

# Healthcare seeking behaviour in Europe

Explained by background characteristics and differences in national healthcare systems between the countries



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Before you lies the second thesis from my hand. For this thesis, I wanted to work on my quantitative data-skills. Although I always utterly underestimated this side of analysis, I have to say that all this positivist modelling was harder than I intentionally thought. The topic of healthcare systems and healthcare seeking behaviour proceeded from the discussions I had with my supervisor of this thesis, Fanny Janssen. My gratitude to her is great, because she critically commented the thesis during the whole research process, like a compass that this geographer needed.

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## Abstract

In this thesis, an attempt is made to see whether the Healthcare Seeking Behaviour of patients in 15 EU-countries is different from each other, and whether these differences can be explained by different National Healthcare Systems (NHS) in the countries. Main focus within these healthcare systems are differences in private payments of the inhabitants, because it could be that due to rising private payments, the healthcare seeking behaviour is shifting from formal to more preference for informal medical advice. At the background of the conceptual model for this thesis lies the healthcare utilisation model of Anderson (1995). The relations between preference for formal advice among the inhabitants of the EU-15 and the population statistics on the one hand and differences in national healthcare systems on the other are analysed in this thesis.

The analysis done in this thesis is split in two parts. First the relations between healthcare seeking behaviour and the background characteristics are analysed. This is done by analysing the relations per country first, and then comparing the relations between preference for formal advice and the individual background characteristics. In the second part of the analysis, the relations between differences in the national healthcare system and preference for formal advice are analysed. First, the differences between the systems are summed up, and formed into additional variables. In the second part of this analysis, these differences are analysed separately to see what their relation is with healthcare seeking behaviour.

From the results can be concluded that there are some differences in healthcare seeking behaviour in the 15 countries researched, although in general gender and older age show a rise in preference for formal advice, while a rise in education level in general shows a decrease in preference for formal advice. Thus, as can be seen in the analysis, there are some countries where different patterns can be seen. There are many differences when looking at the relation between preference for formal advice and income.

Of the variables researched, most of the difference is explained by the background characteristics, thus the variables showing a difference in NHS's show to be an addition to the models, especially when the significant interactions between all variables are included. First, the overall preference for formal advice in countries using the Canadian system of national healthcare insurance model is higher than in the other systems. The relations between NHS-variables and preference for formal advice are highly interacting with income. Next for some NHS-variables, there are also interactions with other background characteristics. It further seems that an increase in private payments leads to a decrease in preference for formal advice for the lower income groups, while it leads to an increase in preference for formal advice for the groups earning 18000-59999 euro.

Differences in healthcare seeking behaviour are finally explained by the population characteristics as well as by differences in national healthcare systems. The chosen background characteristics do not all have a significant relation with healthcare seeking behaviour though in every country. Because the models including the variables do not explain much of the difference when comparing the Nagelkerke  $R^2$ 's, it could also be that other variables explain more difference in preference for formal advice, than the variables chosen in this research.

# Contents

Abstract	1
1. Introduction	4
1.1 Research questions & Objectives	4
1.2 Research relevance	5
1.3 Outline of the thesis	6
2. Theories and Definitions	7
2.1 Healthcare seeking behaviour and use of healthcare services	7
2.2 Use of healthcare services as a process	8
2.3 National Healthcare Systems	10
2.4 Conceptual model	12
3. Study design	15
3.1 Datasets	15
3.2 Study population	16
3.3 Operationalisation	16
3.4 Methods	19
3.5 Research Design	20
4. Healthcare seeking behaviour explained by Background characteristics	22
4.1 Overall differences in healthcare seeking behaviour between countries	22
4.2 Countries using British national healthcare system model	23
4.2.1 Denmark 23   4.2.2 Greece 24   4.2.3 Ireland 26   4.2.4 Italy 28	
4.2.5 United Kingdom 30	
4.3 Countries using Canadian national healthcare system model	32
4.3.1 Finland 32   4.3.2 Portugal 34   4.3.3 Spain 36   4.3.4 Sweden 37	
4.4 Countries using German national healthcare system model	40
4.4.1 Austria 40   4.4.2 Belgium 42   4.4.3 France 43   4.4.4 Germany 45	
4.4.5 Luxembourg 47   4.4.6 Netherlands 49	
4.5 Conclusion	50
4.5.1 Age 51   4.5.2 Education 52   4.5.3 Sex 53   4.5.4 Income 53	
5. Healthcare seeking behaviour explained by differences in Healthcare Systems	55
5.1 Financing health systems in the EU-15	55
5.2 Healthcare seeking behaviour explained by the NHS-model	57
5.3 Healthcare seeking behaviour explained by private payments	60
5.4 Healthcare seeking behaviour explained by OOP-payments	64
5.5 Conclusion	66
6. Conclusion	68
6.1 Discussion	70
6.2 Recommendations for further research	72
6.3 Recommendations for policymakers in healthcare	72
References	73
Appendix: used syntaxes in analysis SPSS	77

## List of Figures & Tables

Figure 2.1 Andersen & Newman's Healthcare utilisation model	8
Figure 2.2 Andersen's Behavioural model for health seeking behaviour	9
Figure 2.3 National Healthcare system in countries researched	11
Figure 2.4 Conceptual model	13
Figure 4.1 Overall preference for formal and informal advice per country	22
Figure 4.2 Probabilities of preference for formal advice by age	51
Figure 4.3 Probabilities of preference for formal advice divided by education level	52
Figure 4.4 Probabilities of preference for formal advice divided by income	54
Figure 5.1 Total per capita expenditure on health in 2005 (PPP in \$)	55
Figure 5.2 per capita government and private expenditure on health in % and \$ (2005)	56
Figure 5.3 Effect of income and share of private payments on preference for formal advice	62
Figure 5.4 Effect of income and share of OOP payments on preference for formal advice	64
Figure 5.5 Effect of age and share of OOP payments on preference for formal advice	65
Table 3.1 Number of respondents in ESS-2 database, per country	16
Table 4.1 Percentage of people preferring formal against informal advice, Denmark	23
Table 4.2 Odds for preference of formal first advice on medical problem, Denmark	24
Table 4.3 Percentage of people preferring formal against informal advice, Greece	25
Table 4.4 Odds for preference of formal first advice on medical problem, Greece	26
Table 4.5 Percentage of people preferring formal against informal advice, Ireland	27
Table 4.6 Odds for preference of formal first advice on medical problem, Ireland	28
Table 4.7 Percentage of people preferring formal against informal advice, Italy	29
Table 4.8 Odds for preference of formal first advice on medical problem, Italy	30
Table 4.9 Percentage of people preferring formal against informal advice, UK	30
Table 4.10 Odds for preference of formal first advice on medical problem, UK	31
Table 4.11 Percentage of people preferring formal against informal advice, Finland	32
Table 4.12 Odds for preference of formal first advice on medical problem, Finland	33
Table 4.13 Percentage of people preferring formal against informal advice, Portugal	34
Table 4.14 Odds for preference of formal first advice on medical problem, Portugal	35
Table 4.15 Percentage of people preferring formal against informal advice, Spain	36
Table 4.16 Odds for preference of formal first advice on medical problem, Spain	37
Table 4.17 Percentage of people preferring formal against informal advice, Sweden	38
Table 4.18 Odds for preference of formal first advice on medical problem, Sweden	39
Table 4.19 Percentage of people preferring formal against informal advice, Austria	40
Table 4.20 Odds for preference of formal first advice on medical problem, Austria	41
Table 4.21 Percentage of people preferring formal against informal advice, Belgium	42
Table 4.22 Odds for preference of formal first advice on medical problem, Belgium	43
Table 4.23 Percentage of people preferring formal against informal advice, France	44
Table 4.24 Odds for preference of formal first advice on medical problem, France	45
Table 4.25 Percentage of people preferring formal against informal advice, Germany	46
Table 4.26 Odds for preference of formal first advice on medical problem, Germany	46
Table 4.27 Percentage of people preferring formal against informal advice, Luxembourg	47
Table 4.28 Odds for preference of formal first advice on medical problem, Luxembourg	48
Table 4.29 Percentage of people preferring formal against informal advice, Netherlands	49
Table 4.30 Odds for preference of formal first advice on medical problem, Netherlands	50
Table 4.31 Probabilities of preference for formal advices divided by sex	53
Table 5.1 Share of PPP paid on private expenditure and OOP-payments	57
Table 5.2 Relations between the NHS-model and HSB in logistic regression	58
Table 5.3 Effect on probabilities due to interactions in model 3 of table 5.2	59
Table 5.4 Relations between the share of private payments and HSB in logistic regression	61
Table 5.5 Relations between the share of OOP-payments and HSB in logistic regression	63



## 1. Introduction

In the coming years, the population of the EU will be 'greying'. One of the biggest effects of this overall ageing of the population is that public spending on pensions and health costs in the independent member states of the EU are projected to increase (Carolle & Costello, 2006).

In the Netherlands for instance, the 'council of public health and healthcare' (RVZ) predicted that with the current rise of costs in health care, by 2015 all government profits will have to go to the healthcare system. Main reason for this growth in costs is the increasing proportion of elderly in the population, and thus an increasing use of healthcare. The RVZ suggested a couple of advices on current health care policy in the Netherlands. One of these advices is concerned with the direct payments of certain services for elderly provided as healthcare in 2008 (RVZ, 2008).

This is just one example of the rising claim on more direct payments instead of other, more public, means to obtain money to pay for the national healthcare system. An effect of user charges on pressing the costs of healthcare might be that people to a lesser extent consult a General Practitioner for every symptom that might indicate a health problem, because they have to pay for every visit.

On the one hand this could lead to a lower amount of unnecessary or excessive use of health care services. On the other hand, not only the unnecessary health services, but necessary services could deteriorate as well, leading to a later diagnosis of serious health problems than it would be when people just went to the doctor for first diagnosis (Mossialos et al. 2002). It needs no further explanation that this might lead to serious problems.

In addition, as van Doorslaer et al (1999) have shown, 'direct payment'-measurements to pay for health care is mainly affecting the households with a lower income within a population, leading to inequality in acces to health care among lower income groups (van Doorslaer et al, 1999). It is not said that the choice to go to a GP is solely based on economic constraints, as healthseeking behaviour could also be determined by other background characteristics, like sex or age (f.i. Koopmans & Lamers, 2007).

The different ways of how inhabitants pay health care, either direct or indirect, might thus have an effect on the way people seek health care. A possible shift from cost-sharing systems (like full taxation) to a system including 'user charges' per visit, might affect the choice to either go to a doctor or to choose for a more self-help cure for physical problems.

As the research of van Doorslaer et al (1999), most research on the policy-effects on healthcare seeking behaviour are not based on the patient behaviour within a system, but on economic comparisons between systems, and their possible effects on household economics. In this thesis, an attempt is made to compare healthcare seeking behaviour of patients to probable policy changes, by comparing the countries that are using certain policies to countries that aren't using these policies, or at least to a lesser extent.

### 1.1 Research Questions and Objectives

To get insight in whether different national healthcare systems (NHS) affect the healthcare seeking behaviour (HSB) of the populations in the EU-15<sup>1</sup>, the focus in this thesis is laid upon the health seeking behaviour with common symptoms in the different countries, and whether there are differences in HSB on the basis of background characteristics. In the second part of this research, the analysis focuses on whether different relations can be seen between healthcare seeking behaviour and differences in the NHS's. The main objective of the second part of this thesis is to get insight in whether the financing of the NHS in more public or private ways leads

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<sup>1</sup> Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom

to a difference in health seeking behaviour for individuals within the populations, separated on the basis of background characteristics.

The research consists of three parts, divided by answering the research questions:

1. 'Are the differences in healthcare seeking behaviour between countries explained by differences in population distribution?'
2. 'What is the share of public and private financing in national healthcare systems in the selected EU-countries?'
3. 'Are the differences in Healthcare seeking behaviour between countries explained by differences in National Healthcare Systems?'

Although these national health systems are compared, this study should mainly be seen as a baseline-study for possible future research on this subject. It might be that differences in healthcare seeking behaviour between countries are mainly due to for instance cultural differences between the countries. Still, in this thesis the assumption is made, that when certain similar differences occur between countries with similar healthcare financing systems, this could also be an effect of different national health systems. The main research question answered in the conclusion will therefore be:

Are the differences in healthcare seeking behaviour between the countries in Europe explained by differences in population distribution or by differences in national healthcare systems?

## 1.2 Research relevance

### Scientific relevance

The main scientific relevance of this thesis is that it gives insight in the differences of healthcare seeking behaviour within and between the countries. Thereby, it is sought to see whether a possible relation between preference for formal advice and different policies in countries can be seen, and thus whether the preference for formal advice is influenced by a shift in policy, and for which groups the effects might be bigger or less.

Further this research could be used as a baseline study for further research on differences in Healthcare seeking behaviour in Europe for certain parts of the population. Because the focus in the thesis lies on relations within the country between healthcare seeking behaviour and background characteristics as well as on overall differences in healthcare seeking behaviour between the countries using different national healthcare systems, a clear overview of these differences in prospected healthcare seeking behaviour for individuals who aren't already sick will be given. This could be contributing to other researches on healthcare seeking behaviour that are patient based and thus leaving out the people who don't go to doctors, as well as to researches that are solely based on possible economic constraints.

### Societal relevance

The main societal relevance of this research is the research done in the last analysis chapter, where the effects of possible shifts of future policy changes in the healthcare seeking behaviour of groups of population are analysed. The results of this can be used to see what the effects of policy shifts are within different groups within the population, and which of these shifts are more or less preferred when equality in healthcare provision for the population is the goal.

Furthermore, when for instance the healthcare systems in Europe are homogenised to a further extent, the differences between at least the different populations within the EU15 countries will be clarified in this thesis, and could be taken into account when policies are created, instead of solely basing the healthcare policy on economic aspects only.



### 1.3 Outline of the thesis

The structure of the following chapters in this thesis will be as follows: Chapter 2 focuses on the theoretical aspects of the research. In paragraph 2.1 definitions of healthcare seeking behaviour and different sorts of healthcare resources are described. In paragraph 2.2 a description is given of the different theoretical models that exist on healthcare seeking behaviour. In paragraph 2.3 a general overview will be given of the theories on national healthcare systems and financing of these systems, as well as a description of the different systems occurring in the analysed countries. In paragraph 2.4 an outline is given of the eventual conceptual model used in the research. In chapter 3, the data and methodology used in this research will be described. First information about the used questionnaires and the study population is given. Then, the different variables and used statistical methods are outlined, in order to answer the individual research questions.

In chapter 4 the healthcare seeking behaviour between the individual countries is compared on the basis of age, sex, income and education. First the countries are individually analysed in paragraph 4.2 to paragraph 4.4. In the last paragraph of chapter 4, the effects of the background variables on the preference for formal advice will be compared to each other.

Chapter 5 first will focus on the differences in the national health care systems in the EU-15 countries. This is followed by a comparison of the relations between Healthcare seeking behaviour in the countries and differences in national healthcare systems. In the last chapter, the main research question of this thesis will be answered. Last, a discussion will be included to finalise the thesis.

## 2. Theories and Definitions

### 2.1 Healthcare seeking behaviour and use of healthcare services

In this chapter the definitions and underlying theories will be outlined, which are used in this thesis. The focus in this paragraph will be on the main topic of the thesis, namely the use of and choice between different healthcare resources. This choice between different healthcare resources is a major part of the 'healthcare seeking behaviour' of individuals, for it involves the eventual action undertaken by an individual to cure their illness (Kroeger, 1983; Andersen, 1995).

