

# The Belgian Health Interview Survey

by

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## Abstract

*In 1997 a Health Interview Survey takes places in Belgium. A total of 10 000 individuals will be interviewed. The individuals are selected within families which are selected by a multistage sampling procedure from the National Register. The individuals are questioned on a variety of health related domains: general health perception, morbidity and functional status, use of health services, life style and socio-economic characteristics. The paper gives a general description of the objectives, the questionnaire (content and development), the sampling procedure and the pilot study.*

## Key-words

Health interview survey, Belgium.

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## **Introduction**

Health research has been defined by the 43rd World Health Assembly as a process for obtaining systematic knowledge and technology which can be used for improvement of the health of individuals or groups. It provides basic information on the state of health and disease of the population; it aims to develop tools to prevent and cure illness and mitigate its effects and it attempts to devise better approaches to health care for the individual and the community (1).

A Health Interview Survey complies to this definition. A Health Interview Survey is a tool by which knowledge on the health of the population is built up. Especially, it provides information on health as perceived by the population. This type of information is essential to the health policy making process: the identification of priorities, the development of objectives and strategies, the evaluation and the monitoring of the health system.

Belgium is one of the few countries within the European Community which has not yet developed a structure for organizing continuous or periodic population surveys that include questions on health characteristics (2). In 1997 a first Belgian Health Interview Survey takes place. The preparation up to the pilot study was financed by the Flemish and the French Community. The Health Interview Survey is commissioned by all Health Ministries in Belgium: the Federal Government (the Ministry of Health and the Ministry of Social Affairs), the Flemish Community, the French Community, the Walloon Region, the Brussels Region and the German Community. The survey is carried out by the Department of Epidemiology of the Institute of Hygiene and Epidemiology in collaboration with the National Institute of Statistics. The aims of this paper are to give a general description of the objectives, the questionnaires (content and development), the sampling methodology and the pilot study.

## **The need for a Health Interview Survey**

The currently available health related information in Belgium is lacking a systematic structure (3-5). It is not integrated in a health information system. The available information is 1) unbalanced;

2) incoherent; 3) it has unknown to poor quality; 4) it lacks comparability and 5) important links with health and health policy are missing. The information consists mainly of data on the absence of health (mortality, morbidity) and the activities of the health care sector. The current structure of the health information is vertical which implies that its different parts are not related and integration is not evident.

At this moment, the only data useful for evaluation of the secular evolution of the health of the nation are the data on birth and mortality. Information on how well we are doing in the period in between — how we experience our health, how we function — is limited in time, space or population. Important sources are e.g. registers (cancer register, HIV/AIDS register,...), surveillance systems (sentinel network of general practitioners,...), services utilization (minimal clinical data,...). These data are mainly concerned with the medical diagnosed morbidity among the users of health services. A Health Interview Survey is complementary to those existing sources because it provides data which can only or preferably be collected by a survey (Table 1) and that cannot be compiled by the health services. In contrast to the vertical nature of the existing health information, the uniqueness and added value of a Health Interview Survey is the horizontal approach of the data collection. This means that several types of health related information on the same person is collected at the same time. The data can be used to explore the interrelationship between self-assessed health, health related behavior, use of services and medication and social, economic and demographic variables. The results of a Health Interview Survey is a picture of the health, illness and disability status of the population, of its medical consumption and of other main variables with which public health policy is concerned.

### **The objectives of a Health Interview Survey**

A Health Interview Survey provides information on the health status of the total population by means of interviews in a representative sample of the population. The individuals are questioned about a wide variety of health related domains: 1) general health perception, 2) morbidity and functional status, 3) use of health services, 4) lifestyle and 5) socio-economic characteristics. The results of the health survey should be a better base of knowledge which provides a rational basis for the policy process: the policy development, the strategies and policy evaluation. Specific aims of the survey are e.g.:

TABLE 1

*Information that can only or can best be collected by sample surveys of the population (12)*

1. (Ill)-health	self-perception of health status prevalence of symptoms, conditions prevalence of impairments, disabilities and handicaps ...
2. Lifestyle related indicators	smoking alcohol breast-feeding physical activity ...
3. Use of health and social services	curative and preventive services first line specialist/hospitalization social services medication ...

