RESEARCH REPORT

TITLE :

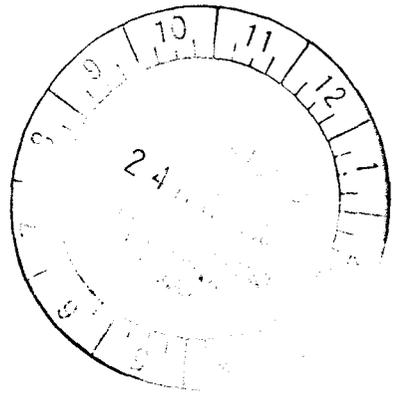**EPIDEMIOLOGY OF CERVICAL CANCER**

IN   KELANTAN

By

Dr. Tengku Mohd Ariff bin Raja Hussin
Assoc. Prof Aziz asSafi bin Ismail
Assoc. Prof Shukri bin Othman

UNIVERSITI SAINS MALAYSIA
PUSAT PENGAJIAN SAINS PERUBATAN
SCHOOL OF MEDICAL SCIENCES

MEMORANDUM

5 Mei 2004

Profesor Zabidi Azhar bin Mohd Hussin
Pengerusi Jawatankuasa Penyelidikan dan Etika,
Pusat Pengajian Sains Perubatan,
USM, Kampus Kesihatan,

Y.Brs Profesor, Tuan/ Puan,

Per : Laporan Akhir Penyelidikan Geran Jangka Pendek

Perkara di atas adalah dengan hormatnya di rujuk.

2. Bersama-sama ini disertakan salinan laporan akhir penyelidikan jangka pendek yang bertajuk "Epidemiologi Kanser Serviks di Kelantan" (Rujukan FPP 94/080) untuk tindakan lanjut pihak tuan.

Segala pertolongan dan kerjasama mendapatkan geran dan di dalam pengeluaran laporan tersebut adalah di ucapkan terima kasih.

Yang benar,

(DR TENGKU MOHD ARIFF RAJA HUSSIN)
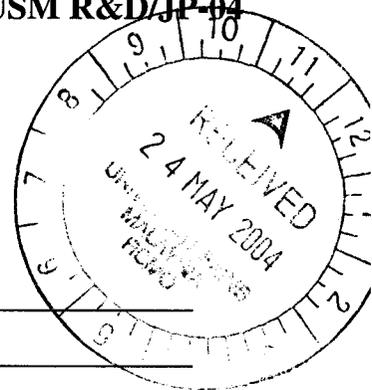
s.k.: 1 . Puan Latifah binti Abdul Latiff
Pejabat Pengurusan Kreativiti dan Penyelidikan,
Bangunan Canselori, USM, 11800 Minden, Pulau Pinang.

2. En Abdul Halim Othman, Setiausaha,
Jawatankuasa Penyelidikan dan Etika PPSP, USM, Kampus Kesihatan,

USM R&D/JP-04

LAPORAN AKHIR PROJEK PENYELIDIKAN R&D JANGKA PENDEK

A. MAKLUMAT AM

Tajuk Projek: ~~Epidemiology of Cervical of Cancer in Kelantan~~
   (Rujukan FPP 94/080)

Tajuk Program: ~~- short term –~~

Tarikh Mula: ——————— ~~1 Jun 1994 hingga 31 Mei 1996~~——————

Nama Penyelidik Utama: ~~Dr Tengku Mohammad Ariff bin Raja Hussin, 601130-03-5601~~
(*berserta No. K/P*)

Nama Penyelidik Lain: ~~Prof Madya Dr Shukri bin Othman (541104 – 03- 5489)~~
(*berserta No. K/P*)   Prof Madya Dr Abd Aziz as-Safi bin Ismail (571104 - 03-5419)

B. PENCAPAIAN PROJEK:
(Sila tandakan [/] pada kotak yang bersesuaian dan terangkan secara ringkas di dalam ruang di bawah ini. Sekiranya perlu, sila gunakan kertas yang berasingan)

[ ] Penemuan asli/peningkatan pengetahuan

   ~~In Kelantan, women who had a family with history of a diagnosed cancer are at~~ higher risk of getting cancer of the cervix. Women who are married are more highly associated with the cancer than those non-married or divorced. Age of marriage did not seem to have shown any evidence of association with the occurrence of the cancer. The same findings were seen with regard to the number of husband's spouses in relation to the cancer. There was no spectacular difference shown between the two populations of those women married to husbands who practiced monogamy of polygamy. So was with the house-hold income which did not show any relations with the cancer in the Kelantan population. Vitamins intake were seen to reduce slightly the rate of the cancer of the cervix.   Most of the patients with the cancer underwent deep X-ray therapy.

