



UNIVERSITI PUTRA MALAYSIA

***EFFECT OF AN OSTEOPOROSIS EDUCATIONAL PROGRAM TO
PROMOTE CALCIUM INTAKE AND EXERCISE AMONG FEMALE
UNIVERSITY STUDENTS IN IRAN***

MARYAM JAMSHIDIAN-TEHRANI

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**EFFECT OF AN OSTEOPOROSIS EDUCATIONAL PROGRAM TO PROMOTE
CALCIUM INTAKE AND EXERCISE AMONG FEMALE UNIVERSITY STUDENTS
IN IRAN**

By

MARYAM JAMSHIDIAN-TEHRANI

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfillment of the Requirements for the Degree of Doctor of Philosophy**

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DEDICATION

Specially Dedication to:

To my Father and Mother,

Who have taught me to trust myself and love people

I am grateful for their constant love, support, encouragement

And for raising me the way I am today.

To my beloved sisters, brothers, my sister in law and my lovely nephew, Ali Reza, for their love, understanding, tolerance, and moral support. Whosoever has provided me with care and compassion throughout my life.

And last but not the least to one who has changed my life...Reza

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of
the requirement for the degree of Doctor of Philosophy

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Chair: Associate Professor Zaitun Yassin, PhD

Faculty: Medicine and Health Sciences

Osteoporosis is known as a silent disease as it is often not diagnosed until an individual presents with a low impact fracture. Many people of all ages appear to be unaware of the risk factors and preventive behaviors associated with osteoporosis. Adolescence and young adulthood is a period of significant growth and change. During this time the majority of bone mass is accumulated. Education to increase awareness of risk factors and preventive behaviors is identified as being paramount in helping to prevent the onset of this disease later in life. Therefore, a randomized controlled trial was designed to investigate the effect of a three-month osteoporosis educational prevention program based on the Health Belief Model (HBM), on osteoporosis knowledge, health beliefs,

self-efficacy and behaviors such as calcium intake and exercise toward osteoporosis prevention among young female university students in Iran.

A sample of 128 new in-coming female students, who met the inclusion and exclusion criteria, participated in the study. They were randomly assigned to the intervention (n=61) and control group (n=67). Participants in the intervention group were exposed to a three-month multi-component intervention program comprised of six structured modules including educational lecture, self study materials (a series of pamphlets and booklets), individual face-to-face consultation, emails and phone call reminders. The total contact time for the entire program was about eight hours. The control group did not receive any information during the study time. The instruments of study were HBM questionnaires, including Osteoporosis Knowledge Test (OKT), Osteoporosis Health Belief Scale (OHBS) and Osteoporosis Self-efficacy Scale (OSES), semi-food frequency and exercise questionnaires. OKT was assessed at baseline, immediately after the lecture and three months follow-up intervention and was analyzed through Analysis of Covariance (ANCOVA) with repeated measures (for controlling difference in OKT risk factor at baseline between the two groups). The OHBS, OSES, calcium intake, and exercise habits were assessed at baseline and three months post- intervention.

The results showed that the participants in the intervention group significantly ($p < 0.001$) increased their scores in OKT (45.1%), OHBS (26.8%) and OSES (8.9%) compared with the control group (OKT=12.1%, OHBS=0.8% and OSES=1.9%). The results also

revealed a significant ($p<0.001$) increase (36.7%) in calcium intake in the intervention group compared with the control group (2.1%) after three months follow-up intervention. Similarly, the intervention group had significantly higher number of time per/week ($p<0.001$), and total duration minutes per/week ($p<0.017$) of weight-bearing exercise compared to the control group.

