

The CINDI Health Monitor Survey. Health behaviour among the Italian adult population, 2001-2002

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Abstract

In accordance to the WHO-CINDI (Countrywide Integrated Non-communicable Diseases Intervention) Programme, in 2001-2002 Italy participated in the Health Monitor Survey (HMS) along with all the other CINDI member countries. The survey aimed to investigate, by the use of a standard questionnaire, the self-reported health status, life-habits, social and health conditions, use of health services and other features of the study population.

Following the international CINDI protocol, the adult population (25-64 years of age) from six Italian demonstration areas were chosen: Bassiano-Lenola (LT), Brisighella (RA), Rovescala (PV), Sardinia (CA, SS), Udine (UD); Valle dell' Irno (SA).

A total number of 4095 subjects, including both males and females were enrolled, with a participation rate of 53%, equal to 2202 subjects [45.7% males (M) and 54.3% females (F)]. All age groups were equally represented. From the analysis of the age-standardised rates, the following results were obtained.

Self-reported "good state of health": M 71%, F 56.9%; Hypertension: M 15.6%, F 17.5%; Diabetes: M 6.1%, F 4.2%; Back-illness: M 18%, F 22%; Gastritis: M 12.8%, F 12.6%; Headache: M 31.7%, F 54.6%; Insomnia: M 15.9%, F 28.5%; Daily smokers: M 35.7%, F 23.5%; Daily consumption of wine: M 40.2%, F 15.7%; BMI \geq 30: M 12.3%, F 13.5%; Regular leisure physical activity: M 27.6%, F 23.1%; Hard physical activity: M 40.5%, F 24%.

The results demonstrate how rural areas (Rovescala and Valle dell' Irno) experience worse health conditions. Thanks to the HMS, the population's health needs have been focused and compared to those of other CINDI countries, in order to plan specific interventions aimed at the improvement of lifestyle and health conditions.

Key words: health-survey, lifestyle, CINDI

Introduction

The Annual Meeting of CINDI (Countrywide Integrated Noncommunicable Diseases Intervention) Programme Directors in Malta (June 2000), decided that CINDI activities should include a periodical health behaviour monitoring survey. Thanks to the previous experience of the Finbalt Health Monitor (involving Finland, Baltic Countries and Russian Karelia) a survey was planned to monitor health behaviour and health related risk factors, by the use of a standard questionnaire.[1] The aim of the survey was to understand the population's health needs, in order to promote healthy behaviours within the population and to make international comparisons of rates and trends. The original proposal was to organize the survey

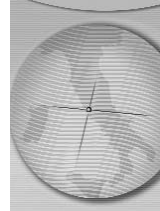
every two years, even if it is not feasible for all countries to achieve this.[2]

The CINDI Health Monitor Survey was carried out in Italy in the year 2001-2002, in six demonstration areas of CINDI-Italy: Rovescala (PV, Lombardy), Udine (UD, Friuli Venezia Giulia), Brisighella (RA, Emilia Romagna), Bassiano-Lenola (LT, Latium), Valle dell' Irno (SA, Campania) and Sardinia region (SS, CA).

Methods

Sample population

The sample population comes from six different Italian demonstration areas (Table 1). The study population is quite representative of the Italian population as the six areas have a homogeneous



distribution covering the national territory: area 2, 3 and 5 are in the North, area 1 is in the Centre, area 4 represents one of the two widest Italian islands and finally area 6 is in the South. The age range varies from 25 to 64 years, as recommended by the CINDI-HMS protocol.

Survey

The survey took place in 2001-2002. In areas 4 and 5 a stratified random sampling method was used to draw the population sample, while in the other areas, all the inhabitants, within the age range (25-64 years), from the municipalities (see Table 1) were involved in the survey.

In some areas CINDI-HMS took place while another local survey was being performed: in Rovescala a survey about the effect of environmental pollution in the population was being undertaken; in Brisighella, Latina and Valle dell’Irno areas, analyses concerning cardiovascular risk factors were being carried out; while in Sardinia the survey was coupled with an investigation concerning the prevalence of type 2 diabetes. The only area where CINDI-HMS took place without being coupled with another survey was in Udine. When possible the survey was completed at the same time as other health investigation projects.