Healthcare seeking behaviour is highly related to health seeking behaviour. Health seeking behaviour is defined in many ways by different researchers. Våga (2004) gives a clear outline of the different ways this term is conceptualised. The differences in definitions are varying mostly on what is included and excluded within the concept of healthcare seeking behaviour. In Liefoghe et al. (1987, in Våga, 2004, pg. 9) for instance, 'health seeking behaviour' is defined as 'what people do, either individually or collectively, to maintain and/or return to health'. This definition is somewhat of a combination of what Kasl & Cobb (1966) call 'illness behaviour' and 'health behaviour'. According to Kasl and Cobb (1966), health behaviour encompasses actions to maintain a perceived health in preventing disease, where 'illness behaviour' includes the actions people undertake to return to a healthy state (Kasl & Cobb, 1966, cf. Ward, 1997, pg. 21). Fabrega (1975) takes a more broad definition of 'health seeking behaviour' in the concept of 'ethno-medicine'. In this definition, the concept of 'healthcare seeking behaviour' by Liefoghe et al. (1987) is extended with a notion on how people from different cultural backgrounds perceive and cope with the illness (cf. Våga, 2004, pg. 9). Another more encompassing definition, around the same concept of healthcare seeking behaviour, is the definition of 'therapy management' by Janzen & Arkinstale (1978). In the term 'therapy management', not only the choice of a therapy is involved, but also the process of diagnoses and the evaluation of the used treatments to cure from an illness. Another thing important according to Janzen & Arkinstale (1978) is the involvement of the people surrounding the ill person, and the influence of them on the choice for a certain healthcare resource (Janzen, 1987, in Våga, 2004).

Health seeking behaviour in this thesis will be defined as 'any activity undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy' (Ward et al. 1997, pg 21). This definition is chosen, for the focus of the thesis will be on actions that people might undertake in the future to recover from a perceived illness. Next, this definition is suitable, for the thesis will focus on individual actions, and not on group reactions, or the influence of persons in the neighbourhood of the subjects on their choice for a certain type of healthcare resource. It therefore is more some kind of healthcare seeking behaviour that is researched, instead of the ambiguous term 'health seeking behaviour'. For this reason in the rest of the thesis will only be spoken about healthcare seeking behaviour.

There are different ways to classify healthcare resources that might be chosen in the healthcare seeking behaviour of individuals. According to for instance Kleinman (1980), healthcare resources can be classified in three categories, namely the popular, folk and professional sector. The popular sector in this classification consists of the non-professional healthcare, where an illness is first recognised and treated, like for instance under self-care or family-based care. With the folk-sector he means local healers, like herbalists or spiritual healers. The professional sector consists includes biomedical practitioners, but also non-western professionalized healthcare systems like Chinese medicine (Hardon et al., 2001).

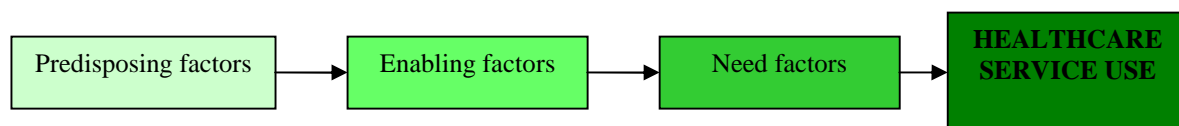
Another way to classify these healthcare resources is the distinction between formal and informal medical practice. In this distinction formal medical practice is carried out by people with a formal qualification to perform medical treatments. Informal medical practice is performed by people without this qualification (Hardon et al., 2001). For instance in figure 2.2, Andersen divides these healthcare systems, namely personal healthcare practices or practices done by the person itself, and the use of 'biomedical' healthcare recourses, or practices performed by authorised medical personnel like General practitioners (Andersen, 1995).

## 2.2 Use of healthcare services as a process

As well as there are many different definitions for healthcare seeking behaviour, there are also a number of different models that can be applied in researching this topic. Among the best-known models are the Health Belief Model<sup>2</sup>, the theory of planned behaviour (Ajzen, 1991), the 'four A's'-model (e.g. Good, 1987, in Hausmann-Muela et al., 2003), pathway models to predict the path people move in their search for perceived health (Good, 1987, in Hausmann-Muela et al., 2003) and the 'healthcare utilisation model' (Andersen, 1995). Some of these models, like the Health Belief Model and the theory for planned behaviour, focus mainly on the conception of illness by respondents and on factors that lead to any action against an (perceived) health problem (Janz et al, 2002; Ajzen, 1991). Because in this thesis the question is not whether on conceptions of people that will eventually lead to seeking medical help, but to see what kind of help they are perceived to seek, these models won't be used. The four A's model is mainly focussing on the distance to healthcare facilities (Hausmann-Muela et al., 2003). Because in this thesis the availability to healthcare isn't questioned<sup>3</sup>, this model is also rejected. Although an adaptation of the pathway model by Good (1987) could also in theory be used for this research, the main reason not to use this model is because only information is available about the person first consulted in the used database, and not about the path that might lead to the eventual preference for a certain healthcare facility.

In this thesis, the healthcare utilisation model of Andersen is chosen as the underlying theory for the conceptual model. Main reason to take this model is because it takes account of both external factors and different types of healthcare resources in the latest version of the model. Furthermore, the model is focussed on quantitative analysis, and is specifically focused on treatment selection (Hausmann-Muela et al., 2003). The original version of this healthcare utilization model is shown in figure 2.1.

**Figure 2.1** Andersen & Newman's Healthcare utilisation model



Source: Andersen & Newman, 1973, in Hausmann-Muela et al., 2003

In the original healthcare utilisation model, shown in figure 2.1, healthcare service use is explained by the predisposing characteristics, enabling resources and perceived need of a respondent. Demographic factors, social structure and personal health beliefs of the respondent are meant by the term predisposing characteristics (Andersen, 1995).

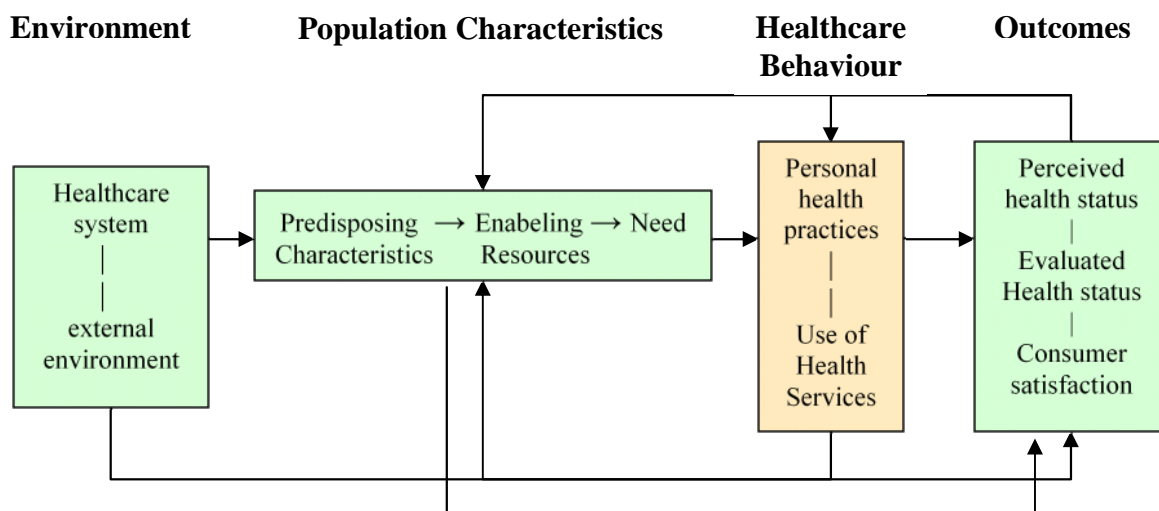
<sup>2</sup> The health belief model is described in for instance Janz et al., 2002

<sup>3</sup> For the assumption can be made that in western European countries there is an overall regional coverage of at least primary healthcare and biomedical treatment is generally accepted in Western Europe as general medical treatment.

With demographic factors, variables that encompass biological aspects are meant that might predict the need for medical assistance by a person, such as age and sex. The determinants for social structure measure the status of a person within society, such as education, occupation and ethnicity (Andersen, 1995). Last aspect of the predisposing characteristics are personal health beliefs, or attitudes, values and knowledge about health and health systems by a person, that might influence their perceptions of need and use of healthcare resources (Andersen, 1995, pg. 2). There are many different attitudes towards health and healthcare that might influence healthcare behaviour. Examples of these attitudes are concepts towards illness (Lüschen et al., 1995), concepts of health (Blaxter, 1990), attitudes towards medicine (Britten et al., 2002), but also expectations of medical care (Kooiker & Mootz, 1996) and social distance between doctors and patients (Stevenson et al. 2002).

The availability of healthcare personnel and facilities and the know-how to get to use these services are included as enabling resources in the model. These characteristics are influenced by the predisposing characteristics, and might influence the perceived need for healthcare. The need within the behavioural model of healthcare services use is the perceived need of a person to actually use a healthcare resource (Andersen, 1995). Over time, this original health care utilisation model has been adapted to the model shown in figure 2.2.

**Figure 2.2** Andersen's Behavioural model for health seeking behaviour



Source: Anderson, 1995. pg. 8.

In the revision of the behavioural model, some other aspects are included, that either directly or indirectly influences the personal healthcare use. External factors are added to the model, like the healthcare system and the physical, political and economic environment of the location someone is searching for care. These external factors might influence both the outcomes of healthcare service use and the personal characteristics (Andersen, 1995). The healthcare system, and especially the healthcare financing system, as an external factor will be outlined in paragraph 2.3. Next, personal health practices like diets and self-medication are added to the model as healthcare behaviour. Therein the model takes account of both formal and informal individual healthcare behaviour. Last, the effect of the outcomes of certain health care use were added, as past experiences might also have an effect on both population characteristics and healthcare behaviour of a person. Due to previous experiences with a certain sort of healthcare resource, either personal or experiences of relatives, the choice for a certain healthcare resource could be influenced (Andersen, 1995).

### 2.3 National Healthcare Systems

The external factor from the model of Andersen that will be researched in this thesis in relation to the choice of different healthcare resources is the effect of the National Healthcare System (NHS) on healthcare seeking behaviour of the population or parts of populations within the countries. In this, a healthcare system consists of 'behaviours and organisations deliberately constructed to provide for the healthcare needs of individuals, groups, communities and the wider society' (Lüschen et al, 1995, pg.14). According to Lüschen et al (1995), these NHS's consist of three components, namely the medical system, the healthcare seeking behaviour of the general population in a country and national healthcare policy. Because the objective in this thesis lies mainly in national policy changes regarding health care, the used definition will be narrowed to the national healthcare policy.

According to Tajnikar & Bon a (2007), the NHS's in Europe can mainly be differentiated by two key features: the 'predominant ownership of health care providers' and the way the healthcare system is financed. Within the ownership there are three ways occurring in the countries researched, namely whether providers of health care are predominantly public, predominantly private or a combination of the two. By this is meant whether the healthcare providers are owned by the government (public), an organisation independent of the government is responsible for payment of the General Practitioners (private) or an (semi-)private healthcare provider is paid directly by the government (Kornai & Eggleston, 2001 cf. Tajnikar & Bon a, 2007). Healthcare providers in this meaning are not the persons actually giving medical assistance, like GP's, but the organisation that contracts these general practitioners, and pays them for their services.

The other main difference between the systems is the way the individual countries finance and organise their national 'healthcare systems' through healthcare financing policy (Grosse-Tebbe & Figueras, 2005; Tajnikar & Bon a, 2007). The European observatory on national healthcare systems (2002) separated four main methods to collect the money to pay for the national healthcare provision, namely through (1.) taxation, (2.) social insurance contribution, (3.) voluntary insurance premiums and (4.) out-of-pocket payments and user charges (Mossialos et al. 2002).

By taxation, the 'system where health care services are predominantly financed by (national or local) taxes' (Mossialos et al. 2002) is meant. Social insurance contribution is a 'system where contributions to healthcare insurance are compulsory for everybody in a population. This financing system is usually levied by third-party player, with some independence of the government. The compulsory rates are also usually levied on different rates according to income' (Mossialos et al. 2002). In a system of 'voluntary insurance premiums', 'healthcare insurance is taken up and paid for at discretion of individuals or employers on behalf of individuals, substitutive, supplementary or complementary healthcare insurance' (Mossialos et al. 2002). The last system to pay for healthcare systems is through out-of-pocket payments and user charges, which refers to a system where 'the contribution to the cost of health care is based on use of care by actual patients' (Mossialos et al, 2002).

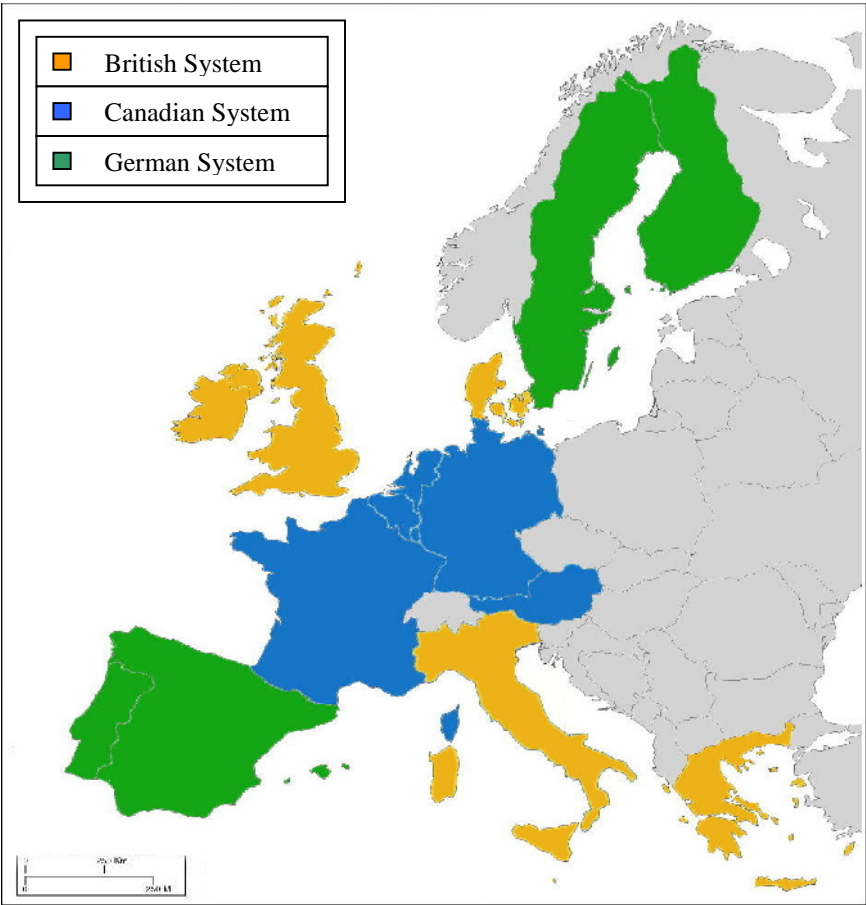
Most of the countries researched in this thesis from the government side finance their healthcare system mainly through taxation, like for instance in the Scandinavian countries researched, the UK, Ireland, Spain, Portugal and Italy. Some other countries use mainly a system of social insurance contribution, like in the Netherlands, France, Germany and Luxembourg. A system where a mix of both social insurance contribution and taxation mainly finance the national health care expenditures is seen in Belgium, Austria and Greece (Mossialos et al. 2002).

The different financing systems, and a combination of these within the different countries, might have a different effect on the vertical and horizontal income distribution due to the financing of health care in a country, between different layers of the population. A separation can be made between progressive and regressive healthcare financing systems. In a progressive financing system, the costs for healthcare are an equal share of household income between the different households in the country, where in regressive systems the share of costs on health care are unequally distributed, and healthcare is more expensive for one group in comparison to others (van Doorslaer et al. 1999).

When both the ownership and the governmental contribution to the NHS's are combined, three overall NHS-models can be seen in the countries researched, as can be seen in figure 2.3. The NHS-models occurring in the researched countries are the British model, the Canadian model and the German model (Kornai & Eggleston, 2001, cf. Tajnikar & Bon a, 2007).

In the British model, or national health system, a combination is made between state-owned healthcare providers, and financing directly through the state-budget. In this system, the national government serves as both purchaser of services and as the manager and owner of health care organisations. One of the main attributes of this system is universal and equal access to basic health care services for all patients. Primal example of this model is the United Kingdom, and therefore this system is also known as the British model. Other countries included that use a similar model, are Denmark, Greece, Ireland and Italy (Kornai & Eggleston, 2001, cf. Tajnikar & Bon a, 2007).

