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VERSLAG VAN EEN EG-ONDERZOEK NAAR DE  
BRUIKBAARHEID EN BETROUWBAARHEID  
VAN EEN VRAGENLIJST VOOR HET OPSPOREN  
VAN BEROEPSGEBONDEN RISICOFACTOREN VOOR KANKER



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VERSLAG VAN EEN EG-ONDERZOEK NAAR DE BRUIKBAARHEID EN  
BETROUWBAARHEID VAN EEN VRAGENLIJST VOOR HET OPSPOREN VAN  
BEROEPSGEBONDEN RISICOFACTOREN VOOR KANKER

Fase 1: hanteerbaarheid en betrouwbaarheid van de vragenlijst  
voor het verzamelen van gegevens over beroep en be-  
roepsverleden

Een verslag van de EG werkgroep "occupational and industrial  
history from patients".

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## TEN GELEIDE

Sinds enige jaren is een EG werkgroep bezig met het ontwikkelen van een methode voor het uitvoeren van gemeenschappelijk onderzoek naar de relatie tussen beroep en ziekte. De twee centrale onderzoeksthema's daarbij zijn de ontwikkeling van:

1. een eenvoudig te hanteren vragenlijst, waarmee informatie over beroep en beroepsverleden verzameld kan worden bij patiënten (fase 1 van het onderzoek)
2. een gemeenschappelijke onderzoeksopzet (fasen 2 en 3).

De resultaten van het onderzoek in fasen 1, 2 en 3 zullen na afloop van het gehele onderzoek gerapporteerd worden in een door de EG uit te geven rapport. Inmiddels zijn de resultaten van fase 1 bekend en deze zijn door de coördinator van de werkgroep, namens de werkgroep, gepubliceerd in de daartoe geëigende wetenschappelijk kanalen\*.\*\*

Door middel van deze uitgave willen wij de volledige rapportage over fase 1 ter beschikking stellen aan belangstellenden. Deze uitgave biedt verder de gelegenheid om degenen te bedanken die hun medewerking hebben verleend aan dit onderzoek. In de eerste plaats zijn dat de patiënten en in de tweede plaats willen wij het IKA en de behandelende specialisten bedanken voor hun medewerking.

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\* Validity and repeatability of self-reported work history in EEC countries. In: Progress in occupational Epidemiology (eds. Hogstedt and Reuterwald; Excerpta Medica, 1988)

\*\* Validity and repeatability of self-reported occupational and industrial history from patients in EEC countries. Int. J. Epid. (In press)



## NEDERLANDSE SAMENVATTING VAN HET FINAL REPORT VAN DE EERSTE FASE

Onderzoekers uit 8 landen (België, Denemarken, Frankrijk, Duitsland, Nederland, Italië, Ierland en Engeland) streven ernaar om gemeenschappelijk onderzoek te doen naar de relatie tussen beroep en kanker. Door gemeenschappelijk onderzoek kunnen eventuele beroepsmatige risicofactoren voor kanker eerder en sneller ontdekt worden. Voor dit onderzoek is het vereist dat er één vragenlijst over beroep en beroepsverleden beschikbaar is in en acceptabel is voor elk van de landen. Omdat bekend is dat bepaalde leefgewoonten (bijvoorbeeld roken) samenhangen met een grotere kans op het krijgen van bepaalde vormen van kanker, worden - naast arbeid - ook over deze gewoonten vragen gesteld, zodat daarmee rekening kan worden gehouden in het onderzoek.

De vragenlijst zal worden afgenomen bij een grote groep patiënten met verschillende ziekten. Is er een mogelijk verband met het beroep gevonden dan zal door vervolgonderzoek dat zich specifiek op dat ene verband richt, nagegaan moeten worden wat precies de beroepsmatige oorzaken kunnen zijn geweest.

Het onderzoek waarover hier gerapporteerd wordt heeft tot doel vast te stellen of een eerder ontwikkelde vragenlijst in de praktijk bruikbaar blijkt te zijn. Met bruikbaar wordt dan bedoeld of de vragen die gesteld worden, begrijpelijk zijn, voor maar één uitleg vatbaar zijn en voldoende precies geformuleerd zijn. Dit kan getest worden door de vragenlijst in de praktijk af te nemen en te kijken of er veel antwoorden onbeantwoord zijn of er zeer onduidelijke antwoorden worden gegeven en of er andersoortige antwoorden worden gegeven dan de bedoeling is. Daarbij kan nog onderscheid gemaakt worden tussen schriftelijk en mondeling afgenomen vragenlijsten. Verder zijn de vragenlijsten tweemaal afgenomen om te zien of de vragen in beide gevallen tot dezelfde, meer of minder nauwkeurige, antwoorden leiden.



Aan het onderzoek hebben in totaal 485 patiënten uit 8 landen deelgenomen, waaronder 30 patiënten uit Nederland. Het ging daarbij om manlijke patiënten van 25-65 jaar met de diagnose longkanker, maagdarmkanker, blaaskanker of leukemie. Eén derde van de patiënten is tweemaal schriftelijk geïnterviewd, één derde is tweemaal mondeling geïnterviewd en één derde is eerst schriftelijk en vervolgens mondeling geïnterviewd. In alle gevallen bedroeg de periode tussen de twee interviews 3 tot 6 weken.

De vragen waarop het onderzoek antwoord moest geven luiden:

1. Zijn de antwoorden op een mondeling afgenomen vragenlijst bruikbaar dan de antwoorden op een schriftelijk afgenomen vragenlijst?
2. Indien de antwoorden op de vragen over beroep en beroepsverleden door verschillende onderzoekers worden ingedeeld in bepaalde classificatieschema's (coderen), worden dezelfde antwoorden dan ook op dezelfde wijze ingedeeld (identieke codes)?
3. Indien dezelfde antwoorden over het beroep en beroepsverleden worden gecodeerd volgens een zeer gedetailleerd classificatieschema en volgens een verkort grover classificatieschema, zijn de resultaten van het coderen dan goed vergelijkbaar?
4. Indien de patiënten dezelfde vragen tweemaal beantwoorden, leidt dat dan ook tot tweemaal dezelfde codes voor beroep en beroepsverleden?



De resultaten van het onderzoek zijn als volgt.

1. Mondeling of schriftelijk afnemen van de vragenlijst?

Uit de vergelijking van de antwoorden op de schriftelijk afgenomen interviews uit de eerste ronde met die van de mondeling afgenomen interviews blijkt dat de mondeling afgenomen vragenlijsten tot meer verwerkbare antwoorden leiden. In beide gevallen was er echter sprake van hoge percentages verwerkbare antwoorden op de vragen. Gemiddeld genomen lagen deze percentages bij de schriftelijk afgenomen vragenlijst rond de 90% terwijl bij de mondeling afgenomen vragenlijsten deze percentages iets hoger lagen ( $\pm 95\%$ ).

De schriftelijke vragenlijst werd door 76% van de mensen binnen de 20 minuten ingevuld. De mondeling vragenlijst werd bij 82% van de mensen binnen de 20 minuten afgenomen.

2. Indien de gegeven antwoorden over het beroepsverleden door twee verschillende onderzoekers gecodeerd worden, leidt dat dan tot tweemaal dezelfde codes?

Er bleek een goede mate van overeenstemming aanwezig te zijn tussen de resultaten van de twee onderzoekers voor de gegevens over de laatste of huidige baan (het beroep en het type bedrijf waar men werkt of werkte). Goed wil zeggen dat de onderzoekers in 79% (type bedrijf) en 70% (beroep) van de gevallen tot dezelfde resultaten kwamen. Indien deze percentages gecorrigeerd worden voor toevallige overeenkomst, bedragen ze 76% respectievelijk 65%. Voor de voorlaatste banen en eventuele andere banen waarin men langer dan 10 jaar heeft gewerkt, ligt de mate van overeenkomst 5% tot 10% lager.



3. Eén van de vragen van het onderzoek was of het coderen van de antwoorden over het beroep met behulp van een zeer gedetailleerd classificatieschema en het coderen van dezelfde antwoorden met behulp van een veel minder gedetailleerd classificatieschema, tot dezelfde resultaten zou leiden.

De resultaten lieten zien dat voor het beroep dat uitgeoefend werd in de laatste of huidige baan de mate van overeenstemming redelijk was (55%). Gecorrigeerd voor toevallige overeenkomst is de overeenkomst tussen de resultaten van het toepassen van de twee classificatiesystemen 48%.