- the contribution to the identification of health priorities;
- the description of the health and health needs of the population;
- the estimation of the prevalence and distribution of determinants of health;
- the analysis of social (in)equities in health and accessibility of the health services;
- the study of health care consumption and its determinants.

A very important aim is the study or the monitoring of the trends of the health of the nation. It is obvious that for the latter repeated or continuous surveys are necessary.

### **The questionnaire: development and content**

In most of the European countries the surveys are exclusively oriented towards health and its determinants. In some countries such as e.g. Germany and the UK there are multipurpose surveys with either a health core or with lifestyle information (2). The advantage of a specific Health Interview Survey is that it allows a more in depth and broader study of the health related issues as there is no competition of other domains. These advantages largely outweigh the higher cost.

Further, there is currently no population survey structure available in Belgium that would have been suitable to incorporate the health core. At this moment only the Belgian Household Panel Study has some health related questions (6).

The face-to-face methodology was chosen as the best means to contact the respondent in preference to a postal survey or a telephone survey (7, 8). The concepts of "total survey error" and "total survey design" bring forward important considerations in the selection of the information-gathering strategy (9). Within a survey there are so many factors which may influence the outcome that it is impossible to control all of them. Knowledge on the error profile of each instrument facilitated the choice of the instrument which may provide the optimal precision within a given budget. In Table 2 an overview is given of the comparison between the 3 instruments. The mail survey approach was excluded because of the lower response rate and the limitation both in form and content of the questionnaire. The telephone was not selected because of potential problems of representativity (10) and the limitation on the content and duration of the questionnaire.

TABLE 2  
*Comparison of information-gathering strategies*

	Mail	Telephone	Face-to-face
Administrative			
cost	+++	++	+
personnel	+++	++	+
time	+++	++	+
Sample			
coverage	++	+	+++
accessibility	+	++	+++
refusal	+	++	+++
non-contact	+	++	+++
subgroups	+	++	+++
sampling within household	+	++	+++
Data			
interviewer effects	+++	++	+
item non-response	+	++	+++
length of questionnaire	+	++	+++
sensitive questions	+++	+	+
complexity of questionnaire	+	++	+++
open questions	+	++	+++

The questionnaire is divided in 3 parts: a household form, a face-to face-form and a self-administrated form. For each of the health related domains, questions or instruments were constructed following a strict

protocol (11): 1) the objective(s) and the definition(s) were formulated; it was verified 2) if an instrument was proposed by the WHO-consensus conferences on harmonization of methods and instruments for health surveys (12); 3) if there were alternative instruments used in foreign national health surveys or in specific surveys in Belgium; 4) if there existed an official translation in Dutch and/or French. Further it was discussed if the instrument or question could be used in the self-administrated form, if the question should be asked to all age groups and both sexes, or if a proxy could respond. As a result of this procedure only a small proportion of the questions or instruments have been newly developed. Even then it was mainly an adaptation to the Belgian situation of previously used questions. The main sources of standard questionnaires were the WHO-consensus conference, the Central Bureau of Statistics (CBS-Netherlands), Center for Social Policy (Belgium) and Inserm (France).

The household form has 31 questions. The first eight questions obtain mainly demographic information on all members of the household: relationship to the reference person, age, sex, nationality and membership of health insurance company. The following questions deal with the absolute and relative household income, the expenses for health care and the access to health services.

The face-to-face form consists of 239 questions. In specific situations a proxy interview is allowed. In addition the proxy interview is mandatory when the person to be interviewed is younger than 15 years old or when he/she is sick or cognitively impaired. It is obvious that a proxy cannot provide accurate information on all questions, especially those which ask for a personal opinion. The interviewer is then asked to skip this part of the questionnaire. The face-to-face interview provides information on:

- the presence and impact of chronic diseases, disabilities or handicaps;
- the prevalence of a list of 32 diseases and the medical consumption as a result of these diseases;
- short term functional limitations due to physical or mental problems;
- long term physical limitations;
- health services utilization: consultation of general practitioner, specialist and dentist; hospitalization, para-medical professional

and social services, medication (prescribed and over the counter);

- vaccination;
- nutrition behavior (BMI and food-frequency questionnaire) / leisure time physical activity;
- issues related to reproductive health and infant health (prenatal care, smoking during pregnancy, breast feeding, service use during first year of life, contraception, cot death prevention);
- socio-economic profile.

