



Awareness of the risk factors for diabetes and hypertension among the Vietnamese and Japanese populations

Miyako Kishimoto¹, MD PhD, Son Pham Thai², MD Msc, Hiroshi Kajio¹, MD PhD, Quang Nguyen Ngoc², MD Msc, Yumi Matsushita¹, PhD, Quyên Dao Huyen², MD, Shuzo Kanagawa¹, MD, Hoa Pham Thi Hong², MD Msc, Yoshihiko Takahashi¹, MD PhD, Huong Nguyen Thi², Mitsuhiko Noda¹, MD PhD, Hanh Tran Thuy², MD PhD, Thuy Pham Thi Phuong², Loi Do Doan², MD PhD, Viet Nguyen Lan², MD PhD

¹International Medical Center of Japan (IMCJ), Tokyo, Japan

²Bach Mai Hospital, Hanoi, Vietnam

Abstract

Background: Diabetes and hypertension are known as risk factors of cardiovascular disease (CVD), and the identification of these risk factors is essential for preventing CVD. We assessed the awareness level with regard to CVD and the sources of information among the Vietnamese and Japanese populations.

Methods: The questionnaire for this study was completed by 155 rural Vietnamese, 147 urban Vietnamese, and 102 urban Japanese subjects, and 159 Japanese outpatients. They were asked to identify the risk factors for diabetes and hypertension and their sources of medical information by answering multiple-choice questions.

Results: Excessive sweet intake, lack of exercise, and obesity were cited as risk factors for diabetes by the urban Vietnamese and Japanese subjects. The most commonly cited risk factor for hypertension by the Japanese subjects was excessive salt intake, whereas obesity and alcohol consumption were cited by the urban and rural Vietnamese subjects, respectively. In both countries, medical information was mainly obtained from medical staff, but other mass media were also commonly used as sources of information.

Conclusion: Certain differences were observed in the level of awareness between the Japanese and Vietnamese and also between the Vietnamese urban and rural populations with regard to the risk factors for diabetes and hypertension. Thus, we think that information regarding modifiable risk factors must be tailored to suit subjects according to their nationality and their area of residence (urban or rural).

Key words: Diabetes, Hypertension, Risk factors

ASEAN HEART J 2009; 17 : 7-12

E-Journal : <http://www.aseanheartjournal.org>

Introduction

Diabetes and hypertension are considered to increase the risk of cardiovascular disease (CVD) (1-3). People with diabetes are 2-4 times more likely to develop CVD (4), and elevated systolic blood pressure (SBP) is an independent risk factor for CVD-related mortality in

Japanese men of all ages (5). Health promotion based on societal knowledge and perceptions regarding chronic diseases such as diabetes and hypertension is considered to be an essential component of any strategy that aims at disease control and prevention (6). Awareness alone is obviously not enough to improve cardiovascular health, but it is a prerequisite for making the right decisions with regard to health. To promote effective health management and to implement future protection programs, it is important for health professionals to recognize the level of awareness among the population with regard to diabetes and hypertension, and the sources of relevant medical information. For this purpose, we conducted a questionnaire study in Vietnam and Japan.

Correspondence to: Hiroshi Kajio, MD PhD
Director, Department of Diabetes and Metabolic Medicine,
International Medical Center of Japan, Toyama 1-21-1, Shinjuku-ku,
Tokyo 162-8655, Japan
Telephone: +81-3-3202-7181, Fax: +81-3-3207-1038
E-mail: hkajio@imej.hosp.go.jp

Methods

A community sample of 155 Vietnamese from a rural area (An Hiep commune of Thai Binh Province in Northern Vietnam), 147 Vietnamese from an urban area (Hanoi), 102 randomly selected urban Japanese subjects (Tokyo), and 159 Japanese outpatients who visited the Division of Diabetes, Endocrinology and Metabolism of the International Medical Center of Japan (Tokyo), completed the questionnaire study. First, self-reported data on whether the subjects were diabetic or hypertensive were obtained. The diagnosis of diabetes in the Vietnamese subjects was also confirmed by a 75-g oral glucose tolerance test (OGTT). Second, they were asked to identify the risk factors for diabetes and hypertension, which included smoking, obesity, excessive salt intake, excessive sweet intake, fatty food intake, excessive alcohol consumption, aging, lack of exercise, and stress; this was achieved by administering a questionnaire containing multiple-choice questions. Finally, the subjects were asked to list their sources of medical information from among the following