4. Tot slot is onderzocht in hoeverre de antwoorden op de eerst afgenomen vragenlijst overeenkomen met de antwoorden op de vier weken later afgenomen (identieke) vragenlijst. Aan de tweede ronde hebben 370 van de 485 patiënten deelgenomen, waaronder de 30 patiënten uit Nederland.

Op de vragen naar rookgewoonten en drinkgewoonten gaf 60% tot 80% antwoorden die op identiek wijze gecodeerd werden. Kleine verschillen werden daarbij genegeerd, bv. als men de eerste keer opgaf 51 jaar oud te zijn en de tweede keer 53 jaar dan kwam men in beide gevallen in de leeftijdsklasse 50-54 jaar terecht kwam. Er waren nauwelijks of geen verschillen tussen de mensen die tweemaal schriftelijk, tweemaal mondeling respectievelijk eerst schriftelijk en vervolgens mondeling geïnterviewd zijn.

Bij het opgeven van het aantal beroepen bleek dat afhankelijk van het interviewschema 62% tot 69% het zelfde aantal beroepen had opgegeven op beide vragenlijsten.



Voor wat betreft het beroep in de laatste of huidige baan is de mate van overeenkomst tussen beide vragenlijsten redelijk (74%). Dat geldt ook voor het beroep in de voorlaatste baan en een eventuele derde baan. Voor wat betreft het type bedrijf waar men werkt of werkte is de mate van overeenkomst tussen beide vragenlijsten goed (voor de meest recente baan 84%). Voor het type bedrijf in vorige banen is de overeenkomst eveneens goed. Analyse van de resultaten uitgesplitst naar interviewschema liet weinig bijzonderheden zien. Blijkbaar heeft de aard van de interviews (tweemaal schriftelijk, tweemaal mondeling of eerst schriftelijk en dan mondeling) weinig effect op de mate van overeenkomst tussen de antwoorden op beide vragenlijsten.

Concluderend kan vastgesteld worden dat de vragenlijst acceptabel is. Slechts zeer weinig vragen worden niet beantwoord en de beantwoording van de vragenlijst kost relatief weinig tijd. De verschillen tussen mondelinge en schriftelijke afname zijn marginaal en lijken een (arbeidsintensieve) mondelinge afname niet te rechtvaardigen. Hieraan kan toegevoegd worden dat in Nederland ook weinig of geen verschillen zijn te verwachten in de respons, aangezien de afname alleen plaats vindt bij patiënten die daarvoor, in een aparte uitnodigingsfase, te kennen hebben gegeven dat ze bereid zijn om medewerking te verlenen.

Voor wat betreft de mate van overeenkomst tussen de codeerresultaten van onderzoekers die dezelfde antwoorden over het beroep en beroepsverleden coderen, geldt dat die overeenkomst redelijk tot goed is. Dit geldt ook voor de mate van overeenkomst tussen de antwoorden van de eerste en tweede ronde. Hierbij moet echter bedacht worden dat de gehanteerde classificatieschema's vrij grof zijn en dat overeenstemming dan relatief gemakkelijk te bereiken is (men bereikt gemakkelijker overeenstemming indien



gekeken wordt of iemand tweemaal in dezelfde leeftijdsklasse van 35 tot 39 jaar valt, dan wanneer gekeken wordt of tweemaal exact dezelfde leeftijd van 37 jaar is geregistreerd).

Vanuit deze laatste, meer kritische optiek moet geconcludeerd worden dat er verbeteringen nodig zijn. Daartoe zijn ook aanvullende analyses verricht die hebben aangegeven dat in de classificatieschema's enkele onduidelijkheden voorkomen, die er in de praktijk toe kunnen leiden dat verschillende onderzoekers verschillende codes toekennen. Deze onduidelijkheden zullen opgehelderd worden door het geven van betere instructies aan de onderzoekers die de antwoorden moeten coderen. Tot slot lijkt het op grond van de ervaringen in dit onderzoek aannemelijk dat training en ervaring met het coderen van beroepen van belang is. Indien veel ervaring is opgedaan met de classificatiesystemen en het oplossen van allerlei typen problemen bij het omzetten van antwoorden op open vragen in codes, zal de overeenstemming tussen onderzoekers respectievelijk de overeenstemming tussen herhaald coderen van dezelfde antwoorden, nog verder toenemen.

A pilot study to obtain occupational and industrial history from patients in EEC countries. Stage 1

Prepared by R. Rona, C. Thornton, S. Patel, P. Vadera on behalf of the EEC Working Party.

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### Summary

The results of a study to assess the feasibility and acceptability of a questionnaire designed to ascertain occupational history and the repeatability of coding occupational and industrial status using an abbreviated version of the coding status are presented for EEC countries. The study demonstrates the difficulty of recruiting cancer patients below age 65. The rate of useful information among patients who completed a self-administered questionnaire was slightly lower than those who completed an administered questionnaire but in general the response rate for most items in the questionnaires in any group was above 90%. Many patients had changed their smoking behaviour within the 10 years prior to this study.

The repeatability of coding occupational status and industrial status for current or last job was satisfactory with Kappa values of 65% and 76% respectively. The within individual repeatability for these variables had similar Kappa values. The validity of coding occupation status with an abbreviated version of coding status compared to the full instructions was satisfactory for current or last occupation. However, observer variability may be fairly large for the abbreviated version. An increase in the coding repeatability for these variables had similar Kappa values. The validity of coding occupational status with an abbreviated version of coding status compared to the full instructions was satisfactory for current or last occupation. However, observer variability may be fairly large for the abbreviated version. An increase in the coding repeatability could probably be achieved with few modifications to the description of occupation status groups and clearer headings for each division of the Industrial Occupation Classification and greater training of coders.

### Background

Since 1978 a group of epidemiologists and clinicians from eight EEC countries has been involved in assessing the availability and value of routinely produced mortality and morbidity data related to occupation. The group has shown that the terminology or classification systems used to define socio-economic groupings varies between countries. However, monitoring occupational hazards in a single country is difficult for the following reasons:

1. At national level, the number of people engaged in specific occupational activities may be small.
2. The level of risk may be too small to detect occupational hazards in individual countries.
3. Reliance on established information systems may not identify possible hazards in a timely way.

Studies drawing on standardised data base from a number of EEC countries may overcome some of the limitations encountered in national studies which have to rely on small numbers.

A study to investigate new approaches to collecting occupational morbidity data began in October 1986. The objective was to improve standardisation in data collection as a basis for the establishment of a system to identify and monitor occupational hazards. Two dimensions must be explored in terms of work experience of individuals: firstly, the worker's occupation i.e. the nature of the work performed, and secondly the industry with which he is associated i.e. the nature of the service or product to which his labour contributes. The purpose of the project is to develop and pilot a simplified classification of

occupational status that could be used with patients attending hospitals in eight EEC countries. This would be based as far as possible on the Classification of Occupations already available in the EEC and the Industrial Classification from the Standard Industrial Classification (1).

The study aims are to develop a uniform system of enquiry into the occupational and industrial history of hospitalised patients in EEC countries and to assess the value of such a system in collaborative studies of selected diseases.

The specific aims of the project are:

- To develop a questionnaire to record occupational and industrial history from hospital patients.
- To explore the possibility and potential difficulties of undertaking case-control studies in EEC member countries, using the developed questionnaire.

The first stage of the study, carried out in the year 1986-87, was to assess the validity, repeatability and acceptability of the questionnaire. Subsequently, the second stage (1987-88) will study the advantages and disadvantages of using newly diagnosed cases or prevalent cases in case-control studies in EEC countries in the context of cancer and occupational history.

The specific objectives of stage 1 were:

1. To assess the acceptability and rate of useful information to a self-administered questionnaire on occupational history, in comparison to similar information obtained from an administered questionnaire.
2. To check the validity and observer repeatability of the abbreviated coding in a proportion of the completed questionnaires.
3. To assess the within individual repeatability of the questionnaire.

#### Materials and methods

An initial questionnaire was piloted in 1985 with the aim of producing a standard questionnaire acceptable to all participating countries.

The questionnaire for the study included the following items: patient's age, marital status, drinking and smoking behavior, diagnosis (using ICD coding), occupational and industrial history and time needed for completion of the questionnaire. Information on occupation and industrial activity was obtained for the last two periods of employment and any employment in which the subject has spent more than 10 years. Details will be obtained on the length of time employed in the job, description of occupation, type of training received and status (self-employed, manager, foreman, apprentice or employee) (Appendix 1).