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☐ **Rekaan atau perkembangan produk baru,**
(Sila beri penjelasan/makluman agar mudah dikomputerkan)

(1) nil _____

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(2) _____

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(3) _____

_____

☐ **Mengembangkan proses atau teknik baru,**
(Sila beri penjelasan/makluman agar mudah dikomputerkan)

(1) nil _____

_____

(2) _____

_____

(3) _____

_____

☐ **Memperbaiki/meningkatkan produk/proses/teknik yang <u>sedia ada</u>**
(Sila beri penjelasan/makluman agar mudah dikomputerkan)

(1) nil _____

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(2) _____

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(3) _____

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C. PEMINDAHAN TEKNOLOGI

☐ Berjaya memindahkan teknologi.

Nama Klien: (1)   Nil _____
(Nyatakan nama
penerima pemindahan teknologi
ini dan sama ada daripada   (2)   _____
pihak swasta ataupun sektor
awam)
                                         (3)   _____

☐ Berpotensi untuk pemindahan teknologi.
(Nyatakan jenis klien yang mungkin berminat)

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nil
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D. KOMERSIALISASI

☐ Berjaya dikomersialkan.
                                         nil
Nama Klien: (1) _____

              (2) _____

              (3) _____

☐ Berpotensi untuk dikomersialkan.
(Nyatakan jenis klien yang mungkin berminat)

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nil
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E. PERKHIDMATAN PERUNDINGAN BERBANGKIT DARIPADA PROJEK
(Klien dan jenis perundingan)

(1) ————— nil —————————————————————

(2) ————————————————————————————

(3) ————————————————————————————

(4) ————————————————————————————

F. PATEN/SIJIL INOVASI UTILITI
(Nyatakan nombor dan tarikh pendaftaran paten. Sekiranya paten/sijil inovasi utiliti telah dipohon tetapi masih belum didaftarkan, sila berikan nombor dan tarikh fail paten).

(1) ————— nil —————————————————————

(2) ————————————————————————————

(3) ————————————————————————————

G. PENERBITAN HASIL DARIPADA PROJEK

(i)   LAPORAN/KERTAS PERSIDANGAN ATAU SEMINAR

(1) —————— - akan mengikuti selepas ini - ——————

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(5) ————————————————————————————

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(ii) **PENERBITAN SAINTIFIK**

(1) ~~- akan menyusul dengan kadar segera -~~

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(2) _____

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(4) _____

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(5) _____

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(6) _____

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H. **HUBUNGAN DENGAN PENYELIDIK LAIN**
(sama ada dengan institusi tempatan ataupun di luar negara)

(1) ~~Professor Dr Tahir bin Azhar, UIA~~

_____

(2) ~~Dr Azidah binti Hashim, Uni Kebangsaan Malaysia~~

_____

(3) ~~-~~

_____

(4) ~~-~~

_____

I.   SUMBANGAN KEWANGAN DARI PIHAK LUAR
(Nyatakan nama agensi dan nilai atau peralatan yang telah diberi)

(1) ——nil——————————————————————

(2) ——————————————————————————

(3) ——————————————————————————

J.   PELAJAR IJAZAH LANJUTAN
(Nyatakan jumlah yang telah dilatih di dalam bidang berkaitan dan sama ada diperingkat sarjana atau Ph.D).

<u>**Nama Pelajar**</u>

Sarjana ——nil——————————————

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——————————————————

Ph.D ——nil——————————————

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K.   MAKLUMAT LAIN YANG BERKAITAN

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Tarikh   **Tandatangan**

Professor Zabidi Azhar Mohd. Hussin
Chairman of Research Ethics Committee
School of Medical Sciences
Universiti Sains Malaysia
KELANTAN, MALAYSIA
TANDATANGAN PENGERUSI
JAWATANKUASA PENYELIDIKAN
PUSAT PENGAJIAN

Sila kopi maklumat ini dgn. kumpulan penyelidik ...