The self-administrated form has 147 questions. Only persons 15 years and older are asked to fill in the questionnaire. The content is:

- perceived health;
- the presence of symptoms, complaints
- life style: tobacco, alcohol, nutrition (weight control), accident prevention;
- HIV/AIDS: knowledge and attitude toward, blood test;
- mental well-being;
- primary and secondary prevention: blood pressure, cholesterol, breast cancer, cervical cancer;
- social network.

### **The sampling procedure**

The Health Interview Survey takes place between 1/1/97 and 31/12/97 in order to eliminate seasonal effects. The target population of the survey are all the people with a residency in Belgium during this period. This means all people who are registered in the National Register of Belgium. There is no restriction either on nationality or age. Excluded from the target population are subjects living in prisons or subjects living in cloisters. The sampling frame is the National Register. The National Register allows to identify the administrative reference person of a household, the first study unit. The second study unit, the individual, is identified at the level of the household. The sample size has been defined based on sample size calculations, but mainly based on the budget constraints to be 10 000 effective interviews (13). This number of individuals has been divided between the regions:

3 500 in the Flemish Region, 3 500 in the Walloon Region (with 300 in the German Community) and 3 000 in the Brussels Region.

The sampling method follows a multi-stage procedure (14).

- The first stage is a stratification by region with fixed sample size as described above.
- The second stratification is at the level of the provinces with the sample size defined proportional to the population size of the province. The result of the first two steps is 12 strata (Table 3): the 5 provinces in the Flemish Region, the Brussels Region, the 5 provinces in the Walloon Region with the special case of the province of Liège, which contains two strata (the province of Liège minus the districts of the German Community and the German Community).
- In the third step the primary sampling unit (PSU) is selected within each stratum by a weighted systematic sampling procedure. The PSU's are defined as the municipalities of Belgium. They are selected by a systematic sampling after ranking by population density from large to small. After ranking they were expanded proportionally to the population size so that larger municipalities have a greater probability to be selected at least once or several times. Figure 1 shows a map of the PSU's selected for the 1997 Health Interview Survey. Each time a PSU is selected a group of 50 individuals have to be successfully contacted.
- Therefore in a fourth stage a number of households, the secondary sampling units (SSU's), are selected by a clustered systematic sampling procedure after ranking the household hierarchically by statistical sector, household size and age of the reference person. Each cluster consists of the household identified by the step size of the systematic sampling procedure and the 3 consecutive households on the ordered list. The number of clusters to be selected in order to obtain interviews with 50 individuals in each PSU is estimated using the average household size of the municipality. The step size needed in the systematic selection procedure is divided by two so that the number of households to be selected is inflated by a factor 8 (twice the number of clusters needed and each cluster consists of 4 households). This is done in order 1) to have 3 replacement households living in the same (or near by) statistical sector and which have the same household size and age of the reference person for each household selected, 2) to take into account the uncertainty within the sampling frame of the National



Register, with respect to the real household size; 3) to take into account drop-outs due to errors in the sampling frame.

- In a last step the individual or the third sampling unit is selected within the household. Up to maximum 4 persons will be interviewed within each household. The two first subjects are selected by definition: the reference person and his/her partner. The two other individuals are selected based on a birthday rule: the persons who have their birthday coming up first after the interview.

