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ORIGINAL ARTICLE

Self-reported chronic diseases and associated sociodemographic status and lifestyle risk factors among rural Vietnamese adults

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Abstract

Aims: The fact that chronic diseases are leading causes of mortality and morbidity in hospitals in Vietnam was certified by yearly statistical information. However, population-based knowledge of chronic diseases is still largely lacking. This article examines the prevalence of major chronic diseases and their relationships with sociodemographic status and selected lifestyle risk factors among the adult population in a rural community in the north of Vietnam. **Methods:** A representative sample comprising 2500 adults aged 25–74 years was surveyed in 2005 using a structured questionnaire. Both descriptive and analytical statistical analyses were applied. **Results:** Thirty-nine per cent of the respondents had at least one of the studied chronic diseases. The prevalence of current smoking was 59% among men and 0.7% among women. The prevalence of at-risk alcohol drinking was 67% among men and 3% among women. Increasing age, low education and doing other jobs (small traders, temporary workers, housekeepers, handicraft makers and jobless), as well as tobacco use and at-risk alcohol drinking, were found to be associated with a higher probability of having at least one chronic disease of interest. Economic status was found to be inversely correlated with the probability of having at least one chronic disease among women only. **Conclusions:** The findings from this study indicated that chronic conditions and lifestyle risk factors were very common among the adult population in rural Vietnam. There is an association between chronic diseases and lower socioeconomic status and unhealthy lifestyle risk factors.

Key Words: Chronic diseases, lifestyle, rural, socioeconomic, Vietnam

Introduction

Chronic diseases refer to a wide range of diseases that have a long natural history and are therefore preventable [1,2]. The burden of chronic diseases is increasing worldwide, especially in developing countries, as a result of changes in demographic structures and socioeconomic and environmental conditions [2–5]. Globally in 2005, of a total of 58 million deaths from all causes, 35 million were attributable to chronic diseases, and 80% occurred in developing countries [2]. The number of deaths from chronic diseases will continue to increase rapidly in the next decade, and the low- and middle-income countries will carry the heaviest burden [2,6]. As many chronic disease interventions are effective and suitable for resource-constrained settings [1,2], it is vitally important that

action is taken with regard to the impending chronic disease pandemic.

Like other developing countries, Vietnam has been experiencing a rapid epidemiological transition, resulting in an increase in the burden of chronic diseases. Chronic diseases have been shown to be major causes of morbidity and mortality in hospitals for the whole country. Hospital admissions due to chronic diseases increased from 39% in 1986 to 68% in 2002, and chronic diseases deaths rose from 42% in 1986 to 69% in 2002 [7]. The overall magnitude of the burden of chronic diseases would be clearer if data from the community level were included. Unfortunately, at the community level, especially in rural areas, where the health information system is weak, the data on chronic disease morbidity and mortality, as well as their proximal risk factors, are

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still largely lacking. Consequently, reliable and more complete data on the extent of chronic diseases are now urgently needed by those with responsibility for health planning and health decision-making, as well as for society in general.

In order to provide some up-to-date population-based information on epidemiological aspects of chronic diseases in developing countries, this article examines the prevalence of major chronic diseases and their relationships with sociodemographic status and selected lifestyle risk factors in a representative sample of the adult population in rural Vietnam. Assessing prevalence, as well the social pattern of chronic diseases, is a key step required in planning of programmes on prevention and control of the burden of chronic diseases.

Material and methods

Study design and setting

This was a cross-sectional study. The study setting was the Bavi district of Vietnam. This is a rural district located in northern Vietnam, 60 km west of Hanoi. The district has a population of about 238,000, and covers an area of 410 km², including lowland, highland and mountainous areas. Agricultural production and livestock breeding are the main economic activities of the local people. This study was conducted in 2005 within the framework of a demographic surveillance system called FilaBavi (Epidemiological Field Laboratory of Bavi). More detailed descriptions of the Bavi district and FilaBavi can be found elsewhere [8].