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TOPIC : EPIDEMIOLOGY OF CERVICAL CANCER IN KELANTAN

Introduction

Cancer of the cervix is one of the most serious illnesses affecting women today - particularly in developing countries. It is the fifth common cancer worldwide and is second only to breast cancer as the leading cause of deaths in women. Half a million cases are diagnosed annually with the highest rates occurring in developing countries (Crook T and Farthing A.,1993). In the South as well as in Central America; sub-Saharan Africa; south and as well a south-east Asia; it is the most or second most common cancer among women (Walboomers JMM *et al.*,1999). In Malaysia, a figure of 2191 new cases of cancer of the cervix was reported in 1993 (Ministry of Health, 2002). The most common cancer in women was breast cancers, cervical cancers, colon, ovarian, and leukemia's. However, the actual number of cases could be expected to be more in view of the fact that notification of cases is notoriously inaccurate in the Malaysian context.

The vast majority of cervical cancer cases are caused by infection with certain subtypes of human papilloma virus (HPV), a sexually transmitted virus that infects cells and may result in precancerous lesions and invasive cancer (Walboomers JMM *et al.*, 1999). Developing countries accounted for 370 000 out of the total 466 000 cases of cervical cancer estimated to occur in the world in the year 2000 (Ferley J. *et al.*,2000). Worldwide, cervical cancer claims the lives of 231 000 women annually, over 80 % of whom lived in developing countries.

Key risk factors to the cancer of the cervix in some countries have been investigated extensively. Potentially strong cofactors have been identified as smoking, oral contraceptive use, parity and interaction with other sexually transmitted viruses (Larsen NS, 1994). Sexual practices (e.g. age at first coitus, number of sexual partners) (Brinton LA et al.,1987) and male factors (eg circumcision, occupation) have been incriminated too in increasing the risk of developing cancer of the cervix.

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Cancer of the cervix is found mainly to occur in older women, especially those between 40 and 50 years of age. There is, however, a new trend evolving whereby younger women are found to be developing the disease (Azhar MT.,1994) This may be due to changing sexual norms and physico-psychological developments (e.g. earlier age at menarche, widespread availability of contraceptives, sexual liberation etc).

Cancer of the cervix is the one type of cancer for which a known and effective preventive strategy exists. The natural history of the disease, with its precursor state or 'dysplasia' and in-situ changes, as well as the anatomic availability and easy access of the cervix for repeated examination, are call circumstances particularly suited to a screening programme (CMA Journal, 1976). Added to this is the fact that many of the risk factors for cancer of the cervix is related to sexual practice, an intimate and highly confidential aspect of a person's life, as well as her socioeconomic status. These two aspects of life are known to be difficult to penetrate, perpetrate and modify, hence health promotion strategies are not cost effective. Hence, early detection of disease via screening measures is the logical solution.

The Papanicolaou (Pap) smear remains the most effective screening tool for this cancer. It has been found to reduce the incidence of cancer of the cervix in many areas of the world (Miller AB.,1992). The risk of developing cancer of the cervix is three times higher in unscreened women as compared to those screened for the disease (Herrero R. *et al.*, 1992). However, problems abound with the use of the Pap smear, chiefly those dealing with technical and interpretational aspects. Other methods of screening are also being evaluated for suitability and cost effectiveness. These include cervico-graphy and 'down-staging' a WHO propagated method of screening.

In Malaysia at the present moment, there is no existing nationwide screening programme for cancer of the cervix. Opportunistic screening and time to time campaigns are being done on a relatively modest scale (with low yields) using the Pap smear screening method done by the Ministry of Health (Maternal and Child Health services), the National

Population and Family Development Board as well as the private sector. As in the case of many countries, there is under-utilization of available screening services and low uptake of screening especially among those women at high risk.

Rationale of the Study

In view of the seriousness of the problem of the cancer in Malaysia and the availability of existing preventive strategies such as screening programme, it appears timely for the formulation of a nationwide screening programme for cancer of the cervix. The decision to implement a national screening programme for cancer of the cervix should be based on the following factors:

- Evidence that cancer of the cervix is a major health problem
- Characteristics of individual and populations at risk
- An appropriate health service infrastructure
- Technical resources for the chosen method of screening and
- Resources for diagnosis and treatment of cases
- Advance research into new methods of screening.