Headings from the EEC status group classification and major divisions and classes for industrial classification in the British Classification of Occupations 1980 (1) were used for coding purposes (Appendices 2 and 3). Suitable translations were available in each participating country.

The questionnaire was planned to be administered to a sample of 72 male patients in the average age range 25 to 65 years in each participating country. The sample was to be divided into two groups of equal size. Group A was made up of patients with cancer of the lung only, and Group B consisted of equal percentages of patients with cancer of the hematopoietic system, cancer of the bladder and cancer of the gastro-intestinal tract. To assess repeatability of the Self-administered/Administered, Self-administered/Self-administered, and Administered/Administered schedules a block balance model was used and for this purpose labels for random allocation were produced (see Figure 1).

To check the repeatability of the abbreviated coding of occupation and industrial activity, 50 per cent of the questionnaires at the first occasion were systematically selected. If the same person recoded both sets of information, at least a month between the first and the second coding should have elapsed.

Local factors varied from country to country in terms of the number of people interviewing the patients and coding the information, the place where the interviews took place, the time when the patients were approached and the catchment population. The number of interviewers and coders varied from one to four. In most countries they were medically qualified. With few exceptions patients were recruited from out-patient departments and

were approached at any time after diagnosis. In terms of the catchment population there was a great diversity. Some countries had a national catchment population (Ireland, Italy and Holland), in others the catchment population was restricted to a part of the country (Britain and Germany), and for others it depended on the type of cancer (Denmark).

To assess the validity of the abbreviated coding of occupation against the full instructions provided in the Classification of Occupation 1980 (1) the repeatability of the questionnaire was assessed. Coding using full instructions of occupation was planned to be undertaken in Britain for all countries with the exceptions of the Netherlands and Denmark, who were going to do it locally.

The current report gives information about response rates to individual items in the questionnaire and level of agreement for repeatability and validity of the coding, and within individual repeatability of the questionnaire. A Kappa measure gives an overall assessment of agreement and corrects for chance (2). If  $Y_o$  is the observed value and  $Y_e$  is the expected value on the basis of chance alone. Kappa ( $k$ ) is calculated as:

$$k = \frac{Y_o - Y_e}{1 - Y_e}$$

If multiplied by a 100, the result is expressed as a percentage, complete agreement represented by 100%. In general terms Kappa values greater than 75% suggest an excellent degree of agreement and values between 40% and 75% may be taken to be fair to good agreement beyond chance (2).

Within individual repeatability of the questionnaire was assessed by comparing for each item in the questionnaires the responses in first and second according to schedule.

There were some sources of variation in the amount of data collected between participating countries. As Britain was able to start data collection approximately three months before any other country, it accumulated more information than most countries. For other countries, notably the Netherlands and Denmark, the period of data collection needed was restricted by the need to comply with stringent local regulations in respect of ethical approval or approval from a Research Board. Ireland needed to negotiate locally a system to gain access to patients and this delayed the start of data collection.

The results section into two parts. The first part assesses the information of first occasion according to whether the patient was interviewed (self-administered or administered questionnaire). The second part assesses the within individual repeatability of the questionnaire according to schedule as defined in figure 1.

## RESULTS

### First occasion results

#### i) General information

Table 1 gives the number of self-administered and administered questionnaires on the first occasion. Owing to the design of the schedules, there were twice as many self-administered questionnaires as administered questionnaires. Only France and Italy entered to the study the recommended number of patients in the

protocol for all type of cancers. Fourteen German patients were excluded from the analysis as they were female patients.

In Table 2 the number of participating patients by type of cancer, country and age is shown. Patient's age was available in all questionnaires and type of cancer was omitted from two questionnaires. Most patients belonged to the age groups 56-59 and 60-65 years for all cancers in the study with the exception of cancers of the haematopoietic system in which there was a large number of younger patients. Some patients were admitted to the study in spite of being older than 65 years. This

happened mainly in the Netherlands where the researchers found it particularly difficult to recruit patients for the study in the age range 25 to 65 years. This difficulty was reported by other countries and may have been a contributing factor to delaying data collection. Thus, for lung cancer only Italy and France obtained information for at least 36 patients (as specified in the protocol), for cancer of the gastro-intestinal tract Belgium, Denmark and the Netherlands obtained information for a very limited proportion of the 12 patients specified in the protocol, the same countries together with Ireland had difficulty in recruiting patients with cancer of the bladder. In contrast all countries, except the Netherlands, were able to recruit sufficient patients with cancers of the haematopoietic system.

Smoking and drinking behaviours were explored in the questionnaire as they represent important potential contributory or confounding factors for occupational cancers. Most patients (90%) declared to have smoked at least one cigarette a day for as long as a year. Only in patients with cancer of the haematopoietic system was this generalisation inappropriate with approximately 24% never having smoked. Only one patient did not



answer the question. Table 3 shows number of cigarettes currently smoked by schedule and country. More patients in the self-administered group did not respond to this question (7.3%) than in the interviewed group (3.0%). Table 4 shows the average number of cigarettes smoked per day a year ago. Fifty four patients (17.0%) did not answer this question in the self-administered group and 30 (17.9%) in the interviewed group. The increase in non-response rate for this question in comparison to the question on current smoking behaviour may have been due to the word "if" at the beginning of the item about smoking status a year earlier. Thus we could not distinguish between those who did not want to answer the question and those who did not answer the question because they had not modified their smoking behaviour in the past year.

Table 5 shows the number of cigarettes smoked a year ago and type of cancer. Lung cancer patients formed the group with the highest number of smokers, although the percentage of non-smokers was quite high (30.1%). Table 6 gives the number of years since a patient stopped smoking (if relevant) by type of cancer. A large proportion of patients particularly patients with lung cancer appeared to have changed their smoking behaviour over the last five years.

Cigar and pipe smoking was a rare behaviour. Fifteen patients smoked cigars and 8 smoked a pipe. Slightly more patients in the self-administered questionnaire group failed to answer this item (approximately 9%) than in the interviewed group (6.1%).

Table 7 shows wine consumption in grams of alcohol by country and type of questionnaire. Instructions how to convert the consumption in glasses or measures to grams of alcohol per week for each type of alcoholic beverage were given to each partici-

pating country. The instructions provided a figure of alcohol content by volume and each country had to adapt these instructions to local practices e.g. size of glass. Nine per cent of patients who completed the self-administered questionnaire did not give information on this item compared to 4% of interviewed patients. This difference was also observed for other types of consumption of alcohol (beer, fortified wines and spirits). Half the patients did not consume wine. Wine consumption was the highest in Italian patients. Approximately 10% of patients completing the self-administered questionnaire did not give information on beer consumption while only four per cent did not give information on this item in the interviewed group. Higher consumption of beer in terms of grams of alcohol was observed in British, German and Danish patients (Table 8). Spirits and fortified wines were consumed less than wine and beer and most coded values appeared reasonable. In Table 9 total alcohol consumption in grams by country is shown. Although alcohol consumption was higher in Italy the other countries are distributed in the different categories in a very similar pattern.

Half the patients in the study were currently occupationally inactive (Table 10). Only 16 patients omitted this information and most of them completed a self-administered questionnaire. The percentage of occupationally active patients was highest in France, Germany and Britain, and lowest in Ireland and the Netherlands. The relation between active and inactive patients by type of questionnaire administered and country was fairly consistent. However, in Belgium and Denmark this relation went in opposite directions for patients interviewed and those completing a self-administered questionnaire. The percentages of occupationally active patients were 49% for cancer of the lungs, 49% for cancer of the gastro-intestinal tract, 54% for cancer of the bladder and 57% for cancer of the haematopoietic systems.

Length of time occupationally inactive is shown in Table 11. The inconsistency in the number of inactive patients in Tables 10 and 11 may be due to some patients being in work but currently on sick leave or in the process of retiring. A large percentage of patients have been out of work for more than 5 years (31%). The reliability of the information on the occupation may be lower in those who have been occupationally inactive for a longer period of time.