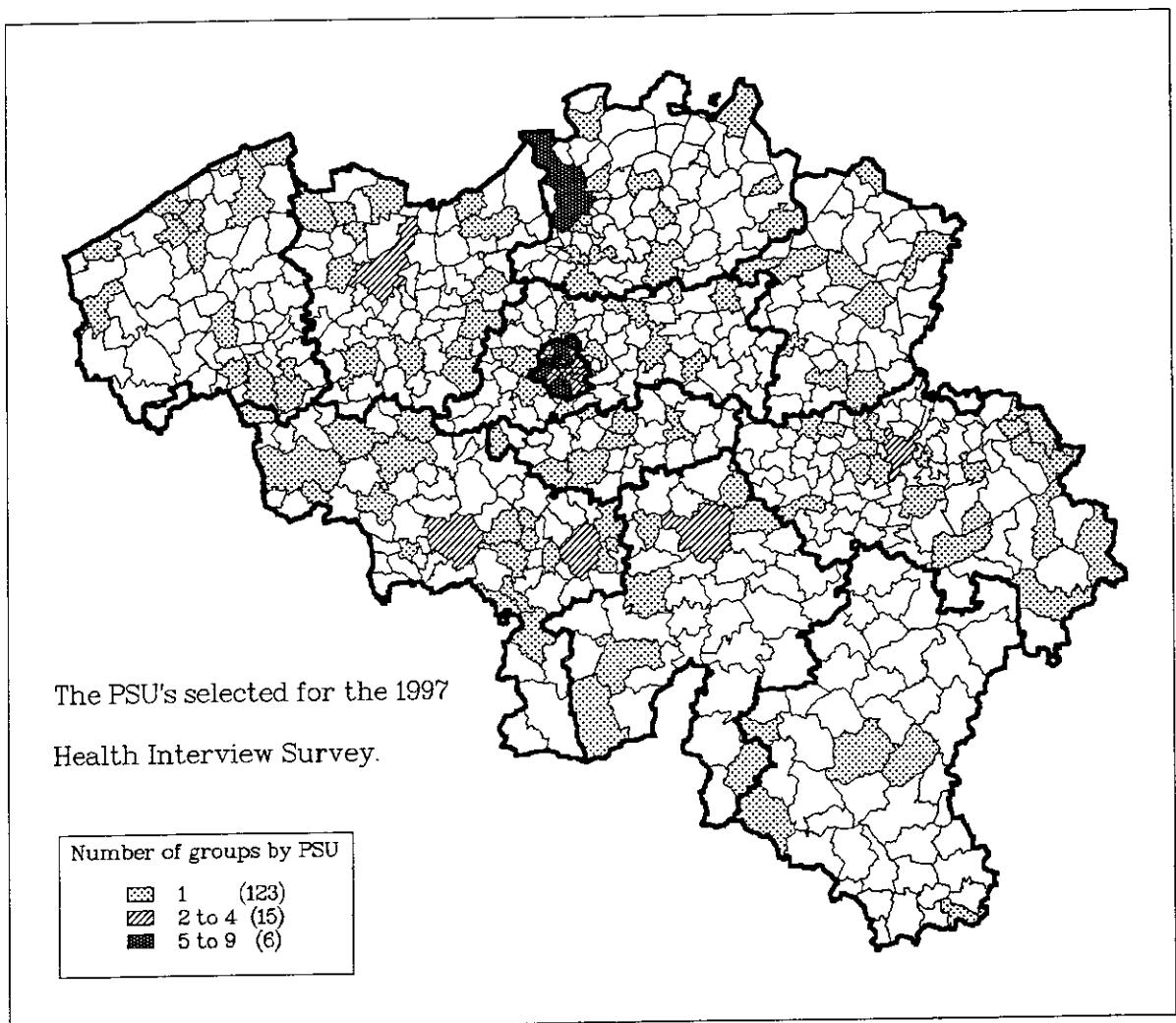


Fig. 1: The PSU's selected for the 1997 Health Interview Survey.

TABLE 3  
The distribution of the sample size by provinces

Province	Popula- tion (10 <sup>6</sup> )	Fraction (%)	Number of selected PSU's*	Number of Groups*	Number of individuals to be interviewed	1/weight
Antwerpen	1.63	27.7	14	19	950	0.58
Vlaams Brabant	1.00	17.0	12	12	600	0.60
Limburg	0.78	13.2	9	9	450	0.58
Oost-Vlaanderen	1.35	23.0	14	16	800	0.59
West-Vlaanderen	1.12	19.1	14	14	700	0.62
Flemish region	5.88	100.0	63	70	3 500	0.60
Brabant Wallon	0.34	10.5	7	7	350	1.03
Hainaut	1.28	39.6	21	25	1 250	0.97
Liège minus the German Community	0.94	29.1	15	18	900	0.95
German Community	0.07		6	6	300	4.32
Luxembourg	0.24	7.4	5	5	250	1.04
Namur	0.44	13.4	8	9	450	1.03
Walloon region	3.24	100.0	62	70	3 500	0.99
Brussels region	0.95	100.0	19	60	3 000	3.16

\* PSU or primary sampling unit: municipality.