Three pre-requisites are already available. Malaysia has an extensive health services infrastructure, which is able to reach even to the most isolated and remote population. It also has adequate technical resources for most methods of screening and just importantly, facilities for diagnosis and treatment of cases of cancer of the cervix are at par with those in developed countries. This study attempted to provide a concrete evidence that cancer cervix is indeed a major health problem. It is expected to produce estimates of prevalence for cancer of the state as well as its distribution in terms of socio-demographic determinants such as of age, place of residence, socio-economic status and etcetera. This study will also identify characteristic of individuals and population of risk, which will form the basis for a targeted nationwide screening programme. The implementation of this organized screening programme is expected to reduce the incidence of cancer of the cervix in Kelantan and will hopefully be a model that other states developing countries

follow. Research concept and proposal into other means of screening are being prepared by the same author and we hope to reveal it to the public in the near future.

Objective

General Objective

To study the epidemiological pattern of cervical cancer in Malaysia and to determine high-risk women to contract the disease.

Specific Objective

1. To determine the epidemiological characteristics of patients with cancer of the cervix.
2. To identify women of high risk of contracting cancer of cervix.
3. To determine the association between familial factors and the cancer of cervix.
4. To determine stages of cancer cervix in the patients upon diagnosis.
5. To study the characteristics of women who agreed and underwent "Pap smear" as screening.

Methodology

This is a short term one-year project under the university short-term grant. The research consisted of 2 phases:

Phase 1: *Case Finding*

All cases of invasive cancer of the cervix from the January 1983 to December 1993 were sourced out from Hospital University Sains Malaysia Kubang Kerian (HUSM) and Hospital Kota Bharu (HKB). Clinical records, death certificates, laboratory records and other data sources were collected from these identified centers and transferred from

original sources onto specially designed study forms. Study forms were rechecked for clinical accuracy and eligibility prior to data processing and data analyses. Analysis of data from phase 1 was expected to provide estimates of incidence of cancer of the cervix between 1983 and 1993, distribution of disease from the viewpoint of several socio-demographic as well as risk factor prevalence among the cases. Since this is more of a descriptive study, a case control study has been done to be able to quantify risk factor prevalence.

Phase 2 : *Case control study*

Selection of cases and controls
Incidents cases of invasive cancer of the cervix in the hospitals identified were selected for this study. Controls were selected from the community - of those staying in the vicinity of the cases, of those satisfied a set of inclusion and exclusion criteria. The controls were being matched to cases – to those in the same age group (intervals of 5 years). Cases were in the ratio of about 1: 1 controls to cases.

Instrument
The instrument used for this study is a pre-tested questionnaire administered and filled by the researcher himself during face-to-face interviews with the study subjects and the controls.

Sample size
Thirty one patients diagnosed to have cancer of the cervix at various levels were taken in as subjects of the study. Thirty seven subjects living in the vicinity of the cases in the community and having the same age grouped at 5 year-intervals were taken as controls. Patients taken in as subjects were diagnosed in USM from the dates as stated above. Thirty seven subjects were selected but only 31 could be followed up in the community whilst the others were lost to follow up and no news of them could be retrieved either by family members or the neighbours.

<u>Statistical analysis</u>

Data was analyzed using statistical software, SPSS. Univariate analyses were carried out to describe the socio-demographic, and stages of cancer cervix. A bivariate analysis was used to determine the association between cancer cervix and the alleged factors studied. Multivariate analysis using multiple logistic regressions were done to investigate the association of the factors whilst controlling for other factors.

Results

Socio-demographic Background of the Respondents

Majority of the respondents are Malay ethnics, aged between 38 to 77 years old and married. Most of them had had formal education (54.4 %) and had been working (55.9 %). Most of them had household incomes of less than RM 350 per month (Table 1).

Association between cases of cancer cervix and races

A higher percentage of the Chinese (71.4%) contracted cancer while a higher percentage (57.4 %) of the Malays were in the control group- did not get cancer. Albeit, chi-square test showed that there was no significant association between cervical cancer and these races (Table 2).