**Figure 2.3** National healthcare system in countries researched



In the Canadian model, or national health insurance model, the national health care benefit package is publicly financed, but the healthcare providers are privately owned. Still, though purchaser and provider roles are separated, the main emphasis in this model is on universal and equal access to almost all standard health care services, and the fees for services are still regulated by the government. The insurer and sponsor function are integrated in a single-payer institution, which operates on a regional basis. Originated in Canada, countries included in the thesis that use this model are Finland, Portugal, Spain and Sweden (Kornai & Eggleston, 2001 pg. 109; Phelps, 2003 pg. 558-560).

In the German model, or social insurance model, sickness funds operate as a non-profit organisation, of which (households of) workers are compulsory members. Both the workers themselves as their employers contribute to these funds. The link between sickness funds and health care providers is formalised in this model. The sickness funds combine public financing by the government and the responsibility for contracting purchasers and providers. The all over insurance role in this model is decentralised, while a standardised package of services is guaranteed in this system. Main advantage of this system is that patients have a free choice in picking their healthcare provider and sickness fund. Countries following this model are Germany, after which the model is named, Austria, the Netherlands, Luxembourg, France and Belgium (Kornai & Eggleston, 2001 pg. 109-110; Phelps, 2003 pg. 561-562).

#### 2.4 Conceptual model

In the conceptual model, shown in figure 2.3, the different aspects of the research are outlined. The new behavioural model of Andersen (1995) forms the basis of the conceptual model. The focus in the conceptual model lies on the choice in different healthcare resources, outlined in the model as healthcare seeking behaviour. The different healthcare resources are classified in two categories, based on the different classifications of healthcare resources set in paragraph 2.1. This division is based on the separation between formal and informal medical practices, narrowing the formal practices to practices performed by biomedical healers like General Practitioners, and informal practices performed by all other groups. The actual choice between different healthcare resources for different groups is therein probably influenced by the background characteristics, differences in NHS's and interactions between the variables.

The population characteristics included in this research are Socio-economic Status, including income and education of the respondents, and the demographic factors sex and age. The hypotheses are analysed whether the background characteristics are related to Healthcare seeking behaviour, and what the effect of these background characteristics is on healthcare seeking behaviour within the countries.

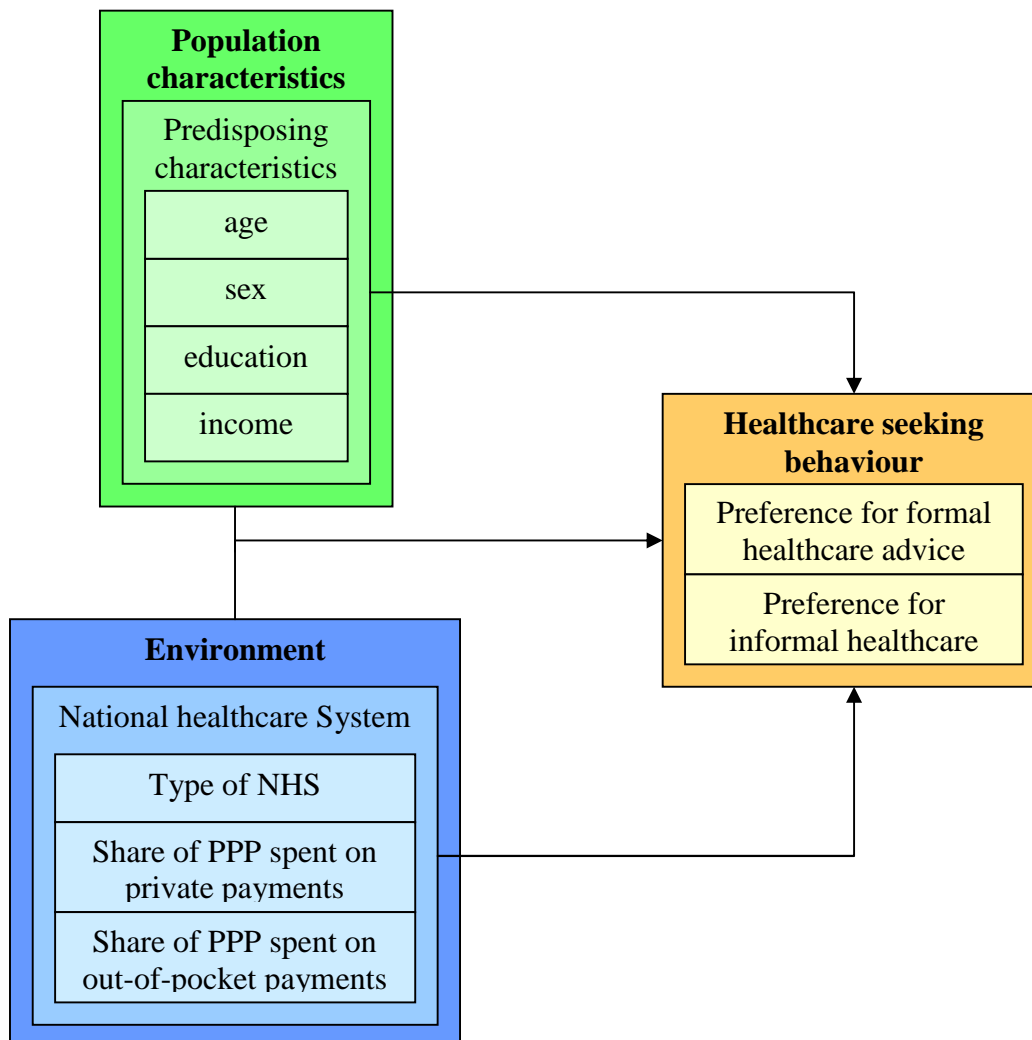
The expectation is that there are relations between healthcare seeking behaviour and the background characteristics, for at least in some countries, the relation between healthcare seeking behaviour and the background characteristics are analysed. It is expected that the preference for formal advice raises with age, as for instance Pinquart and Sörensen(2002) have shown in their comparison between the US and Germany. In relation to gender, the main hypothesis is that the preference for formal advice is higher for females than for males, as is also described in Pinquart and Sörensen (2002) for Germany, as well as in Galdas et al. (2004) for the UK, and Apostolidis et al. (2009) have shown for Greece.

With regards to socio-economic differences, it is expected that the preference for formal advice decreases with a rise of education. This hypothesis is based on the research of Adamson et al. (2003), in which it is stated that formal healthcare seeking behaviour is higher among the people with lower SES in the UK. In Canada, according to the research done by Smith et al. (2009), a lower education and a higher income both show an increasing effect on the use of formal healthcare resources.



Mortimer et al. (2003) have shown that the healthcare seeking behaviour in Sweden is lower for women with lower income than with higher income. Thus the main hypothesis for the effect of income on preference for formal and informal advice is, that the preference for formal healthcare seeking behaviour is lower among lower income groups.

**Figure 2.3** Conceptual model



The NHS's are included in the research as an external factor that might influence the preference for healthcare resources. First the effect of the division between types of NHS's in a British, Canadian or German model on healthcare seeking behaviour is analysed. The effect of differences in NHS-model on the preference for formal advice is unsure, and thus no clear theory-based hypothesis is connected to this part of research. It might thus be that the preference for formal advice in countries using a certain model is higher than in countries using another model.

Next, two variables denominating differences in private costs within the NHS's are included further, because it might be that due to higher private costs the future healthcare seeking behaviour of choosing for formal advice decreases. Although not being a very significant portion of the overall payment, out-of-pocket payments and user charges are of special interest in this part as a mean to finance the healthcare system. Reason for this is mainly, that although serious problems with out-of-pocket payments (Carolle & Castello, 2006), there seems to be a tension in same countries to increase the share of these user costs (RVZ, 2008; van Doorslaer et al, 1999).

It might thus be that due to higher direct costs for formal care and therein unequal access for different income-groups, individuals prefer cheaper informal healthcare resources. The hypotheses lying behind this part of the analysis are whether the difference in preference for formal advice between countries is explained by differences in national healthcare systems. It is expected that the preference for formal advice decreases with an increase of private and out-of-pocket costs for healthcare, in combination maybe to lower income. This hypothesis is based on the hypothesis about income, that the preference for formal healthcare is lower among lower income groups, than for higher income groups.

The assumption in relation to healthcare costs is that formal healthcare sometimes is too expensive for these lower income groups. An increase of the private costs might lead to an even bigger decrease in preference for formal healthcare among lower income groups, especially when the absolute increase in prices is equal for everyone, and not taking into account that the burden of price-increases on relative household income is higher for lower income groups than for higher income groups.

The interactions between NHS's and background characteristics are also included, to see whether the differences between NHS's interact with background characteristics in explaining a difference in preference for formal or informal advice. It seems logical from the possible relation between rise of costs and income that the private costs and OOP-payments interact with income. The interactions between the other background characteristics and differences in NHS in explaining healthcare seeking behaviour will also be researched, mainly because of the conclusion of Mortimer et al. (2003) that the effect of lower preference for formal advice mainly occurs among women with lower income, more than with men.

Some parts intentionally included in the population characteristics within the behavioural model of Andersen are left out of the conceptual model for several reasons. Other predisposing characteristics, like ethnicity and personal health beliefs, are left out of the analysis. Main reason to exclude these variables from the thesis is because the research would otherwise become too all-embracing and probably even become unfocused. Reason to leave out the Enabling resources is, because the assumption will be made that all respondents in the EU-15 countries researched, know how to use the different healthcare resources, and that healthcare facilities and personnel are available in the whole region. The factor 'need' is not included, because in the research it is not the question if a person seeks help, but who he or she turns to when a symptom is occurring. Further no other political, economic and physical environment will be included in this research, than the differences in national healthcare systems. Last, also the possible effect of previous healthcare seeking behaviour is excluded from the analysis.

### 3. Study design

#### 3.1 Datasets

For this thesis, a quantitative survey analysis is done for the populations of the EU-15 countries. The data used in this thesis is derived from two different sources. For answering the first and third sub question, mainly data from the second round of the European Social Survey is used. The European Social Survey is 'an academically-driven social survey designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations' (ESS, 2007). The data in the ESS-database is collected through a questionnaire performed in most European countries, on a wide variety of social topics. This information is given on an individual level. It is therefore quite useful to compare differences between European countries. The database is distributed by the Norwegian Social Science Data Services (NSD) (Jowell et al. 2005).

The core questionnaire of all ESS-rounds encompasses individual-level information about trust in institutions, political engagement, socio-political values, moral and social values, social capital, social exclusion, national, ethnic and religious identity, well-being, health and security, demographic composition, education and occupation, financial circumstances and household circumstances for almost every European country. This core-questionnaire is then complemented for every ESS-round with a couple of so-called 'rotating modules', which encompass themes that are not included in every ESS-round (Jowell et al. 2005).

From the four ESS-questionnaires that are performed till 2009, special focus in this thesis will be on the rotating module 'health and care seeking in a changing Europe', included in the round 2 questionnaire (ESS-2) performed in the last months 2004 and in 2005. In this specific module, the respondents were asked about their concept of health, concepts of illness, medicine-taking behaviour, attitudes towards treatment and their perception on the doctor-patient relationship and the seeking of ambulatory healthcare (Jowell et al. 2005).

Of this rotating module, the questions used involve preference for formal advices in healthcare seeking behaviour for formal and informal care, when suffering from several symptoms like a sleeping problem, serious headache or a sore throat. The preferable healthcare-resource when suffering from different symptoms will be calculated from the results on these questions as the dependant variable in the analysis of chapter 4 and 5. Next, also many background characteristics are included in this ESS-database, like sex, age, income variables and variables describing education (Jowell et al., 2005).

The second sub-question will be mainly answered using the data from the World Health Organisation Statistical Information System (WHOSIS) to compare the health financing situation for the EU-15 in 2005 on a national base. In this dataset, the core health statistics are included for all countries who are a member of the World Health Organisation, including the countries researched, on a national level. The variables that occur from this analysis then will be corrected using the purchasing power parity, or PPP per capita in the countries, so that the prices of healthcare costs can be compared between the countries. The PPP-rates over 2005 are derived from data from the Worldbank (Worldbank, 2008).

### 3.2 Study population

In table 3.1 some general information about the amount of participants is given for all countries included in the thesis. The study-population in this thesis consists thus of all people that entered the ESS-2 survey and residing in Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden or the United Kingdom. Of the 29516 respondents that filled in the ESS-2 questionnaire, in total 19978 respondents are analysed in this thesis. The cases where respondents did not answer all the questions were excluded from the analysis. Next, for every country all respondents are asked about the health module, with exception of Italy. In Italy, the questionnaire was split into two groups, where half of the respondents were asked about the health module in the ESS-2-questionnaire. This is the main reason why the number of respondents in Italy is much lower than in other countries.

**Table 3.1** Number of respondents in ESS-2 database, per country

<b>Country</b>	<b>Total number of respondents</b>	<b>Number of used respondents</b>
Austria	2256	977
Belgium	1778	1318
Danmark	1487	1194
Finland	2022	1798
France	1806	1468
Germany	2870	2001
Greece	2406	1494
Ireland	2286	1594
Italy	1529	482
Luxembourg	1635	907
Netherlands	1881	1523
Portugal	2052	1105
Spain	1663	1017
Sweden	1948	1702
United Kingdom	1897	1398
Total	29516	19978

### 3.3 Operationalisation

Beginning the operationalisation of the data, it first needs to be said that for the logistic regression analyses done in chapter 4 and 5, the data is weighted by the variable design weight (dweight) which is incorporated in the ESS-2 database (Jowell et al., 2005). In this way, the country-specific data can be used as a sample of the real population, with groups lesser occurring in the real population given lesser weight due to the design weight.

In this thesis we pursue to see whether there are differences in healthcare seeking behaviour between the countries researched. The variable that shows the overall healthcare seeking behaviour per person in this thesis is:

- The overall preference for formal advice of respondents for either formal or informal advice.

This self-reported healthcare seeking behaviour of respondents is a relatively valid variable for the actual healthcare seeking behaviour of people (Reijneveld & Stronks, 2001<sup>4</sup>). Furthermore, it is used in other similar researches as a denominator for healthcare seeking behaviour (Grosse Frie et al, 2009), and the results of this thesis are therefore more easily comparable to other researches.

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<sup>4</sup> Although this article is mainly about comparing retrospective self reported healthcare seeking behaviour against actual healthcare seeking behaviour, it is assumed that this also accounts for future self reported healthcare-seeking behaviour of respondents.

In the ESS-2 2004 questionnaire, four questions are asked in relation to preference for formal advice of different health resources, when suffering from various symptoms. Three of these variables are combined into one variable. These three variables are:

- who would you go to first for advice/treatment if very sore throat?(ADVSTHR)
- who would you go to first for advice/treatment if serious headache?(ADVHACH)
- who would you go to first for advice/treatment if serious sleeping problem?(ADVSLEP)

The fourth variable is concerning first advice or treatment if having a serious backache. This variable is left out of the analysis, because the overall preference for formal advices for all populations were very different for this variable in comparison to the others variables concerning first treatment.

The three variables included in the research were then transformed into dichotomous variables, with the outcomes of 'preference for formal advice' and 'preference for informal advice'. Among these informal practices the categories that a person goes to nobody, friends and family or consults the internet for treatment are included. When a person goes to a doctor, a nurse, a pharmacist/chemist/drugstore or to medical help-lines for first advice, this is classified as formal advice. The question lying at the background of this separation is whether the diagnosis is set by medically untrained versus medically trained personnel. In the case of for instance internet consulting, although this information might have a medical basis, the eventual diagnosis is done by the person themselves, and thus it is classified as informal advice. With medical help-lines, it is assumed that the diagnosis is done by medically trained, formal healthcare personnel, although without seeing the patient. Therefore medical help-lines are seen as formal healthcare resources.

Finally, these three variables were combined into one variable 'the overall preference for formal or informal advice', where a person who two or three times chooses formal advice with the individual symptoms is categorised as someone with an 'overall preference for formal advice'. Someone who prefers informal advice in two or more occasions is classified as a person with an 'overall preference for informal advice'. In this way, a binary dependent variable is created, which will be used for further analysis of the healthcare seeking behaviour.

These perceived preference for formal advices will be compared in the first place with predisposing or background characteristics. The background characteristics used in the analysis are income and education, which combined form the social economic status, and the variables age and sex.