Group: number of groups of 50 individuals to be interviewed in the PSU's (the number of groups is greater than the number of PSU's as some municipalities are selected more than once).

### The pilot study

In the last quarter of 1996 a pilot study was done in collaboration with the National Institute of Statistics and the School of Public Health of the University of Liège. The objectives of the study were (15):

- to evaluate the understanding and the acceptability by the respondent of the questionnaire forms;
- to estimate the duration of the interview;
- to study the comments of the interviewed subjects and the interviewers on the questionnaires;
- to evaluate the practical feasibility to organize a Health Interview Survey in Belgium;
- to test the collaboration between two institutions: the National Institute of Statistics and the Institute of Hygiene and Epidemiology.

In the province of Brabant and the Brussels Region a sample of 120 households has been interviewed. They were selected from the list of participants to the 1995 Labor Force Survey. This sampling frame was used to allow a comparison of some socio-economic characteristics between the responders and non-responders. The participation of the households was 60%. The participation was somewhat lower in the Brussels region and the district of Nivelles and when the reference person of the household was either a female, an older person, of turkish nationality or an independent professional. With respect to the educational attainment a higher response rate was observed when the reference person had a higher non-university degree. However those differences were not statistically significant. No substantial difference was observed by family size. The within household participation was approximately 95%. The median time required for the face-to-face form was 40 minutes. The questions were found to be "very easy" to "not difficult/not easy" by 91% of the subjects; 80% did not experience the questions as too personal or intimate. A proxy responded to the questions in 21% of the cases. The reason for a proxy interview was in more than two third of the cases because the person to be interviewed was younger than 15 years; only in a few cases the reason was the ill-health of the subject. The median of the time needed to fill in the self-administrated form was 15 minutes. The questions were experienced too personal or too intimate by 17% of the subjects.

To check the understanding and the acceptability of the questions, the validity of the response categories was evaluated (the estimation of the frequency of the response category "other", the frequency of a response outside the possible categories or the frequency of the non-response). The internal validity was assessed by evaluating the consistency in responses to questions within the same domain and by evaluating the direction of the association with other variables. In general the item non-response or the selection of the category "other" was limited. In some of the questions with a higher non-response problems either in the instruction to the interviewer or in the wording or presentation of the question could be identified. The internal validity of the questions which have been controlled (e.g. income, alcohol use, physical limitations,...) was good. The pilot study confirms the feasibility to do an Health Interview Survey in Belgium and as a joint project of the Institute of Hygiene and Epidemiology and the National Institute of Statistics.

As a result of the pilot study, more attention is given to the letter and information to be sent to the selected household as this first contact has a substantial impact on the participation. Further some more attention to the comparability between the different language versions is necessary and some questions need revision by external expert groups.

## **Conclusion**

Compared to the other European countries, Belgium has little experience in the field of national health survey. The process of the preparation of the Belgian Health Interview Survey, which started in 1993 has been long. A main issue during this whole period was to build on a consensus between the different partners: the policy makers, the administrations and the researchers. The 1997 - health survey should be a basis for the consolidation of the instrument as an integrated part of the health information system so that it is repeated in a periodic way. The only way to achieve this is to accomplish the main objective of the health interview survey: "to have the policy makers really use the health interview survey as an integrated part of the health policy process".

## **Résumé**

Une enquête de santé sera organisée en Belgique en 1997. Au total 10 000 personnes seront interviewées. Celles-ci seront sélectionnées au sein des familles choisies par un échantillonnage à plusieurs degrés à partir du Registre National. Les personnes seront interrogées sur une variété de domaines en relation avec la santé: perception générale de la santé, morbidité, état fonctionnel, utilisation des services de santé, styles de vie et caractéristiques socio-économiques. L'article donne une description générale des objectifs, des questionnaires (contenu et développement), de la méthodologie d'échantillonnage et de l'étude pilote.