Table 1: Socio-demographic of respondents

Data	Number	Percentage (%)
Race		
Malay	61	89.7
Chinese	7	10.3
Marital Status		
Married	56	82.4
Divorced	12	17.6
Educational Background		
Informal Education	31	45.6
Primary School	25	36.8
Secondary School Leavers	12	17.6
Occupation		
Housewife	30	44.1
Government's employee	2	2.9
Private Sector	1	1.5
Self-employed	33	48.5
Retired	2	2.9
Household Income		
Less than RM 350	51	75
More than RM 350	17	25

Table 2: Risk of having cancer among different races

Race	Samples		p-value
	Case	Control	
Chinese	5 (71.4 %)	2 (28.6 %)	0.233
Malay	25 (45.6 %)	35 (57.4 %)	

Not significant using chi-square test

Association between cancer cervix patients and familial factors

Familial factors studied which could have contributed to getting cancer of cervix were marital status, age of marriage, educational background, and number of spouses, vitamin

intake, family history and family planning. Bivariate analysis using chi-square test had shown that only marital status has a significant association with cancer of cervix (p<0.0001). A higher prevalence of the cancer was seen among married women as compared to divorced women.

Table 3: Association between cancer cervixes with familial factors

Variables		Group		p-value
		Case	Control	
Marital status	Married	31 (55.4%)	25 (44.6 %)	**<0.0001***
	Divorced	0 (0 %)	12 (100%)	
Age of marriage	17 and less	17 (43.6 %)	22 (56.4 %)	0.807
	18 and above	14 (48.3%)	15 (51.7%)	
Number of spouse	One	13 (35.1 %)	24 (64.9 %)	0.087
	More than 1	18 (58.1 %)	13 (41.9 %)	
Household income	Less than RM350	20 (41.7 %)	28 (58.3 %)	0.424
	More than RM 350	11 (55.0%)	9(45.0 %)	

*significant using chi-square test

Habits and Life Style

There were significant associations between cancer of cervix with family history as well as history of having had family planning (p<0.05). Vitamin intake and having had Pap smear done did not show any significant association with cancer of cervix (Table 4).

Vegetable intake also did not show any significant association with cancer of cervix. Fruit intake (frequency per day) showed some significant association with cancer of cervix (p= 0.026). Respondents who took twice or more vegetables and fruits per day have less chance of getting cancer (Table 5).

Table 4: Habits and lifestyle among respondents

Variables		Group		p Value
		Case	Control	
Vitamin	Yes	11 (44.0 %)	14 (56.0 %)	1.000
intake	No	20 (46.5 %)	23 (53.5 %)	
Family History	Yes	17 (89.5 %)	2 (10.5 %)	<0.0001*
	No	14 (28.6 %)	35 (71.4 %)	
Family Planning	Yes	7 (87.5 %)	1 (12.5 %)	0.019*
	No	24 (40.0 %)	36 (60.0%)	
Pap Smear	Yes	5 (62.5 %)	3 (37.5 %)	0.454
	No	26 (43.3 %)	34 (56.7 %)	

*Significant using chi-square test

Table 5: Vegetables and Fruits intake among respondents

Variables		Group		p Value
		Case	Control	
Vegetables	Only one or less per day	21 (53.5 %)	18 (46.2 %)	0.143
	Twice or more per day	10 (34.5 %)	19 (65.5 %)	
Fruit	Only one or less per day	23 (57.5 %)	17 (42.5 %)	0.026*
	Twice or more per day	8 (28.6 %)	20 (71.4 %)	

*Significant using chi-square test

Stages of Cancer of Cervix upon Diagnosis

Patients were asked of symptoms observed upon diagnosis. Majority of them gave the history of having inter-menstrual bleeding (71.0 %), inter-coital hemorrhage (38.7 %), menorrhagia (19.4 %), and Per vaginal discharge (64.5 %) (Table 6).

Table 6: Information symptoms of Cancer Cervix among respondents

	Case (N=31)	
	Yes	No
Inter-menstruation	22 (71.0 %)	9 (29.0 %)
Inter-coital hemorrhage	12 (38.7 %)	19 (61.3 %)
Menorrhagia	6 (19.4 %)	25 (80.6 %)
PV Discharges	20 (64.5 %)	11 (35.5 %)

Classification of the cancer was done based on the "International Federation of Gynecological and Obstetrics" Classification, FIGO (1988). Majority of the patients were diagnosed to be in stage 6 and 7 (25.8 %), the less percentage are stages 2 and 3 (3.2 %) (Table 7).