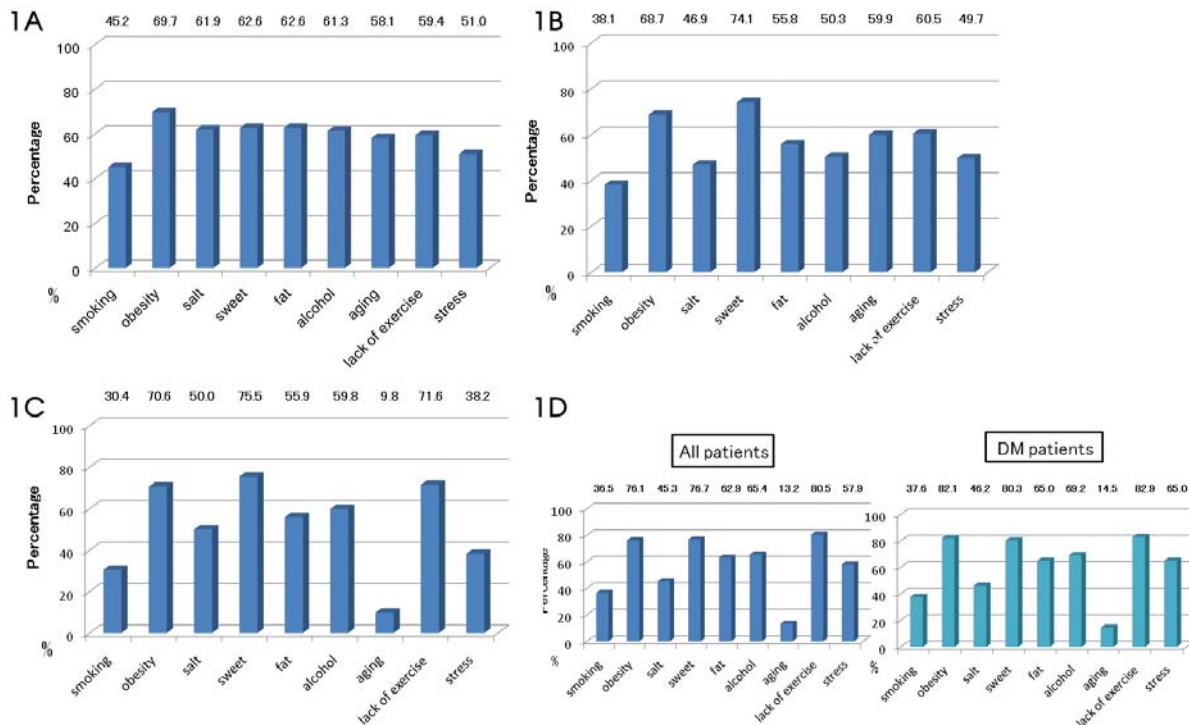
options: medical staff, friends and relatives, books and newspapers, TV and radio, internet, and others; this also followed a multiple-choice question format. This study was a part of the study titled “Studies on the identification of risk factors for the development of diabetes and metabolic syndrome in Vietnam,” which was approved by the Ethics Committee both in Vietnam and Japan.

Results

Subjects

The 155 rural Vietnamese subjects comprised 52 males and 103 females (mean [SD] age, 51.6 [13.3]; age range, 24-88 years). The 147 urban Vietnamese subjects comprised 57 males and 90 females (mean [SD] age, 52.6 [12.3]; age range, 57-90 years). The 102 rural Japanese subjects comprised 39 males and 63 females (mean [SD] age, 48.2 [15.6]; age range, 23-77 years). The 159 Japanese outpatients comprised 93 males and 66 females (mean [SD] age, 48.2 [15.6]; age range, 23-77 years).

Figure 1. Awareness of the risk factors for diabetes. The figure shows the percentage of subjects who identified a particular risk factor for diabetes: **a)** the rural Vietnamese, **b)** urban Vietnamese, **c)** urban Japanese subjects, and **d)** the Japanese outpatients. DM indicates diabetes.



