RESEARCH COMMUNICATION

Gastric and Colo-rectal Cancer Mortality in Viet Nam in the Years 2005-2006

Le Tran Ngoan[1]*, Nguyen Thi Diep Anh[1], Nguyen Thi Thanh Huong[2], Nguyen Thi Thu[1], Nguyen Thi Lua[1], Lai Thi Minh Hang[1], Nguyen Ngoc Bich[1], Nguyen Van Hieu[1], Ha Van Quyet[1], Le Thi Tai[1], Do Duc Van[1], Nguyen Cong Khan[3], Le Bach Mai[3], Shinkan Tokudome[4], Takesumi Yoshimura[5]

Abstract

Background: The International Collaborative Epidemiological Study of Host and Environmental Factors for Stomach and Colorectal Cancers in Southeast Asian Countries (SEACs) has been conducted in Viet Nam from 2003 to 2008 on a case-control basis. For further effective primary prevention, we examined gastric and colorectal cancer mortality nationwide ineight regions of Viet Nam in 2005-06. Methods: Both demographic data and lists of all deaths in 2005-06 were obtained from all 10,769 commune health stations in Viet Nam. Five indicators included name, age, sex, date of death and cause of death was collected for each case. We selected only communes having the list of deaths with clear cause for each case and crude mortality rate for all causes from 300-600/100,000 as published by the Ministry of Health for a reasonable accuracy and completeness. Obtained data for all causes, all cancers, stomach and colorectal cancer deaths as well as demographic information were processed using Excel software and exported to STATA 8.0 for estimation of world age-standardized cancer mortality rates per 100,000. Results: Data were available for 1,246 gastric cases, (819 male and 427 female) with age-standardized mortality rates from 12.7 to 31.3 per 100,000 in males and from 5.9 to 10.3 per 100,000 in females in the 8 regions of the country. For colorectal cancers, 542 cases (268 male and 274 female) gave mortality rates from 4.0 to 11.3 per 100,000 in males and from 3.0 to 7.8 per 100,000 in females. Discussion: Stomach cancer mortality in males in the region of North East in the North Viet Nam (2005-06) was higher than that in Japan (2002) (31.3 versus 28.7 per 100,000) while colorectal cancer in Viet Nam was lower. While prevalence of *Helicobacter pyloris* infection in Viet Nam was from 70-75% in both males and females, the stomach cancer rate in males was significantly higher than in females, 31.3 versus 6.8 per 100,000, suggesting an influence of other environmental risk factors. Whether protective factors are operating against colorectal cancer in Viet Nam now needs to be explored.

Key Words: Cancer mortality - stomach - colorectal - population-based-routine-death registration - Viet Nam

Asian Pacific J Cancer Prev, **9**, 299-302

Introduction

The International Collaborative Epidemiological Study of Host and Environmental Factors for Stomach and Colorectal Cancers in Southeast Asian Couintries (SEACs) has been conducted in Viet Nam from 2003 to 2008 on a case-control basis. Viet Nam is divided into eight regions, the North East, North West, Red River Delta (Three regions in the North), North central coast, South Central Coast, and Central Highland (Three regions in Central Viet Nam), North-East South and Mekong River Delta (Two regions in the South).

The vast majority of stomach cancers are due to environmental factors and therefore are amendable to control (Doll & Peto, 1981). Incidences are relatively high in Viet Nam (Ngoan et al., 2002) but might be expected to differ within the country (Ngoan et al., 2001a). Estimated incidence of colorectal cancers in Viet Nam increased from 9.3 to 11.8 per 100,000 in males and from 6.4 to 8.3 per 100,000 in females between 1990 and 2002 as published by IARC in GLOBOCAN. Estimated mortality in 2002 was 5.6 and 5.2 per 100,000 in males and females, respectively (IARC, 2002). However, the GLOBOCAN data for Viet Nam were estimated based on incidence data for Hanoi and Ho Chi Minh cities only, and therefore might not reflect the real problem for the whole country because over 75% of Vietnamese live in rural areas (General Statistics Office, 1999; Vietnam-

*[1]Hanoi Medical University, [2]Quang Binh Department of Health, [3]National Nutrition Institute, Hanoi City, Viet Nam, [4]Nagoya City University, Nagoya, [5]Fukuoka Institute of Health and Environmental Sciences, Fukuoka, Japan *For Correspondence: Dept. of Occupational Health, Hanoi Medical University, Ton That Tung Street, Hanoi, Viet Nam. Fax. 84-4-8525115, E-mail: letngoan@hmu.edu.vn*

Central-Census-Steering-Committee, 1991). For this reason, we here tried to generate a comprehensive picture for stomac and colorectal cancers in the eight regions of Viet Nam to facilitate epidemiological studies in our country.