Table 7: Stages of cancer cervix in the patients upon diagnosis

Stages	Number	Percentage (%)
1	3	9.7
2 (Ia1)	1	3.2
3 (Ia2)	1	3.2
4 (Ib)	2	6.5
5 (IIa)	2	6.5
6 (IIb)	8	25.8
7 (IIIa)	8	25.8
8 (IIIb)	1	3.2
9 (IIIc)	0	0
10 (IVa)	5	16.1
11 (IVb)	0	0

Based on International Federation of Gynecological and Obstetrics Classification, FIGO 1988)

Treatment instituted

Table 8 showed the treatment instituted to patients followed up in the study. Most of the patients were treated with "Deep X-ray therapy" - DXT (29.0 %) and the remaining patients were on other modes of treatment (6.5 %).

Table 8: Treatment of cancer of cervix cases studied

Treatment	Number	Percentage (%)
Wertheim's Radical Hysterectomy	6	19.4
DXT	9	29.0
Surgery and DXT	5	16.1
Refused Treatment	6	19.4
Chemoteraphy	3	9.7
Other surgery	2	6.5

Association between cancer of cervix and selected factors using logistic regression

Logistic regression was done to analyze the association of cancer of cervix with the selected variables such as age of married, household income, vitamin intake, and vegetable and fruit intake and family planning. These tests showed that there was no differences in cancer rate associated with of age marriage (Exp B=0.9926) and household income (Exp B = 0.998). Vitamin intake slightly reduced the rate of cancer of cervix (Exp B = 1.1067 in those not taking vitamin). Patients who took only one or less vegetable and fruit per day have higher risk for getting cancer of cervix (Exp B = 2.2165 and 1.2050). Also, those who had family planning were more highly associated with cancer of cervix (Exp B = 0.0954) (Table 9).

Table 9: Logistic Regression among selected variables with risk of cancer cervix

Variable	B	S.E	Exp (B)	95 % CI for Exp (B)	
				Lower	Upper
Age of marriage	- 0.0075	0.0647	0.9926	0.8744	1.1267
Household income	- 0.012	0.0007	0.998	0.9975	1.0002
Vitamin intake	0.1014	0.5058	1.1067	0.4107	2.9824
Vegetable intake	0.7959	0.5058	2.2165	0.8225	5.9729
Fruit intake	1.2186	0.5266	3.3824	1.2050	9.4942
Family planning	-2.3500	1.1005	0.0954	0.110	0.8244

Discussion

Cervical cancer and race

This study showed that a higher percentage of cancer of cervix occurred among Chinese (71.4 %), as compared to the Malay race; though this was not shown to be statistically significant. Studies elsewhere in Malaysia has also shown that among the few major races in Malaysia, the Chinese have a more preponderance towards many cancers, including the cervical cancer in women and nasopharyngeal cancers in men.

Reports from the Ministry of Health, Malaysia revealed that in 1992, overall cancer incidence rate (crude rate) is highest among the Chinese population. (Cancer Incidence Malaysia 2002). Overall incidence was higher in females than in males in the ratio of 1.12:1. Among females, cancer of the cervix is the second most common cancer 9.3% of all female cancer. Breast cancer is the highest occurring cancer with 32.4% of all female cancers.

Cancer of cervix had in fact been notorious to occur in some specific groups of populations. Studies done in America had shown a high prevalence among the Hispaniacs (Cancer among Hispanics in New Jersey, 1990-1996). These findings and the findings of the decreasing trend in the urban and modern society furthermore emphasize the strong

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sociological association of the cancer. The epidemiological risk factors identified to contribute to the development of the cancer from the CIN stage and to invasive carcinoma is the infection with the HPV – the human papilloma virus (Rock Cl *et al,* 2000). With it thus, emerge the factors of hygiene, overcrowding, diets, vaccines and the other socio-economic related factors.

There were clear evidence of cancers association with different races and ethnicity. Reports of racial / ethnic patterns of cancer in the US had been produced by SEER, which stated that among 11 ethnic groups studied, the Alaskan natives had the highest rates of cancer of lung and bronchus, while the African American women had the second highest rates of the cancers. The Vietnamese American population had the highest rate of cervical cancers as compared to other races in US. Cervix uteri ranked the lowest among 5 common cancers (breast, colon-rectal, lung-bronchus, corpus uteri, cervix uteri) in the US females of other ethnicities. (Parker *et al.,*1998)

Another report had in fact showed that after adjusting for age, the incidence of cervical cancer in New Mexico 60-70% higher in Hispanic and American Indian women when compared to others. Though overall the trend of cervical uteri cancers in US had a decreasing incidence trend for the last 3 decades. (Cancer Mortality and incidence in New Mexico 197-1996).