#### -Socio-Economic Status

Although Socio-economic status normally consists of a combined variable of income, education and job status, in this thesis the focus will only be on the separate variables education and income. Reason to put in both these variables, is because for instance Winkleby et al. (1992) have shown, that there is little relation between education and income within health seeking behaviour, whereas occupation and education are related to each other. Therefore, occupation is left out of the analysis. Although, as stated in for instance Winkleby et al., mostly only education is used as a measure for SES (Winkleby et al., 1992), in this study I choose to leave the variable income in, mainly because of the lack of relation between both. Another reason to leave in the variable income is because no variable for education level is given for the United Kingdom in the ESS2-dataset, thus leaving income as the only denominator for SES in this country.

#### -Income

For income the variable 'total net. household income' (hinctnt) is used. The total net household income is given in 12 categories. The number of categories in this variable will be reduced to six categories, namely to under 6000 euros net. annual household income, 6000-11999 euro, 12000-17999 euro, 18000-29999 euro, 30000-59999 euro and 60000 euro or more annually. The categories are selected, because in the theory it states that the access for healthcare might become a problem for lower income groups. Therefore, it is chosen to specify the lower income groups (till 18000 euro annually) to a greater extent, and combine the groups with a higher income. Also the three groups with the lowest annual income are though combined, because the number of respondents in these categories was very low in some cases.

#### -Education

Two variables that denominate education will be used in this thesis. For chapter 4, the variable 'highest level of education' (edulvl) included in the ESS-2 database will be used. The reason to use this variable is because it separates the levels of education most clearly. In the original database, highest level of education was split in 7 categories, ranging from not completed primary education to secondary stage of tertiary education. This variable will too be rearranged into three categories. The respondents that did 'not complete primary education', or have finished 'primary' or 'first stage of basic' are combined in the category 'primary education'. Respondents with 'Lower secondary or second stage of basic' education and 'upper secondary' are combined as 'secondary education'. The respondents that completed 'post-secondary, non tertiary education', the 'first stage of tertiary' or 'second stage of tertiary' education are classified as people that completed 'post-secondary or tertiary education'. This variable is thus a clear denominator for the level of education the respondents had.

There is just one problem with the variable 'edulvl', which is that there is no data about the education level in Great Britain in the ESS-2 database. To include Great Britain in the analysis done in chapter 5, where all countries are compared to each other, the variable education in years 'edyurs' is included. Although this variable doesn't explicitly show the difference between education levels, the length of education is the best substitute variable for education level in the ESS 2 database, where more years of education are assumed to be comparable to a higher level of education.

#### -Age

In the ESS-2 2004 database, the year of birth of the respondents (yrbrn) is included. This variable first is transformed to the variable age at 31 December 2005, by using the formula  $age = 2005 - yrbrn$ . The year 2005 is chosen as a reference-year, because most of the ESS-2 data-collection was done in 2005.

This variable is then recoded into a variable age in 15 year categories. The categorisation of the age-groups is based on the spread in age among all respondents within the ESS-2 surveys, which ranges from 13 to 103. Therefore, the following age-categories are categorized: the respondents 'younger than 28 years', 'aged 28-42 years', 'aged 43-57 years', 'aged 58-72 years' and 'aged 73 years and older'. Although this way of categorisation isn't very conventional, the categorisation of population by these age-groups seems most fitting the data used.

#### -Sex

The last explaining variable that is included in this research is sex. The binary variable (gndr) included in the ESS-2 database is used directly as the explaining variable for sex.

Next, variables denominating differences in the NHS-model are used in the last part of the analysis. The first variable in this that will be included is the variable derived from chapter 2, namely:

-NHS-model

A new variable will be created, classifying the countries by ownership, and thus grouping the countries by the British, Canadian or German model. Countries that will be labelled as countries using the British model are Denmark, Greece, Ireland, Italy and the UK. Countries that will be classified as using the Canadian model are Finland, Spain, Portugal and Sweden, while Austria, Belgium, France, Germany, Luxembourg and the Netherlands will be classified as countries using the German model. The variable NHS-model will be included in the analysis as a categorical variable.

-Share of PPP paid to private payments/ Out-of-pocket payments

Second, the different ways for total share of private payment and the share of Out-of-Pocket Payments are included as separate variables in the analysis. The average costs per country in dollars will be divided by the average PPP per capita over 2005 in that country (Worldbank, 2008). In this way, the share of costs become comparable for every country researched, without the data being disturbed by differences in living standards in the countries researched. Both the share of private payments and the share of OOP-payments will be included in the model as continuous variables.

### 3.4 Methods

In the first part of the research, a chi<sup>2</sup>-test is used to see whether there is a significant difference between the countries. After this, the focus will be more on variables that might explain differences in healthcare seeking behaviour. As can be seen in the previous paragraph, the dependent variable for healthcare seeking behaviour isn't continuous but rather more categorical, and a linear regression analysis would thus not fit the analysis.

Instead, a logistic regression analysis is chosen as the main research method. The reason to choose a logistic regression is because the dependant variable as well as most of the explaining variables are either nominal/ordinal, or continuous, and therefore the logistic regression procedure seems the best fitting method to see whether the odds of difference for the groups are significantly different.

Generally, in logistic regression the probability for success (1) over failure (0) is calculated. These probabilities in a logistic regression are calculated through the model:

$$\pi = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_k X_k)}}$$

This formula to calculate the probability can be transformed to calculate the log-odds in the model, which forms the following formula:

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots + \beta_k X_k$$

In this way, a simulated linear equation is created, which is easier to interpret. In the shown formulas, the  $\pi$  is the probability of 'success', or in this thesis the probability to prefer formal advice.  $(\pi / 1 - \pi)$  refers to the odds, or the ratio of the probabilities.  $\beta_0$  is representing the constant in the equation, where  $X_1$  to  $X_k$  refer to the explaining variables, or in case of nominal, ordinal or interval variables one category within these variables.  $\beta_1$  to  $\beta_k$  refer to the coefficients of the explaining variables, or category of explaining variable. The reason why for nominal, ordinal or interval variables the coefficient is grouped by category, is because the relation between the variables isn't linear and starting at 0, and therefore for every population the coefficients are calculated separately (Demaris, 1995).



To perform this binary logistic regression for every country, SPSS is used. The Enter method is chosen as the method on how to include the explaining variables in the model. This method is used because in this way all the variables are included in the model, and thus a comparison can be made in possible differences caused by the background variables between countries.

The outcomes of these logistic regressions are presented by showing the odds-ratios in the first place. To see whether the relation between Healthcare seeking behaviour and the background characteristics or differences in NHS is significant, the p-values will be included in the tables describing the odds-ratios in the logistic regression models done. Next also the Nagelkerke  $R^2$  is included in the tables, to see to what extent the model predicts more difference than when the relations between the explaining and dependent variables are not included in the model.

Some odds ratios show a negative difference. A negative difference in odds ratio is included in the output of for instance SPSS as a value between 0 and 1. In this thesis is chosen to transform the values between 0 and 1 to a value that shows the opposite, so that the effect for these negative ratios do not seem lower than for positive ratios. The calculation behind this transformation is  $(1/\exp(\ ))^{-1}$  (Sieben & Linssen, 2009). The transformed negative coefficients will then be added with an -1-sign, so that it is visible in the prescription of the models, that a negative odds-ratio is present. Last, the constant that is initially included in logistic regression models in SPSS is excluded, so that the effects shown are only the differences in preference for formal advice, and are not interfered by this constant.

For the models showing the effect of differences in NHS on the HSB of individuals, also interactions are included. Interactions are incorporated in the models to see whether the relation between background variables and differences in NHS explain differences in preference for formal advices for formal care more, than when only the overall effects are included in the model. By using the forward stepwise method for the different possible interactions, the interactions that are significantly showing a relation between formal preference for formal advice and the variables are automatically included in the logistic regression model, while those which aren't significantly explaining the difference are rejected from the model.

### 3.5 Research design

The focus in the first part of the analysis will be on individual healthcare seeking behaviour of the respondents per country, and whether the healthcare seeking behaviour can be explained by background characteristics. The question answered in chapter 4 will be:

'Are the differences in healthcare seeking behaviour between countries explained by differences in population distribution?'

First the analysis will focus on a description of percentages showing the relations between individual healthcare seeking behaviour and differences in the populations are separated by background characteristics. Next, a logistic regression analysis is done for every country, comparing the background characteristics to the healthcare seeking behaviour, and trying to see which of the background characteristics show a significant difference in healthcare seeking behaviour. In this part it is chosen to analyse the countries separately, instead of combining them into one logistic regression model.

Logistic regression models are separately made for all countries, because the focus is on possible differences between the countries. When all countries are put in one logistic regression model, the effects occurring in bigger countries might outclass the differences in smaller countries when the data is weighted by a population weight. When the data is not weighted by population weight, the effect of the countries with more respondents would thus be bigger.

Second it is thus chosen to compare the probabilities of formal healthcare seeking behaviour for different groups per explaining variable. This comparison seems more meaningful than when just putting all countries in a model and see which direction is most occurring in all the countries, and clearly shows the differences in formal healthcare preference for formal advice.

To gain insight in the difference and similarities in the financing of national health systems, the systems will be compared in the first part of chapter 5, answering the second sub question:

'What is the share of public and private financing in national healthcare systems in the selected EU-countries?'

A comparison is made on the ways the health systems are financed. This will be done by comparing the shares of different health financing resources for the EU-15. The comparison of healthcare systems will be done for 2005, because most of the ESS-2 questionnaires in the individual European countries are performed in this year.

The variables that are derived from the analysis in the second research question will be used in the models shown in the second part of chapter 5, where the last research question in this thesis will be answered:

'Are the differences in Healthcare seeking behaviour between countries explained by differences in National Healthcare Systems?'

As in chapter 4, the binary logistic regression-analysis is used to answer this question. All countries are put in one database, and the extra 'country-specific' variables derived from the first part of chapter 5 will be added to these models. In this analysis, first tables are created showing the effect of one of the relations between preference for formal advice and one of the differences only, a model including the background characteristics and the NHS-variable, and a model including interactions between the NHS-variable and one of the background variables. The comparison of different models will be done by comparing the Nagelkerke pseudo- $R^2$  of the different models.

## 4. Healthcare Seeking Behaviour explained by background characteristics

In this first chapter of the results, the focus will be on health seeking behaviour through preference for formal or informal advice, and whether there is a relation with background characteristics. As said in the introduction, this will first be analysed by looking at every country individually and see whether there are differences in the preference for formal advices for different groups within the population.

In analysing the relations, first the percentages of people preferring informal and formal advice within the populations will be compared to the preference for formal advice in the overall population. The reason to compare the percentages of the population is because the sample sizes are not the same for every country, and therefore percentages give a clearer overview when comparing the countries with each other.

Second, a logistic regression analysis is done for all countries separately, to see whether the odds to choose for formal first medical advice are significantly related to age, income, sex or education. For the UK, education level is not available in the ESS-2 dataset, and thus will not be included in the logistic regression model of the United Kingdom. The main outline of paragraph 4.2 to 4.4 is based on the division between countries using the British NHS model, the Canadian NHS-model or the German NHS-model. This is mainly done to improve the readability of the chapter, as well as that this division is also used in chapter 6. This chapter will finish with a concluding paragraph, in which the effects of the background characteristics in the countries will be compared to each other.

### 4.1 Overall differences in healthcare seeking behaviour between countries

To begin this chapter, first the focus will be on whether the differences in the overall populations are significant. In Figure 4.1 an overview is given of the overall preference for formal advices for formal or informal first advice per country when comparing the EU-15 countries.

**Figure 4.1** Overall preferences for formal and informal advice per country



Pearson  $\chi^2$ : 291.2;  $p < 0.001$

In figure 4.1 can be seen that the average percentage of the population preferring formal advice in the whole of the EU-15 is 64.2 percent, while on average 35.8 percent prefers informal first advice. The countries where the preference for formal first advice is highest are Portugal (76.2 percent) and Spain (74.8 percent), followed by the UK (70 percent), Sweden (69.7 percent) and France (67.8 percent). The preference for formal first advice is lower in Luxembourg (54 percent), the Netherlands (57.4 percent) and Germany (57.4 percent). A difference in preference for formal advice between the individual countries is thus clearly present. According to a chi2-test, the difference in preference for formal advices between the countries is highly significant.

## 4.2 Countries using British national healthcare system model

### 4.2.1 Denmark

The first country that will be researched in individually is Denmark. In table 4.1 the preference for formal advices for informal and formal first advice for the respondents in Denmark can be seen, split by the background characteristics. Within the overall survey, 59 percent of the researched population in Denmark prefer formal medical advice when a symptom is occurring. Differences in preference for formal advice occur when the population is split by sex. The preference for formal advice is lower for men (55.9 percent) than for women (62.2 percent).

**Table 4.1** Percentage of people preferring formal against informal advice, Denmark

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	55.9%	44.1%	606
	Female	62.2%	37.8%	588
Age in 15 years age - categories	younger than 27	39.6%	60.4%	149
	28-42	58.5%	41.5%	323
	43-57	60.6%	39.4%	340
	58-72	66.4%	33.6%	274
	73 and older	63.9%	36.1%	108
Highest level of education in categories	primary	51.9%	48.1%	27
	secondary	58.2%	41.8%	679
	post-secondary & tertiary	60.7%	39.3%	488
Annual household income total net in categories	less than 6000 euro	50.0%	50.0%	38
	6000-11999 euro	46.6%	53.4%	58
	12000-17999 euro	58.3%	41.7%	120
	18000-29999 euro	57.2%	42.8%	243
	30000-59999 euro	62.4%	37.8%	516
	60000 or more	58.4%	41.6%	219
<b>Total</b>		<b>59.0%</b>	<b>41.0%</b>	<b>1194</b>

Further it can be seen in table 4.1 that the preference for formal advice is lower for the group younger than 27 years (39.6 percent) than in the other age-groups, increasing from 58.5 percent for the group aged 28-42 years, to 66.4 percent for the group aged 58-72 years. For the eldest age group, 73 and older, the preference for formal first advice decreases again to 63.9 percent of the population preferring formal advice.

When the population is split by education level, an increase in preference for formal first advice can be seen when the education level is higher. 51.9 percent of the people that only finished primary education prefer formal first advice, while the people educated till secondary level prefer

formal first advice in 58.2 percent of the cases, and the part of the population that finished post-secondary and tertiary education prefer formal advice in 60.7 percent of the cases.

No clear line can be seen when looking at the population split by household income. The category of population most preferring formal advice is the group with an income of 30000-59999 euro annually. The other income groups all have a below average preference for formal advice, ranging from 46.6 percent preference for the part of the population earning 6000-11999 euro annually, to 58.4 percent of the group with highest income.

**Table 4.2** Odds for preference of formal first advice on medical problem, Denmark

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.279 (1.011-1.619)	0.041
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.809 (1.201-2.727)	0.005
43-57 years	1.930 (1.281-2.908)	0.002
58-72 years	2.623 (1.734-3.968)	0.000
73 years and older	2.622 (1.563-4.398)	0.000
edulvlcat (RC: primary education)		0.628
secondary education	1.282 <sup>-1</sup> (2.252 <sup>-1</sup> -1.369)	0.386
post-secondary and tertiary education	1.350 <sup>-1</sup> (2.481 <sup>-1</sup> -1.362)	0.335
Annual Household income tot net. (RC: less than 6000 €)		0.244
6000-11999 €	1.931 <sup>-1</sup> (4.167 <sup>-1</sup> -1.119)	0.094
12000-17999 €	1.277 <sup>-1</sup> (2.427 <sup>-1</sup> -1.487)	0.455
18000-29999 €	1.300 <sup>-1</sup> (2.387 <sup>-1</sup> -1.409)	0.395
30000-59999 €	1.011 (1.776 <sup>-1</sup> -1.815)	0.971
60000 € or more	1.121 <sup>-1</sup> (2.075 <sup>-1</sup> -1.652)	0.717
Chi <sup>2</sup> (df=12)	77.492	

In table 4.2, the outcomes for the most saturated logistic regression model on basis of background characteristics are shown. In the table can be seen, that in Denmark there is a significant difference on preference for formal advice for different age-groups and on the basis of sex. Following the p-value, age is most significant in explaining a difference in preference for formal advice of the background characteristics, while sex is explaining a significant difference to a lesser extent.