The survey questionnaire had eight sections, with a total of 70 questions, most of them closed. The eight sections included: demographic data, profession, marital status, use of health services, smoking habits, alcohol consumption, nutrition, physical activity, anthropometric measures and traffic safety.

Questionnaires were distributed by post in Brisighella, while in Sardinia, Rovescala, Valle dell’Irno and Bassiano-Lenola, the questionnaires were self-administered. In Friuli Venezia Giulia the questionnaires were filled by using telephone interviews.

Because of the different age distribution across the areas, age-standardisation using the direct method was adopted for the data analysis. Rates \bar{I} confidence intervals at 95% were calculated and the whole sample population from the six demonstration areas was used as the “standard

population”. The χ^2 test was employed to evaluate some of the different rates for self reported risk factors or habits according to educational level (≤ 9 years or less and > 9 years) across two age groups (25-44 years and 45-64years).

Results

Response rate

The response rate varied from 20% in Area 2 to 68% in Area 4, with a total mean response rate of 53%.

The information from non-responders was incomplete as the questionnaire was administered anonymously (with respect to the privacy and data protection regulations) and identification codes were not used, however progressive numbers were used for the completed questionnaires. For this reason it was not possible to follow-up non-responders except for those in Area 5, where the survey was carried out by telephone interview, making follow-up of non-responders possible.

Basic characteristics of the respondents

45.7% of the respondents were male and 54.3% were female. The age groups were well represented across both genders: 22.8% were 25 to 34 years (22.4% male and 23.1% female), 22.2% were 35 to 44 years (20.6% male and 23.6% female), 26.4% were 45 to 54 years (26% male and 26.6% female), 28.7% were 54 to 65 years (31% male and 26.6% female). In each of the demonstration areas the respondents lived in rural municipalities, except for Area 5 (Udine), which is a city and consequently the population shows quite different characteristics from the other residents included in the survey.

Assessment of health status

Concerning the assessment of health status, 71% of men and 56.9% of women declared that their health was “good or reasonably good”; with the highest percentages being recorded in the Bassiano-Lenola area (87.6% of males and 75.8% of females). Amongst the men, 21.4% considered their health to be “in the average” category as did 28.7% of the women, while 7.7% of men and 14.6% of

Table 1. Italian demonstration areas.

Demonstration Area	Sample size	Number of respondents	Response rate %
Area 1 - Bassiano-Lenola (LT)	504	204	40
Area 2 - Brisighella (RA)	453	91	20
Area 3 - Rovescala (PV)	526	265	50
Area 4 - Sardinia (SS, CA)	1600	1075	68
Area 5 - Udine (UD)	512	319	62
Area 6 - Valle dell’Irno (SA)	500	248	49
TOTAL	4095	2202	53

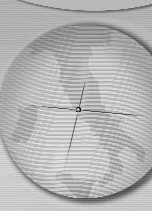


Table 2. Age-standardised rates of self assessed health status reported by the sample population.

How would you assess your present state of health?	MALES Mean % (CI 95%)			FEMALES Mean % (CI 95%)		
	Good/ reasonably good	Average	Rather poor/ poor	Good/ reasonably good	Average	Rather poor/ poor
Area 1 <i>Bassiano-Lenola (LT)</i>	87.6 (84.8-90.3)	10.2 (7.4-13)	2.1 (-0.6-4.8)	75.8 (73.3-78.3)	17.3 (14.7-19.9)	6.8 (4.1-9.5)
Area 2 <i>Brisighella (RA)</i>	87.3 (85.8-88.8)	9.9 (8.4-11.4)	2.8 (1.1-4.5)	74.6 (70.8-78.4)	16.1 (12-20)	9.3 (5-13.6)
Area 3 <i>Rovescala (PV)</i>	66.5 (64-69)	24.1 (21.4-26.7)	9.4 (6.6-12.1)	51.5 (49.3-53.6)	30.4 (28-32.7)	18.1 (15.5-20.6)
Area 4 <i>Sardinia (SS, CA)</i>	81.2 (79.7-82.7)	13.9 (12.7-15.1)	4.9 (3.4-6.4)	65.2 (64.1-66.3)	26.7 (25.5-27.8)	8.0 (6.8-9.2)
Area 5 <i>Udine (UD)</i>	67.5 (63.8-71.1)	22.4 (18.5-26.2)	10.1 (6.22-13.9)	54.8 (51.9-57.6)	32.5 (29.8-35.2)	12.7 (9.9-15.4)
Area 6 <i>Valle dell'Irno (SA)</i>	60.7 (58.2-63.2)	29.3 (26.6-31.9)	9.9 (6.8-12.9)	29.9 (27.5-32.2)	42.3 (39.4-45.2)	27.8 (24.4-31.2)
Pooled Areas	71	21.4	7.7	56.9	28.7	14.6