Risk factors for diabetes

According to self-reports and the results of the 75-g OGTT, all the rural Vietnamese subjects were negative for diabetes. With regard to the risk factors for diabetes, more than 50% of the rural Vietnamese study population considered almost all the listed choices, except for smoking, as risk factors for diabetes (Figure 1a). Among the 147 urban Vietnamese subjects, 8 subjects (5.4%) were diabetic, and 4 (50%) of these diabetic patients stated that they were aware of the risk factors for diabetes. The urban Vietnamese subjects considered excessive sweet intake (74.1%), obesity (68.7%), and lack of exercise (60.5%) as the 3 major risk factors for diabetes among the listed choices, followed closely by aging (Figure 1b). Among the 102 urban Japanese subjects, 6 subjects (5.9%) were diabetic, and all these diabetic patients stated that they were aware of the risk factors for diabetes. The urban Japanese subjects considered excessive sweet intake (75.5%), lack of exercise (71.6%), and obesity (70.6%) as the 3 major risk factors for diabetes among the listed choices, which were the same as those selected by the urban Vietnamese subjects (Figure 1c). Most of the Japanese patients at the Division of Diabetes, Endocrinology and Metabolism of the International Medical Center of Japan were diabetic, while the rest had thyroid disease, hyperlipidemia, hyperuricacidemia, and other hormonal abnormalities. Among the 159 randomly selected outpatients, 117 (73.6%) were diabetic, and 104 (88.9%) of these diabetic patients stated that they were aware of the risk factors for diabetes. With regard to the risk factors for diabetes, the patterns of the results for all the patients and those for the diabetic patients were quite similar; the 3 major risk factors were lack of exercise (80.5% and 82.9% of the all patients and diabetic patients, respectively), excess sweet intake (76.7% and 80.3%, respectively), and obesity (76.1% and 82.1%, respectively) (Figure 1d).

Risk factors for hypertension

Among the 155 rural Vietnamese subjects, 18 (11.6%) were hypertensive, and 7 (38.9%) of these hypertensive subjects stated that they were aware of the risk factors for hypertension. The rural Vietnamese subjects considered excessive alcohol consumption (87.1%), obesity (83.9%), and smoking (80.6%) as the 3

major risk factors for hypertension, and 70.3% of these people identified excessive salt intake, which ranked seventh among the 9 factors listed in the questionnaires, as a risk for hypertension (Figure 2a). Among the 147 urban Vietnamese subjects, 33 (22.4%) were hypertensive, and 11 (33.3%) of these hypertensive subjects stated that they were aware of the risk factors for hypertension. The urban Vietnamese subjects considered obesity (79.6%), aging (78.9%), and excessive alcohol consumption (77.6%) to be the 3 major risk factors for hypertension. Although 66.7% of the urban Vietnamese subjects identified excessive salt intake as a risk factor for hypertension, it was ranked eighth among the 9 factors listed in the questionnaires (Figure 2b). Among the 102 urban Japanese subjects, 13 (12.7%) were hypertensive, and 10 (76.9%) of these hypertensive subjects stated that they were aware of the risk factors for hypertension. In all, 80.4% of the urban Japanese subjects considered excessive salt intake as a risk factor for hypertension, which was the most frequently selected choice among the listed risk factors (Figure 2c). Among the 159 Japanese outpatients, 58 subjects (36.5%) were hypertensive, and 49 (84.5%) of these hypertensive subjects stated that they were aware of the risk factors for hypertension. In all, 69.8% of the Japanese outpatients considered excessive salt intake as a risk factor for hypertension; it was the most frequently selected option among the listed risk factors. The patterns of the results for all the patients and for the hypertensive patients were quite similar (Figure 2d).

Sources of medical information

The sources of medical information for the rural Vietnamese subjects were as follows: medical staff (65.2%), TV/radio (61.9%), friends/relatives (52.9%), and books/newspapers (40.6%) (Figure 3a). For the urban Vietnamese subjects, the sources of information were as follows: TV/radio (79.6%), books/newspapers (64.9%), friends/relatives (63.9%), and medical staff (51%) (Figure 3b). The urban Japanese subjects indicated that they received most of their health information from the following sources: books/newspapers (55.9%), TV/radio (53.9%), medical staff (47.1%), friends/relatives (37.3%), and the internet (18.6%) (Figure 3c). The majority of the Japanese outpatients indicated that they mostly relied on medical staff for medical information (85.5%), followed

Figure 2. Awareness of risk factors for hypertension. The figure shows the percentage of subjects who identified a particular risk factor for hypertension: **a)** the rural Vietnamese, **b)** urban Vietnamese, **c)** urban Japanese subjects, and **d)** the Japanese outpatients. HT indicates hypertension.

