Knowledge, attitudes, and practices about tuberculosis and choice of communication channels in a rural community in Vietnam

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ABSTRACT

Objectives: To describe the TB knowledge in the general population and to analyze which methods and tools should be used for health education in community.
Methods: A population-based cross-sectional survey was carried out within a demographic surveillance site in a rural district in Vietnam. A random sample of 12,143 adults was included.
Results: The average knowledge score was 4.3 ± 2.1 (maximum = 8). Men had a significantly higher knowledge score than women (4.8 vs. 4.0). More than half of the respondents thought TB was hereditary. In a multivariate analysis, gender, occupation, economic status, education, and sources of information were significantly associated with level of TB knowledge. Commonly, reported sources of information included television (64.6%) and friends/relatives (42.7%). Sources of information differed between men and women. Commonly, television and loudspeakers were suggested as good ways of supplying information (70.4% and 55.1%).
Conclusions: A large proportion of general population had limited knowledge of TB, especially among women. Traditional beliefs such as a hereditary cause of TB persists in the population, despite many years of health education on TB. Access to information should be taken into consideration when choosing methods and channels for health education programmes.

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1. Introduction

Tuberculosis (TB) is one of the greatest public health problems in the world. About 95% of all TB cases and 99% of deaths due to TB occur in low-income countries [1]. Vietnam ranks thirteenth among the world's nations in terms of numbers of TB cases [2]. Vietnam is one of only a few countries with a high TB burden that have reached the WHO targets on case finding and treatment success [2]. Despite these successful results, there are indications that the incidence of TB is increasing [2,3]. Major obstacles to sustain effective TB control in Vietnam include inequities in access to qualified health care [4,5] and the increasingly active but poorly regulated private health sector [6]. The National TB programme in Vietnam has set high standards for their preventive work with TB, including continuous work with nation-wide information campaigns, though the impact of these has rarely been evaluated.

Health education continues to be one of the most important strategies in the fight against TB. Efforts are directed at patients to make them more informed and aware of all aspects of TB disease, its treatment and the basic rules to prevent the spread of infection to others in the community. Health education plays a key role in encouraging patients to seek diagnosis for TB and to adhere to the treatment regimen [7,8]. To receive a timely TB diagnosis, patients must recognise the disease symptoms/signs and present themselves to the health care provider for TB diagnosis. The most

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important starting point is early recognition of the symptoms suggestive of TB. Moreover, health-seeking behaviour is not only decided by the individual patient's knowledge, attitudes and practices. Rather, it is a complex function of these factors in addition to socio-cultural and societal determinants such as stigma, gender and socio-economic inequities which steers when and where a patient will seek care for TB symptoms.

The main aim of this study was to describe the knowledge of TB, TB-associated stigma and suggested actions in response to TB symptoms in relation to socio-demographic factors among men and women in a rural Vietnamese population. The study also analyzed community perceptions of which communication channels should be used for health education at the community level.

2. Materials and methods

The study was conducted in 2005 within a demographic surveillance site in a northern rural district of Vietnam: Bavi (FilaBavi). The population of Bavi district at the time of the study was 242,780. The sample size for FilaBavi includes 69 out of 352 randomly selected clusters (probability proportional to size) comprising 11,547 households with 49,893 inhabitants, or about one-fifth of the total district population [9].

A population-based cross-sectional survey was carried out during July–September 2005. During the survey, all households were visited by specially trained interviewers. For each household, one adult ($\geq$15 year old) was chosen for survey; if in the first household a man was interviewed (if a man was not available a women would be replace him) then in the next household a woman was selected for interview (if a women was not available a man would replace her). If there was more than one adult who met the inclusion criteria for the study in the household at the time of interview, one study subject was randomly selected. The questionnaire included information about socio-demographic characteristics (age, sex, ethnicity, education, occupation, economic, marital status, health insurance, smoking, etc.), knowledge and attitudes about TB, its treatment and prevention and what the individual would do to solve some common situations related to active TB disease. The interviewees were also asked how and from which sources they had received TB information. The questionnaire was compiled and modified from the National TB Programme guidelines [10] and previous qualitative studies [11,12] and piloted to make sure that all questions were clear and understandable. Answers were categorized into either correct (if matching the medically correct answer from the NTP guidelines), or incorrect. One score was given for each of the correct answers.