women considered it to be “rather poor or poor” (10.1% of men in Udine and 27.8% of women in Valle dell’Irno) [Table 2]. The more educated men aged from 45-64 showed a significant difference ($p = 0.0019$) in assessing their health as “good”, when compared to those less educated in the same age group. The same trend ($p = 0.035$ and $p < 0.001$) was also found for women in both age groups (25-44 years and 45-64 years).

On the other hand, when asked if they had been feeling tense or stressed during the last month, 86.2% of men and 77.8% of women said “not at all” or “not more than usual for people in general” (91.9% of males and 82% of females in Sardinia), while 13.8% of men and 22.2% of women said “yes, more than usual” or “yes, my life is almost unbearable” (22.2% of males and 31.1% of females from Valle dell’Irno).

Visits to the Doctor

Examining the age standardised data, men generally visit the doctor less than women; 10.4% of men and 16.9% of women visit the doctor almost 5-8 times a year (highest levels: 11.5% of men in Rovescala, and 22.4% of women in Valle dell’Irno); 5.9% of men and 10.1% of women go to the doctor around 9-12 times a year (highest levels: 7.5% of men in Rovescala and 22.4% of women in Valle dell’Irno), while 3.6% of men and 8.5% of women visit the doctor 13 times or even more per year (highest levels: 5.6% of men in Rovescala and 11.5% of women in Valle dell’Irno). Men from the Bassiano-Lenola area and Sardinia attend the doctor the least number times (1-4 times a year), 62.2% and 68.2% respectively. While women from Udine (54.8%) and Bassiano-Lenola (60.2%) recorded the lowest levels in this category (1-4 times a year).

Reported risk factors/diseases/health status disturbances

Hypertension. 72.2% of men and 76.1% of women had their blood pressure measured at least once during the last year (highest hypertension rates were found in Bassiano-Lenola, 81% of men and 79.4% of women).

15.6% of men and 17.5% of women professed to having been diagnosed or treated for hypertension, with levels peaking in the Valle dell’Irno area (22.3% of males and 38.9% of females). For men aged between 25-44 years, a significant difference ($p = 0.005$) was demonstrated between those who were less and more educated (with a higher rate reported in the former). The same trend is seen for females, but in both age groups ($p = 0.006$ and $p = 0.001$).

Hypercholesterolemia. 54.5% of men and 55.1% of women had their cholesterol levels measured (highest rates were found in Sardinia: 66.2% of males and 69.9% of females) and 13.6% of males and 17.5% of females reported had high levels of cholesterol, with the highest values, 22.6% in men and 23.4% in women, coming from the Valle dell’Irno area.

Diabetes. The disease has been diagnosed in 6.1% of men and in 4.2% of women, with the Brisighella area having the highest rates amongst the males (14.3%) [Table 3].

Heart attacks. Few subjects recorded a history of heart attacks: 1.4% of men and 1.2% of women, with no cases amongst the men in the Friuli area or amongst the women in Sardinia. The highest rates were shown in the males of Valle dell’Irno (5.1%) and the females in Friuli (2.5%).

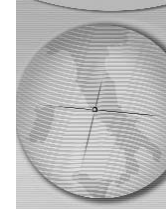


Table 3. Age-standardised rates of risk factors diagnosed in the previous year in the sample population. M, male; F, female.