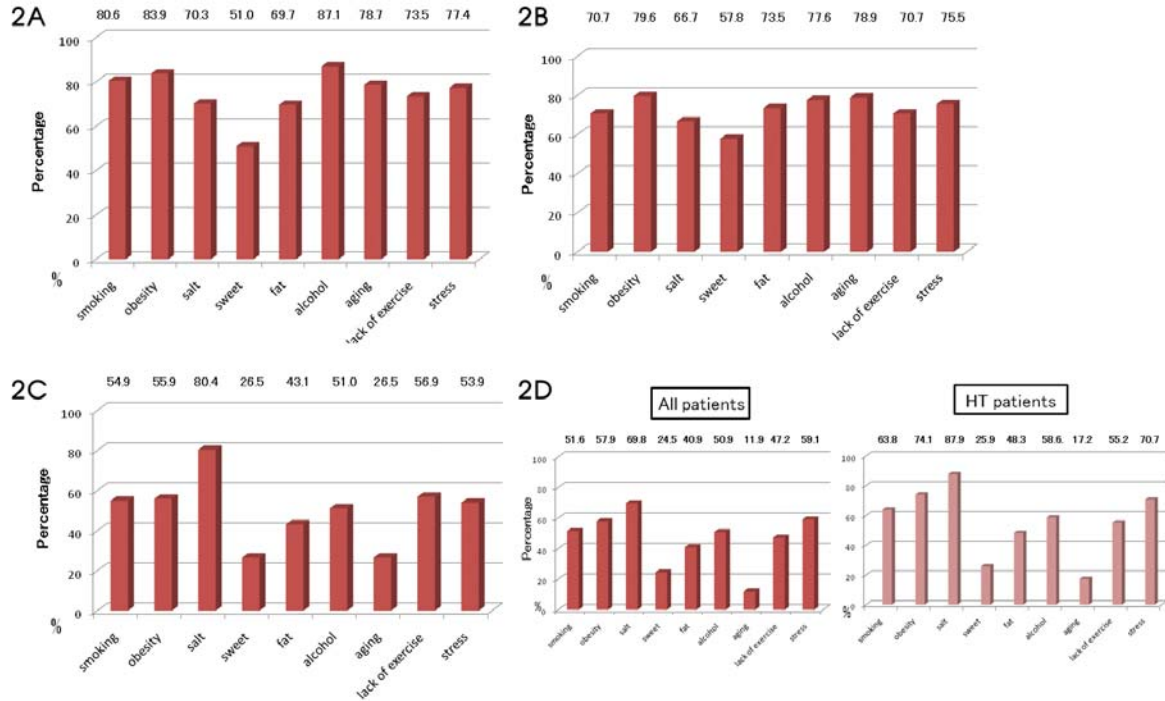
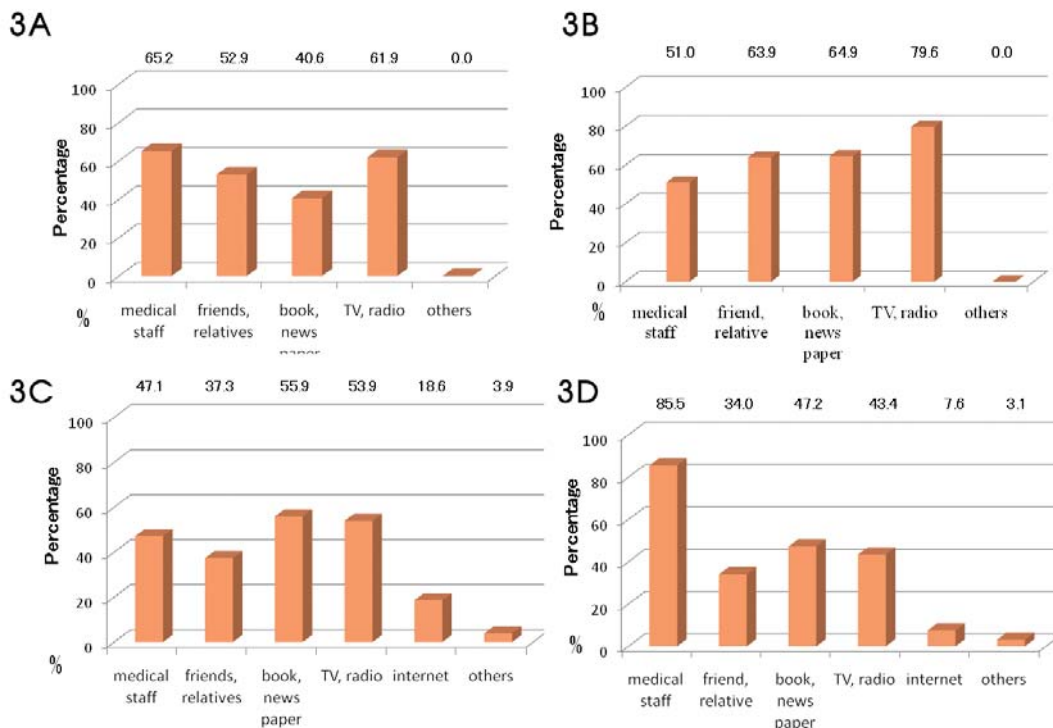