In conclusion, a three-month multi-component educational intervention program using HBM was effective to improve osteoporosis knowledge, change health beliefs about osteoporosis and increase self-efficacy in adopting preventive behaviors among Iranian young female adults. Therefore, this approach should be widely used at the university setting to promote the adoption of osteoporosis prevention behaviors including intake of calcium-rich foods and regular weight-bearing exercise among young adults. In future studies, other strategies and approaches to promote preventive behaviors should also be explored. Future studies should also include a larger representative sample and should evaluate the longer-term effects of the educational intervention.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN PROGRAM PENDIDIKAN OSTEOPOROSIS UNTUK
MENGALAKKAN PENGAMBILAN KALSIUM DAN SENAMAN DALAM
KALANGAN PELAJAR WANITA UNIVERSITI DI IRAN**

Oleh

MARYAM JAMSHIDIAN-TEHRANI

January 2012

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Osteoporosis dikenali sebagai pembunuh senyap kerana sering kali tidak didiagnosis sehinggalah seseorang individu itu tampil dengan kepatahan tulang berimpak rendah. Ramai orang dari pelbagai peringkat umur tidak sedar akan faktor risiko dan tingkah laku pencegahan yang berkaitan dengan osteoporosis. Peringkat remaja dan awal dewasa ialah peringkat di mana pertumbuhan dan perubahan berlaku secara signifikan. Kebanyakan jisim tulang bertambah pada peringkat ini. Pendidikan bagi meningkatkan tahap kesedaran mengenai faktor risiko dan tingkah laku pencegahan dikenalpasti penting untuk membantu mengelakkan penyakit ini pada usia lebih tua di kemudian hari. Oleh itu, ujian rawak terkawal telah dibentuk bagi mengkaji kesan program pendidikan

pengecahan osteoporosis selama 3 bulan, berdasarkan Model Kepercayaan Kesihatan (*Health Belief Model, HBM*) terhadap pengetahuan osteoporosis, kepercayaan kesihatan, serta keyakinan sendiri dan tingkahlaku seperti pengambilan kalsium dan senaman untuk pengecahan osteoporosis dalam kalangan pelajar wanita muda universiti di Iran.

Sampel yang terdiri daripada 128 pelajar wanita yang baru, yang memenuhi kriteria inklusif dan eksklusif, turut serta dalam kajian. Mereka dibahagikan secara rawak ke dalam kumpulan intervensi (n=61) dan kumpulan kawalan (n=67). Peserta dalam kumpulan intervensi didedahkan kepada program intervensi pelbagai-komponen selama 3-bulan yang terdiri daripada enam modul berstruktur yang merangkumi syarahan pendidikan, bahan pembelajaran sendiri (satu siri risalah dan nota kecil), perundingan secara individu serta peringatan melalui e-mel dan panggilan telefon. . Jumlah tempoh masa pendedahan untuk keseluruhan program adalah selama hampir lapan jam. Kumpulan kawalan tidak menerima sebarang maklumat semasa tempoh kajian. Instrumen kajian meliputi borang soalselidik HBM, termasuk Ujian Pengetahuan Osteoporosis (Osteoporosis Knowledge Test, OKT), Skala Kepercayaan Kesihatan Osteoporosis (Osteoporosis Health Belief Scale, OHBS) dan Skala Keyakinan Kendiri Osteoporosis (Osteoporosis Self-efficacy Scale, OSES), borang soalselidik kekerapan pengambilan makanan dan amalan senaman. OKT ditaksir pada garis tapak, sejurus selepas syarahan, dan tiga bulan selepas intervensi dan melalui kajian Covariance (ANCOVA) dengan ulang kaji (untuk mengelak perbezaan dalam OKT masalah factor pada garis tapak antara dua kumpulan). Manakala, OHBS, OSES, pengambilan kalsium, dan amalan senaman ditaksir pada garis tapak dan tiga bulan selepas intervensi. .

Hasil kajian menunjukkan peserta dalam kumpulan intervensi meningkat secara signifikan ($p < 0.001$) untuk skor OKT (45.1%), OHBS (26.8%), OSES (8.9%) berbanding dengan kumpulan kawalan (OKT=12.1%, OHBS=0.8% and OSES=1.9%). Hasil kajian juga menunjukkan yang signifikan ($p < 0.001$) peningkatan (36.7%) dari segi pengambilan kalsium untuk kumpulan intervensi berbanding dengan kumpulan kawalan (2.1%) tiga bulan selepas intervensi. Kumpulan intervensi juga menunjukkan peningkatan tempoh masa per minggu yang signifikan ($p < 0.001$), dan jumlah tempoh minit per minggu ($p < 0.017$) bagi amalan senaman berbanding dengan kumpulan kawalan.