Sample size, sampling and data collection

Taking advantage of FilaBavi's sampling frame [8], a sample of 2500 adults aged 25–74 years was selected using a stratified random-sampling method; there were approximately 250 individuals in each sex and 10-year age group. Data were collected through a personal household interview conducted by 12 trained fieldworkers. Data quality was controlled in the field by supervisors as well as by the investigators of this study. Of the 2500 subjects selected from the FilaBavi study base, 2484 (1268 men and 1216 women) responded to the survey (response rate of 99.3%).

Survey instrument and measurements

The structured questionnaire was used to collect information on self-reported chronic diseases and major lifestyle risk factors, as well as sociodemographic information.

Self-reported chronic diseases. Respondents were asked whether they had been told by a health worker that they had chronic joint problems, heart and circulatory conditions, cancer, diabetes, chronic pulmonary diseases, or psychological illness. The total number of chronic diseases was calculated by the summation of the number of positive responses to these questions.

Major lifestyle risk factors. These included current smoking habit and alcohol use. Those who answered “yes” to the question “Do you currently smoke any tobacco products, such as cigarettes, cigars or pipes?” were classified as current smokers; otherwise, they were classified as non-current smokers. Current at-risk drinkers were defined as those who consumed, during the month preceding the survey, a large amount of alcohol (three or more standard drinks per day among men, and two or more standard drinks per day among women) [9].

Socioeconomic status. The socioeconomic status of the study subjects was estimated by assessing educational level, occupational status, and the present economic condition of the household. Educational level was categorized into three groups: (a) less than secondary school (completion of any school level from the first to the sixth class, or none); (b) secondary school (completion of school level from the seventh to the ninth class); and (c) high school and higher. Occupational status (main occupation of the study subjects) was grouped as: (a) farmer; (b) government staff; and (c) other jobs (small traders, temporary workers, housekeepers, handicraft makers, jobless, etc.). The economic condition of households was classified by the local authorities as: (a) poor (the average income per person per month is less than VND 100,000 or US\$6.3); (b) middle (the average income per person per month is VND 100,000–600,000 or US\$6.3–63.0); and (c) rich (the average income per person per month is greater than VND 600,000 or US\$63.0).

Statistical methods

Both descriptive and analytical statistical analyses were carried out using Stata8 software (Stata Corporation). Proportions of variables of interest, together with corresponding 95% confidence intervals, were calculated. Multivariate logistic regression modelling was performed to examine the probability of having any chronic disease of interest in relation to risk factors and sociodemographic status. A significance level of $p < 0.05$ was used.

Ethical considerations

The protocol of this study was approved by the Scientific and Ethical Committee in Biomedical Research, Hanoi Medical University. All human subjects in the study were asked for their consent before collection of data, and all had complete rights to withdraw from the study at any time without any threats or disadvantages. The Research Ethics Committee at Umeå University has given ethical approval for the FilaBavi household surveillance system, including data collection on vital statistics (reference number 02-420).

Results

The sociodemographic characteristics of the final study sample are described in Table I. Chronic diseases were commonly reported among the respondents. As shown in Table II, 39% of respondents reported at least one of the chronic diseases of interest. More than 10% of them reported having two or more chronic conditions.

Table III shows the prevalence of common chronic diseases and selected lifestyle risk factors by gender and age. Pulmonary diseases and chronic joint problems were the most commonly reported conditions (18% and 16%, respectively), whereas diabetes and cancer were reported by fewer than 1% of the respondents.

Smoking was the main form of tobacco use in Bavi, and the prevalence of current smoking was high among men (59%) as compared with women (0.7%). The same was true for at-risk alcohol

Table II. Self-reported number of chronic diseases, Bavi district, Vietnam, 2005.