Table 12 shows the number of occupations by patients in each country by type of questionnaire. The majority of patients in all countries had between 1 and 3 jobs recorded. However 14% of the patients recorded more than 3 jobs. Sixteen patients did not answer this question.

ii) Repeatability of occupational status coding

The repeatability of the abbreviated version of the coding of occupational status is shown for each country in terms of percentage of agreement and 95% confidence interval for present or last occupation, previous occupation and any other job in which the patient has been employed for more than 10 years (Table 13). The figures do not include the "not known" group because as we could not distinguish in our analysis cases in which the coder was unable to give a code number to the occupation from those in which there was no description of occupation. The percentage of agreement for present or last job varied from 56 to 80 per cent between countries and averaged around 70 per cent. With the wide confidence intervals observed it can be said that there were small differences in the level of agreement between countries. The level of agreement tended to decrease for the previous job and for any other job in which the patient was employed for more than 10 years. The number of patients with another job lasting 10 years or more was relatively small in most countries. The

Kappa value expressed as a percentage for all countries was fairly high.

Table 14 shows the repeatability of response to the item concerning current or last employment in the abbreviated version of the questionnaire for all countries. The numbers correspond to those shown in the occupation status classification (Appendix 3). In the terms of numbers of misclassification it was found to be difficult to distinguish between the following groups: 9 (skilled and semi-skilled manual workers) and 10 (labourers); 8 (foremen and supervisors of manual workers) and 9 (skilled and semi-skilled manual workers); 12 (clerical, sales and service workers) and 7 (liberal and related professions); 4 (own account workers in industry, construction, trade, transport and services) and 3 (employers in industry, construction, trade transport and services).

Further problems were experienced in Britain. Many patients recorded their occupation as "engineer" without elaborating as on the type of engineering with which they were engaged. (Italy is the only other country that seems to have had any difficulty in this area). In the category transport and communication, whether patients worked for a naval or commercial dockyard was not made clear (this occurred in Medway, England).

### iii) Validity of occupational status coding

Table 15 shows the percentage of agreement and 95% confidence interval by country for current or last, previous and any other long term occupation (more than 10 years) using full instructions and abbreviated instructions. Kappa values are given for the totals. For 6 out of 8 countries the agreement for validity for current employment was lower than in the analysis of repeat-

ability (see Table 13). However this did not happen in the Netherlands, where all coding took place locally, and Britain where the level of agreement was higher for validity than repeatability. For all the countries, except the Netherlands, coding full instructions was undertaken in Britain. It is therefore possible that the difference in the level of agreement between repeatability and validity is not due to the coding instructions but the fact that information using abbreviated and full instructions is coded by the same observer.

In general the level of agreement for previous occupation and any other long term employment was lower than for current occupation. For most countries the level of agreement was quite low with the exception of Belgium and Britain, and in the latter country this may have been due to it being the same person who coded with full and abbreviated instructions. The Kappa values indicate fairly satisfactory agreement.

iv) Repeatability of industrial occupation coding

Industrial occupation is given in 10 divisions and by nearly 100 classes. Table 16 gives the percentages and 95% confidence interval, of agreement for present, previous and any other job for longer than 10 years by country. Kappa values in terms of percentages are also given for the total. Agreement was assessed using the classification at the level of division. In general terms the level of agreement, with exceptions of Britain and the Netherlands was quite high. The Kappa values were at least 70% for each occupation assessed. Table 17 gives the level of agreement of industrial occupation based on 10 division for all countries for current or last job. The headings of columns and rows correspond to the numbers given in the Industrial Classification (see Appendix 2). The main disagreements in classification

on were between: 3 (metal goods, engineering and vehicle industries) and 1 (energy and water supply industries); 3 (metal goods, engineering and vehicle industries) and 2 (extraction of minerals and ores other than fuels; manufacture of metals, mineral products and chemicals); 3 (metal goods, engineering and vehicle industries) and 4 (other manufacturing industries); 4 (other manufacturing industries) and 6 (distribution, hotel and catering, repairs); 6 (distribution, hotel and catering, repairs) and 9 (other services), 7 (transport and communication) and 9 (other services). With the relatively small number of individuals in the study, agreement by class was not studied.

v) Time needed to complete the questionnaire

The British response to this question was not available for patients who entered the study in the first three months of the project. Table 18 shows the amount of time needed to complete the questionnaire by schedule and time. Time to complete the questionnaire was less in the interviewed group. There were large differences between countries, the Italians being the fastest to complete the questionnaire regardless of type of administration.

Within patient repeatability

i) General information

Information on two occasions was available for 370 out of the 485 patients who took part in the study initially. Table 19 gives the number of patients by country and schedule. The main reasons of lost to follow-up were death, deterioration of health and reluctance to participate again in the study. Only five patients of

the total group change status from first to second occasion interview.

Regardless of schedule most patients were consistent, indicating as to whether they have ever smoked. Between 16.2 and 18.8% according to schedule failed to be consistent in their responses to the age when they started smoking behaviour as assessed by the wide age range groups given in Table 2. The highest level of disagreement (18.8%) was observed in the administered-administered schedule (AA).

The percentage of agreement of number of cigarettes currently smoked was lower in the self-administered/self-administered (SS) and self-administered/administered (SA) schedules (Spearman correlation of 0.69 and 0.70 respectively) than AA schedule (Spearman correlation of 0.78). For cigars and pipes the lowest Spearman correlation was observed for those in the SS schedule ( $r=0.70$ ) intermediate in the SA schedule (cigar  $r=0.80$  and pipe  $r=0.88$ ). The reverse tendency was observed in relation to number of cigarettes smoked a year ago in which agreement was highest in the SS schedule.

Table 20 shows the Spearman correlation and percentage of agreement for each category in terms of grams of alcohol. For Spearman correlation the not known values were excluded from the calculation while they were included for the calculation of percentage of agreement. In the calculations for wine and beer the groups were formed as shown in Tables 7 and 8. For fortified wine and spirits there were only three drinking cate-

gories. No schedule showed consistently a higher or lower degree of agreement and correlation for each type of alcohol consumption. The level of agreement was fairly high in most assessments with the exception of fortified wine where the Spearman correlation varied from 0.54 to 0.63.

Approximately 10% of patients in the SA and AA schedules changed occupation activity status while 5.9% did so in the SS schedule. Among the patients changing their answers 72% became inactive and 28% active. With the progression of the disease it is possible that many of these changed correspond to changes in circumstances of the patients. The higher percentage of these patients in the SA and AA schedules than the SS schedule suggest that patients who deteriorated were more prepared to complete an administered than a self-administered questionnaire.

In the three schedules, only between 69.2 and 61.5% indicated the same number of occupations in the two occasions. Admittedly most of the disagreements were differences of one occupation. However the lack of absolute agreement in a large number of individuals indicate difficulties in the obtaining of detailed occupational history of patients.



ii) Occupational status repeatability

Table 21 shows the occupational status repeatability within individual by country. There was large variation in the percentage of agreement between countries in relation to current, previous or another job. Belgium, Ireland and Italy had higher repeatability while the Netherlands and Britain had the lowest repeatability. In spite of this very large variability between countries the percentage of agreement and Kappas were fairly high.

Table 22 shows the occupational status repeatability within individual by schedule. Focusing on the present or last job the three schedules had a very similar agreement level. For previous jobs the SS schedule showed a lower agreement than the other two schedules.

Inconsistencies of repeatability within individuals tended to cluster in three groups: 8 (foremen and supervisors of manual workers) and 9 (skilled and semi-skilled manual workers); between 9 and 10 (labourers) and between categories 8 and 10.

iii) Industrial occupation repeatability

The repeatability agreement within individuals for industrial occupation at the level of division by country was of at least 70% for present or last job (Table 23). More variability was observed for previous job than current job. However the Kappa values for all countries was high. Type of schedule was unrelated to

the percentage of agreement for present or last job and previous job (Table 24). In the group of patients with another job for 10 or more years the number of patients were too few for useful interpretation of results.

### Discussion

The main aims phase 1 of the study were; to assess the feasibility of recruiting patients for the study; the acceptability of the questionnaire; the repeatability of coding occupation in terms of occupation status and industrial status using a shortened version of the coding instructions; the validity of coding occupational states with an abbreviated version and within repeatability of the questionnaire by type of questionnaire (self-administered or administered).

In terms of the feasibility of recruiting patients for the study the main problem was the restricted age range i.e. 25 to 65 years, which was intended to minimise memory inaccuracies in recording occupational history.