The odds to prefer formal advice for the group aged 28-42 are 81 percent higher than the odds of someone in the youngest age-group to prefer formal advice. For the group aged 43-57, the odds are 93% higher than the odds for the youngest group, and 2.62 times the odds of the youngest group for the groups aged between 58-72 years and the eldest age group. The odds that females prefer formal medical advice are 28% higher than that a male prefers formal advice.

#### 4.2.2 Greece

In table 4.3, the cross-tabulation shows the preference for informal and formal first advice with a medical problem in Greece, compared to background characteristics. In this table can be seen that of the total population 38.1 percent prefer informal first advice, against 61.9 percent preferring formal first advice with a medical problem.

First, again a lower percentage of men, 55.9 percent, prefer formal medical first advice compared to women, of whom 67.3 percent prefers formal advice. The second thing that can be seen in this table is that the preference for formal advice seems to increase with increasing age for Greece. For people aged 27 years or younger, 44.8 percent prefer formal first advice, increasing to 69.8 percent of the population aged 73 or above.

**Table 4.3** Percentage of people preferring formal against informal advice, Greece

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	55.9%	44.1%	703
	Female	67.3%	32.7%	791
Age in 15 years age - categories	younger than 27	44.8%	55.2%	174
	28-42	58.5%	41.5%	376
	43-57	61.9%	38.1%	378
	58-72	68.9%	31.1%	386
	73 and older	69.8%	30.2%	182
Highest level of education in categories	primary	64.5%	35.5%	569
	secondary	59.4%	40.6%	650
	post-secondary & tertiary	62.5%	37.5%	275
Annual household income total net in categories	less than 6000 euro	57.9%	42.1%	299
	6000-11999 euro	58.4%	41.6%	344
	12000-17999 euro	64.0%	36.0%	264
	18000-29999 euro	63.5%	36.5%	392
	30000-59999 euro	68.1%	31.9%	160
	60000 or more	68.6%	31.4%	35
<b>Total</b>		<b>61.9%</b>	<b>38.1%</b>	<b>1494</b>

When the preference for formal advices for the survey population of Greece are compared to education level, it can be noticed that the people who attended secondary level education are less likely to prefer formal advice, compared to the other education levels. 59.4 percent of the population that finished secondary education prefer formal first advice, against 64.5 percent of the people who only completed primary education, and 62.5 percent of the people who completed post-secondary or tertiary level of education.

Further an increase in preference for formal advice can be seen from 57.9 percent preferring formal advice in the income group earning less than 6000 euro, to 68.6 percent of the people in the richest group, earning 60000 and more. A small decrease in preference of formal advice for the group earning 18000-29999 euro disrupts this pattern though.

In table 4.4 the outcomes for the logistic regression analysis for Greece are summarised. In the table can be seen that age, sex and income are the variables that are significantly related to the preference for formal advice in Greece. According to the p-value, age and gender are significantly explaining most difference in preference for formal advice, with a p-value less than 0.001. next, also a significant difference is seen between different income groups with regard to preference for formal advice.

**Table 4.4** Odds for preference of formal first advice on medical problem, Greece

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.517 (1.238-1.860)	0.000
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.137 (1.195 <sup>-1</sup> -1.545)	0.412
43-57 years	1.223 (1.092 <sup>-1</sup> -1.634)	0.173
58-72 years	1.746 (1.315-2.320)	0.000
73 years and older	2.013 (1.410-2.874)	0.000
edulvlcat (RC: primary education)		0.348
secondary education	1.209 <sup>-1</sup> (1.565 <sup>-1</sup> -1.069)	0.147
post-secondary and tertiary education	1.155 <sup>-1</sup> (1.616 <sup>-1</sup> -1.213)	0.404
Annual Household income tot net. (RC: less than 6000 €)		0.022
6000-11999 €	1.167 <sup>-1</sup> (1.575 <sup>-1</sup> -1.158)	0.316
12000-17999 €	1.188 (1.192 <sup>-1</sup> -1.683)	0.331
18000-29999 €	1.291 (1.065 <sup>-1</sup> -1.774)	0.116
30000-59999 €	1.684 (1.100-2.579)	0.016
60000 € or more	1.749 (1.229 <sup>-1</sup> -3.761)	0.152
Chi <sup>2</sup> (df=12)	148.741	

The odds of preferring formal advice rise with higher age. For people aged 28-42 years in Greece are 14 percent higher than the odds of the group younger than 28. The odds that someone in the aged 43-57 years prefers formal first advice, are about 22 percent higher than the odds of the reference category. Thus, for both the group aged 28-42 years, as for the population aged 43-57 years, the odds-ratio by itself isn't significant. For the population aged 58-72 years the odds increase to 75 percent higher than the odds that someone in the youngest age-group prefers formal advice, and for the group age 73 years or older to 2 (or 2.013) times the odds of the youngest age group. Next it can be seen in the most saturated model that the odds for a female to prefer formal first advice are 52 percent higher than for a male.

There are also some differences between different income groups. The odds to prefer formal advice in Greece increases when the income is increased. Thus the difference between the poorest group and the group earning 30000-59999 euro is the only odds-ratio that is significant by itself. The odds to prefer formal advice are 68.4 percent higher for the group earning 30000-59999 euro than for the poorest income group included in this analysis.

#### 4.2.3 Ireland

The relations between background characteristics and healthcare seeking behaviour in Ireland are described in table 4.5. Of the total survey population, 62.1 percent prefers formal first advice. When looking at the different background characteristics, the first difference that can be seen is between males and females, where 56.8 percent of the males prefer formal first advice, against 66.1 percent of the females. When looking at the preference for formal advices for different age categories, it can be seen that the group aged 27 years and younger have a much lower preference for formal first advice than the other age groups. Within the youngest group, 45.3 percent prefer formal first advice, while for the other age groups, this preference for formal advice ranges from 63.7 for the group aged 28-42 years, to 66.8 percent for the group aged 43-57 years.



**Table 4.5** Percentage of people preferring formal against informal advice, Ireland

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	56.8%	43.2%	690
	Female	66.1%	33.9%	906
Age in 15 years age - categories	younger than 27	45.3%	54.7%	267
	28-42	63.7%	36.3%	358
	43-57	66.8%	33.2%	494
	58-72	65.3%	34.7%	363
	73 and older	66.7%	33.3%	114
Highest level of education in categories	primary	63.1%	36.9%	355
	secondary	61.2%	38.8%	768
	post-secondary & tertiary	62.9%	37.1%	472
Annual household income total net in categories	less than 6000 euro	57.7%	42.3%	26
	6000-11999 euro	60.2%	39.8%	113
	12000-17999 euro	62.6%	37.4%	179
	18000-29999 euro	63.6%	36.4%	401
	30000-59999 euro	61.5%	38.5%	571
	60000 or more	62.4%	37.6%	303
<b>Total</b>		<b>62.1%</b>	<b>37.9%</b>	<b>1594</b>

In comparing the population on basis of education level, small differences can be seen. The preference for formal advice is lowest for the group that completed secondary level education. 61.2 percent of this group prefer formal first advice, against 63.1 percent of the people completed primary education, and 62.9 percent of the people who completed tertiary education. The differences on education level are thus relatively small compared to the other background characteristics.

No direction can be distinguished in comparing the preference for formal advice between different income groups. The preference for formal advice is below average for the groups with an income less than 6000 euro (57.7 percent), 6000-11.999 euro (60.2 percent) and 30.000-59.999 euro (61.5 percent), and above average for the other income groups.

In table 4.6, the outcomes of the logistic regression for Ireland can be seen. It seems that when including the background characteristics, the variables age and sex significantly explain the difference in preference for formal advice in Ireland.

Compared to the reference category 27 years and younger, the odds to prefer formal first advice are 98 percent higher for the group aged 28-42 years. The odds for people aged 43-57 years are 2.36 times the odds for the youngest age group. For the group aged 58-72 years the odds are 2.32 times the odds for the reference category, and 2.56 times the odds for the people aged 73 years and older. All of these odds ratios are very significant. Next, the odds to prefer formal advice are also 45% higher for females than for males.

**Table 4.6** Odds for preference of formal first advice on medical problem, Ireland

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.454 (1.182-1.790)	0.000
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.978 (1.433-2.729)	0.000
43-57 years	2.361 (1.737-3.208)	0.000
58-72 years	2.324 (1.661-3.251)	0.000
73 years and older	2.569 (1.581-4.173)	0.000
edulvlcat (RC: primary education)		0.489
secondary education	1.020 (1.302 <sup>-1</sup> -1.356)	0.889
post-secondary and tertiary education	1.181 (1.189 <sup>-1</sup> -1.658)	0.337
Annual Household income tot net. (RC: less than 6000 €)		0.184
6000-11999 €	1.767 <sup>-1</sup> (2.924 <sup>-1</sup> -1.067 <sup>-1</sup> )	0.027
12000-17999 €	1.613 <sup>-1</sup> (2.519 <sup>-1</sup> -1.034 <sup>-1</sup> )	0.035
18000-29999 €	1.468 <sup>-1</sup> (2.169 <sup>-1</sup> -1.006)	0.054
30000-59999 €	1.634 <sup>-1</sup> (2.445 <sup>-1</sup> -1.093 <sup>-1</sup> )	0.017
60000 € or more	1.414 <sup>-1</sup> (2.169 <sup>-1</sup> -1.085)	0.113
Chi <sup>2</sup> (df=12)	148.316	

Last conclusion that can be done from the model seen in table 4.6 is that some odds-ratios within the variable income are significantly adding to the model, although the variable isn't significantly included by itself. The odds of someone earning 6000-11999 euro in Ireland to prefer formal advice are 77 percent lower than the odds for the reference category. For the group earning 12000-17999 euro the odds are 61 percent lower, and for the group earning 30000-59999 euro, these odds are 63 percent lower.

#### 4.2.4 Italy

The preference for formal advices for formal and informal medical advice for Italy, split by background characteristics, can be found in table 4.7. The overall image for Italy is that 63.7 percent of the total survey population prefer formal first advice. The preference of formal advice for males (60.6 percent) is again lower in Italy than for females (67.1 percent). When the population is divided by age categories, no line can be seen in preference for informal and formal advice. Compared to the total population, the age-groups with a lower preference for formal advice are the groups aged 28-42 years (61.1 percent) and aged 58-72 years (58.3 percent). The groups with higher than average preference for formal advice are the groups aged 43-57 years (69.3 percent) and group aged 73 years and older (67.6 percent).

**Table 4.7** Percentage of people preferring formal against informal advice, Italy

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	60.6%	39.4%	254
	Female	67.1%	32.9%	228
Age in 15 years age - categories	younger than 27	64.0%	36.0%	89
	28-42	61.1%	38.9%	126
	43-57	69.3%	30.7%	127
	58-72	58.3%	41.7%	103
	73 and older	67.6%	32.4%	37
Highest level of education in categories	primary	57.6%	42.4%	92
	secondary	65.6%	34.4%	322
	post-secondary & tertiary	63.2%	36.8%	68
Annual household income total net in categories	less than 6000 euro	61.9%	38.1%	21
	6000-11999 euro	64.1%	35.9%	64
	12000-17999 euro	64.8%	35.2%	105
	18000-29999 euro	67.9%	32.1%	158
	30000-59999 euro	58.9%	41.1%	107
	60000 or more	55.6%	44.4%	27
<b>Total</b>		<b>63.7%</b>	<b>36.3%</b>	<b>482</b>

Looking at the population divided by education level, it seems that the group that only completed primary education prefer formal advice in 57.6 percent of the cases, which is less than the population that completed secondary (65.6 percent) or post-secondary/tertiary education (63.2 percent). Although there is no line between the level of education and preference for formal advice, the group with only secondary education has again the highest preference for formal advice. The preference for formal advice in different income groups first increases with rise of income, and then decreases again for the richest income groups. Within the income group earning 6000 or less annually, 61.9 percent of the population prefer formal first medical advice. This preference for formal advice increases till the group with an income of 18.000-29.999 euro, of whom 67.9 percent prefer formal advice. The preference for formal advices for formal advice then decreases again till 55.6 percent for the group earning 60.000 euro or more annually.

In table 4.8 can be seen that for Italy, none of the background characteristics seem to relate to the Healthcare seeking behaviour significantly. No direction in odds-ratios can further be discovered when looking at the different age and income groups. Thus, there is a difference between sexes, where the odds for women to prefer formal advice are 38 percent higher than for men. Although the relation between preference for formal advice and sex is insignificant on a 5 percent interval, it is the most significant variable declaring preference for formal advice in Italy. Further, the preference for formal advice seems to increase with age, although this direction is again insignificantly added to the model.

**Table 4.8** Odds for preference of formal first advice on medical problem, Italy

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.379 (1.054 <sup>-1</sup> -2.003)	0.092
age15ycat (RC:27 years and younger)		0.311
28-42 years	1.227 <sup>-1</sup> (2.137 <sup>-1</sup> -1.420)	0.470
43-57 years	1.337 (1.312 <sup>-1</sup> -2.346)	0.312
58-72 years	1.034 <sup>-1</sup> (1.815 <sup>-1</sup> -1.695)	0.906
73 years and older	1.621 (1.403 <sup>-1</sup> -3.687)	0.249
edulvlcat (RC: primary education)		0.137
secondary education	1.737 (1.004 <sup>-1</sup> -3.028)	0.052
post-secondary and tertiary education	1.840 (1.156 <sup>-1</sup> -3.913)	0.113
Annual Household income tot net. (RC: less than 6000 €)		0.554
6000-11999 €	1.064 <sup>-1</sup> (2.364 <sup>-1</sup> -2.090)	0.880
12000-17999 €	1.021 <sup>-1</sup> (2.083 <sup>-1</sup> -1.999)	0.954
18000-29999 €	1.128 (1.789 <sup>-1</sup> -2.274)	0.737
30000-59999 €	1.399 <sup>-1</sup> (2.967 <sup>-1</sup> -1.514)	0.380
60000 € or more	1.672 <sup>-1</sup> (4.695 <sup>-1</sup> -1.682)	0.330
Chi <sup>2</sup> (df=12)	49.932	

#### 4.2.5 United Kingdom

The last country using the British NHS-model analysed in this thesis is the United Kingdom. The preferences for formal advice for the UK are summed up in table 4.9. The overall preference for formal advice in the UK for formal advice is 70 percent. When the population is divided by background characteristics, again some differences can be seen between the groups. First, 63.4 percent of the male population prefer formal first advice against 76.4 percent of the female population. Thus, women prefer formal advice more than men.

**Table 4.9** Percentage of people preferring formal against informal advice, United Kingdom

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	63.4%	36.6%	689
	Female	76.4%	23.6%	709
Age in 15 years age - categories	younger than 27	52.3%	47.7%	195
	28-42	70.2%	29.8%	439
	43-57	70.5%	29.5%	364
	58-72	81.2%	18.8%	271
	73 and older	71.3%	28.7%	129
Annual household income total net in categories	less than 6000 euro	81.9%	18.1%	72
	6000-11999 euro	76.2%	23.8%	164
	12000-17999 euro	74.5%	25.5%	196
	18000-29999 euro	72.9%	27.1%	299
	30000-59999 euro	62.0%	38.0%	418
	60000 or more	69.0%	31.0%	248
<b>Total</b>		<b>70.0%</b>	<b>30.0%</b>	<b>1398</b>

When looking at different age categories, the preference for formal advice seems to increase for older population groups. The preference for formal advice increases from 52.3 percent for the group aged 27 years or younger, to 81.2 percent for the group aged 58-72 years. The preference for formal advice then decreases to 71.3 percent for the group of 73 years and older.

When comparing the preference for formal advice to household income, the preference for formal advice decreases from 81.9 percent for the group with an income of less than 6000 euro, to 62 percent for the group earning 30000-59999 euro. The preference for formal advice of the richest income group increases again in comparison to the group earning 30000-59999 euro, to 69 percent of the population in the group earning most preferring formal advice.

The outcomes for the logistic regression analysis done for the United Kingdom are summarised in table 4.10. In the table can be seen, that in the most saturated model on basis of background characteristics, there is a significant relation between preference for formal advice and age, sex and income-groups. According to the p-values, age and sex are most significantly related to the preference of formal advice, where the p-value showing the significance of the relation between income and preference for formal advice is lower, thus still highly significant.

