



**UNIVERSITI PUTRA MALAYSIA**

**EFFECT OF AN EDUCATIONAL INTERVENTION ON THE  
PROMOTION OF DIETARY AND LIFESTYLE CHANGES FOR THE  
PREVENTION OF BREAST CANCER AMONG FEMALE TEACHERS  
IN SELECTED SCHOOLS IN SELANGOR, MALAYSIA**

**HALA HAZAM AI-OTAIBI**

**FPSK(P) 2008 4**



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SELANGOR, MALAYSIA**

By

**HALA HAZAM AI-OTAIBI**

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

**August 2008**



## **Dedication**

This work is dedicated to my mother, Rowaidah Bawabeji, who passed away from breast cancer in February 15, 1997. Her strength and tremendous love provided inspiration to all who knew her.



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

**EFFECT OF AN EDUCATIONAL INTERVENTION ON THE PROMOTION OF DIETARY AND LIFESTYLE CHANGES FOR THE PREVENTION OF BREAST CANCER AMONG FEMALE TEACHERS IN SELECTED SCHOOLS IN SELANGOR, MALAYSIA**

By

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**August 2008**

**Chairman : Associate Professor Mirnalini Kandiah, PhD**

**Faculty : Medicine and Health Sciences**

Breast cancer affects more women in the world today than any other cancer. Epidemiological studies have consistently shown that diet and lifestyle play a substantial role in the development of breast cancer in women. The landmark reports by the World Cancer Research Fund (1997 & 2007) concluded that cancer is largely a preventable disease. The objective of this study is to determine the effect of an educational intervention to modify the nutrition and physical activity related to breast cancer risk among female secondary school teachers in Selangor. This study aimed to improve diet and lifestyle behaviors that included fruit and vegetable intake, the total energy from fat, physical activity and anthropometric indicators. Psychosocial factors (knowledge, attitude, barriers and self-efficacy) were examined for their relationship to change in diet and physical activity. This intervention was developed based on the guidelines of the World Cancer



Research Fund (WCRF, 1997; 2007) for cancer prevention, as well as the Malaysian Guidelines for Cancer Prevention of The National Cancer Society of Malaysia. A total of 210 female teachers, from eight randomly selected schools in four districts in the state of Selangor, were randomized into the intervention group (n= 108) and the control group (n= 102). The intervention group received a multi-component diet and lifestyle educational program, comprising a one-day seminar, a self-help educational module, face to face diet and lifestyle motivational counselling. The control group received only the self-help educational material after completing the final follow-up assessment. A validated and reliable questionnaire was used to obtain the necessary information, over three time points i.e: baseline, immediate (post-1) intervention and 4-months follow-up (post-2). Descriptive and multivariate analyses were used to analyze the data. The teachers were predominantly Malays, Muslims, and married with a mean age of 37 years. At baseline, the mean consumption of fruit and vegetable intakes were two servings per day in both groups, with a high proportion in both groups showing a moderate level of physical activity and body fat percentage. Both groups were at the moderate level for total knowledge and the three sub-scales of knowledge, attitude, barriers and self-efficacy. The results of the ANOVA - GLM Repeated Measure showed that there was a significant difference within and between the groups ( $p < 0.05$ ) for change in the consumption of fruit and vegetables (+0.68 serving/ day), body fat percentage (-.61%), and the multiple of resting metabolic rates (+210.56 MET), as well as for the time spent for high, moderate and walking activities, where significant changes were found within groups only. A significant difference between the groups ( $p < 0.05$ ) indicated an increase in knowledge, attitude, and self-efficacy, as well as a reduction in barriers in the intervention group. No significant change was observed in the

control group for the consumption of fruit and vegetables, and body composition, but there was significant increase in knowledge was observed. The change in self-efficacy was found to be predictors for the change in the intake of fruit and vegetables, MET and reduction in the percentage of body fat in the intervention group. The reduction in barriers and the increase in knowledge were found to be the predictors for the reduction in the percentage of body fat. These findings suggest that the strategies used in this intervention study have had some impact in promoting positive changes in the diet and lifestyle behaviours. In conclusion, this study confirmed that apparently healthy and educated women participated in short term intervention can be motivated to increase their dietary intake of fruits and vegetables, improved their physical activity and reduce their body fat percentage.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia untuk memenuhi syarat mendapatkan ijazah Doktor Falsafah

**KESAN SATU INTERVENSI PENDIDIKAN UNTUK MEMPROMOSIKAN  
PERUBAHAN-PERUBAHAN PEMAKANAN DAN GAYA HIDUP SEBAGAI  
PENCEGAHAN KANSER PAYUDARA DI KALANGAN GURU-GURU  
PEREMPUAN DI SEKOLAH-SEKOLAH TERPILIH DI SELANGOR**