However, a large proportion of patients with the relevant cancers referred to the appropriate clinics were older than 65 years which slowed the process of recruiting patients. For some countries in the study special local constraints delayed the beginning of the project. This was especially related to compliance with ethical committees, research boards and arrangements between researchers and clinical colleagues. We suspect these delaying factors will play a less important role in the future as all researchers and collaborating colleagues become more experienced with the basic elements of the study design. The age constraint, however, will be a permanent feature in

studies of cancer patients and consequently the possibility in increasing the age range to include older patients should be explored.

We have not collected data on patients' refusal to enter the study for all countries. In the Netherlands the ethical committee did not allow the Dutch researchers to gather such information. Anecdotal accounts of some patients willing to complete the administered but not self-administered questionnaire reached the researchers. However these were isolated cases.

For most items of the questionnaire more responses were omitted by patients who completed the self-administered questionnaire compared to those who were interviewed. By using the self-administered questionnaire we found between a 2 and 5% lower rate of useful information for the study. In addition those who completed the self-administered questionnaire took longer to complete the questionnaire than the interviewed group. There were proportionately more patients giving information than expected in the interviewed group or the AA schedule than in the group receiving a self-administered questionnaire or in the SS schedule. This could be interpreted as slightly more reluctance of the patient to give information if they have to complete a self-administered questionnaire instead of being interviewed. Thus if it was not for financial constraints, we should prefer to interview every patient in this type of study. However, the percentage of patients who provided useful information once in the study in the self-administered group was quite high (above 90%) for most items in the questionnaire. Therefor this method of data collection is satisfactory for research purposes provided notice is taken of the possible sources of bias highlighted in this study.

Information about tobacco and alcohol consumption was willingly given in most cases. The reliability of the information is not known in this study. A large proportion of patients with lung cancer stated that they were non-smokers. This may have been because we simply explored a patient's smoking behaviour over the past year. However a large percentage of patients stopped smoking between 1 and 10 years before the study began. A question exploring changes in tobacco and alcohol consumption in the last five years should be included in the questionnaire to obtain a more realistic figure of smoking and alcohol consumption of patients before onset of disease.

Information on occupation was given by most patients. By the time the patients were diagnosed, between 40% and 55% according to type of cancer, were occupationally inactive. The longer a patient has been out of a job the more likely it is that the information he gives on occupation is inaccurate. If the age range of patients is increased in a future study the reliability of occupational information may decrease. The great majority of patients had between 1 and 3 occupations. A very large proportion of patients gave a different number of occupations in the first and second occasion. This finding casts doubts on using a very detailed occupational history for research purposes. Therefore, the current questionnaire asking for information about 3 occupations seems to be satisfactory for studies of occupational history. Moreover the low percentage of patients giving information on another job in which they worked for 10 or more years suggests that there may be a very small loss for reducing the questionnaire to the sections current and previous job.

Although there was a small decrease in the percentage of agreement in the analysis of validity of occupational status in comparison to the repeatability analysis, the difference is not

large enough to reject the use of the abbreviated version in favour of the instruction version. The greatest problem was the distinction between skilled and semi-skilled manual workers (employees) and labourers. This is probably because some occupations were coded simply from a patient's estimation of whether training or qualifications are required to do this occupation. With very few exceptions, e.g. group 6 (managers, legislative officials and government administratives) the full instructions version is not clearly more advantageous for coding occupation status than the abbreviated instructions. Our experience with the British data, where repeatability agreement was lower than validity agreement, would indicate that more important than the type of instructions produced (abbreviated or not) is the variability between coders. In Britain when, say, coder A coded using both abbreviated instructions and full instructions the level of agreement was 82%. When coder A used full instructions and another coder, say, coder B used abbreviated instructions the level of agreement was 66%. It would be interesting to assess whether the level of disagreement between coders tend to dissappear as coders become more experienced in the task.

Another finding was that the level of agreement in coding was higher for current or last occupation than pervious or long term occupations. The same finding was observed in the analysis of within individual repeatability. This may be due to two factors: firstly the patients may have given less relevant information for previous and long term occupations which appeared later in the questionnaire and secondly, coders may have drecreased concentration by the end of the questionnaire.

The repeatability for coding the nature of the work using the Industrial Classification of Occupations was quite high. There are certain areas of difficulty between divisions 1,2,3 and 4,

and 4,6,7 and 9 (see Appendix 2). An attempt to improve the resolution between divisions would probably increase the level of agreement. In this study the assessment of industrial occupation in terms of agreement was made at the level of division and not class. A larger sample will be needed for assessing the suitability of the classification at the level of class.

In conclusion the study has shown that it is difficult, but feasible, to recruit patients for an occupational surveillance system based on patients referral to hospital. The rate of useful information for each item in the questionnaire was very high for patients who accepted to enter the study. In view of the very complex division of work in modern societies the reasonable level of repeatability in the coding of occupation in terms of occupational and industrial status is pleasing. There should be an increase in the coding repeatability with more complete, than hitherto, descriptions for some categories of occupation status groups and clearer headings for each division of the Industrial Occupation Classification. The similarity of the Kappa values for the assessment of coding repeatability and within individual repeatability may indicate that the main component of disagreement is in the coding of jobs rather than the lack of consistency in the patient description of recent jobs. Otherwise we would have expected that the Kappa values in the within individual variation that include both, coding and patients' variation, would have been lower than the analysis of coding repeatability. It is expected that greater training for coders in the art of coding variables related to occupation will increase the reliability of the coded information.

## References

1. Office of Population Censuses and Surveys Classification of Occupations 1980. London: HMSO, 1980.
2. Fleiss, J.L. :Statistical Methods for Rates and Proportions. Second Edition. New York: John Willey and Sons, 1981.

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FIGURE 1  
Design of the study

Schedule

Lung Cancer	Self-Administered	Self-Administered
	Self-Administered	Administered
	Administered	Administered
Other Cancers*	Self-Administered	Self-Administered
	Self-Administered	Administered
	Administered	Administered

\* Other Cancers: Cancer of the bladder, cancer of the gastrointestinal tract and cancer of the hematopoietic system.



Table 1. Number of self administered and administered questionnaires by country

	Self-administered	Administered	Total
Belgium	28	18	46
Denmark	33	19	52
France	47	25	72
Germany	37	21	58
Holland	22	8	30
Ireland	39	19	58
Italy	55	29	84
United Kingdom	56	29	85
Total	317	168	485

Table 2. Number of patients by type of cancer, age and country

	Age in years					
	25-50	51-55	56-60	61-65	66-90	Total
<u>A.- Cancer of the lung</u>						
Belgium	4	5	5	8	3	25
Denmark	3	4	6	20	0	33
France	13	4	11	8	0	36
Germany	5	6	8	11	0	30
Holland	3	0	4	2	6	15
Ireland	5	5	5	12	0	27
Italy	6	12	12	12	1	43
United Kingdom	0	4	10	16	0	30
Total	39	40	61	89	10	239
<u>B.- Cancer of the gastro-intestinal tract</u>						
Belgium	1	0	0	0	0	1
Denmark	1	1	0	0	0	2
France	3	1	3	5	0	12
Germany	5	1	0	2	0	8
Holland	2	1	3	0	0	6
Ireland	2	4	1	5	0	12
Italy	2	4	5	5	0	16
United Kingdom	1	2	2	8	0	13
Total	17	14	14	25	0	70

(continuing)

Table 2. Number of patients by type of cancer, age and country

	Age in years					
	25-50	51-55	56-60	61-65	66-90	Total
<u>C.- Cancer of the bladder</u>						
Belgium	3	0	2	3	0	8
Denmark	0	0	2	2	0	4
France	1	3	3	5	0	12
Germany	2	2	2	1	0	7
Holland	1	0	1	1	6	9
Ireland	0	2	1	4	0	7
Italy	1	3	4	4	0	12
United Kingdom	2	2	8	7	0	19
Total	10	12	23	27	6	78
<u>D.- Cancer of the hematopoietic system</u>						
Belgium	6	4	0	2	0	12
Denmark	9	1	0	2	0	12
France	5	3	2	2	0	12
Germany	2	1	6	3	0	12
Holland	0	0	0	0	0	0
Ireland	6	3	2	1	0	12
Italy	6	2	2	3	0	13
United Kingdom	9	3	7	4	0	23
Total	43	17	19	17	0	96

Diagnosis omitted for two patients.

