporosis Foundation, Advanced Health and Wellbeing PC, Bone Health Profile by Dr. Susan E.B., and Wisconsin Medical Journal. From the study, 340 of pharmacy students were recruited with a mean age 21.1 ±1.7. 82.6% of the subjects were a female students and 17.4% was male students. Majority of the pharmacy students are Malay, female student, reside in suburbs and falls in lower income group. In fact, 64.7% of students had normal bone, followed by 31.5% had osteopenia and 3.8% had osteoporotic bone. Year 2 pharmacy students showed that they had highest percentage that had normal bone with 20.3% and 0.6% of osteoporotic bone. Furthermore, studied variables such as weight, height, BMI, body fat were positively correlated with bone density status while gender, exposure to sunlight, milk intolerance and breakfast frequency had negative correlation with bone density. The study revealed that most of the pharmacy students have low background osteoporosis in family, practice active and healthy lifestyle (not smoking, take enough food and vegetable, and drink milk frequently) and they were also not prefer to take supplement in their daily life.

CHAPTER 1

1.0 Introduction

According to the International Osteoporosis Foundation, bones are living tissue and continuous altering. The densest of bone in early 20's is called peak bone mass and it can be a determinant of osteoporotic fracture risk (Bonjour J. P. *et al.*, 1994). Thus, individuals who attain a lower levels peak bone mass are most likely to diagnose osteoporosis as the bone loss arise due to age-related, whereas those with high levels are at lower risk (Seeman E, 1997).

Osteopenia is defined as a phase in the continuum from declined bone mass to break and infirmity, but the term can be explained by the bone mineral content on radiography become lower (Iqbal, 2000). Whereas osteoporosis is refer to decrease in BMD and strength causing increased tendency to fracture (Raisz, 1999). "Osteoporosis is normally a silent disease undiagnosed and until what would otherwise be a minor trauma from a fall, results in a fracture" (Barling, 2013). Osteoporotic fractures that has significant morbidity usually occur at the forearm and the spine but the most severe consequences take place in patients with osteoporosis that occur at hip fracture which is related to the increase in mortality (15–20%), but