During the last year, have you been treated or diagnosed for:	Hypertension Mean % (CI 95%)		Hypercholesterolemia Mean % (CI 95%)		Diabetes Mean % (CI 95%)	
	M	F	M	F	M	F
Area 1	21.5	11.4	10.8	7.8	2.8	3.4
Bassiano-Lenola (LT)	(18.5-24.5)	(8.7-14)	(8.8-12.8)	(5.2-10.4)	(0-5.6)	(0.7-6.2)
Area 2	23.2	12.4	12.1	20.4	14.3	3.5
Brisighella (RA)	(18.2-28.2)	(8.3-16.5)	(6.9-17.2)	(16.4-24.4)	(9.3-19.3)	(-0.5-7.6)
Area 3	17.1	20.0	14.3	17.6	6.6	4.8
Rovescala (PV)	(14.3-19.9)	(17.4-22.6)	(11.7-17)	(15-20.1)	(4.1-9.1)	(2.2-7.4)
Area 4	6.6	12.1	12.7	16.5	5.1	1.7
Sardinia (SS, CA)	(5.6-18.5)	(10.8-13.3)	(11.2-14.1)	(15.3-17.7)	(3.6-6.5)	(0.5-2.9)
Area 5	14.5	17.2	10.9	14.5	6.7	5.9
Udine (UD)	(11.3-17.7)	(14-20.3)	(6.6-13.6)	(11.6-17.3)	(2.9-10.5)	(2.6-9.2)
Area 6	22.3	38.9	22.6	23.4	4.8	4.2
Valle dell'Irno (SA)	(18.9-25.7)	(34.9-42.8)	(19.2-26)	(20.5-26.3)	(1.6-7.9)	(-0.3-8.7)
Pooled Areas	15.6	17.5	13.6	17.5	6.1	4.2

Angina pectoris. Rates of angina pectoris were similar to those of heart attacks item, with a prevalence of 2.1% for males and 0.5% for females.

Back illness. 18% of males and 22% of females reported back illness, with the highest rates recorded in the Valle dell'Irno area (22.1% of males and 39.4% of females) and in the Rovescala area (22.8% of males and 25.7% of females).

Chronic bronchitis or emphysema. 4.9% of males and 4.5% of females indicated that they had these diseases, with the highest values amongst men (6%, 5.5%, 5.2% in the areas of Rovescala, Valle dell'Irno and Friuli respectively) and with no reported cases amongst the women in Brisighella and Udine.

Bronchial asthma. It was diagnosed in 3.3% of men and 4.7% of women, with the highest rates amongst women in the Valle dell'Irno and Bassiano-Lenola areas (6% and 6.1%, respectively).

Gastritis or ulcer. The situation is very similar for men and women, with rates of 12.8% and 12.6%, respectively; Valle dell'Irno area showed the highest rates (28.3% of males and 26.1% of females).

Coughs. 3.8% of males and 2.1% of females experienced persistent productive coughs "almost daily in the last year", with the highest rates for males in Valle dell'Irno (4.3%) and Rovescala (5.5%).

Headache in the last month. 31.7% of males and 54.6% of females suffered from headaches; the highest rates are reported by women (62.4% in Valle dell'Irno, 56.9% in Rovescala and 56.5% in Udine), while amongst men the highest rate was found in Valle dell'Irno (39.9%). The highest prevalence was

found in women aged 25-44 years. No significant association with education was found.

Insomnia in the last month. 15.9% of males and 28.5% of females had insomnia; the highest rates were reported by women (32% Bassiano-Lenola, 28.6% Rovescala and 28.1% Udine), while amongst the men the highest rate was found in Rovescala (18.4%). The highest prevalence was found in females aged of 45-6 years. There was no association with education.

Daily Smoking

Concerning smoking habits, the results showed that daily smokers are 35.7% male (peaking at 51.4% in Brisighella and 40.8% in Bassiano-Lenola area) and 23.5% female (peaking at 33% in Valle dell'Irno area) [Table 4]. The prevalence of daily smokers is higher among less educated males aged 25-44 years ($p = 0.009$); the same trend was found among women aged 45-64 years ($p = 0.012$).

Among smokers, 33% had received advice to quit smoking by a doctor, with the highest rates in Bassiano-Lenola (40%), Sardinia (35%) and Valle dell'Irno (34.6%).

The mean number of cigarettes smoked per day was 18.1 for males (20 in Rovescala) and 10.8 for females (17.6 in Brisighella), with a range from 1 to 80 for men and 1 to 40 for women.

At the time of the survey, 74.1% males and 68.4% females stated they would like to stop smoking (88% of males and 89.6% of females in Valle dell'Irno).

Food Habits

Kind of fat used for cooking. Most people use vegetable oil to cook (82.7% of males and 95.3% of females).