Figure 3. Sources of medical information. The figure shows the percentage of subjects who identified a particular source of medical information: **a)** the rural Vietnamese, **b)** urban Vietnamese, **c)** urban Japanese subjects, and **d)** the Japanese outpatients.



by books/newspaper (47.2%), TV/radio (43.4%), friends/relatives (34%), and the internet (7.5%) (Figure 3d). The other sources indicated by the urban Japanese subjects and the Japanese outpatients were open public lectures and seminars.

Discussion

In the present study, the authors sought to determine the awareness level regarding the risk factors, i.e., diabetes and hypertension, for CVD, as well as the sources of medical information, among the Vietnamese and Japanese populations. More than half of the rural Vietnamese subjects considered almost all the listed choices as risk factors for diabetes, whereas the urban Vietnamese subjects, urban Japanese subjects, and Japanese outpatients identified excessive sweet intake, obesity, and lack of exercise as risk factors. Various studies that were recently conducted in many parts of the world suggest that there is a lack of public awareness and knowledge of the various risk factors related to diabetes (7–9). Health promotion based on societal knowledge and perceptions regarding chronic diseases like diabetes is considered an essential component of any strategy that aims at disease control and prevention (6).

It was reported that greater consumption of sodium can increase the risk of hypertension (10). Reduced sodium intake is recommended for hypertensive patients and as a first line of intervention for persons with prehypertension (11). In Japan, government-led health campaigns have resulted in a considerable reduction in the general salt intake, and together with improved blood-pressure treatment, have brought about a reduction in the blood pressure in the general population (12). Other countries have also implemented salt-reduction strategies with some success. For example, in the UK, a government-promoted program in consort with the food-and-drink manufacturing industry reduced the salt content in almost a quarter of manufactured foods over several years (13–15). In our study, excessive salt intake was ranked seventh and eighth among the 9 listed factors by the rural and urban Vietnamese subjects, respectively, while it was ranked first by both the urban Japanese subjects and Japanese outpatients. The findings of this study cannot be extended to the general Vietnamese population because of selective sampling and the small sample size, however,

our findings lead to implications that appropriate public awareness and health information on the reduction of salt intake is necessary for the prevention of hypertension among Vietnamese populations.

Health information is a major component of health promotion (16). Awareness of the sources of medical information that individuals rely on will help in providing a rational basis for the development of effective public educational strategies that are also cost-effective. In our study, medical staff was the most commonly cited source of medical information by the rural Vietnamese subjects, while TV and radio were cited as sources by both the rural and urban Vietnamese subjects. The Japanese subjects acquired medical information from medical staff and mass media, including the internet, rather than from their friends and relatives. Additional research is required to determine the type or level of information received from each source and to determine how satisfied individuals are with the health information they receive (17).