Data was processed and analyzed in Epi-Info 6.04 (CDC) and in Stata 8 software (Stata Corporation, College Station, TX, USA). The chi-square test was used to assess significant differences between proportions. The knowledge score was analyzed using analysis of variance to examine mean score differences among different groups. One-way ANOVA was used for analysis with normally distributed data; and non-parametric tests were used for data with skewed distributions. Multiple linear regression analysis was done to identify factors influencing knowledge score. The following variables were included as independent variables in the multiple regression model: age, sex, level of education, economic status and occupation.

Ethical permission for the study was obtained from the Ministry of Health and local authorities of the Bavi district, Vietnam.

3. Results

The general characteristics of the respondents are presented in Table 1. More men than women reported being smokers (59% vs. 0.7%, $p < 0.0001$) and more men than women reported having a health insurance (25% vs. 19%, $p < 0.001$).

3.1. Knowledge about tuberculosis

Among the 12,143 people surveyed, only 15% reported that bacteria caused TB (Table 2). More than half of the respondents (6219 persons) thought that TB was hereditary. Approximately one-third of respondents (31.4%) did not know any TB suggestive symptoms. Cough was the most frequently mentioned symptom (92.5%). Only 38% of the respondents considered sputum examination essential for a diagnosis. The majority of all respondents reported that TB was curable. Only about half of the people (50.2%) knew that TB drugs are free of charge (Table 2).

The average score for overall knowledge was 4.3 (S.D. = 2.1; maximum = 8). There were 539 respondents

Table 1
Socio-demographic characteristics of 12,143 persons

Characteristic	n	%
Age group (years)		
15–34	3,834	31.6
35–54	5,288	43.6
$\geq$55	3,021	24.8
Sex		
Male	5,069	41.7
Female	7,074	58.3
Ethnicity		
Kinh	11,687	96.2
Other	456	3.8
Occupation		
Farmer	7,606	62.6
Other	4,537	37.4
Education		
Illiterate	260	2.1
Primary school	3,220	26.5
Secondary school	6,301	51.9
High school	1,520	12.6
University	842	6.9
Marital status		
Married	9,244	76.1
Other (single, divorced, etc.)	2,899	23.9
Economic classification		
Very poor	43	0.3
Poor	1,349	11.1
Average	7,197	59.3
Above average	2,806	23.1
Rich	748	6.2

Table 2
Knowledge about TB among adults in Bavi district

Statement	Accurate answer		
	Women ($n = 7074$) n (%)	Men ($n = 5069$) n (%)	p-Value[+]
Cause of TB (*Germ/bacillus*)	857 (12.1)	976 (19.3)	<0.001
Transmission of TB	6163 (87.1)	4528 (89.3)	<0.001
Mode of transmission (airborne route)	4047 (65.7)	3529 (77.9)	<0.001
Symptoms of pulmonary TB			
Know at least one suggestive symptom	4585 (64.8)	3746 (73.9)	<0.001
Cough for 2 weeks or more[a]	4217 (92.0)	3492 (93.2)	<0.05
Fever[a]	1519 (33.1)	1547 (41.3)	<0.001
Chest pain[a]	336 (7.3)	392 (10.5)	<0.001
Loss of weight[a]	796 (17.4)	775 (20.7)	<0.001
Haemoptysis[a]	791 (17.3)	577 (15.4)	<0.05
Know most effective diagnostic tool (sputum smear examination)	2250 (54.5)	2363 (66.0)	<0.001
TB treatment			
TB is treatable	4920 (69.6)	4067 (80.2)	<0.001
TB drug is free of charge	3207 (45.3)	2887 (57.0)	<0.001
Prevention of TB			
TB is preventable	1937 (27.4)	2244 (44.3)	<0.001
Diagnosis and treatment for TB patient[b]	711 (36.7)	656 (29.2)	<0.001
BCG vaccination[b]	148 (6.6)	165 (8.5)	<0.05
Other (hygiene, non-smoking, good nutrition, etc.)[b]	1321 (68.2)	1778 (79.2)	<0.001

[a] Percentages are of the persons that knew at least one symptom.

[b] Percentages are of the persons that knew TB is preventable.

[+] p-Value was calculated for the comparison of the proportion of men and women giving the correct answer.

(4.4%) who answered all eight questions correctly. However, 4.7% people could not answer any question correctly.

In a multiple linear regression analysis, male, higher education, higher economic status, being married, aged younger than 55, and not being a farmer were significantly associated with increased knowledge scores (Table 3). The regression coefficient (increased score), for males was estimated at 0.5 scores (95% CI 0.4–0.6), for not being a farmer at 0.2 scores, for being married at 0.5 scores, and for aged younger than 55 at 0.6 scores. The effect of economic status and education level on knowledge score was considered greater than other factors (Table 3).