Materials and Methods

The socialist Republic of Viet Nam introduced a national mortality system in 1992. This unique system relied on commune-level officials providing basic demographic data and information on the cause of death. The information collected is recorded in an official book referred to as the A6. The data from the A6 was collated by the District-level Health Service who in turn forward the information to the Provincial and Central-level governments. The data comprises all cancer mortality records at the commune-level. Based on this system, descriptive cancer epidemiology was designed for the present study. Both demographic data and list of all deaths in 2005-06 were obtained from all 10,769 commune health stations. Five indicators included name, age, sex, date of death and cause of death was collected for each case. These process of this unique system in collecting cancer data has been introduced elf where (Ngoan, 2006; Ngoan et al., 2007).

To date, 94.6% (10,184 commune health stations) of the 10,769 communes (from the 638 of 671 districts within the 64 provinces) have forwarded the required data and we currently have approximately 93,719 cancer deaths occurred at all 638 districts for the 2 year period. Number of person-years was 76,726,873 in 2005 and 77,902,688 in 2006 (Ngoan et al., 2007). Because data obtained from number of 10,184 commune health stations, level of accuracy and completeness might be varied among them. Because crude mortality rate of all causes has been estimated from 300 to 600 per 100,000 published by the Ministry of Health (Ministry of Health, 2007), we categorized that communes were eligible when communes having the list of deaths with clear cause for each case and crude mortality rate for all causes from 300 – 600/ 100,000 for a reasonable accuracy and completeness. Gastric and colorectal cancer cases were coded following ICD-10 as C16 and C18-21.

For 2005-06, we identified 13,460 cases of stomach cancer among 93,719 all cancers nationwide and 4,646 cases of colorectal cancers.

Results

Stomach Cancers

Available data for the present analysis was 1,246 cases, male 819 and female 427. Age-standardized stomach cancer mortality rates were from 12.7 to 31.3 per 100,000 in males and from 5.9 to 10.3 per 100,000 in females (see Table 1). For the age group of 40-49, cancer mortality rates various from 5.9 to 33.1 per 100,000 in males and from 4.2 to 15.6 per 100,000 in females. Among males, the ratio of highest to lowest rates was 2.46 (31.3 versus 12.7 per 100,000) but it was only 1.75 in females. Male to female ratios in the region of North East in the North

Table 1. Registered Numbers and Stomach Cancer Mortality Rates per 100,000 (ASR) by Sex in Eight Regions of Viet Nam

Region	Male			Female		
	No	Crude rate	ASR	No	Crude rate	ASR
Red river delta	274	22.1	27.7	145	11.2	10.1
North-East	120	18.3	31.3	43	6.3	6.8
North-West	29	11.5	19.8	13	4.9	7.5
North central	144	16.3	21.9	77	8.4	8.1
Central coast	50	14.9	18.9	24	6.9	5.9
Central plateau	32	11.0	22.8	18	6.0	10.3
South-East	64	7.5	12.7	46	5.2	6.8
Mekong delta	106	9.6	15.0	61	5.3	6.8

Table 2. Registered Numbers and Colorectal Cancer Mortality Rates per 100,000 (ASR) by Sex in Eight Regions of Viet Nam

Region	Male			Female		
	No	Crude rate	ASR	No	Crude rate	ASR
Red river delta	68	5.5	6.9	75	5.8	5.2
North-East	20	3.1	4.4	34	5.0	5.0
North-West	7	2.8	4.7	9	3.4	5.0
North central	29	3.3	4.0	34	3.7	3.0
Central coast	18	5.4	7.7	13	3.7	4.1
Central plateau	9	3.1	6.0	7	2.3	3.7
South-East	34	4.0	6.3	24	2.7	3.4
Mekong delta	83	7.5	11.3	78	6.8	7.8

Viet Nam was 4.60 for all ages but it was 7.88 for the age of 40-49.

A comparison of rates with other communities in Asia (data from GLOBOCAN) is given in Figure 1.