In conclusion, certain differences were observed in the level of awareness regarding the risk factors for diabetes and hypertension between the Japanese and Vietnamese, and between the urban and rural populations in Vietnam. Thus, we think that the cultural and social background of individuals should be considered when disseminating information regarding modifiable risk factors.

Acknowledgement

This project was a part of the study “Studies on the identification of risk factors for the development of diabetes and metabolic syndrome in Vietnam” funded by the (1) Ministry of Health, Labor and Welfare of Japan, and (2) Japan Foundation for the Promotion of International Medical Research Cooperation.

A preliminary version of this data was presented at the 17th ASEAN Congress of Cardiology at Hanoi, Vietnam, in October 2008.

References

1. Rosamond W, Flegal K, Friday G, et al. Heart disease and stroke statistics-2007 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 2007; 115: e69-171.

2. Lawes CM, Rodgers A, Bennett DA, et al. Asia Pacific Cohort Studies Collaboration. Blood pressure and cardiovascular disease in the Asia Pacific region. *J Hypertens* 2003; 4: 707-16.
3. Lewington S, Clarke R, Qizilbash N, Peto R, Collins R. Prospective Studies Collaboration Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. *Lancet* 2002; 360: 1903-13.
4. Wu T, Brooks B, Yue D. Macrovascular disease: the sword of Damocles in diabetes. In: Turtle JR, Kaneko T, Osato S, eds. *Diabetes in the New Millennium*. Sydney: The Endocrinology and Diabetes Research Foundation of the University of Sydney, 1999; 403-14.
5. Okayama A, Kadowaki T, Okamura T, Hayakawa T, Ueshima H. The NIPPON DATA80 Research Group. Age-specific effects of systolic and diastolic blood pressures on mortality due to cardiovascular diseases among Japanese men (NIPPON DATA80). *J Hypertens* 2006; 3: 459-62.
6. Al Shafae MA, Al-Shukaili S, Rizvi SG, et al. Knowledge and perceptions of diabetes in a semi-urban Omani population. *BMC Public Health* 2008; 8: 249.
7. Gunay T, Ulusel B, Velipasaoglu S, Unal B, Ucku R, Ozgener N. Factors affecting adult knowledge of diabetes in Narlidere Health District, Turkey. *Acta Diabetol* 2006; 43: 142-7.
8. Angeles-Llerenas A, Carbaja-Sanchez N, Allen B, Zamora-Munoz S, Lazcano-Ponce E. Gender, body mass index and socio-demographic variables associated with knowledge about type 2 diabetes mellitus among 13,293 Mexican students. *Acta Diabetol* 2005; 42: 36-45.
9. Murugesan N, Snehalatha C, Shobhana R, Roglic G, Ramachandran A. Awareness about diabetes and its complications in the general and diabetic population in a city in southern India. *Diabetes Res Clin Pract* 2007; 77: 433-7.
10. Institute of Medicine. of the National Academies. Sodium and Chloride. In *Dietary reference intakes for water, potassium, sodium chloride, and sulfate*. 1st ed. Washington, DC: The National Academies Press, 2005:269-423.
11. Chobanian AV, Bakris GL, Black HR, et al. National Heart, Lung, and Blood Institute Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; National High Blood Pressure Education Program Coordinating Committee. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA* 2003; 289: 2560-72.
12. WHO. Cardiovascular death and disability can be reduced more than 50 percent 2002. Available at <http://www.who.int/mediacentre/news/releases/pr83/en/>
13. Food Standards Agency Strategic Plan 2005 - 2010 Putting Consumers First. Available at <http://www.food.gov.uk/multimedia/pdfs/stratplan0510.pdf>
14. Food Standards Agency. Regulatory impact assessment-setting targets for salt content in a range of processed-food categories. March 14, 2006. <http://www.food.gov.uk/multimedia/pdfs/salttargetsria.pdf>
15. Havas S, Dickinson BD, Wilson M. The urgent need to reduce sodium consumption. *JAMA* 2007; 298: 1439-41.
16. Healthy people: The Surgeon General's report on health promotion and disease prevention-background papers. DHEW Publication No. 79-55071/A. Public Health Service, Office of the Assistant Secretary for Health and Surgeon General, Washington, DC, July 1979, pp.1-5.
17. Connell CM, Crawford CO. How people obtain their health information--a survey in two Pennsylvania counties. *Public Health Rep* 1988; 103: 189-95.