Number of chronic diseases	Men, <i>n</i> (%)	Women, <i>n</i> (%)	Both genders, <i>N</i> (%)
0	748 (61.5)	771 (60.8)	1519 (61.2)
1	331 (27.2)	370 (29.18)	701 (28.2)
2	101 (8.3)	102 (8.04)	203 (8.2)
3	28 (2.3)	23 (1.81)	51 (2.0)
4	8 (0.7)	2 (0.16)	10 (0.4)
5	1216 (100)	1268 (100)	2484 (100)

drinking. While 67% of men reported that they had consumed three or more alcoholic drinks during the last month, only 3% of women reported that they had taken two or more alcoholic drinks during the same period. The prevalence of the lifestyle risk factors did not vary constantly across ages.

Multivariate logistic analyses of the effects of sociodemographic status and risk factors on chronic diseases are shown in Table IV. It can be seen that, in both genders, people who were older, or those with lower education and/or those did other jobs, had a higher probability of having at least one chronic disease of interest. However, economic status was found to be inversely correlated with the probability of having at least one chronic disease among women only. Poor women had a significantly higher probability of having at least one chronic disease than better-off women.

Table IV also shows that smoking and at-risk alcohol use increased the probability of having at least one chronic disease. However, the association between having any chronic disease of interest and smoking status was only significant in men.

Table I. Characteristics of the final study sample, Bavi district, Vietnam, 2005.

	Men, <i>n</i> (%)	Women, <i>n</i> (%)	Both genders, <i>n</i> (%)
Total	1268 (100)	1216 (100)	2484 (100)
Age (years)			
25–44	524 (41.3)	504 (41.5)	1028 (41.4)
45–64	509 (40.1)	493 (40.5)	1002 (40.3)
65–74	235 (18.6)	219 (18.0)	454 (18.3)
Education			
Less than secondary school	501 (37.8)	211 (16.6)	712 (27.4)
Secondary school	683 (51.5)	802 (63.2)	1485 (57.2)
High school and higher	141 (10.7)	257 (20.2)	398 (15.4)
Occupation			
Farmer	892 (67.3)	686 (54.0)	1578 (60.8)
Government staff	80 (6.0)	157 (12.4)	237 (9.1)
Other jobs	353 (26.7)	427 (33.6)	780 (30.1)
Economic status			
Poor	156 (11.9)	140 (11.1)	296 (11.5)
Middle	844 (64.6)	812 (64.4)	1656 (64.5)
Rich	306 (23.5)	309 (24.5)	615 (24.0)

Table III. Prevalence of common chronic diseases and risk factors by gender and age, Bavi district, Vietnam, 2005.