Colorectal Cancers

The registered number was 542 cases, male 268 and

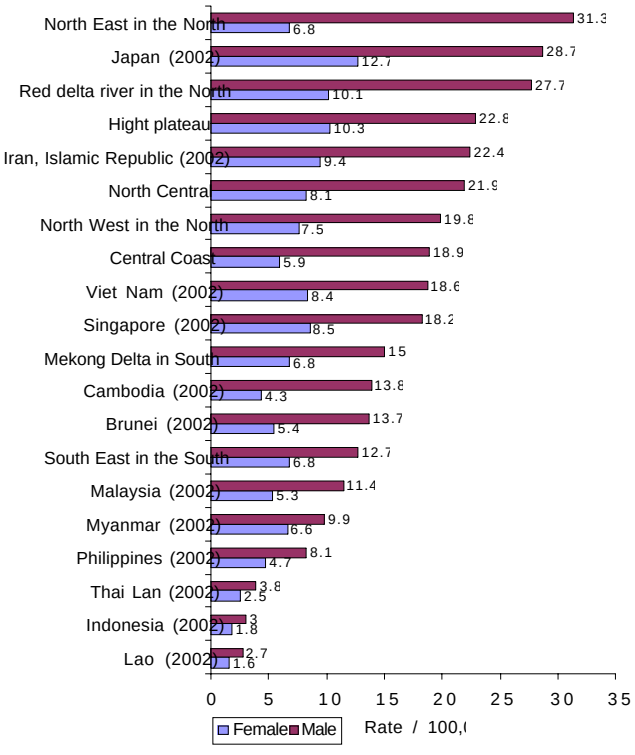

Figure 1. Age-standardized Stomach Cancer Mortality

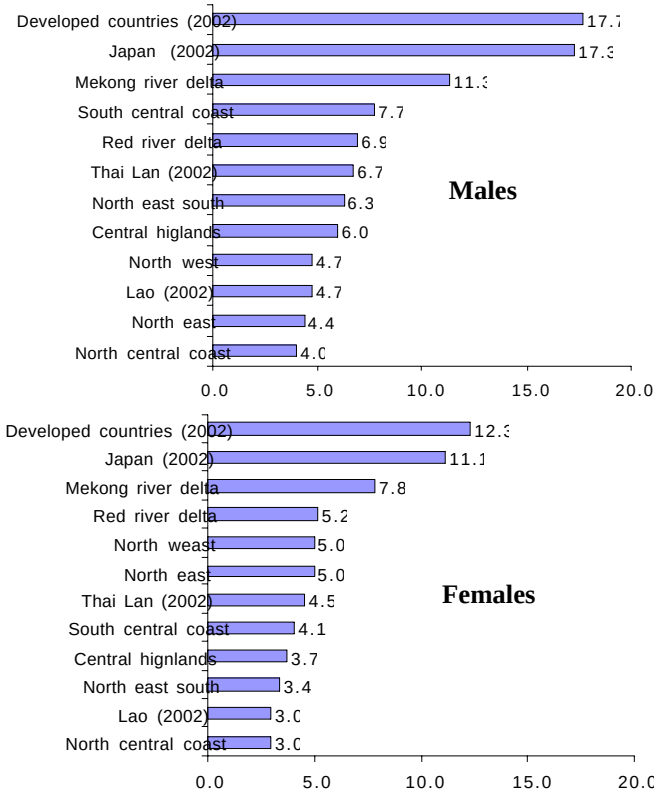

Figure 2. Age-standardized Colorectal Cancer Mortality

female 274 in 2005-06 from eligible commune populations within eight regions of Viet Nam, giving a male to female ratio of 0.98. In the eight regions, age-standardized colorectal cancer mortality rates were from 4.0 to 11.3 per 100,000 in males and from 3.0 to 7.8 per 100,000 in females (Table 2). The highest mortality rates were seen in both males (11.3 per 100,000) and females (7.8 per 100,000) in the region of Mekong River Delta in the South Viet Nam. The age specific rate per 100,000 were sharply increased from the age group 50-59 with a peak at 80+ as high as 346.6 and 275.3 per 100,000 in males and females, respectively.

A comparison of rates with other communities in Asia (data from GLOBOCAN) is given in Figure 2.

Discussion

The present results showed considerable variation in stomach and colorectal cancer mortality among the regions of Viet Nam but overall the values were very high for stomach and somewhat lower than in other countries for the large bowel.