When comparing the different age-groups, it can be seen that the odds for the groups aged 28-42 years and 43-57 years are around 2.6 times the odds for the group aged 27 years or younger. These odds increase till the group aged 58-72 years to 4.4 times the odds of the youngest age group. For the group aged older than 73 years, the odds to prefer formal advice are 2.26 times the odds for the youngest group.

**Table 4.10** Odds for preference of formal first advice on medical problem, United Kingdom

	Odds Ratio (CI)	p-value
<b>Sex (RC: Male)</b>		
Female	1.917 (1.514-2.429)	0.000
<b>age15ycat (RC:27 years and younger)</b>		
28-42 years	2.559 (1.823-3.593)	0.000
43-57 years	2.537 (1.787-3.601)	0.000
58-72 years	4.428 (2.949-6.649)	0.000
73 years and older	2.259 (1.394-3.661)	0.001
<b>Annual Household income tot net. (RC: less than 6000 €)</b>		
6000-11999 €	1.085 <sup>-1</sup> (1.730 <sup>-1</sup> -1.469)	0.731
12000-17999 €	1.214 <sup>-1</sup> (1.873 <sup>-1</sup> -1.270)	0.380
18000-29999 €	1.238 <sup>-1</sup> (1.789 <sup>-1</sup> -1.168)	0.257
30000-59999 €	2.016 <sup>-1</sup> (2.841 <sup>-1</sup> -1.433 <sup>-1</sup> )	0.000
60000 € or more	1.285 <sup>-1</sup> (1.855 <sup>-1</sup> -1.125)	0.182
Chi <sup>2</sup> (df=10)	322.137	

Also it seems that, according to the model, the odds for females to prefer formal advice are 92 percent higher than the odds for males. Last conclusion that can be drawn from the logistic regression analysis is that in the UK a higher income decreases the odds to prefer formal advice. This line can be seen from the group earning 6000 or less to the group earning 30000-59999 euro. For the richest income group, the odds seem to increase again. Thus the difference in odds is only significant for the group earning 30000-59999 euro. The odds for the reference category to prefer formal advice are 2 (or 2.02) times the odds for the group earning 30000-59999 euro annually.

## 4.3 Countries using Canadian national healthcare system model

### 4.3.1 Finland

In table 4.11 an overview is given on the preference for formal advices for formal and informal advice for the survey-population of Finland, split by background characteristics. In Finland, the overall survey population preferred informal medical advice in 38 percent of the cases, and 62 percent of the population prefers formal first advice. A small difference can be seen between males and females, where males (61.4 percent) prefer formal first advice slightly less than females (62.6 percent). When looking at different age-categories, there mainly is a difference between the group younger than 27 years and the rest of the population. Of the people aged 27 years or younger, 38.8 percent prefer formal first advice. This preference for formal advice increases till 69.1 percent for the group aged 58-72 years. A small decrease can be seen to 66.8 percent preference for formal advice for the group aged 73 years or older in comparison to the group aged 58-72 years.

When the population is split by education level, it can be seen in table 4.11 that the preference for formal first advice seems to decrease with an increase of education level, from 68.6 percent for the group with only primary education, till 59.9 percent for the group with post-secondary to tertiary education level.

Table 4.11 Percentage of people preferring formal against informal advice, Finland

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	61.4%	38.6%	858
	Female	62.6%	37.4%	940
Age in 15 years age - categories	younger than 27	38.8%	61.2%	260
	28-42	60.4%	39.6%	460
	43-57	68.1%	31.9%	464
	58-72	69.1%	30.9%	421
	73 and older	66.8%	33.2%	193
Highest level of education in categories	primary	68.6%	31.4%	334
	secondary	60.9%	39.1%	925
	post-secondary & tertiary	59.9%	40.1%	539
Annual household income total net in categories	less than 6000 euro	51.4%	48.6%	107
	6000-11999 euro	55.5%	44.5%	211
	12000-17999 euro	64.6%	35.4%	260
	18000-29999 euro	65.1%	34.9%	507
	30000-59999 euro	64.7%	35.3%	597
	60000 or more	50.9%	49.1%	116
<b>Total</b>		<b>62.0%</b>	<b>38.0%</b>	<b>1798</b>

Last no clear line can be seen when the population of Finland is divided in different household income groups. Thus, the three groups with lowest household income and the highest income group prefer formal advice less than average, while the three groups with income between 12000 and 59999 euro prefer formal advice more than average. Of the lower income groups, the preference for formal advice is lowest for the group with an income lower than 6000 euro annually. 51.4 percent of the people in this income group prefer formal first advice. The preference for formal advice increases first with the rise income to 65.1 percent of the population

earning 18000-29999 euro. The preference for formal advice decreases again after this to 50.9 percent preferring formal advice in the richest part of the population.

In table 4.12 the output for a logistic regression analysis for Finland can be seen. In this model can be seen that there is a significant relation between preference for formal advice and age, income and education. Age is again the variable showing most significant difference in relation to the preference for formal advice according to the p-value, followed by education and income. Thus, within income, none of the odds-ratios themselves are significant. It seems that the negative odds-ratios for the groups earning 6000-11999 euro and 60000 euro or more annually, are more significant than the odds-ratios for the other groups. Only the significant odds-ratios in the model will be described to a further extent.

**Table 4.12** Odds for preference of formal first advice on medical problem, Finland

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.034 (1.176 <sup>-1</sup> -1.258)	0.737
age15ycat (RC:27 years and younger)		
28-42 years	2.236 (1.622-3.083)	0.000
43-57 years	3.062 (2.220-4.224)	0.000
58-72 years	2.959 (2.150-4.073)	0.000
73 years and older	2,506 (1,684-3,728)	0.000
edulvcat (RC: primary education)		
secondary education	1.321 <sup>-1</sup> (1.727 <sup>-1</sup> -1.009 <sup>-1</sup> )	0.043
post-secondary and tertiary education	1.684 <sup>-1</sup> (2.336 <sup>-1</sup> -1.212 <sup>-1</sup> )	0.002
Annual Household income tot net. (RC: less than 6000 €)		
6000-11999 €	1.493 <sup>-1</sup> (2.232 <sup>-1</sup> -1.002)	0.051
12000-17999 €	1.002 (1.484 <sup>-1</sup> -1.491)	0.990
18000-29999 €	1.033 (1.389 <sup>-1</sup> -1.481)	0.861
30000-59999 €	1.081 (1.339 <sup>-1</sup> -1.564)	0.680
60000 € or more	1.550 <sup>-1</sup> (2.532 <sup>-1</sup> -1.055)	0.081
Chi <sup>2</sup> (df=12)	196.205	

First in the table can be seen that the odds for the group aged 28-42 years to prefer formal advice are 2.24 times the odds for the youngest group to prefer formal advice. Of the population in Finland aged 43-57 years, this preference for formal advice increases to 3.06 times the odds for someone aged 27 years or younger. The odds for the population aged 58-72 years are 2.96 times the odds of the reference group, and 2.51 times the odds of the reference category for the group aged 73 years or older. Overall, when looking at different age categories, the odds seem to be higher to prefer formal advice for the older groups in comparison to the youngest age-group, thus decreasing from the population aged 43-57 till the eldest age group.

Next coefficient that is significant in the model is in education level, where according to the model the odds to prefer formal advice decrease with 32 percent for the group that finished secondary education, and with 68 percent for someone who completed post-secondary or tertiary education, in comparison to the population that completed primary education solely. Overall, the preference for formal advice is thus decreasing with a higher education level in Finland.



### 4.3.2 Portugal

In table 4.13 the preference for formal advices for informal and formal advice for Portugal is shown, divided by background characteristics. Of the total population of Portugal, 23.2 percent prefer informal first advice, against 76.8 percent preferring formal first advice. In Portugal, males seem to prefer formal advice more than females. 76.4 percent of the women prefer formal first advice, against 77.2 percent of the men.

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	77.2%	22.8%	438
	Female	76.4%	23.6%	669
Age in 15 years age - categories	younger than 27	78.8%	21.2%	151
	28-42	71.5%	28.5%	270
	43-57	77.1%	22.9%	279
	58-72	79.3%	20.7%	270
	73 and older	79.4%	20.6%	136
Highest level of education in categories	primary	77.9%	22.1%	711
	secondary	73.6%	26.4%	303
	post-secondary & tertiary	79.1%	20.9%	91
Annual household income total net in categories	less than 6000 euro	73.1%	26.9%	334
	6000-11999 euro	75.4%	24.6%	357
	12000-17999 euro	80.6%	19.4%	196
	18000-29999 euro	78.4%	21.6%	125
	30000-59999 euro	89.1%	10.9%	46
	60000 or more	81.2%	18.8%	48
<b>Total</b>		<b>76.8%</b>	<b>23.2%</b>	<b>1105</b>

When the survey population is compared on age, in the table can be seen that almost all age-groups have an above average preference for formal first advice, except for the people aged 28-42 years. While the preference for formal advice ranges from 77.1 percent to 79.4 percent for the other age groups, 71.5 percent of the people in the age-category 28-42 years prefer formal advice. The preference for formal advice also increases from group aged 28-42 years to the group aged 73 years and older.

When looking at different education levels, the preference for formal first advice is lower for the group that completed secondary education, in comparison to the other groups. 73.6 percent of the people who completed secondary education prefer formal first advice, against 77.9 percent of the population who have finished primary education only, and 79.1 percent of the population that completed post-secondary or tertiary education.

There are also some differences in preference for formal and informal advice for the different income groups. Although no clear direction can be seen between the variables, the two groups with lowest income have a below average preference for formal advice, while the other income groups have an above average preference for formal advice.

The preference for formal advice increases from 73.1 percent preferring formal advice in the group earning less than 6000 euro, to 80.6 percent of the group earning 12000-17999 euro preferring formal advice. For the other income groups, the preference for formal advice ranges from 78.4 percent for the group earning 18000-29999 euro, to 89.1 percent for the group earning 30000-59999 euro annually.

In table 4.14, the logistic regression model for Portugal can be seen, when all background characteristics are compared to the preference for formal advice in formal advice. In this model can be seen, that in Portugal, the preference for formal advice is significantly related to different age-categories and different income groups.

For age, the preference for formal advice seems to rise with an increasing age. The odds for someone aged 28-42 years to prefer formal advice are 20 percent higher than for someone aged 27 years or younger, although this specific coefficient isn't significant. The odds-ratios between the reference category and the parts of the population aged 43-57 years, 58-72 years and 73 years or older are significant. For the population in Portugal aged 43-57 years, the odds to prefer formal advice are 60 percent higher than for the population aged 27 years or younger. These odds increase to 2.3 times the odds of the reference category for the part of the population aged 58-72 years, and 2.78 times the odds of the reference category for people aged 73 years or older.

**Table 4.14** Odds for preference of formal first advice on medical problem, Portugal

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.220 (1.070 <sup>-1</sup> -1.593)	0.143
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.196 (1.193 <sup>-1</sup> -1.708)	0.324
43-57 years	1.597 (1.104-2.309)	0.013
58-72 years	2.300 (1.613-3.280)	0.000
73 years and older	2.767 (1.766-4.337)	0.000
edulvcat (RC: primary education)		0.925
secondary education	1.031 <sup>-1</sup> (1.451 <sup>-1</sup> -1.365)	0.861
post-secondary and tertiary education	1.126 <sup>-1</sup> (2.045 <sup>-1</sup> -1.614)	0.697
Annual Household income tot net. (RC: less than 6000 €)		0.000
6000-11999 €	1.774 (1.274-2.470)	0.001
12000-17999 €	2.792 (1.787-4.364)	0.000
18000-29999 €	2.350 (1.394-3.962)	0.001
30000-59999 €	5.385 (1.954-14.840)	0.001
60000 € or more	2.731 (1.230-6.064)	0.014
Chi <sup>2</sup> (df=12)	339.487	

When looking at the differences in odds for different income groups in Portugal, no clear line can be detected, although the preference for formal advice is higher for all other groups compared to the reference category. For the group earning 6000-11999 euro annually, the preference for formal advice is 77 percent higher than for the group earning less than 6000 euro annually. For the group earning 12000-17999 euro, this preference for formal advice increases again till 2.79 times the odds of the reference category. The odds for the group earning 18000-29999 euro are decreasing again in comparison to the group earning 12000-17999 euro, to 2.35 times the odds of the reference category. The odds for the group earning 30000-59999 euro increase again to 5.39 times the odds of the reference category. For the richest group, the preference for formal advice decreases again to 2.73 times the odds of the group earning less than 6000 euro.

### 4.3.3 Spain

In table 4.15 the preferences of the survey-population in Spain for informal and formal first advice are outlined. In total, 74.8 percent of the population prefer formal first advice. When looking at the differences in the population on preference for formal advice compared to background characteristics, again some differences are shown.

A difference can again be seen on basis of sex, where a lesser percentage of the male population, 71.6 percent, prefers formal first advice in comparison to 78.1 percent of the female population. Next, the preference for formal advice in Spain seems to increase when the population gets older. For the population aged 27 years or younger, 61.3 percent prefers formal advice. The preference for formal advice for the groups aged 28-42 years and 43-57 years are almost similar, with around 74.5 percent preferring formal advice. The preference for formal first advice increases further for older age-groups, till 83.8 percent for the group aged 73 or older.

Although there doesn't seem to be a direction in preference of formal advice when grouped into education levels, also a clear difference can be seen between these groups. The preference for formal advice with 80.3 percent is highest in the group that only completed primary education. This is much higher than in the groups who completed secondary level education, where 69.8 percent prefers formal advice, and who completed post-secondary or tertiary education, of which 72.9 percent prefers formal advice.

**Table 4.15** Percentage of people preferring formal against informal advice, Spain

		overall preference as combination of three symptoms		N
		always or mostly preference formal advice	always or mostly preference informal advice	
Sex	Male	71.6%	28.4%	518
	Female	78.1%	21.9%	498
Age in 15 years age - categories	younger than 27	61.3%	38.7%	163
	28-42	74.7%	25.3%	316
	43-57	74.6%	25.4%	244
	58-72	81.8%	18.2%	176
	73 and older	83.8%	16.2%	117
Highest level of education in categories	primary	80.3%	19.7%	416
	secondary	69.8%	30.2%	390
	post-secondary & tertiary	72.9%	27.1%	210
Annual household income total net in categories	less than 6000 euro	74.4%	25.6%	79
	6000-11999 euro	79.5%	20.5%	166
	12000-17999 euro	69.9%	30.1%	183
	18000-29999 euro	72.8%	27.2%	313
	30000-59999 euro	79.0%	21.0%	214
	60000 or more	72.6%	27.4%	62
<b>Total</b>		<b>74.8%</b>	<b>25.2%</b>	<b>1016</b>

As with education level, no clear line can be seen between annual household income and the preference for informal and formal advice. The income categories which seem to prefer formal first advice less than average are the income group that earn less than 6000 euro (74.4 percent), 12000-17999 euro (69.9 percent), 18000-29999 euro (72.8 percent) or 60000 euro or above (72.6 percent). The income-groups with a relative higher preference for formal advice are the group earning 6000-11999 euro (79.5 percent) or 30000-59999 euro (79 percent).

In table 4.16, the odds for different groups are summarised for Spain. There are significant relations between the preference for formal advice in Spain and age, which is showing to be most related according to the p-value. Furthermore, there are significant relations between preference for formal advice and income and sex.

**Table 4.16** Odds for preference of formal first advice on medical problem, Spain

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.418 (1.067-1.883)	0.016
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.986 (1.360-2.899)	0.000
43-57 years	1.839 (1.229-2.752)	0.003
58-72 years	2.829 (1.755-4.562)	0.000
73 years and older	3.385 (1.910-5.998)	0.000
edulvlcat (RC: primary education)		0.300
secondary education	1.282 <sup>-1</sup> (1.825 <sup>-1</sup> -1.112)	0.170
post-secondary and tertiary education	1.342 <sup>-1</sup> (2.070 <sup>-1</sup> -1.150)	0.184
Annual Household income tot net. (RC: less than 6000 €)		0.012
6000-11999 €	1.537 (1.086 <sup>-1</sup> -2.565)	0.100
12000-17999 €	1.156 (1.406 <sup>-1</sup> -1.878)	0.559
18000-29999 €	1.531 (1.006-2.328)	0.047
30000-59999 €	2.348 (1.431-3.854)	0.001
60000 € or more	1.691 (1.155 <sup>-1</sup> -3.305)	0.124
Chi <sup>2</sup> (df=12)	301.831	

First, the odds to prefer formal advice are increased by age. For the groups aged 28-42 years and 43-57 years, the odds to prefer formal advice are respectively 99 and 84 percent higher than in the youngest age-group. These odds for the group aged 58-72 years increase to 2.83 times the odds for the group aged 27 years or younger, and 3.39 times the odds of the reference category for the group aged 73 or older. Second, the odds to prefer formal advice are 42 percent higher for females than for males.