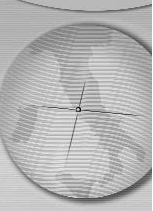


Table 4. Age-standardised rates of smokers in the sample population.

Subjects that smoked at the time of the survey	MALES Mean % (CI 95%)			FEMALES Mean % (CI 95%)		
	Yes	Yes, I smoked but now I don't	I never smoked	Yes	Yes, I smoked but now I don't	I never smoked
Area 1 <i>Bassiano-Lenola (LT)</i>	40.8 (37.5-44.1)	23.3 (20-26.6)	35.8 (32.5-39.1)	16.7 (14.1-19.3)	20.7 (18-23.3)	62.6 (59.9-65.3)
Area 2 <i>Brisighella (RA)</i>	51.4 (46.1-56.6)	21.5 (16.4-26.6)	27.1 (21.8-32.3)	29.9 (26.1-33.6)	10.5 (6.6-14.4)	59.6 (56.7-62.5)
Area 3 <i>Rovescala (PV)</i>	38.7 (36.2-41.2)	16 (13.1-18.8)	45.2 (42.7-47.6)	25.9 (23.3-28.4)	15.2 (12.6-17.8)	58.8 (56.2-61.4)
Area 4 <i>Sardinia (SS, CA)</i>	34.4 (32.9-35.8)	37.9 (36.4-39.3)	27.7 (26.2-29.2)	22.4 (21.3-23.5)	17.9 (16.8-19)	59.6 (58.5-60.7)
Area 5 <i>Udine (UD)</i>	30.6 (28-33.2)	28.1 (25.3-30.8)	41.3 (38.7-43.8)	26.5 (24.3-28.7)	11.8 (9.6-13.9)	61.7 (59.5-63.9)
Area 6 <i>Valle dell'Irno (SA)</i>	34.5 (32-37)	22.9 (20-25.7)	40 (37.4-42.6)	33 (30-36)	11.5 (8.5-14.5)	55.5 (52.9-58)
Pooled Areas	35.7	30.1	34.2	23.5	16.2	60.3

Fat used on bread. 86.9% of the subjects do not use any fat on bread during meals, following Italian tradition. Among those who put fat on bread, 8.9% use butter or products consisting mainly of butter.

Consumption of fresh vegetables. During the previous week 43.3% of males and 57.1% of females ate fresh vegetables 6-7 times, peaking at 50.5% for males aged between 55-64 years and 63.6% of females aged between 35-44. While 26.6% of males and 24% of females did so 3-5 times a week, and only 19.5% of male and 4.3% of female 1-2 times and 4.3% or never.

Bassiano-Lenola area appeared to be the region where the most fresh vegetables are consumed, as demonstrated by the rate of 72.5% of men and 87% of women consuming fresh vegetables almost 6-7 times per week, while the Valle dell'Irno area shows the lowest rates, with only 18.3% of men and 27.6% of women eating fresh vegetables 6-7 times per week.

Counselling on changing dietary habits. In 20.6% of subjects (males and females) the advice to modify their dietary habits came from a doctor and for 12.8% from a relative.

Alcohol Consumption

Concerning spirits consumption, 80.7% of males and 95% of females have never drunk them; 17.4% of males and 4.8% of females drink spirits just a few times a year (40.4% for males aged 25-34 years); 7.1% of males and 2.2% of females drink spirits 2-3 times a month. 17.4% of males and 4.8% of females drinks spirits from 2-3 times a month to 2-3 times a week (for males

the highest rate in Bassiano-Lenola: 26.6%, and for female 8.2% in Udine); 4.9% of men and 0.5% of women drink spirits 2-3 times a week and 7.3% of men and 2.4% of women drink them once a week. Spirits are consumed every day by 1.9% of men (5.4% in Rovescala) and by 0.3% of females (1.9% in Bassiano-Lenola). 2.2% of the total study population did not answer the question.

Concerning wine, 33.8% of males and 70.4% of females never drink it, 26% of males and 13.9% of females drink it from 2-3 times a month to 2-3 times a week (33.1% of males and 25.5% of females in Udine), 40.2% of males and 15.7% of females drink wine every day (56.7% of males and 29.7% of females in the Bassiano-Lenola area).