3.2. Attitudes and social consequences

Near half (43%) of the respondents answered they would be afraid and depressed if they got TB. The mean knowledge score of these people was significantly lower than among the people who would not be afraid (4.1 vs. 4.5, $p < 0.01$). More women than men associated heavy stigma with a TB diagnosis (48.7% vs. 35.1%, $p < 0.0001$). More women than men would hide their TB diagnosis from friends and neighbours (12.8% vs. 10.9%, $p < 0.01$). However, a majority of study subjects reported that they would inform their family members if they had TB (94.2% among both sexes).

In a given scenario of having suffered from cough for more than 2 weeks, more women (96.8%) than men (95.2%) would take healthcare action including self-medication ($p < 0.001$). The most common reason for not taking action was that the symptom was not considered serious (50.4%). The general healthcare-seeking pattern was quite similar among women and men, with a preference by both genders for private providers as their first healthcare action (31%)

followed by district hospital (27%), commune health center (25%) and self-medication (17%). However, significantly more men than women sought care at the district hospital (31.7% vs. 24.2%, $p < 0.001$). Hospital care seeking was significantly related to mean knowledge score. In the group who intended to visit a hospital, the mean knowledge score was 5.0 (S.D. = 1.9) compared with 4.1 (S.D. = 2.1) among who did not intend visiting a hospital ($p < 0.01$).

3.3. Sources of information about TB

Among 12,143 households, 84.5% had their own television and 21.2% their own radio. The respondents reported receiving TB information from various sources. On average, there were 1.4 sources per person (S.D. = 0.8). The most commonly reported sources of information included television (64.6%) and friends/relatives (42.7%) (Table 4). More men than women reported receiving TB information from TV (71.4% vs. 59.9%, $p < 0.001$). On the other hand, more women than men reported friends or relatives as sources of information about TB (46.2% vs. 37.8%, $p < 0.001$).

Sources of information also affected TB knowledge. People who reported having received information from friends or relatives had an average knowledge score of 5.3 (S.D. = 2.4); from television 6.4 (S.D. = 2.4); and from loudspeakers 7.4 (S.D. = 2.5). These differences were significant, $p < 0.001$.

3.4. Selected communication channels by community people

Community people suggested that TB information should be disseminated through more than one chan-

Table 3
Multiple linear regression analysis with knowledge score as dependent variable

Factors	Mean of knowledge score	Regression coefficient	95% CI	*p*-Value
Sex				
Female	4.0	Control		
Male	4.8	0.52	0.45–0.59	<0.001
Age (years)				
15–54	4.3	0.62	0.53–0.71	<0.001
55+	4.3	Control		
Occupation				
Farmer	4.1	Control		
Other	4.7	0.20	0.12–0.28	<0.001
Economic classification				
Very poor	2.3	Control		
Poor	3.6	0.89	0.33–1.45	<0.05
Average	4.2	0.99	0.44–1.55	<0.001
Above average	4.9	1.39	0.83–1.94	<0.001
Rich	5.3	1.57	0.99–2.15	<0.001
Education				
Illiterate	2.3	Control		
Primary school	3.5	1.00	0.76–1.24	<0.001
Secondary school	4.4	2.02	1.78–2.27	<0.001
High school	5.1	2.70	2.44–2.96	<0.001
University	6.1	3.38	3.11–3.65	<0.001
Marital status				
Married	4.7	0.46	0.37–0.54	<0.001
Other	3.8	Control		

Table 4
Sources of TB information (persons could list more than one option)

Source	Total (*n* = 12,143) (%)	Male (*n* = 5069) (%)	Female (*n* = 7074) (%)	*p*-Value
Television	64.6	71.1	59.9	<0.001
Radio	12.7	16.3	10.1	<0.001
Community meeting	1.4	1.2	1.5	>0.05
Health worker	3.5	3.9	3.1	<0.05
Newspaper	7.1	9.9	5.1	<0.001
Friend/relative	42.7	37.8	46.2	<0.001
Poster	4.6	5.0	4.3	>0.05
Loudspeaker[a]	3.8	4.1	3.6	>0.05
Other	6.4	5.7	7.0	<0.01

[a] Loudspeaker is system for the purpose of government propaganda/health teaching at village.

nel. The average number of channels suggested was 2.1 (S.D. = 1.1). Commonly suggested channels were television and loudspeakers (70.4% and 55.1%). Following were community meeting (26.5%), radio (25.0%), newspaper (11.2%), poster (9.7%) and health staff (8.1%).