With income, as with Portugal no clear direction can be detected. The odds-ratios between the reference category and the groups earning 18000-29999 euro and 30000-59999 euro are significant. For the group earning 18000-29999 euro annually, the odds are 53 percent higher than for the group earning less than 6000 euro, while for the group earning 30000-59999 euro, these odds are 2.35 times higher than the odds of the reference category.

#### 4.3.4 Sweden

The preference for formal advices in formal or informal advice for Sweden are summarised in table 4.17. In this table first can be seen that 69.7 percent of the total population included in this thesis for Sweden preferred formal first advice. As with most other countries researched, a lesser proportion of the male population prefer formal advice in comparison to the female population. 66 percent of men prefer formal first advice, against 73.8 percent of women.

Also a difference can be seen between the different age groups, where the preference for formal advice increases for older age groups. The percentage of people preferring formal first advice in the youngest age group is 37.7 percent, strongly increasing for the groups aged 28-42 years (63 percent), 43-57 years (78 percent) and 58-72 years (84.4 percent). For the group aged 73 years and older, the preference for formal first advice seems to decrease again to 81 percent preferring formal advice.

When looking at the percentages for different education groups, the preference for formal advice decreases from 75 percent of the people that completed primary education only, till 66.5 percent of the people that completed post-secondary or tertiary education.

In comparing the population by household income, a great difference can be seen for different income groups. For the poorest income group, 54.5 percent prefer formal advice. The preference for formal advice is then increasing till the group earning 18000-29999 euro, where 74.7 percent prefer formal advice. For the two highest earning groups, the preference for formal advice decreases again to 56 percent for the group earning 60000 euro or more.

**Table 4.17** Percentage of people preferring formal against informal advice, Sweden

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	66.0%	34.0%	884
	Female	73.8%	26.2%	818
Age in 15 years age - categories	younger than 27	37.7%	62.3%	257
	28-42	63.0%	37.0%	441
	43-57	78.0%	22.0%	454
	58-72	84.4%	15.6%	366
	73 and older	81.0%	19.0%	184
Highest level of education in categories	primary	75.0%	25.0%	448
	secondary	68.9%	31.1%	716
	post-secondary & tertiary	66.5%	33.5%	538
Annual household income total net in categories	less than 6000 euro	54.5%	45.5%	33
	6000-11999 euro	66.9%	33.1%	133
	12000-17999 euro	68.9%	31.1%	222
	18000-29999 euro	74.7%	25.3%	509
	30000-59999 euro	69.8%	30.2%	696
	60000 or more	56.0%	44.0%	109
<b>Total</b>		<b>69.7%</b>	<b>30.3%</b>	<b>1702</b>

In table 4.18, the outcomes of the logistic regression model for Sweden are summarised. In this table can be seen, that according to this model, the difference in preference for formal advice is significantly explained by age, income and sex. From the different p-values can be concluded that age and income are mostly explaining a significant difference in preference for formal advice, while the significance of the relation between preference for formal advice and sex is slightly lower, thus still significant.

The odds for females to prefer formal first advice are 48 percent higher than for males. Next, also a significant difference in odds can be seen for different age categories. The odds for someone aged 28-42 years to prefer formal advice, are almost 3 (or 2.91) times the odds for the group aged 27 years or younger. For the group aged 43-57 years, the odds are 6.16 times the odds for the reference category. For the group aged 58-72 years, the odds are 8.82 times the odds of the group aged 27 years or younger, and the odds for the group aged 73 years or older to prefer formal advice are 6.46 times the odds for the group aged 27 years or younger.

**Table 4.18** Odds for preference of formal first advice on medical problem, Sweden

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.481 (1.184-1.853)	0.001
age15ycat (RC:27 years and younger)		0.000
28-42 years	2.913 (2.089-4.062)	0.000
43-57 years	6.158 (4.337-8.742)	0.000
58-72 years	8.819 (5.988-12.987)	0.000
73 years and older	6.457 (4.044-10.308)	0.000
edulvlcat (RC: primary education)		0.165
secondary education	1.087 <sup>-1</sup> (1.471 <sup>-1</sup> -1.244)	0.587
post-secondary and tertiary education	1.330 <sup>-1</sup> (1.832 <sup>-1</sup> -1.036)	0.081
Annual Household income tot net. (RC: less than 6000 €)		0.000
6000-11999 €	2.016 <sup>-1</sup> (3.367 <sup>-1</sup> -1.211 <sup>-1</sup> )	0.007
12000-17999 €	1.965 <sup>-1</sup> (3.067 <sup>-1</sup> -1.258 <sup>-1</sup> )	0.003
18000-29999 €	1.357 <sup>-1</sup> (1.984 <sup>-1</sup> -1.076)	0.114
30000-59999 €	1.761 <sup>-1</sup> (2.577 <sup>-1</sup> -1.203 <sup>-1</sup> )	0.004
60000 € or more	3.279 <sup>-1</sup> (5.618 <sup>-1</sup> -1.912 <sup>-1</sup> )	0.000
Chi <sup>2</sup> (df=12)	493.644	

For income, again no clear line in difference for formal advice can be seen. For almost all groups, except for the group earning 18000-29999 euro, the odds-ratio is significant by itself. The preference for formal advice first is decreasing from the reference category to the group earning 6000-11.999 euro, than increases till the group earning 18000-29999 euro, and after this decreases again for the two groups with the highest income, though for all group the preference for formal advice seems to be lower than the preference for formal advice for people earning 6000 euros or less. The odds for the group earning 6000 euro are 2.02 times the odds for the population earning 6000-11999 euro, 97 percent higher than the group earning 12000-17999 euro, 76 percent higher than the odds for the population earning 30000-59999 euro, and 3.28 times the odds for the population earning 60000 euro or more.

## 4.4 Countries using German national healthcare system model

### 4.4.1 Austria

The first country that will be analysed using the German NHS-model is Austria. In table 4.19, an overview is shown of the associations between the preference for formal advices to choose for formal or informal advice and the background characteristics included in this thesis. The explaining variables 'sex' 'age' highest level of education' and 'total net household income' are compared to the dependent variable 'overall preference for formal advice as a combination of three symptoms'.

In table 4.19 can be seen, that there is a large difference in preference for formal advice for the different age-groups and income groups. In the variable age, the preference for formal first advice increases from 41.6 percent for the group aged 27 and younger, to 67.8 percent for the respondents aged between 28 and 42, around 74.5 percent for the part of the population aged 43 to 72 years, and 77.4 percent for the eldest age-group.

**Table 4.19** Percentage of people preferring formal against informal advice, Austria

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	64.4%	35.6%	483
	Female	65.7%	34.3%	493
Age in 15 years age - categories	younger than 27	41.6%	58.4%	238
	28-42	67.8%	32.2%	236
	43-57	74.5%	25.5%	310
	58-72	74.3%	25.7%	140
	73 and older	77.4%	22.6%	53
Highest level of education in categories	primary	55.5%	44.5%	247
	secondary	68.4%	31.6%	610
	post-secondary & tertiary	68.3%	31.7%	120
Annual household income total net in categories	less than 6000 euro	78.0%	22.0%	41
	6000-11999 euro	70.1%	29.9%	77
	12000-17999 euro	67.7%	32.3%	127
	18000-29999 euro	65.3%	34.7%	331
	30000-59999 euro	62.9%	37.1%	340
	60000 or more	55.9%	44.1%	59
<b>Total</b>		<b>65.1%</b>	<b>34.9%</b>	<b>977</b>

Within the different income groups, the preference for formal first advice seems to decrease with the increase of the household income. For the group with an annual income of less than 6000 euro, the percentage of this population preferring formal first advice on a medical problem is 78 percent. This preference for formal advice decreases with every income group, to a 55.9 percent preference for formal advice in the part of the population with an income of 60000 euro per year or more.

For sex, a smaller difference can be seen, where the male population seems to prefer formal advice slightly less than the female population. Last, when the total population is split by level of education, it seems that the group with only primary education prefers formal first advice less than the groups done secondary education or more.



In table 4.20 the outcomes of a logistic regression analysis for Austria can be seen. In this, it seems that of the background characteristics age, income and education are significantly explaining the difference in preference for formal advice to choose for formal health advice. According to the p-values, the most significant difference in preference for formal advice can be seen for different age-categories, followed by different income categories and different education-levels

In comparison to the reference category 'age is younger than 27', the odds to choose for formal first advice for all other age-groups are significantly higher. The odds for someone in the age group 28-42 years to choose for formal first medical advice are 2.98 times higher than the odds for someone in the youngest age-group. For a person in the age-group 43-57 years, the odds are 4.19 times the odds of the reference category. For the group aged 58-72 years, the odds are 4.17 times the odds of the reference category, and for the population aged 73 or older the odds to prefer formal advice are 5.3 times the odds of the population aged 27 years or younger.

**Table 4.20** Odds for preference of formal first advice on medical problem, Austria

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.001 (1.318 <sup>-1</sup> -1.320)	0.996
age15ycat (RC:27 years and younger)		0.000
28-42 years	2.979 (1.995-4.447)	0.000
43-57 years	4.188 (2.858-6.137)	0.000
58-72 years	4.172 (2.602-6.689)	0.000
73 years and older	5.295 (2.582-10.856)	0.000
edulvlcat (RC: primary education)		0.021
secondary education	1.567 (1.133-2.166)	0.007
post-secondary and tertiary education	1.228 (1.339 <sup>-1</sup> -2.019)	0.417
Annual Household income tot net. (RC: less than 6000 €)		0.004
6000-11999 €	1.495 <sup>-1</sup> (2.710 <sup>-1</sup> - 1.213)	0.185
12000-17999 €	1.894 <sup>-1</sup> (3.135 <sup>-1</sup> -1.144 <sup>-1</sup> )	0.013
18000-29999 €	2.004 <sup>-1</sup> (2.985 <sup>-1</sup> -1.344 <sup>-1</sup> )	0.001
30000-59999 €	2.105 <sup>-1</sup> (3.135 <sup>-1</sup> -1.418 <sup>-1</sup> )	0.000
60000 € or more	2.421 <sup>-1</sup> (4.505 <sup>-1</sup> -1.302 <sup>-1</sup> )	0.005
Chi <sup>2</sup> (df=12)	182.357	

Next, when looking at the variable income, in Austria the preference for formal advice is decreasing with an increase of income. The odds for a person with an annual income of less than 6000 euro in Austria to prefer formal medical advice is 49.5 percent higher than the odds for someone with an income of 6000-11999 euro, 89 percent higher than for a person with an income of 12000-17999 euro, 2 times the odds of a person with an income between 18000 and 29999 euros annually, 2.1 times the odds of someone with an income of 30000-59999 euro, and finally 2.4 times the odds of a person with an income higher than 60000 euro. When the population is split by education level, a significant difference can be seen between people with primary and with secondary education finished, where the odds for someone that completed secondary education is 57 percent higher than of a person with only primary education.



#### 4.4.2 Belgium

In table 4.21, the proportional differences in preference for formal and informal first medical advice are shown for Belgium. In the table can be seen that there is an overall preference for formal first advice in Belgium. Of the overall population, 61.5 percent of the population prefer formal medical advice when one of the symptoms is occurring. When looking at sex differences, it can be seen that 57.5 percent of the males prefer formal first advice, where the preference for formal first advice is much higher for females, with 65.4 percent.

Next, also a decrease of preference for formal advice can be seen with an increase of the education level of the respondents. For the people who have an education level of primary education only, 69.8 percent prefer formal first advice, where of the people who are educated on a post-secondary or tertiary level, 58.1 percent prefers formal first advice.

In the table can further be seen that the younger two age-groups have a lesser preference for formal advice more than the groups of 43 years and above. For the youngest age-groups, the preference for formal first advice is 45.2 percent for the group younger than 27, and 56.2 percent for the group aged 28 to 42 years. In comparison to the younger age groups and the total population, the older age groups have more preference for formal first advice, for 67 percent of the group from 43 to 57 years, 69.3 percent of the group aged 58-72 years and 69 percent of the group aged 73 years and older preferring formal first advice.

Although there seems to be some difference between the different income groups, no clear direction can be seen in population percentages in comparison to the preference for formal versus informal first medical advice, although the preference for formal advice for the poorer income groups decreases from 65.1 percent for the group earning less than 6000 euro, to 60.1 percent preference for formal advice in the population earning 12000-17999 euro.

**Table 4.21** Percentage of people preferring formal against informal advice, Belgium

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	57.5%	42.5%	659
	Female	65.4%	34.6%	659
Age in 15 years age - categories	younger than 27	45.2%	54.8%	199
	28-42	56.2%	43.8%	356
	43-57	67.0%	33.0%	376
	58-72	69.3%	30.7%	274
	73 and older	69.0%	31.0%	113
Highest level of education in categories	primary	69.8%	30.2%	169
	secondary	61.3%	38.7%	777
	post-secondary & tertiary	58.1%	41.9%	372
Annual household income total net in categories	less than 6000 euro	65.1%	34.9%	43
	6000-11999 euro	63.2%	36.8%	144
	12000-17999 euro	60.1%	39.9%	248
	18000-29999 euro	63.5%	36.5%	397
	30000-59999 euro	58.8%	41.2%	381
	60000 or more	62.9%	37.1%	105
<b>Total</b>		<b>61.5%</b>	<b>38.5%</b>	<b>1318</b>

As with the other countries a logistic regression analysis is done for Belgium, where the overall preference for formal advice is compared to the background characteristics. The outcomes for this logistic regression can be seen in table 4.22. In the most saturated model on basis of the background characteristics, the variables age and sex are significantly related to the preference for formal medical advice.

The odds to choose for formal medical advice for the age-group 28-42 years increase with 61 percent in comparison to the youngest age group. For the people aged 43-57 years in Belgium, the odds to prefer formal advice are 2.5 times the odds of someone from the reference category. For the elder age-groups, the odds to prefer formal advice are about 2.8 times<sup>5</sup> the odds for the youngest age-group. Furthermore, in this model, the odds for females to prefer formal medical advice are 41 percent higher than for the males in the survey for Belgium.

**Table 4.22** Odds for preference of formal first advice on medical problem, Belgium

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.409 (1.122-1.770)	0.003
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.613 (1.149-2.265)	0.006
43-57 years	2.514 (1.787-3.539)	0.000
58-72 years	2.819 (1.940-4.097)	0.000
73 years and older	2.806 (1.717-4.585)	0.000
edulvlcat (RC: primary education)		0.186
secondary education	1.189 <sup>-1</sup> (1.672 <sup>-1</sup> -1.184)	0.321
post-secondary and tertiary education	1.437 <sup>-1</sup> (2.146 <sup>-1</sup> -1.039)	0.076
Annual Household income tot net. (RC: less than 6000 €)		0.448
6000-11999 €	1.414 <sup>-1</sup> (2.358 <sup>-1</sup> -1.179)	0.184
12000-17999 €	1.443 <sup>-1</sup> (2.288 <sup>-1</sup> -1.096)	0.117
18000-29999 €	1.092 <sup>-1</sup> (1.698 <sup>-1</sup> -1.420)	0.691
30000-59999 €	1.164 <sup>-1</sup> (1.815 <sup>-1</sup> -1.340)	0.504
60000 € or more	1.028 <sup>-1</sup> (1.779 <sup>-1</sup> -1.684)	0.922
Chi <sup>2</sup> (df=12)	125.407	

#### 4.4.3 France

For France, as can be seen in table 4.23, the overall preference for formal first advice is 67.8 percent. First, the preference for formal advice for men for formal first advice is lower than for women, with 65.6 percent of the male population preferring formal first advice, compared to 69.9 percent of the female population.