Kesimpulannya, program intervensi pendidikan pelbagai komponen selama tiga bulan menggunakan HBM adalah berkesan untuk meningkatkan pengetahuan mengenai osteoporosis, mengubah kepercayaan kesihatan tentang osteoporosis dan meningkatkan keyakinan diri untuk mengamalkan tingkahlaku pencegahan dalam kalangan wanita muda Iran. Oleh itu, pendekatan ini harus digunakan secara meluas di persekitaran universiti untuk menggalakkan pengamalan tingkahlaku pencegahan osteoporosis termasuk mengambil makanan yang kaya dengan kalsium dan senaman yang kerap dalam kalangan dewasa muda. Untuk kajian masa depan, strategi dan pendekatan yang lain untuk meningkatkan tingkahlaku pencegahan ini perlu diterokai disamping mengambilkira saiz sampel yang lebih besar dan menilai kesan jangka masa panjang program intervensi pendidikan.

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I thank you all.

Approval Sheet 1

I certify that a Thesis Examination Committee has met on 3th of February, 2012 to conduct the final examination of *Maryam Jamshidian-Tehrani* on her thesis entitled, “*Effects of Osteoporosis Educational Prevention Program to Promote Calcium Intake and Exercise Among Female University Students In Iran*” in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U. (A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy degree.

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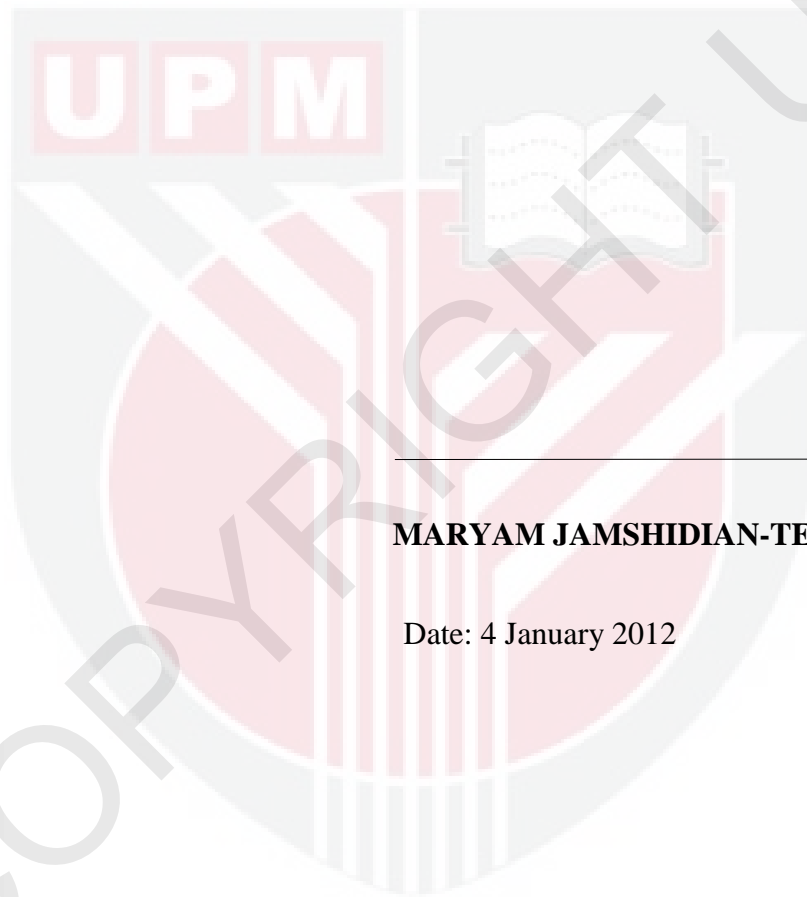
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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



MARYAM JAMSHIDIAN-TEHRANI

Date: 4 January 2012

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