The channels suggested varied between men and women. For example, 74.5% of men and 55.8% of women suggested TB information should be spread by TV; by radio 27.9% vs. 22.9% (*p* < 0.001); and by newspapers 13.8% vs. 9.3% (*p* < 0.001).

4. Discussion

Despite the health education campaigns of the Vietnamese NTP during recent years, in our study, knowledge about basic facts related to TB was, in general, poor. Most strikingly, more than half of the respondents thought TB is a hereditary disease. More than one-third of the interviewees associated TB with heavy stigma, and thought being diagnosed with TB would be depressing and very worrisome. Stigma was more frequently brought up by women than men. During the last decade earlier studies from our group have shown how prevailing traditional beliefs on TB were common among TB patients as well as among cough subjects in the general population [4,11], and how especially women with TB risk being under detected [5]. Fear of stigma and social isolation will lead to a patient delay to a TB diagnosis and contribute to a persistent under reporting, especially among women. A reason for this could be that the NTP's message about TB has not been contextualised with traditionally held beliefs. To be successful, any educational program must begin with an understanding of the knowledge base of the target population and relate traditional beliefs and perceptions about the disease to modern medical knowledge. If one purpose of health education is to have an impact on the social consequences of the disease and to diminish associated stigma, health education needs to be designed to approach these traditional beliefs in a sensitive way, addressing the context and specific needs of the targeted population.

The respondents commonly reported sources of information that included television (65%). However, women access mass media less than men. The possibility of having access to TV (or other kinds of media) is related to many different factors, such as gender, age, and socio-economic status [12]. In addition, people cannot be exposed to a message if that message is not made available to them. We also found that 42.7% of individuals reported the source of TB information as friends and relatives. Some other authors also showed that TB suspects were advised by family members and neighbours to see health care providers [13,14]. To improve the knowledge level of the general population in Vietnam, the NTP could use TB educated community members for health education activities as they often fit well within the context and culture of the target group. The involvement of the community in TB care can help to reduce the stigma of the disease by proving its curability, and making treatment more accessible to patients, thereby overcoming many of the barriers to both initial diagnosis and completion of treatment.

In an earlier study, we found that knowledge and practices regarding TB and NTP were insufficient among health care staff at basic health care facilities, especially staff who worked at the district hospital and village health workers [15]. To be effective, a NTP must have the enthusiastic support of a well-informed medical professional. This will require giving high priority to training for health staff. Interpersonal communication is the most effective method of communicating health information [16]. However, key communicators need the necessary skills to carry out activities that allow discussions, feedback and explanation with the target audience.

Despite the targeted health education campaigns by the NTP in Vietnam ongoing since 1995, we did not find any signs of an improvement of knowledge in the here presented study, which took place about a decade later. The study setting, Bavi district is a rural area, and 80% of the population in Vietnam are estimated to live in rural areas. Rural communities are likely to have different education needs and the specified channels of communication may be more or less effective in rural versus urban areas. Even though literacy is high also in rural areas in Vietnam, it has earlier been shown that traditional gender structures and disease related stigma are more dominant in rural areas [11,14,17]. These structures need to be acknowledged and recognised in the health education campaigns that are undertaken. The rapid economic growth and urbanization in parts of the Vietnamese society, leads to wider gaps between urban and rural areas in terms of public health as well as responsiveness to health education campaigns of different modalities. It is thus not enough to develop a 'one size fits all' TB campaign, but the special needs of the Vietnamese rural population need to be taken into account. The use of more than one channel should be considered to make TB health education activities more effective.

Without reducing stigma and traditional beliefs of TB the barriers to health care seeking for TB symptoms will not be reduced, and the fight against the epidemic will remain futile despite the ambitious Vietnamese national TB programme.

5. Conclusions

In general, knowledge about TB within the population was not adequate despite NTP health education programmes. We found that the social stigma attached to TB is still a common concern in community. To reduce stigma caused by traditional beliefs and negative attitudes towards TB, basic knowledge about the cause and mode of transmission is necessary. The fear and stigma associated with TB seems to have a greater impact on women than on men. Nearly half of respondents would go to private practitioners or self-medication for care if they have coughed more than 2 weeks. People commonly reported sources of information that included television and friends/relatives. Hence, a wider approach is needed in order not to create barriers to health education messages.

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