Table 3. Number of cigarette currently smoked by country and type of questionnaire completed

	Number of cigarettes smoked								
	None	1-9	10-19	20-29	30-39	40-89	90 or over	Missing	
<u>Self-administered</u>									
Belgium	4	1	7	9	1	3	0	3	28
Denmark	18	3	5	4	1	0	0	2	33
France	28	5	6	5	1	2	0	0	47
Germany	25	1	5	4	1	1	0	0	37
Holland	12	0	3	2	1	1	0	3	22
Ireland	10	3	3	9	5	0	0	9	39
Italy	38	6	3	4	1	2	0	1	55
United Kingdom	28	1	9	7	1	5	0	5	56
Total	163	20	41	44	12	14	0	23	317
<u>Administered</u>									
Belgium	8	1	3	3	0	2	0	1	18
Denmark	10	3	1	2	0	3	0	0	19
France	17	4	1	1	0	2	0	0	25
Germany	12	0	3	4	1	0	0	1	21
Holland	6	0	2	0	0	0	0	0	8
Ireland	8	2	3	3	1	1	0	1	19
Italy	16	3	3	6	0	1	0	0	29
United Kingdom	13	3	6	2	1	1	1	2	29
Total	90	16	22	21	3	10	1	5	168

Table 4. Number of cigarettes smoked a year ago, if different from current smoking, by country and type of questionnaire completed

	None	1-9	10-19	20-29	30-39	40-89	90 or over	Missing	Total
<u>Self-administered</u>									
Belgium	5	1	2	6	1	0	0	13	28
Denmark	14	2	3	9	0	3	0	2	33
France	8	1	7	16	6	6	0	3	47
Germany	19	2	4	5	4	2	0	1	37
Holland	8	1	2	3	1	1	0	6	22
Ireland	8	0	2	5	2	7	1	14	39
Italy	26	3	5	7	2	5	0	7	55
United Kingdom	21	1	6	16	1	3	0	8	56
Total	109	11	31	67	17	27	1	54	317
<u>Administered</u>									
Belgium	1	0	1	0	2	1	0	13	18
Denmark	5	0	3	7	1	2	0	1	19
France	5	0	3	7	3	7	0	0	25
Germany	10	0	3	2	2	3	0	1	21
Holland	7	0	0	1	0	0	0	0	8
Ireland	5	0	3	1	1	8	0	1	19
Italy	13	1	0	4	2	0	0	9	29
United Kingdom	15	1	1	2	3	2	0	5	29
Total	62	2	14	24	14	23	0	30	168

Table 5. Number of cigarettes smoked a year ago by type of cancer

	None	1-9	10-19	20-29	30-39	40-89	90 or over	Missing	Total
Cancer of the lung	72	4	27	59	20	25	1	31	239
Cancer of the gastro-intestinal tract	27	3	5	9	5	10	0	11	70
Cancer of the bladder	29	2	3	12	3	9	0	20	78
Cancer of the hematopoietic system	41	4	10	11	3	6	0	21	96
Total	169	13	45	91	31	50	1	83	483

Diagnosis omitted for two patients

Table 6. Number of patients stopped smoking, if appropriate, for type of cancer

	Number of years stopped					Total
	Less than 1	1-5	6-10	11-15	16 or over	
Cancer of the lung	43	67	18	8	9	145
Cancer of the gastro-intestinal tract	7	9	4	0	8	28
Cancer of the bladder	2	7	7	5	6	27
Cancer of the hematopoietic system	5	12	6	2	7	32
Total	57	95	35	15	30	232

Tabel 7. Wine consumption by country (in grams of alcohol)

	None	1-99	100-299	300-499	500-800	Not known	Total
<u>Self-administered</u>							
Belgium	7	13	6	1	0	1	28
Denmark	16	12	3	1	0	1	33
France	16	26	2	0	0	3	47
Germany	26	6	3	0	0	2	37
Holland	13	3	1	1	0	4	22
Ireland	29	0	0	1	0	9	39
Italy	6	3	19	22	5	0	55
United Kingdom	41	7	1	0	0	7	56
Total	154	70	35	26	5	27	317
<u>Administered</u>							
Belgium	9	5	4	0	0	0	18
Denmark	12	4	2	0	0	1	19
France	5	16	2	0	0	2	25
Germany	19	1	0	0	0	1	21
Holland	5	3	0	0	0	0	8
Ireland	15	0	1	0	0	3	19
Italy	4	2	8	12	3	0	29
United Kingdom	25	4	0	0	0	0	29
Total	94	35	17	12	3	7	168



Table 8. Beer consumption by country (in litres)

	None	1-99	100-299	300-499	500-800	Not known	Total
<u>Self-administered</u>							
Belgium	9	12	5	0	1	1	28
Denmark	6	18	5	1	0	3	33
France	35	6	0	0	2	4	47
Germany	16	3	13	1	2	2	37
Holland	6	7	5	0	0	4	22
Ireland	7	11	8	4	0	9	39
Italy	43	11	1	0	0	0	55
United Kingdom	20	18	6	3	2	7	56
Total	142	86	43	9	7	30	317
<u>Administered</u>							
Belgium	10	2	4	2	0	0	18
Denmark	4	7	5	2	1	0	19
France	18	3	0	1	1	2	25
Germany	8	3	3	3	3*	1	21
Holland	2	4	1	1	0	0	8
Ireland	4	2	5	4	1	3	19
Italy	22	4	1	0	1	1	29
United Kingdom	18	5	3	3	0	0	29
Total	86	30	22	16	6	7	167

\* A person reported consumption above 800g.

Table 9. Total alcohol consumption (in grams of alcohol)

	None	1-99	100-299	300-499	500-800	Not known	Total
<u>Self-administered</u>							
Belgium	3	10	9	4	1	1	28
Denmark	5	14	11	1	1	1	33
France	14	23	5	1	2	2	47
Germany	10	6	13	2	4	2	37
Holland	0	7	9	2	0	4	22
Ireland	4	9	11	5	1	9	39
Italy	5	2	20	18	10	0	55
United Kingdom	13	18	8	3	3	11	56
Total	54	89	86	36	22	30	317
<u>Administered</u>							
Belgium	6	3	5	3	1	0	18
Denmark	2	8	5	2	2	0	19
France	3	11	5	1	3	2	25
Germany	7	3	4	3	3	1	21
Holland	1	2	4	0	1	0	8
Ireland	3	3	5	3	2	3	19
Italy	3	3	7	12	4	0	29
United Kingdom	13	5	4	2	1	4	29
Total	38	38	39	26	17	10	168

Table 10. Number of patients occupationally active by type of questionnaire and country

	Self-administered			Administered			Total
	Active	Inactive	Missing	Active	Inactive	Missing	
Belgium	17	7	4	4	14	0	46
Denmark	11	22	0	11	8	0	52
France	30	17	0	15	10	0	72
Germany	23	9	5	16	3	2	58
Holland	8	12	2	1	7	0	30
Ireland	12	27	0	4	15	0	58
Italy	24	31	0	11	18	0	84
U.K.	37	16	3	19	10	0	85
Total	162	141	14	81	85	2	485

Table 11. Number of years occupationally inactive by type of questionnaire and country

	Less than 1	1-2.9	3-4.0	5 or over	Total
<u>Self-administered</u>					
Belgium	1	3	2	5	11
Denmark	4	11	5	1	21
France	5	3	3	3	14
Germany	8	5	3	5	21
Holland	1	2	1	6	10
Ireland	6	9	3	10	28
Italy	13	8	4	11	36
United Kingdom	3	5	4	9	21
Total	41	46	25	50	162
<u>Administered</u>					
Belgium	5	3	2	4	14
Denmark	4	2	0	2	8
France	0	3	1	4	8
Germany	4	2	4	2	12
Holland	0	1	2	4	7
Ireland	1	5	4	5	15
Italy	2	4	7	5	18
United Kingdom	3	4	0	3	10
Total	19	24	20	29	92

Table 12. Number of occupations by country and schedule

	No. of occupations						
	1	2	3	4	5 or over	Missing	Total
<u>Self-administered</u>							
Belgium	10	5	6	3	1	0	25
Denmark	13	9	4	2	3	2	33
France	16	11	11	3	4	1	46
Germany	7	14	7	4	1	4	37
Holland	7	3	5	3	1	2	21
Ireland	18	11	6	2	0	0	37
Italy	20	23	9	1	1	0	54
United Kingdom	22	12	8	6	3	3	54
Total	113	88	56	24	14	12	307
<u>Administered</u>							
Belgium	8	4	4	0	2	0	18
Denmark	4	2	7	2	3	1	19
France	3	7	7	5	2	1	25
Germany	6	3	4	3	2	2	20
Holland	1	2	3	0	1	1	8
Ireland	5	7	5	2	0	0	19
Italy	15	10	4	0	0	0	29
United Kingdom	7	10	9	2	1	0	29
Total	49	45	43	14	11	5	167