Body Mass Index

The pooled results (Table 5) showed that 3.4% of men and 13.3% of women are underweight (BMI < 20), with a maximum of 31.9% in women aged between 25-34 years; 36.9% of men and 45.8% of women are in a healthy weight range (BMI: 20-24.99); 47% of males and 27.4% of females are overweight (BMI: 25-29.99). Concerning obesity (BMI ≥ 30), the prevalence was 12.7% of men and 13.5% of women, with rates in the 55-64 age group of 18.1% and 23.8% respectively. In the Valle dell'Irno area and Sardinia, were founded the highest rates of obese males (16.3% and 15.3% respectively) and females (19.6% and 15.2% respectively). A higher prevalence of overweight and obesity was seen amongst less educated males of both age groups (p = 0.01 and p = 0.03, respectively) and the same trend is found in females (p = 0.001).

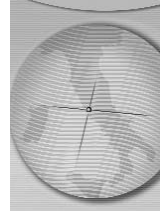


Table 5. Age-standardised rates of Body Mass Index classes.

BMI classes standardised for age	MALES Mean % (CI 95%)				FEMALES Mean % (CI 95%)			
	≤ 19.99	20 - 24.99	25 - 29.99	≥ 30	≤ 19.99	20 - 24.99	25 - 29.99	≥ 30
Area 1 Bassiano-Lenola (LT)	2.1 (-0.9-5.2)	26.8 (24-29.6)	51.3 (48.6-54)	12.4 (5.5-19.3)	6.6 (4-9.2)	39.8 (37.1-42.5)	36.1 (33.4-38.8)	10.7 (8.1-13.3)
Area 2 Brisighella (RA)	0	49.6 (44.3-54.8)	50.3 (48.7-51.9)	0	16.8 (13.2-20.4)	46.7 (42.9-50.5)	30.4 (26.3-34.7)	6.1 (2-10.1)
Area 3 Rovescala (PV)	4.6 (2.3-7.1)	42.3 (39.9-44.7)	42.3 (39.6-45)	10.8 (8.2-13.4)	11.3 (9.2-13.4)	46.3 (44.1-48.5)	28.7 (26.4-31)	13.7 (11.2-16.2)
Area 4 Sardinia (SS, CA)	3.2 (1.7-4.7)	31.7 (30.2-33.2)	49.7 (48.3-51.1)	15.3 (13.9-16.7)	12.3 (11.2-13.4)	44.1 (43-45.2)	28.3 (27.1-29.5)	15.2 (14-16.4)
Area 5 Udine (UD)	4.3 (0.4-8.2)	49.3 (45.5-53.1)	40.2 (36.8-43.6)	6.7 (3.2-10.2)	22.9 (20.2-25.6)	50.5 (47.4-53)	17.9 (15-20.8)	8.6 (5.7-11.5)
Area 6 Valle dell'Irno (SA)	1.6 (-0.9-4.1)	35.2 (32.7-37.7)	46.9 (44.3-49.5)	16.3 (13-19.6)	10.8 (7.9-13.7)	51.4 (48.7-54.1)	18.2 (15.3-21.1)	19.6 (15.9-23.3)
Pooled Areas	3.4	36.9	47	12.7	13.3	45.8	27.4	13.5

Table 6. Age-standardised rates of leisure physical activity in the sample population.

Physical activity: at leisure	MALES Mean % (CI 95%)			FEMALES Mean % (CI 95%)		
	Every day/2-3 times a week	Once a week/ few times a year	Unable for disease or inability	Every day/2-3 times a week	Once a week/ few times	Unable for disease or inability
Area 1 Bassiano-Lenola (LT)	19.9 (17.3-22.6)	51.3 (48.5-54.1)	6.3 (3.5-9.1)	29.7 (27.1-32.2)	64.2 (61.6-66.8)	6.2 (3.5-8.8)
Area 2 Brisighella (RA)	14.9 (9.6-20.1)	27.4 (22.1-32.7)	57.7 (52.5-62.8)	9.9 (6.2-13.6)	40.7 (36.9-44.5)	49.3 (45.4-53.2)
Area 3 Rovescala (PV)	315 (29-33)	53.4 (50.9-55.9)	15 (12.3-17.7)	19.8 (17.6-22)	68.6 (66.3-70.9)	11.5 (8.9-14)
Area 4 Sardinia (SS, CA)	25.7 (24.2-27.2)	68.1 (66.6-69.6)	6.2 (4.7-7.7)	20.1 (19-21.2)	72.6 (71.5-73.7)	7.3 (6.1-8.5)
Area 5 Udine (UD)	30 (26.1-33.9)	64.7 (61-68.,4)	5.3 (2.1-8.5)	36 (33.1-38.8)	54.7 (51.9-57.5)	9.4 (6.8-11.9)
Area 6 Valle dell'Irno (SA)	29.5 (27.1-31.9)	54 (51.3-56.7)	16.5 (13.6-19.4)	16.3 (14.2-18.4)	55.4 (52.9-57.9)	28.3 (23.9-32.7)
Pooled Areas	27.6	61.9	10.5	23.1	66.3	10.5