	Men, % (95% confidence interval)				Women, % (95% confidence interval)				Both genders, % (95% confidence interval), 25–74 years
	25–44 years	45–64 years	65–74 years	All 25–74 years	25–44 years	45–64 years	65–74 years	All 25–74 years	
Any chronic disease	26.2 (22.3–30.0)	40 (35.6–44.3)	63.5 (57.0–69.9)	39.1 (36.4–41.8)	31.1 (27.1–35.1)	43.0 (38.7–47.3)	48.9 (42.5–55.4)	39.6 (37–42.3)	39.4 (37.5–41.2)
Joint problems	8.5 (6.1–11.0)	13.1 (10.1–16.1)	25.1 (19.3–30.9)	13.4 (11.6–15.3)	10.1 (7.5–12.7)	24.8 (21–28.6)	18.7 (13.7–23.7)	17.7 (15.7–19.8)	15.6 (14.2–17.0)
Stroke	0.8 (0.1–1.6)	1.8 (0.6–3.0)	5.0 (2.1–7.9)	2.0 (1.2–2.7)	0.7 (0.0–1.5)	0.7 (0.0–1.6)	0.4 (0.0–1.2)	0.7 (0.3–1.2)	1.3 (0.9–1.8)
Heart disease	3.8 (2.1–5.4)	9.4 (6.8–12.0)	16 (11.1–20.9)	8.5 (6.9–10.0)	5.4 (3.4–7.3)	9.4 (6.9–12)	11.9 (7.7–16.1)	8.6 (7–10.1)	8.5 (7.5–9.6)
Diabetes	0.6 (0.1–1.3)	0.4 (0.1–1.0)	0 (0–0)	0.4 (0.1–0.7)	0.2 (0.1–0.6)	0.2 (0.0–0.6)	0.4 (0.1–1.3)	0.3 (0.1–0.6)	0.3 (0.1–0.6)
Pulmonary disease	12.7 (9.8–15.6)	20 (16.5–23.6)	32.4 (26.2–38.7)	19.9 (17.7–22.1)	14.4 (11.3–17.4)	16.3 (13.1–19.5)	20.9 (15.6–26.1)	16.7 (14.6–18.7)	18.3 (16.9–19.8)
Hypertension	4.2 (2.4–5.9)	9.9 (7.2–12.6)	23.3 (17.6–28.9)	9.9 (8.2–11.5)	2.9 (1.5–4.4)	7.7 (5.3–10)	15.3 (10.7–20.0)	7.3 (5.9–8.7)	8.6 (7.5–9.7)
Cancer	0.2 (0.0–0.6)	0 (0–0)	0 (0–0)	0.1 (0.0–0.2)	1.2 (0.2–2.1)	0.6 (0.1–1.3)	0 (0–0)	0.7 (0.2–1.1)	0.4 (0.1–0.6)
Current smoking	67.5 (63.4–71.6)	58.2 (53.8–62.6)	38.5 (32.0–45.0)	58.8 (56.1–61.5)	0.8 (0.0–1.5)	0.6 (0.1–1.3)	0.9 (0.1–2.0)	0.7 (0.2–1.1)	29.2 (27.4–30.9)
Current at-risk drinking	66.7 (62.5–70.8)	59 (54.7–63.4)	53.4 (46.8–60.1)	60.9 (58.3–63.6)	3.2 (1.7–4.8)	5.1 (3.2–7.0)	7.7 (4.2–11.1)	5.0 (3.8–6.2)	32.1 (30.3–33.9)

Table IV. Multivariate logistic analyses of association between having any chronic disease of interest with sociodemographic status and risk factors, Bavi district, Vietnam, 2005.

Characteristics	Having any chronic disease of interest (odds ratios and 95% confidence intervals)	
	Men	Women
Age (years)		
25–44	1	1
45–64	1.7 (1.3–2.3) ^a	1.1 (1.0–1.4) ^a
65–74	2.8 (1.9–4.2) ^a	1.6 (1.4–1.9) ^a
Education		
Less than secondary school	2.4 (1.5, 3.7)*	2.7 (1.7, 4.3)*
Secondary school	1.0 (0.8–1.5)	0.6 (0.4–1.0)
High school and higher	1	1
Occupation		
Farmer	1	1
Government staff	0.7 (0.4–1.0)	1.2 (0.7–2.0)
Other jobs	1.8 (1.3–2.4) ^a	1.7 (1.2–2.3) ^a
Economic status		
Poor	0.8 (0.6–1.6)	1.4 (1.1–2.2) ^a
Middle	1.4 (1.0–1.9)	1.1 (0.8–1.6)
Rich	1	1
Current smoking		
Yes	1.6 (1.3–2.1) ^a	0.6 (0.1–2.6)
No	1	1
Current at-risk alcohol drinking		
Yes	1.7 (1.3–2.2) ^a	3.5 (1.6–7.7) ^a
No	1	1

^aStatistically significant results.

As the prevalences of smoking and at-risk drinking among women were low, joint effects of age and lifestyle risk factors on chronic disease were only examined for men. As compared with non-smoking and non-at-risk-drinking men aged 25–44 years, the probability of having at least one chronic disease was 3.2 times higher among the men in the same age group who had both smoked and consumed three or more alcoholic drinks during the last month, and 4.9 times higher among men aged 65–74 years who had both smoked and consumed three or more alcoholic drinks during the last month. However, the differences were not statistically significant (data not shown).