Association between cancer cervix patients and familial factors

Family history

This study had shown that women who have a family with history of a diagnosed cancer were at a higher risk of getting cancer of the cervix. Family history is recognized as one of the most important risk factors in predicting personal cancer risk. Family history is of value in identifying individuals at increased risk of cancer (Weber W., 1993) and evaluating lifetime cancer risk. Estimates of the frequency of a family history of cancer in a population can be useful to physicians and health planners in assessing the expected

caseload of patients at higher risk for cancer and the demand for increased screening and follow-up (Brzezinski W. *et al.,* 1990) such as referral for genetic counseling. More recently, a number of reports suggest that associations with modifiable reproductive and dietary risk factors as well as underlying genetic pathways for some cancers may vary by family history status (Egan KM *et al.,* 1998, Sellers TA *et al.,* 1998, Keller G *et* al., 1998) Thus, evaluation of family history status is important to patient management, medical care program planning and may have implications for response to treatment.

Other familial factors

Other familial factors among which were scrutinized in this study, which could have contributed to getting cancer of cervix were marital status, age of marriage, and number of spouses, and house hold income Bivariate analysis using chi-square test had shown that only marital status had a significant association with cancer of cervix (p<0.0001). A higher prevalence of the cancer was seen among married women as compared to divorced or non-married women.

Age of marriage did not seem to have shown any evidence of association with the occurrence of the cancer. The same findings were seen with regard to number of husband's spouses in relation to the cancer of the cervix. There was no spectacular difference shown between the two populations of those women married to husbands who practiced monogamy or of those who practiced polygamy. This event variable, named as "number of marital events" had been studied in as early as 1962 by Stern and Neely who thought that that the marital event is the most useful parameter. Studies were quoted that cancer of cervix does not occur in celibate women. (Elizabeth S. and Peter M.N.,1962)

The variable "religion" is also deemed almost as important. The Muslims and the Jewish were reported to have lower incidences of cancer, perhaps in relation with circumcision in the two populations (Elizabeth S. and Peter M.N., 1962).

Other authors had reported the risk factors to cancer of the cervix as early age at first intercourse (early being 15 years or younger), having history of many sexual partners, smoking, and HIV infections (Sloan-Kettering Cancer Center,2004).

House hold income

Household income did not show any association with the cancer of cervix among these cases. House hold-income was studied as an indicator to denote the socio-economic status of the family or the patients. House-hold income history in Kelantan especially is not the best indicator or variable to gather data with. The people tend to be a bit more modest and would not tell their income apart from giving a small figure. Anyway the data on income is quite homogenously low that there was not much difference detected. This added to the small sample size could have shown the results of no association between income and the cancer cases. Cancer of cervix has been noted to be more frequent among women of lower income and educational level; which some authors noted that these being the reasons for the difference in incidence between different races in US (Devesa S.S., 1984). Other studies had reported that socio-economic status and education, as well as screening could reduce the cervical cancer morbidity and mortality. (Shanta V. *et al., 2000*)

Dietary factors and Vitamin intake

The study had shown that vegetables and fruit intake will reduce the risk of cancer. The epidemiological studies examining the relationship between fruit and vegetable intake and cancer risk show an overwhelmingly protective effect against a variety of cancers. A 1992 review by Block et al. found that 128 of 156 studies reported fruit and vegetable consumption to be inversely related to overall cancer risk. A more recent review by the World Cancer Research Fund (WCRF) in conjunction with the American Institute for Cancer Research (AICR) included 37 cohort, 196 case-control and 14 ecological studies and found that, when all cancer sites were considered, 78% of the studies showed a

significant decrease in cancer risk with higher intake of at least one vegetable and/or fruit category examined .

Association between cancer of cervix and selected factors using logistic regressions

Logistic regression was done to analyze the association of cancer of cervix with the selected variables such as age of married, household income, vitamin intake, and vegetable and fruit intake and family planning. These tests showed that there was no differences in cancer rate associated with of age marriage (Exp B=0.9926) and household income (Exp B = 0.998). Vitamin intake slightly reduced the rate of cancer of cervix (Exp B = 1.1067 in those not taking vitamin). Patients who took only one or less vegetable and fruit per day have higher risk for getting cancer of cervix (Exp B = 2.2165 and 1.2050). Also, those who had family planning were more highly associated with cancer of cervix (Exp B = 0.0954) (Table 9).