We earlier reported low stomach cancer survival, with only 23.8% for one year and 0.8% for five years (Ngoan et al., 2007a). Stomach cancer mortality in males in the region of North East in the North Viet Nam (2005-06) was here found to be higher than that in Japan (2002), (31.3 versus 28.7 per 100,000). While the prevalence of Hp infection in Viet Nam is from 70-75% in both males and females, with especially high values in large urban areas, such as the city of Hanoi (Hoang et al., 2005), stomach cancer in males was significantly higher than females, 31.3 versus 6.8 per 100,000, suggesting the existence of other environmental risk factors, like possibly smoking. Because salt strongly enhances and promotes chemical gastric carcinogenesis and *H pylori* infection in both humans and animals, there may be an association between work, salt intake, and the development of stomach cancer among workers in particular (Ngoan and Yoshimura, 2003). The finding of very low incidence of stomach malignancy in Yogyakarta (Tokudome et al., 2005) and Semarang (Tokudome et al., 2006), Indonesia, appears to be due to the rarity of *H pylori*. Similar results have been reported in Malaysia, whereby the incidence of gastric carcinoma was found to be much higher in Chinese in Penang compared to Malays in Kelantan, where the *H. pylori* infection rate is exceptionally low (Gurjeet et al., 2005). Whether some dietary factor may be playing a role remains unclear. While the absolute rates for stomach mortality were higher for the Red River Delta than for other areas, we earlier found better cancer survival in Hanoi than in Phu Tho province, pointing to a need for greater efforts in early detection and treatment in rural areas (Ngoan et al., 2007).

The higher rates for colorectal cancer in the Mekong delta than in the Red River delta might suggest that there is an influence of Ho Chi Minh city as opposed to Hanoi. We earlier found differences in female but not male incidence rates (Ngoan et al., 2001) and a case-control comparison of the two major cities would appear warranted. Lower incidences in Ho Chi Minh city were also found for cancers of the nasopharynx, stomach, lung and female breast, while that of cervical cancer was significantly higher than in Hanoi (Ngoan et al., 2001).

We now need to extend our studies to other cancers, for example to cervical cancer, For females, cancer death in the cervix is uncommon in Hanoi but it is a very common site in Ho Chi Minh (Ngoan et al., 2002). major risk factors for HPV DNA detection were indicators of sexual habits, most notably the presence of HSV-2 antibodies, nulliparity and the current use of oral contraceptives. Women in Hanoi showed the lowest HPV prevalence ever reported so far, and as expected, HPV prevalence closely correlated with ICC incidence rates. (Pham et al., 2003). Although cervical HPV infection is extremely common, particualrly among female sex workers in southern Vietnam, prevalence varies by education level, sexual activity, habits of regular partners, and HIV status (Hernandez and Vu Nguyen, 2008). There is also significant increase in risk of cervical cancers linked to to multi parity and illiteracy (Ngoan and Yoshimura, 2001b). However, a lay health worker outreach program with Vietnamese women has produced significant increases in Pap testing (Mock et al., 2006) and initial responses to the HPV vaccine for girls in Vietnam appear favorable. Beliefs regarding negative social consequences for girls who engage in premarital sex are prevalent but unassociated with HPV vaccine acceptability (Dinh et al., 2007).

Another important cancer in Viet Nam is the hepatocellular carcinoma, with slightly higher rates in Ho Chi Minh city than in Hanoi (Ngoan et al., 2001). This could partly be explained by herbicide exposure(Ngoan and Yoshimura, 2001a) as well as a high age-dependent

incidence of liver cancer among carriers of HBsAg (+) in a general population (Ngoan and Yoshimura, 2001c). Universal infant HBV vaccination should reduce chronic HBV prevalence in Vietnam but it was estimated that the HBV-related liver disease burden will continue to rise (Nguyen et al., 2008).

In conclusion, the present study obtained data nationwide from the eight regions of Viet Nam and showed major variation which might provide clues to risk factors and how to target prevention efforts. Future investigations should also explore links to cardiovascular disease mortality, which is also high (Hoang et al., 2006) so that both primary prevention and secondary treatment initiatives can be coordinated for all of the non-communicable diseases, including diabetes associated with colorectal cancer and stroke correlating with stomach cancer.

References

Dinh TA, Rosenthal SL, Doan ED, et al (2007). Attitudes of mothers in Da Nang, Vietnam toward a human papillomavirus vaccine. *J Adolesc Health*, **40**, 559-63.

General Statistics Office. (1999). Report, Population Projections of Viet Nam, 1994-2024. General Statistical Office, Project VIE/97/p14: Hanoi.

Gurjeet K, Subathra S, Bhupinder S (2004). Differences in the pattern of gastric carcinoma between north-eastern and north-western peninsular Malaysia: a reflection of *Helicobacter pylori* prevalence. *Med J Malaysia*, **59**, 560-1.