## **Samenvatting**

In 1997 wordt een Gezondheidsenquête georganiseerd in België. Een totaal van 10 000 personen wordt bevroegd. Deze individuen worden geselecteerd binnen huishoudens die gekozen zijn uit het Nationaal Register via een getrapte steekproefmethode. De personen worden bevroegd over meerdere gezondheids-gerelateerde domeinen: gezondheidsbeleving, morbiditeit en functionele status, het gebruik van medische diensten, leefstijl en socio-economische kenmerken. Het artikel geeft een algemene beschrij-

ving van de doelstellingen, de vragenlijsten (inhoud en ontwikkeling), de steekproefmethodologie en de pilootstudie.

## References

1. WORLD HEALTH ORGANIZATION. Forty-third World Health Assembly. Report of technical discussions. Geneva, WHO, Document A.43/Technical Discussions/8 1990.
2. CENTERS FOR DISEASE CONTROL AND PREVENTION NATIONAL CENTER FOR HEALTH STATISTICS. International health data reference guide, 1995. Hyattsville, MD. U.S. Department of health and human services 1996; 1-140.
3. VAN OYEN H, TAFFOREAU J. Een Gezondheidsenquête in België: een noodzakelijkheid? In: Raes V, Kerkofs E, Louckx F (ed.), Sociale ongelijkheid en verschillen in gezondheid. Brussels: VUBPRESS 1993; 121-128.
4. VAN OYEN H, TAFFOREAU J. Health Interview Survey. Arch Public Health 1994; 52: 79-82.
5. VAN OYEN H, MOENS G. Conceptueel kader voor een gezondheidsinformatiesysteem. In: Preventiecongres Vlaanderen, 1997; 898-912.
6. JACOBS T, LOOTS I, MARYNISSEN R, SCHEIPERS T. PSBH Onderzoeksplan. Antwerpen, Universitaire Instelling Antwerpen 1991.
7. HOCHSTIM J R. A critical comparison of three information-gathering strategies of collecting data from households. Journal of the American Statistical Association 1967; 62: 976-989.
8. SIEMIATYCKI J. A comparison of mail, telephone, and home interview strategies for household health surveys. Am J Public Health 1979; 69: 238-245.
9. QUATAERT P, VAN OYEN H. Gegevensinzameling i.v.m. middelengebruik d.m.v. CATI. IHE/Episerie nr. 6. Ed. Brussel, C.O.O.V., Instituut voor Hygiëne en Epidemiologie 1995.
10. CANTILLON B, MARX I, PROOST D, VAN DAM R. Sociale indicatoren: 1985-1992. Antwerpen: Centrum voor Sociaal Beleid, UFSIA 1993; 2-43.
11. HERMANS H, LAMBERT M, VAN OYEN H, TAFFOREAU J, REGINSTER G. Gezondheidsenquête d.m.v. interview. Ontwerp vragenlijst. Brussel, C.O.O.V., IHE/ Ecole de Santé Publique, ULG 1995; 1-69.
12. DE BRUIN A, PICAVET H, NOSSIKOV A. Health interview surveys. Towards international harmonization of methods. Copenhagen: WHO-Europe, CBS-Netherlands 1996; 1-161.
13. HERMANS H, LAMBERT M, TAFFOREAU J, VAN OYEN H, REGINSTER G. Gezondheidsenquête d.m.v. interview: methoden en technieken. Brussel: C.O.O.V., IHE/Ecole de Santé Publique, ULG 1995; 1-80.
14. MOLENBERGHS G, GAENS E. Health Interview Survey. Statistische beschouwingen. Diepenbeek: Biostatistiek, LUC 1994; 1-123.
15. VAN OYEN H, TAFFOREAU J, REGINSTER G, SCHIETTECATTE E. Naar een gezondheidsenquête d.m.v. interview in België: rapport van de pilootstudie. Brussel: COO, IHE 1996; 1-47.