Pap Smear Screening as a preventive approach

Although the program for early cervical detection using Papanicolaou smear (Pap smear) was introduced about three decades ago (Gerarld C. C. L., 2002) the overall prevalence of Pap smear in this study was low about 40 % among the case study group. No significant lower percentage was found among these women that haven't doing Pap smear.

Pap smears are important for women because the early stages of cervical cancer normally produce no symptoms. Cervical cancer has well defined pre-cancerous stages. Beginning with cervical dysplasia, the appearance of abnormal cells on the surface of the cervix. Many cervical dysplasia form in response to infection with certain strains of HPV human papilloma virus, a sexually transmitted virus that causes genital warts. While women who have had multiple sex partners have a higher risk of cervical cancer (as do those who begin sexual relations early in life), even women who are in lifelong monogamous relationships may develop the disease. Another factor that an increase the risk of cervical dysplasia develops into cancer is use of birth control pills.

Early cervical cancer is often asymptomatic (does not produce symptoms). In women who receive regular screening, the first sign of the disease is usually an abnormal Pap test result. Symptoms that may occur include the following includes abnormal vaginal bleeding (e.g., spotting after sexual intercourse, bleeding between menstrual periods, increased menstrual bleeding), abnormal (yellow, odorous) vaginal discharge, low back pain, painful sexual intercourse (dyspareunia), painful urination (dysuria).

As prevention, public education, the promotion of healthy lifestyle and well-being programs are to be given further emphasis with the development and implementation of information technology and telemedicine. These programs could be available as generic information or as personalized health information to individuals based on their individual health records. With a population that is both knowledgeable and motivated, the incidence of cancer and its attendant morbidity and mortality should be reduced. This policy is line with the country's vision of being nation healthy individuals, families and communities through the promotion of individual responsibility and community participation towards an enhanced quality of life. Thus, it hoped that the incidence, morbidity and mortality of disease such as cancer will decreased while the cost of the country's heath care may be contained within reasonable limits.

In view of the importance of socio-epidemiological factors related to the infection of the papilloma virus, which is of key import in the pathogenesis of the disease and that the disease incidence can be reduced if the infection is treated earlier and the pre-invasive condition the CIN can be dealt with earlier; we can think of some primary and secondary preventive strategies to combat and reduce the burden of the disease. Some primary strategies could be- hygiene, diet change (diet education) or dietary supplements, vaccines, chemo-preventive medications. There could be ways of increasing Pap smear screening techniques – which still remained the mainstay of the methods of identifying the disease at earlier stage. All efforts should be focused towards increasing the coverage of screening for the cancer for earlier detection and treatment could much improve the incidence of disease to the lowered level as they are now enjoying in some western and

European countries.

Treatment

In this study, most of the patients were treated with "Deep X-ray therapy" - DXT (29.0 %) and the remaining patients were on other modes of treatment (6.5 %). Treatment of cervical cancer depends on the stage of the disease. Treatment of cancer is a multidisciplinary effort. The modalities of treatment include surgery, radioteraphy, chemotherapy, hormonal therapy, immune therapy and symptomatic and supportive therapy. There are 14 radiotherapy centers in Malaysia, with two in Ministry of Health (MHO), three in universities and nine in private sector. The proportion of cancer patients who seek treatment at government centers is in excess of 60 % (National Health and Morbidity Survey, 1996)

Conclusion

As a conclusion the study had shown that women who had a family with history of a diagnosed cancer are at higher risk of getting cancer of the cervix. Other relevant factors shown were marital status i.e. a higher percentage was seen among married women as compared to divorced or non-married women. Age of marriage did not seem to have shown any evidence of association with the occurrence of the cancer. The same findings were seen with regard to the number of husband's spouses in relation to the cancer. There was no spectacular difference shown between the two populations of those women married to husbands who practiced monogamy of polygamy. So was with the house-hold income which did not show any relations with the cancer in the Kelantan population. Vitamins intake were seen to reduce slightly the rate of the cancer of the cervix. Most of the patients with the cancer underwent deep X-ray therapy.

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