Table 13. Occupational status repeatability by country

	Present or last job		Number	Previous job		Another job- >10 years	
	Number	% of Agreement *		% of Agreement *	Number	% of Agreement *	
Belgium	14	71% (44 to 98)	10	70% (37 to 100)	1	100%	
Denmark	23	70% (49 to 91)	16	50% (22 to 78)	4	50% ( 0 to 100)	
France	71	80% (70 to 90)	65	72% (60 to 84)	9	67% (31 to 100)	
Germany	28	79% (62 to 96)	20	75% (54 to 96)	20	60% (36 to 84)	
Holland	25	56% (35 to 77)	21	29% ( 7 to 51)	6	50% ( 2 to 98)	
Ireland	23	65% (43 to 87)	12	67% (36 to 98)	9	67% (31 to 100)	
Italy	83	72% (62 to 82)	47	70% (56 to 84)	9	67% (31 to 100)	
United Kingdom	72	63% (51 to 75)	48	50% (35 to 65)	21	67% (45 to 89)	
All countries	339	70% (65 to 75)	239	61% (54 to 68)	79	64% (51 to 77)	
Kappa		65% (60 to 71)		53% (46 to 62)		(44 to 72)	

\* Percentage correctly classified (95% confidence interval)

Table 14. Repeatability of coding occupational status for current or last job (all countries)

*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	All
1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12
2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
3	0	0	6	4	0	0	0	0	0	0	0	0	0	0	10
4	0	0	1	12	1	0	0	0	0	0	0	1	0	1	16
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	1	8	1	1	0	0	0	0	0	0	11
7	0	0	0	1	0	1	22	1	2	0	1	7	0	0	35
8	0	0	0	0	0	2	1	28	6	0	3	2	0	0	42
9	0	0	2	0	0	0	3	3	70	8	0	3	0	0	89
10	0	3	0	0	0	0	0	0	15	49	0	1	0	0	68
11	0	0	2	0	0	2	1	2	0	0	7	2	0	0	16
12	0	0	0	2	0	2	0	0	5	2	1	23	0	0	35
13	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All	14	4	11	19	2	15	28	35	98	59	12	40	1	1	339

\* Numbers correspond to those in Appendix 3.

Table 15. Occupational status validity by country

	Present or last job			Previous job		Another job- >10 years	
	Number	% of Agreement *	Number	% of Agreement *	Number	% of Agreement *	
Belgium	14	64% (35 to 93)	10	10% (50 to 100)	1	100%	
Denmark	26	35% (15 to 55)	16	44% (17 to 71)	5	60% ( 7 to 100)	
France	72	50% (35 to 62)	65	42% (29 to 65)	6	50% ( 2 to 98)	
Germany	27	56% (49 to 61)	19	47% (22 to 72)			
Holland	25	56% (35 to 77)	22	36% (13 to 59)	6	50% ( 2 to 98)	
Ireland	25	48% (27 to 69)	12	75% (46 to 100)	10	30% ( 0 to 63)	
Italy	81	42% (31 to 53)	46	28% (14 to 42)	10	40% ( 5 to 75)	
United Kingdom	70	84% (75 to 93)	49	73% (60 to 86)	22	95% (84 to 100)	
All countries	340	55% (49 to 61)	239	47% (40 to 54)	80	61% (50 to 72)	
Kappa		48% (642 to 55)		37% (29 to 44)		52% (38 to 65)	

\* Percentage correctly classified (95% confidence interval)



Table 16. Industrial occupation repeatability by country

	Present or last job		Number	Previous job		Another job- >10 years	
	Number	% of Agreement *		Number	% of Agreement *	Number	% of Agreement *
Belgium	14	100%	8	100%		1	100%
Denmark	23	83% (65 to 100)	16	94% (79 to 100)		4	100%
France	71	86% (73 to 99)	65	83% (73 to 93)		9	78% (45 to 100)
Germany	28	82% (66 to 98)	20	75% (53 to 96)		20	80% (60 to 100)
Holland	29	72% (54 to 90)	22	68% (46 to 90)		10	50% (14 to 86)
Ireland	25	76% (57 to 95)	13	62% (32 to 92)		9	78% (46 to 100)
Italy	82	85% (77 to 93)	47	87% (77 to 97)		9	89% (63 to 100)
United Kingdom	74	64% (52 to 76)	52	65% (51 to 79)		21	52% (28 to 76)
All countries	346	79% (75 to 83)	243	78% (75 to 81)		83	75% (70 to 80)
Kappa		77% (72 to 81)		75% (69 to 81)			72% (62 to 83)

\* Percentage correctly classified (95% confidence interval)

Table 17. Repeatability of coding Industrial Occupations for current or last job (all countries) based on divisions.

*	0	1	2	3	4	5	6	7	8	9	All
0	24	0	0	1	0	0	1	1	0	0	27
1	0	4	0	4	1	2	0	0	0	1	12
2	0	1	10	6	0	2	0	1	2	0	22
3	0	0	1	47	1	0	1	2	0	0	52
4	1	0	0	5	31	0	0	0	2	1	40
5	0	0	0	2	0	35	0	0	0	1	38
6	0	0	1	1	3	2	23	1	0	6	37
7	0	1	0	1	2	0	0	39	0	2	45
8	0	0	0	0	0	0	0	0	11	1	12
9	0	1	1	1	0	1	3	4	0	50	61
All	25	7	13	68	38	42	28	48	15	62	346

\* Numbers correspond to those in Appendix 2

Table 18. Time (in minutes) to complete the questionnaire by country -  
schedule

	1-9	10-19	>20	N/K	Total
<u>Self-administered</u>					
Belgium	11	14	1	2	28
Denmark	6	18	7	2	33
France	6	36	2	3	47
Germany	14	18	0	5	37
Holland	4	7	11	0	22
Ireland	18	12	0	9	39
Italy	44	5	0	6	55
United Kingdom	15	15	0	26	56
Total	118	125	21	53	317
Percentage	37%	39%	7%	17%	
<u>Administered</u>					
Belgium	12	5	1	0	18
Denmark	5	10	0	4	19
France	1	20	1	3	25
Germany	10	10	0	1	21
Holland	0	3	5	0	8
Ireland	18	1	0	0	19
Italy	28	1	0	0	29
United Kingdom	14	0	0	15	29
Total	88	50	7	23	168
Percentage	52%	30%	4%	14%	

Table 19. Number of individuals by schedule and country

	Schedules			Total
	SS	SA	AA	
Belgium	13	13	16	42
Denmark	12	14	17	43
France	14	16	14	44
Germany	14	12	12	38
Holland	12	10	8	30
Ireland	5	17	16	38
Italy	20	24	26	70
United Kingdom	20	21	24	65
Total	110	127	133	370

Table 20. Within individual agreement for alcohol consumption by schedule

	Self-administered Self-administered Spearman % of correlation agreement		Self-administered Administered Spearman % of correlation agreement		Administered Administered Spearman % of correlation agreement	
Wine	0.83	70.3	0.85	75.4	0.75	69.9
Fortified wine	0.57	79.4	0.63	76.2	0.54	80.5
Beer	0.77	72.1	0.85	69.0	0.68	68.7
Spirit	0.66	76.7	0.79	75.4	0.69	78.9

Table 21. Occupational status repeatability within individual by country

	Present or last job			Previous job			Another job- >10 years	
	Number	% of Agreement *	Number	% of Agreement *		Number	% of Agreement *	
Belgium	39	92% (82 to 100)	22	100%		6	100%	
Denmark	43	77% (63 to 91)	27	67% (47 to 87)		7	71% (30 to 100)	
France	44	82% (70 to 94)	37	73% (57 to 89)		0		
Germany	36	67% (50 to 84)	27	67% (47 to 86)		9	78% (45 to 100)	
Holland	25	52% (30 to 74)	21	48% (24 to 71)		5	40% (13 to 93)	
Ireland	35	80% (65 to 95)	17	88% (70 to 100)		10	70% (36 to 100)	
Italy	69	80% (70 to 90)	36	80% (66 to 94)		6	67% (39 to 95)	
United Kingdom	55	55% (40 to 69)	35	60% (42 to 77)		7	87% (53 to 100)	
All countries	346	74% (69 to 78)	222	72% (65 to 78)		50	71% (58 to 84)	

Kappa

\* Percentage correctly classified (95% confidence interval)

Table 22. Occupational status repeatability within individual by schedule

Schedule	Present or last job		Previous job		Another job > 10 Years	
	Number	% of agreement*	Number	% of agreement*	Number	% of agreement*
Self-administered/Self-administered	97	74% (64 to 84)	59	61% (47 to 65)	10	100%
Self-administered/Administered	119	74% (65 to 83)	74	77% (66 to 88)	22	68% (44 to 92)
Administered/Administered	130	74% (66 to 82)	89	76% (66 to 86)	20	68% (42 to 95)

\*Percentage correctly classified (95% confidence interval)

Table 23.