Hernandez BY, Vu Nguyen T (2008). Cervical human papillomavirus infection among female sex workers in southern Vietnam. *Infect Agent Cancer*, **23**, 3-7.

Hoang VM, Dao LH, Wall S, Nguyen TK, Byass P (2006). Cardiovascular disease mortality and its association with socioeconomic status: findings from a population-based cohort study in rural Vietnam, 1999-2003. *Prev Chronic Dis*, **3**, A89.

Hoang TT, Bengtsson C, Phung DC, Sörberg M, Granström M (2005). Seroprevalence of *Helicobacter pylori* infection in urban and rural Vietnam. *Clin Diagn Lab Immunol*, **12**, 81-5.

IARC. (2002). GLOBOCAN 2002. IARC: Lyon France.

Matsuhisa TM, Yamada NY, Kato SK, Matsukura NM (2003). *Helicobacter pylori* infection, mucosal atrophy and intestinal metaplasia in Asian populations: a comparative study in age, gender- and endoscopic diagnosis-matched subjects. *Helicobacter*, 8, 29-35.

Ministry of Health. (2007). Health Statistics Yearbook 2006. Vietnam Ministry of Health: Hanoi City

Mock J, Nguyen T, Nguyen KH, Bui-Tong N, McPhee SJ (2006). Processes and capacity-building benefits of lay health worker outreach focused on preventing cervical cancer among Vietnamese. *Health Promot Pract*, **7 (3 Suppl)**, 223S-32S.

Ngoan LT (2006). Development of population-based cancer mortality registration in the North of Viet Nam. *Asian Pac J Cancer Prev*, **7**, 381-4.

Ngoan LT (2006). Anti-smoking initiative and decline in incidence rates of lung cancer in Viet Nam. *Asian Pac J Cancer Prev*, **7**, 492-4.

Ngoan LT, Fukumitsu S, Kaneko S, Yoshimura T (2001). Differences in cancer risks in the South and North of Viet Nam. *Asian Pac J Cancer Prev*, **2**, 193-8.

Ngoan LT, Long TT, Lu NT, Hang LT (2007a). Population-based cancer survival in sites in Viet Nam. *Asian Pac J Cancer Prev*, **8**, 539-42.

Ngoan LT, Lua NT, Hang LT (2007b). Cancer mortality pattern in Viet Nam. *Asian Pac J Cancer Prev*, **8**, 535-8.

Ngoan LT, Mizoue T, Yoshimura T (2002). Estimates of cancer mortality in Hanoi and Ho Chi Minh City, Viet Nam in the 1990s. *J Epidemiol*, **12**, 179-87.

Ngoan LT, Yoshimura T (2001a). Liver cancer in Viet Nam: risk estimates of viral infections and dioxin exposure in the South and North populations. *Asian Pac J Cancer Prev*, **2**, 199-202.

Ngoan LT, Yoshimura T (2001b). Parity and illiteracy as risk factors of cervical cancers in Viet Nam. *Asian Pac J Cancer Prev*, **2**, 203-6.

Ngoan LT, Yoshimura T (2001c). Estimate of the incidence of hepatocellular carcinoma among carriers of HBsAg (+) in the general population of Hanoi, Viet Nam from 1991-93. *Asian Pac J Cancer Prev*, **2**, 309-14.

Ngoan LT, Yoshimura T (2003). Work, salt intake and the development of stomach cancer. *Med Hypotheses*, **60**, 552-6.

Nguyen VT, Law MG, Dore GJ (2008). An enormous hepatitis B virus-related liver disease burden projected in Vietnam by 2025. *Liver Int*, **28**, 525-31.

Pham TH, Nguyen TH, Herrero R, et al (2003). Human papillomavirus infection among women in South and North Vietnam. *Int J Cancer*, **104**, 213-20.

Tokudome S, Soeripto, Triningsih FXE, et al (2005). Rare *Helicobacter pylori* infection as a factor for the very low stomach cancer incidence in Yogyakarta, Indonesia. *Cancer Lett*, **219**, 57-61.

Tokudome S, Samsuria WD, Soeripto, et al (2006). *Helicobacter pylori* infection appears essential for stomach carcinogenesis - observations in Semarang, Indonesia. *Cancer Sci*, **96**, 873-5.Vietnam-Central-Census-Steering-Committee. (1991). Vietnam Population Census-1989, completed census results. Vol. Vol. I. Central Census Steering Commitee.