Physical Activity

Considering those who undertake physical activity for leisure, 27.6% of males and 23.1% of females recorded that they did so every day or 2-3 times a week. Considering gender, the least active males come from Bassiano-Lenola (19.9%) and females from Valle dell'Irno (16.3%) [Table 6].

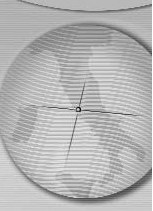
Advice to increase physical activity mainly came from a doctor (18.3%) or from a relative (14.8%).

A large significant difference, in the practice of regular leisure time physical activity, was found between males (aged 45-64 years) who had higher and lower levels of education (p = 0.001). The same trend was found in women aged 45-64 years (p = 0.001).

Considering physical activity at work, 40.5% males and 24% females assess their work as being "heavy manual work" or "fairly strenuous" [the highest rates for "heavy manual work" were in Rovescala, both for men (65.3%) and women (33.9%)]. The difference for "heavy manual work" was highly significant amongst less educated males (p = 0.001), as well as in females of both age groups (p = 0.001). In summary less educated subjects are more likely to do "heavy" or "fairly strenuous" manual work.

Traffic safety

Front seat belts were almost always used by 78.5% of the study population, the highest level was recorded in Udine (87.1%), however, 4.8% of



the respondents stated that they never used them (11.9% in Valle dell'Erno). While, back seat belt were used almost always by 15.6% of the study population (21.5% in Udine) and never by 51.4% (57.7% in Bassiano-Lenola).

Other topics

When asked about behavioural changes in the last year, 28.8% answered they had reduced dietary fat (39.2% in Valle dell'Erno and 38% in Bassiano-Lenola), 30.6% had increased the intake of fresh vegetables (36.9% in Valle dell'Erno and 36.5% in Bassiano-Lenola), 11.9% had undertaken a weight reducing diet (19.3% in Valle dell'Erno and 11.8% in Bassiano-Lenola) and 15% increased the level of physical activity (18.3% in Valle dell'Erno and 21.8% in Bassiano-Lenola). Concerning dental care, 67.2% of men and 88.1% of women brushed their teeth more than once a day.

In the opinion of the total study population, the most important cause of death among the adult population, was: smoking (22.2%), stress (20.7%) and wrong diet (18.6%), while 7.6% said "other causes" (of these 29.5% did not specify a cause, 32.2% said "cancer" and 10.1% said "environmental pollution").

Discussion and conclusions

The CINDI Health Monitor Survey, in Italy, though not conducted at a national level, has shown results which in many cases are quite similar to the data collected from a recent national survey,[3] confirming that the our sample from our six demonstration areas appears to be quite representative of the overall Italian population.

Considering that it was the first time the survey took place and follow-up of non-responders was not possible, except for in the Udine area, the overall response rate was satisfactory. The response to this survey was enhanced by combining this survey with other local health investigations in all the areas except for Udine. Only Brisighella had a very low participation, while Sardinia had the highest response rate. The difference in response rate between these two areas should be taken into consideration when comparing the results or aggregating the data. It should be mentioned that a randomised population sample was drawn only from two areas, Udine and Sardinia; in the other four areas "pre-selection" of the involved subjects took place which could represent a limitation in this study's design. However, the results coming from the randomised samples do not seem to be incongruous with those coming from the non-randomised areas.

Focusing on the different methods of data collection (self-administration and phone-

interview), we ought to state that according to the CINDI-HMS protocol,[2] all data collection methods have their advantages and disadvantages and none of them is clearly superior to the others. The protocol therefore does not dictate which data collection methods should be used and, in the case of this survey, the choice was linked to issues concerning local organisation.