	Present or last job			Previous job		Another job- >10 years	
	Number	% of Agreement *	Number	% of Agreement *	Number	% of Agreement *	
Belgium	32	91% (80 to 100)	19	89% (72 to 100)	5	100%	
Denmark	43	70% (55 to 85)	27	93% (82 to 100)	8	88% (69 to 100)	
France	44	98% (93 to 100)	37	84% (71 to 97)	0		
Germany	36	75% (59 to 91)	27	55% (34 to 76)	9	66% (46 to 88)	
Holland	29	72% (54 to 90)	23	78% (59 to 97)	4	75% (20 to 100)	
Ireland	35	83% (69 to 97)	17	88% (70 to 100)	10	60% (25 to 95)	
Italy	69	83% (73 to 92)	37	78% (63 to 93)	6	100%	
United Kingdom	56	80% (69 to 91)	36	69% (52 to 85)	8	50% ( 9 to 91)	
All countries	344	84% (80 to 88)	223	78% (72 to 84)	50	74% (61 to 87)	
Kappa		82% (78 to 86)		76% (70 to 82)		72% (59 to 85)	

\* Percentage correctly classified (95% confidence interval)



Table 24. Industrial occupation repeatability within individual by schedule

Schedule	Present or last job		Previous job		Another job > 10 Years	
	Number	% of agreement*	Number	% of agreement*	Number	% of agreement*
Self-administered/Self-administered	98	82% (73 to 90)	59	81% (71 to 92)	12	58% (26 to 90)
Self-administered/Administered	118	86% (79 to 92)	76	75% (65 to 85)	20	85% (67 to 100)
Administered/Administered	128	84% (78 to 91)	88	80% (71 to 89)	18	72% (49 to 96)

\*Percentage correctly classified (95% confidence interval)

Bijlage

**VRAGENLIJST**



UNITED KINGDOM

1

STUDY OF HEALTH AND OCCUPATION  
IN THE EUROPEAN COMMUNITY

Hospital ..... 

2

Survey number ..... 

2		
3	4	5

Type of interview ..... 

6

7

8

	Day	Month	Year												
Date .....	<table border="1"><tr><td></td><td></td></tr><tr><td>9</td><td>10</td></tr></table>			9	10	<table border="1"><tr><td></td><td></td></tr><tr><td>11</td><td>12</td></tr></table>			11	12	<table border="1"><tr><td></td><td></td></tr><tr><td>13</td><td>14</td></tr></table>			13	14
9	10														
11	12														
13	14														

YOUR ANSWERS TO THE FOLLOWING QUESTIONS WILL PROVIDE  
INFORMATION FOR A STUDY OF HEALTH IN THE EUROPEAN COMMUNITY.  
YOUR ANSWERS WILL BE TREATED AS STRICTLY CONFIDENTIAL.

1.	How old are you ? .....	<input type="text"/> <input type="text"/> (Years)	15-16
2.	Status:		
	Married .....	<input type="text"/>	
	Single .....	<input type="text"/>	
	Widower .....	<input type="text"/>	<input type="text"/> 17
	Divorced/separated .....	<input type="text"/>	
	Other .....	<input type="text"/>	
	(please specify)		
3.	Have you ever smoked for as long as a year? (This means at least one cigarette a day (or one or more cigars a week or one or more ounces of pipe tobacco a months)	YES <input type="text"/> NO <input type="text"/>	18
	If NO, please skip to question 8.		
	If YES:		
4.	How old were you when you started smoking?	<input type="text"/> <input type="text"/> Year	19-20
5.	How much do you now smoke on average?		
	i) Number of cigarettes a day	<input type="text"/> <input type="text"/>	21-22
	ii) Number of cigars a day	<input type="text"/> <input type="text"/>	23-24
	iii) Pipe tobacco, in ounces, a week	<input type="text"/> <input type="text"/>	25-26

6. If you have cut down or stopped in the last 5 years how much did you use to smoke on average before the change?

i) Number of cigarettes a day

--	--

27-28

ii) Number of cigars a day

--	--

29-30

iii) Pipe tobacco, in ounces, a week

--	--

31-32

7. If you have cut down, or no longer smoke, please state the year of change.

--	--

33-34

8. How much alcohol do you drink per week?

(If you have cut down in the last 5 years state how much you used to drink in an average week)

Wine .....(glasses per week)

--	--	--

35-37

Fortified wines ..... (glasses per week)  
(sherry, port,

--	--	--

38-40

Beer .....(pint per week)

--	--	--

41-43

Spirits .....(measures per week)

--	--	--

44-46

WE WOULD LIKE SOME INFORMATION ABOUT JOBS YOU HAVE DONE IN THE PAST.

9. Are you now in paid employment YES 

--

 NO 

--

 or are you self-employed?

47

10. If you are not working at present how long is it since you were last in employment (please write in number)

--	--

 years 

--	--

 months

48-49 50-51

11. Please list any jobs in which you have been employed for  
AT LEAST a year starting with the most recent:

Most recent:

	Occupation	From	To
1.	_____	19__	19__
2.	_____	19__	19__
3.	_____	19__	19__
4.	_____	19__	19__
5.	_____	19__	19__
6.	_____	19__	19__

52

\_\_\_\_\_

WE WOULD LIKE SOME MORE DETAILS ABOUT YOUR JOBS

(Please go to next page)

## 12. PRESENT OR LAST JOB

## 13.- PREVIOUS JOB

14.- ANOTHER JOB IF YOU WORKED  
FOR 10 YEARS OR MORE.

a) What job do/did you do?

.....  
.....b) What type of industry or  
business do/did you work for,  
that is what did it make or do?.....  
.....c) Do/did you need a particular  
qualification or training  
to obtain this job?YES ☐ NO ☐

If YES, please specify:

.....

d) Are/were you:

- A manager working for  
an employer? ☐
- a foreman or supervisor  
working for an employer? ☐
- Working for an employer? ☐
- Self-employed? ☐

e) If self-employed:

Do/did you employ others? ☐ ☐  
YES NO

a) What job did you do?

.....  
.....b) What type of industry or  
business did you work for,  
that is what did it make or do?.....  
.....c) Did you need a particular  
qualification or training  
to obtain this job?YES ☐ NO ☐

If YES, please specify:

.....

d) Were you:

- A manager working for  
an employer? ☐
- A foreman or supervisor  
working for an employer? ☐
- Working for an employer? ☐
- Self-employed? ☐

e) If self-employed:

Did you employ others? ☐ ☐  
YES NO

a) What job did you do?

.....  
.....b) What type of industry or  
business did you work for,  
that is what did it make or do?.....  
.....c) Did you need a particular  
qualification or training  
to obtain this job?YES ☐ NO ☐

If YES, specificity:

.....

d) Were you:

- A manager working for  
an employer? ☐
- A foreman or supervisor  
working for an employer? ☐
- Working for an employer? ☐
- Self-employed? ☐

If self-employed:

Did you employ others? ☐ ☐  
YES NO

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

<input type="checkbox"/>	<input type="checkbox"/>
53	54

<input type="checkbox"/>	<input type="checkbox"/>
55	56

<input type="checkbox"/>	<input type="checkbox"/>
57	58

<input type="checkbox"/>	<input type="checkbox"/>
59	60

<input type="checkbox"/>	<input type="checkbox"/>
61	62

<input type="checkbox"/>	<input type="checkbox"/>
63	64