Oleh

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Kanser payudara kini mengancam lebih ramai wanita di dunia berbanding dengan penyakit-penyakit kanser yang lain. Kajian-kajian epidemiologi telah menunjukkan dengan konsisten bahawa pemakanan dan gaya hidup memainkan peranan penting dalam pembentukan kanser payudara di kalangan wanita. Laporan penting daripada *World Cancer Research Fund* (1997 & 2007) telah membuat kesimpulan utama bahawa kanser merupakan penyakit yang boleh dicegah. Objektif kajian ini adalah untuk menentukan kesan intervensi pendidikan untuk mengubahsui faktor-faktor pemakanan dan aktiviti fizikal yang berkait dengan kanser payudara di kalangan guru-guru wanita di Selangor. Kajian ini bertujuan untuk mempertingkatkan tingkah laku pemakanan dan gaya hidup yang merangkumi pengambilan buah-buahan dan sayur-sayuran, pengambilan jumlah tenaga daripada lemak, aktiviti fizikal dan indikator-indikator antropometri. Faktor-faktor psikososial (pengetahuan, sikap, halangan dan keyakinan diri) telah di kaji untuk





mengenalpasti perkaitannya terhadap perubahan dalam amalan pemakanan dan aktiviti fizikal. Kajian intervensi ini telah dibentuk berdasarkan garis panduan daripada *World Cancer Research Fund* (WCRF, 1997; 2007) untuk pencegahan kanser, dan Garis Panduan Pencegahan Kanser yang disediakan oleh *The National Cancer Society of Malaysia*. Seramai 210 guru-guru wanita, daripada lapan buah sekolah yang dipilih secara rawak daripada empat daerah di negeri Selangor telah dibahagikan kepada kumpulan intervensi (n= 108) dan kumpulan kawalan (n= 102). Kumpulan intervensi menerima program pendidikan pelbagai komponen yang terdiri daripada seminar satu hari, modul pendidikan sendiri dan kaunseling motivasi pemakanan dan gaya hidup bersemuka. Kumpulan kawalan pula hanya menerima modul pendidikan sendiri, sebaik sahaja tamat penilaian susulan terakhir. Borang soal-selidik yang dipercayai dan telah ditentukan digunakan untuk mendapatkan maklumat yang diperlukan, pada 3 tempoh masa berlainan iaitu peringkat awal (*baseline*), sebaik sahaja selepas intervensi (pos-1) dan empat bulan selepas intervensi (pos-2). Analisis deskriptif dan multivariat telah digunakan untuk menganalisis data. Majoriti guru-guru tersebut berbangsa Melayu, beragama Islam dan sudah berkahwin dengan min umur sebanyak 37 tahun. Pada peringkat awal, purata pengambilan buah-buahan dan sayur-sayuran adalah dua sajian sehari bagi kedua-dua kumpulan, dengan sebahagian besar daripada subjek daripada kedua-dua kumpulan menunjukkan tahap aktiviti fizikal dan peratus lemak badan yang sederhana. Subjek kedua-dua kumpulan juga didapati mempunyai tahap pengetahuan keseluruhan yang sederhana, begitu juga dengan tiga sub-skala yang lain iaitu tahap pengetahuan, sikap, amalan dan keyakinan diri. Hasil analisis *ANOVA- GLM Repeated Measure* telah menunjukkan bahawa terdapat perbezaan yang signifikan dalam kumpulan dan di antara kumpulan ( $p < 0.05$ ) bagi perubahan-

perubahan dalam pengambilan buah-buahan dan sayur-sayuran (+0.68 sajian/hari), peratus lemak badan (-0.61%), dan kadar metabolik rehat pelbagai (+210.56 MET), begitu juga dengan masa yang digunakan untuk aktiviti berjalan, aktiviti berintensiti sederhana dan aktiviti berintensiti tinggi, dengan perubahan yang signifikan hanya dikenalpasti dalam kumpulan sahaja. Perbezaan yang signifikan juga dapat dilihat di antara kumpulan dan dalam kumpulan ( $p < 0.05$ ), menunjukkan peningkatan dari segi tahap pengetahuan, sikap dan keyakinan diri, begitu juga penurunan dalam tahap halangan bagi kumpulan intervensi. Tiada perbezaan yang signifikan dapat dilihat dalam kumpulan kawalan dari segi pengambilan buah-buahan dan sayur-sayuran dan komposisi badan, namun peningkatan tahap pengetahuan yang signifikan dapat dilihat. Perubahan tahap keyakinan diri dikenalpasti sebagai perantara kepada perubahan dalam pengambilan buah-buahan dan sayur-sayuran, kadar metabolik rehat pelbagai dan penurunan peratus lemak badan di kalangan subjek dalam kumpulan intervensi. Penurunan tahap halangan dan peningkatan tahap pengetahuan pula telah dikenal pasti sebagai perantara kepada penurunan peratus lemak badan. Hasil kajian mencadangkan bahawa strategi yang digunakan dalam kajian ini mempunyai impak untuk mempromosikan perubahan yang positif dalam tingkah laku pemakanan dan gaya hidup. Sebagai kesimpulannya, kajian ini mengesahkan bahawa golongan wanita yang sihat dan berpendidikan yang menyertai program intervensi jangka masa pendek boleh dimotivasikan untuk meningkatkan pengambilan buah-buahan dan sayur-sayuran harian, memperbaiki aktiviti fizikal serta mengurangkan peratus lemak dalam badan mereka.

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I certify that an Examination Committee met on 27-8-2008 to conduct the final examination on Hala Hazam AL-Otaibi, on her Doctor of Philosophy thesis entitled, “Effect of an Educational Intervention on the Promotion of Dietary and Lifestyle Changes for The Prevention of Breast Cancer among Female Teachers in Selected Schools In Selangor, Malaysia” in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Putra Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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Date: 12 February 2009



## **DECLARATION**

I declare that the thesis is based on 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 UPM or at any other institution.

---

**HALA HAZAM AL-OTAIBI**

Date: 27 January 2009



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