Concerning the category of health status, the respondents assessed it "good or reasonably good" in a great number of cases (71.1%). A remarkable difference between genders shows that adult women have more health problems than men.

However, the significant differences among the areas, indicated by the values of the confidence intervals, highlight difference in health status which should be investigated. In two areas (Valle dell'Erno and Rovescala) a correlation between ill-health and the frequency of attendance to primary health care services, in both genders, was found.

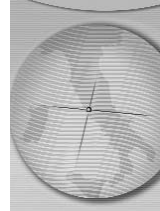
Among the reported diseases or symptoms, back illness was the most prevalent, with significant differences between the areas. This finding is often reported in many of the health evaluation surveys carried out in adult populations.

The prevalence of diabetes across the different areas is supported by data from other Italian areas taken from surveys were carried out in the '90.[4] Heart attacks and angina pectoris prevalence are also similar to the estimated levels in the Italian adult population[5] and quite homogeneous throughout the different areas. Contrarily, chronic obstructive pulmonary disease rates are quite different within the areas, being highest in the women of Rovescala. However, the pooled rates are similar to national estimates.[6]

Hypercholesterolemia prevalence is surprisingly very high in Valle dell'Erno area, as it is in Southern Italy where consumption of a mediterranean diet should have a protective effect against high lipid values. In the same area, among women, we also found a high prevalence of obesity together with the highest rates for hypertension. On the other hand, mortality data show that the highest rates of cerebrovascular diseases are in the Campania region. [7]

High rates of headache and insomnia in women have already been described in different surveys[8-9] and deserve further investigations concerning their aetiology.

Smoking prevalence overall is higher than that found in the whole Italian population,[3] where it is equal to 24%. Men smoke more than women, independently from the age; the percentage of quitters increases as the population gets older, while the percentage of smokers decreases in the



same direction. Surprisingly women smoke more than men in Valle dell'Inno area in Southern Italy, which is interesting as other sources of official data[3] report that in Southern Italy women smoke less than in the rest of the country. Considering spirits consumption, the low intake is can be explained by the traditional Italian habit of drinking mainly wine. Quantitative assessment of wine consumption was not possible, because of unreliable answers to the specific questions.

Italian people, being producers, have high intakes of fresh vegetables and use vegetable oil to cook with. The lowest consumption of fresh vegetables per week, found in Valle dell'Inno area, is quite unexpected considering its geographical location.

Participation levels of physical activity were quite low. Physical activity at work was reported only in Rovescala, which is a rural community where agriculture is one of the most important economic resources. The low rates of leisure-time physical activity, show that the prevalence of sedentary habits is high, as previously reported.

Glancing at the Body Mass Index, we can see that among young women being underweight is not unusual; this is in agreement with recent trends, and it could be associated with the increasing prevalence of eating disorders, such as anorexia. By contrast, 35.9% of the study population, especially in old age, were overweight and 13% of the subjects were obese, as reflected in the general Italian population.[10] The highest prevalence is found in southern and insular areas, as indicated by the anthropometric measures.

Less educated people show higher rates of risk factors and unhealthy behaviours than those with a higher educational level, as already demonstrated by other studies.[11-12] Furthermore a higher prevalence of risk factors and ill-health is evident in rural areas. A previous study showed the same trend for coronary risk factors in Italy.[13]

The nutritional data collected in the Health Monitor Survey do not allow quantitative analysis of the caloric intake of subjects, although qualitative choices indicate that the traditional mediterranean diet seems to be respected. The excessive caloric intake, together with limited physical activity is likely to contribute to overweight and obesity.

The Health Monitor Survey has the ability to highlight the population's perceived health needs which should be confirmed with biological measurements, in order to obtain a true assessment of health status. According to World Health Organization, the questionnaire represents

the first and cheapest step aimed at planning specific preventive programmes mainly oriented to the improvement of lifestyle.[14]

In the Italian areas the outcomes of the Health Monitor Survey demonstrated the necessity to reinforce preventive programs aimed at improving physical activity, lowering smoking prevalence in both genders, monitoring hypertension and hypercholesterolemia. These programs should be implemented especially in the rural areas, where health needs appear most evident.

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