Discussion

The overall prevalence of chronic diseases of 39% found in this study indicates that the conditions already affect a large proportion of the adult population in the Bavi district. This figure was close to the 38% found in China [10] and lower than the 43% found in Japan [11] and the 77% found in the

USA [12]. A household survey conducted in Vietnam [13] found a slightly lower prevalence of self-reported pulmonary heart diseases (16%), joint problems (12%), and heart diseases (5%). A study by Giang and Allebeck [14], conducted in FilaBavi in 2000, reported a much lower prevalence of heart diseases (0.6%), because they included only those conditions that required regular medical check-ups.

The present study also shows that there is a high prevalence of current smoking and at-risk alcohol use among the adult population in the study setting. Recent studies carried out in Bavi also found a similar prevalence of smoking (58% among men and 0.1% among women) [15] and at-risk alcohol drinking (59% among men and 2% among women) [16].

The findings of the present study indicate that increasing age is associated with higher occurrence of chronic diseases in both genders. The fact that chronic diseases were more prevalent among older people is in concordance with the findings from a previous Vietnamese survey [13] as well as other international publications [17–20].

We found that the prevalence of chronic diseases is significantly higher among those with lower education. This fact probably reflects higher education being associated with increased knowledge about health matters, leading to consequent reductions in ill-health and risky health behaviours. This inverse association was also found in the previous local studies [13,14] as well as in the international literature [19,21].

In term of occupational status, people doing other jobs (small traders, temporary workers, jobless, etc.) had more chronic diseases than farmers. People doing other jobs were also shown to be more likely to have hypertension than farmers [22]. There was a higher prevalence of chronic diseases among people doing other jobs, possibly because of unhealthy lifestyles and job pressure.

In this study, economic status was found to be inversely associated with the probability of having at least one chronic disease among women only. A higher occurrence of chronic diseases among poor women than among better-off women could possibly be explained by Barker's hypothesis about infant origins of chronic adult diseases [23–25]. In fact, in the past, Vietnamese people valued boys over girls, and often took better care of boys; as a consequence, undernutrition rates were higher among girls than among boys [26].

In line with the existing knowledge of the harmful effects of smoking [2,27–29] and at-risk alcohol use [2,27,30,31], the findings of this study show that

these unhealthy lifestyle risk factors are associated with a higher prevalence of chronic diseases.

We found that the combination of three risk factors (old age, smoking, and at-risk drinking) increased the probability of having at least one chronic disease, even though the joint effects were not statistically significant. The non-significant results were possibly due to this study's small sample size. The problem of unhealthy lifestyles among older people must be considered seriously. Preventive actions against smoking and at-risk drinking should be taken as early in life as possible.

Some methodological limitations of this study must be taken into consideration. First, self-reported morbidity might not be totally accurate, because of recall bias. The reported prevalence of chronic diseases found in this study was likely to be a rough estimate, because only diagnoses that were recalled were counted. Second, owing to the cross-sectional nature of the data, the causal relationship between chronic conditions and sociodemographic status and lifestyle cannot be determined.

In summary, the findings from this study indicate that chronic conditions, smoking and at-risk alcohol use were quite common among the adult population in rural Vietnam. There is an association between chronic diseases and lower socioeconomic status and unhealthy lifestyle risk factors.

Given the evidence, actions to reduce the levels of chronic diseases in rural setting are clearly urgently needed. Interventions should be comprehensive and integrated, including both primary and secondary approaches, as well as policy-level involvement. The highest priorities should be put on primary prevention to reduce the level of smoking and at-risk alcohol use, as these are shown to be problems in the rural setting. The interventions should address all people in society, with a focus on disadvantaged groups, especially poor women.

This is a preliminary study of chronic diseases in a rural setting in a transitional country. Further studies over longer periods of time and deeper analyses are required to give greater insights into the epidemiological aspects of chronic diseases.

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