Second, when the population is split by age group, the preference for formal first advice is much lower for the youngest age group of 27 years and younger, compared to the other age-groups. The preference for formal first advice with a symptom for the youngest age group is 39.3 percent, while for almost all the other age groups, around 70 percent of the population prefer formal medical first advice. Only for the age group of 58-72 years the preference for formal advice is even higher, with 76.2 percent mainly preferring formal first advice.

Another thing that can be seen in table 4.23, is that the preference for formal medical advice seems to decrease with an increase of education level. This preference for formal advices decrease from 73.6 percent for the group with only primary education, till 63.2 percent for the highest education group.

<sup>5</sup> 2,82 for 58-72 years and 2,81 for population aged 73 or older

Last, in the table can be seen that the preference for formal first advice is lower for the poorest and the richest group, in comparison to the other income groups. For the group with an income of 6000 euro and less, 57.8 percent of the population prefer formal first advice when a symptom is occurring. This preference for formal advice increases with income till the income-category earning 18.000-29.999 euro annually, where 73.8 percent prefer formal first medical advice. For the richer two groups, the preference for formal advice seems to decrease again with income to 62.9 percent preferring formal advice in the richest income-group.

**Table 4.23** Percentage of people preferring formal against informal advice, France

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	65.6%	34.4%	697
	Female	69.9%	30.1%	771
Age in 15 years age - categories	younger than 27	39.3%	60.7%	178
	28-42	69.8%	30.2%	411
	43-57	70.7%	29.3%	392
	58-72	76.2%	23.8%	336
	73 and older	70.2%	29.8%	151
Highest level of education in categories	primary	73.6%	26.4%	333
	secondary	69.8%	30.2%	507
	post-secondary & tertiary	63.2%	36.8%	628
Annual household income total net in categories	less than 6000 euro	57.8%	42.2%	102
	6000-11999 euro	67.1%	32.9%	161
	12000-17999 euro	67.9%	32.1%	271
	18000-29999 euro	73.8%	26.2%	435
	30000-59999 euro	65.6%	34.4%	375
	60000 or more	62.9%	37.1%	124
<b>Total</b>		<b>67.8%</b>	<b>32.2%</b>	<b>1468</b>

When looking at the outcomes of the logistic regression model for France in table 4.24 it can be seen that there is a significant association between preference for formal advice and age on the one side, and preference for formal advice and education on the other. The relation between age and preference for formal advice is most significant, according to the p-values.

The odds for someone aged 28-42 to prefer formal advice are 2.77 times the odds for the reference category of population aged 27 years or younger. For the group aged 43-57 years, the preference for formal advice is 2.8 times the odds for the group aged 27 years or younger. The odds to prefer formal advice for the group aged 58-72 years are 3.44 times the odds for the youngest age category, and the odds for the eldest age category to prefer formal advice are 2.38 times the odds for the youngest age group.

For education, the preference for formal advice decreases with a higher level of education. Within this variable, the odds-ratio between primary education and tertiary or post-secondary education is significant. The odds for someone with only primary education to prefer formal advice is 61 percent higher than for someone with post-secondary or tertiary education.

**Table 4.24** Odds for preference of formal first advice on medical problem, France

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.179 (1.060 <sup>-1</sup> -1.475)	0.148
age15ycat (RC:27 years and younger)		0.000
28-42 years	2.774 (1.966-3.915)	0.000
43-57 years	2.799 (1.982-3.953)	0.000
58-72 years	3.440 (2.408-4.914)	0.000
73 years and older	2.381 (1.539-3.684)	0.000
edulvlcat (RC: primary education)		0.014
secondary education	1.316 <sup>-1</sup> (1.789 <sup>-1</sup> -1.033)	0.080
post-secondary and tertiary education	1.608 <sup>-1</sup> (2.208 <sup>-1</sup> -1.170 <sup>-1</sup> )	0.003
Annual Household income tot net. (RC: less than 6000 €)		0.231
6000-11999 €	1.021 <sup>-1</sup> (1.603 <sup>-1</sup> -1.536)	0.927
12000-17999 €	1.018 <sup>-1</sup> (1.515 <sup>-1</sup> -1.460)	0.928
18000-29999 €	1.380 (1.075 <sup>-1</sup> -2.047)	0.110
30000-59999 €	1.014 (1.493 <sup>-1</sup> -1.533)	0.949
60000 € or more	1.094 <sup>-1</sup> (1.818 <sup>-1</sup> -1.518)	0.727
Chi <sup>2</sup> (df=12)	227.000	

#### 4.4.4 Germany

In table 4.25, an overview is given of the preference for informal and formal first advice in Germany when dividing the population by background characteristics. In Germany, 57.4 percent of the overall survey-population prefers formal first medical advice. A difference again can be seen on basis of sex, where 54 percent of the male population prefers formal first advice against 60.8 percent of the female population. Thus, a larger amount of the male population prefers informal first advice in comparison to females.

A difference can again be seen too on the basis of education level, where the preference for formal first advice seems to decrease with the rise of education level. 62.8 percent of the people with only primary education prefer formal first advice, against 57.9 percent of the population with secondary education, and 56.1 percent of the people with post-secondary or tertiary educational level.

For Germany, also a clear line in preference for formal advice can be seen when looking at different age-groups, where the preference for formal advice seems to increase with age. This preference of formal advice increases from 47.8 percent for the group aged 27 years and younger, to 66.1 percent of the people preferring formal first advice in the eldest age group of 73 years and older.

There is no clear line in preference for formal advice when the population is split in different income groups. There seems to be some line between the rise of household income and a decreasing preference for formal first advice. Thus, this line is disrupted by the relatively large amount of the population in the income-group with 6000-11.999 euro income annually mainly preferring informal advice, and only 49.5 percent prefer formal advice. Other groups of which the population prefers formal first advice less than average are the groups with an income between 30.000-59.999 euro annually of whom 56.9 percent prefers formal advice, and the group with an income of 60.000 and above in which 52.4 percent prefer formal first advice.

The groups mostly preferring formal medical advice when a symptom is occurring are the poorest groups who have a household income of 6000 euro or less (62.6 percent), and the group earning 12.000-17.999 euro, of whom 62.5 percent prefer formal first advice.

**Table 4.25** Percentage of people preferring formal against informal advice, Germany

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	54.0%	46.0%	994
	Female	60.8%	39.2%	1007
Age in 15 years age - categories	younger than 27	47.8%	52.2%	253
	28-42	55.5%	44.5%	526
	43-57	58.3%	41.7%	580
	58-72	60.6%	39.4%	467
	73 and older	66.1%	33.9%	174
Highest level of education in categories	primary	62.8%	37.2%	43
	secondary	57.9%	42.1%	1365
	post-secondary & tertiary	56.1%	43.9%	592
Annual household income total net in categories	less than 6000 euro	62.6%	37.4%	91
	6000-11999 euro	49.5%	50.5%	184
	12000-17999 euro	62.5%	37.5%	291
	18000-29999 euro	58.5%	41.5%	638
	30000-59999 euro	56.9%	43.1%	633
	60000 or more	52.4%	47.6%	164
<b>Total</b>		<b>57.4%</b>	<b>42.6%</b>	<b>2001</b>

In table 4.26, the outcomes for the most saturated logistic regression model can be seen for Germany, on basis of the analysed background characteristics. There is a significant relation between preference for formal advice and different age-groups and between preference for formal advice and sex. Of these variables, age is most significantly related to the preference for formal advice.

**Table 4.26** Odds for preference of formal first advice on medical problem, Germany

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.291 (1.079-1.545)	0.005
age15ycat (RC:27 years and younger)		0.001
28-42 years	1.354 (1.002-1.831)	0.049
43-57 years	1.565 (1.160-2.113)	0.003
58-72 years	1.706 (1.254-2.320)	0.001
73 years and older	2.128 (1.432-3.162)	0.000
edulvcat (RC: primary education)		0.851
secondary education	1.020 (1.466 <sup>-1</sup> -1.525)	0.923
post-secondary and tertiary education	1.042 <sup>-1</sup> (1.621 <sup>-1</sup> -1.495)	0.857
Annual Household income tot net. (RC: less than 6000 €)		0.077
6000-11999 €	1.733 <sup>-1</sup> (2.793 <sup>-1</sup> -1.074 <sup>-1</sup> )	0.024
12000-17999 €	1.024 <sup>-1</sup> (1.592 <sup>-1</sup> -1.521)	0.919
18000-29999 €	1.244 <sup>-1</sup> (1.883 <sup>-1</sup> -1.216)	0.301
30000-59999 €	1.248 <sup>-1</sup> (1.890 <sup>-1</sup> -1.211)	0.293
60000 € or more	1.495 <sup>-1</sup> (2.439 <sup>-1</sup> -1.093)	0.109
Chi <sup>2</sup> (df=12)	81.368	

From the model can be concluded that the odds to choose for formal first advice rise with the different age groups. The odds to prefer formal first advice for the group aged 28-42 years are 35% higher than the group aged 27 years and younger. These odds rise with every age-group, till 2.1 times the odds of the youngest group preferring formal advice in the eldest age group. Another thing that can be seen in this model is that the odds that a woman prefers formal advice are 29 percent higher than the preference for formal advice for a man. Last, there seems to be a significant difference in the variable income between the group earning less than 6000 euros in comparison to the group earning 6000-11999 euro. The odds for people earning less than 6000 euro in Germany are 73 percent higher than someone earning 6000-11999 euro.

#### 4.4.5 Luxembourg

In Luxembourg, as outlined in table 4.27, 54 percent of the overall population prefers formal first advice when a symptom is occurring. The preference for formal advice of 51.6 percent of the males for formal first advice is again lower than the preference for formal advice of females, with 57.1 percent.

When the population is split in different age-groups, the youngest age-group prefers formal advice less than the other age-groups. 33.8 percent of the survey population of Luxembourg aged younger than 27 years prefer formal first medical advice. The population aged 58-72 years also prefer formal advice less than average, with 49.2 percent preferring formal first advice. The other groups have an more than average preference for formal advice, with 61.9 percent of the group aged 28-42 years, 56.7 percent of the group aged 43-57 years and 62.2 percent of the group aged 73 years and older prefer formal first advice.

**Table 4.27** Percentage of people preferring formal against informal advice, Luxembourg

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	51,6%	48.4%	514
	Female	57.1%	42.9%	392
Age in 15 years age - categories	younger than 27	33.8%	66.2%	148
	28-42	61.9%	38.1%	328
	43-57	56.7%	43.3%	261
	58-72	49.2%	50.8%	126
	73 and older	62.2%	37.8%	45
Highest level of education in categories	primary	60.9%	39.1%	256
	secondary	50.6%	49.4%	411
	post-secondary & tertiary	52.9%	47.1%	210
Annual household income total net in categories	less than 6000 euro	30.8%	69.2%	13
	6000-11999 euro	81.3%	18.8%	16
	12000-17999 euro	52.0%	48.0%	50
	18000-29999 euro	55.0%	45.0%	189
	30000-59999 euro	57.4%	42.6%	406
	60000 or more	47.2%	52.8%	233
<b>Total</b>		<b>54.0%</b>	<b>46.0%</b>	<b>907</b>

When comparing the population on their education level, it can be seen that the people which only completed primary education have more preference for formal advice than people with higher education levels completed. 60.9 percent of the people who completed primary education prefer formal advice, against 50.6 percent of the people who are educated till secondary level, and 52.9 percent of the people who completed post secondary or tertiary education.

For the population divided by income, it seems that within the groups earning less than 6000 euro, the preference for formal first advice is lower than for the other groups, with only 30.8 percent preferring formal first advice. The preference for formal first advice is highest for the group earning 6000-11999 euro annually, where 81.3 percent preferring formal advice on a symptom. Also, the preference for formal first advice seems to increase for the groups earning 12000-59999 euro, from 52 percent for the group earning 12000-17999, to 57.4 percent for the group earning 30000-59999 euro. With the richest income-group, the preference for formal advice seems to decrease again till 47.2 percent.

The outcomes for the logistic regression done for Luxembourg are summarised in table 4.28. It can be seen that there is a significant relation between preferences for formal advice and again age and education level in Luxembourg. Most significant difference is again explained by age, according to the p-values.

First, for different age-categories can be seen that the odds for the population of Luxembourg aged 28-42 years to prefer formal advice are 2.85 times the odds of the group aged 27 years or younger. The odds to prefer formal advice for people aged 43-57 years are 2.15 times the odds for the group aged 27 years or younger, and 52 percent higher for someone aged 58-72, in comparison to the reference category. The odds for the oldest age group are 2.38 times the odds for the youngest group.

**Table 4.28** Odds for preference of formal first advice on medical problem, Luxembourg

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.057 (1.247 <sup>-1</sup> -1.393)	0.695
age15ycat (RC:27 years and younger)		
28-42 years	2.849 (1.879-4.320)	0.000
43-57 years	2.152 (1.416-3.271)	0.000
58-72 years	1.518 (1.078 <sup>-1</sup> -2.483)	0.096
73 years and older	2.378 (1.189-4.754)	0.014
edulvlcat (RC: primary education)		
secondary education	1.475 <sup>-1</sup> (2.070 <sup>-1</sup> -1.053 <sup>-1</sup> )	0.024
post-secondary and tertiary education	1.582 <sup>-1</sup> (2.415 <sup>-1</sup> -1.036 <sup>-1</sup> )	0.033
Annual Household income tot net. (RC: less than 6000 €)		
6000-11999 €	1.946 (1.862 <sup>-1</sup> -7.048)	0.311
12000-17999 €	1.527 <sup>-1</sup> (3.012 <sup>-1</sup> -1.293)	0.223
18000-29999 €	1.305 <sup>-1</sup> (2.110 <sup>-1</sup> -1.238)	0.277
30000-59999 €	1.161 <sup>-1</sup> (1.838 <sup>-1</sup> -1.362)	0.522
60000 € or more	1.531 <sup>-1</sup> (2.558 <sup>-1</sup> -1.092)	0.104
Chi <sup>2</sup> (df=12)	53.700	

When the effect of education on the odds to prefer formal advice are analysed, it can again be seen that the odds to prefer formal advice decrease when the people are higher educated. For the group that completed secondary education, the odds is decreased with 48 percent, in comparison to people completed primary education only. The odds that people with post-secondary or tertiary education in Luxembourg prefer formal first advice according to this model are 58 percent lower in comparison to the reference category.



#### 4.4.6 Netherlands

Of the overall population of the Netherlands, as can be seen in table 4.29, 57.4 percent prefer formal first advice, when a medical problem is occurring. When the population is split on basis of sex, men again have a lower preference for formal advice than women. The difference is not large though, with 56.9 percent of the males preferring formal first advice, against 57.8 percent of the females.

Furthermore, when looking at the preference for formal advices for different age-groups, the preference for formal advice seems to increase when age is increasing, from 38.8 percent of the people younger than 28 preferring formal first advice, to 71.4 percent preference of formal advice for the population aged 73 or older. The preference for formal first advice also is decreasing with education level increasing, from 62.8 percent preference for formal advice for the people who completed primary education only, to 51.9 percent for the people who completed post-secondary or tertiary education.

When comparing the population on household income, it seems that the preference for formal advice first is increasing from the poorest group to the group earning 6000-11.999 euro, from 64.5 percent preferring formal advice to 67.9 percent. For the three income-groups in the range of 12.000-59.999 euro income annually, the preference for formal first advice then seems to decrease again per income category from 59.5 percent to 55.3 percent of the population preferring formal first advice. For the highest income-category, the preference for formal advice increases again in comparison to the part of the population earning 30.000-59.999 euro annually to 57.2 percent preference for formal advice.

**Table 4.29** Percentage of people preferring formal against informal advice, Netherlands

		overall preference as combination of three symptoms		
		always or mostly preference formal advice	always or mostly preference informal advice	N
Sex	Male	56.9%	43.1%	671
	Female	57.8%	42.2%	851
Age in 15 years age - categories	younger than 27	38.8%	61.2%	152
	28-42	51.4%	48.6%	395
	43-57	56.0%	44.0%	514
	58-72	69.6%	30.4%	329
	73 and older	71.4%	28.6%	133
Highest level of education in categories	primary	62.8%	37.2%	172
	secondary	59.5%	40.5%	866
	post-secondary & tertiary	51.9%	48.1%	484
Annual household income total net in categories	less than 6000 euro	64.5%	35.5%	31
	6000-11999 euro	67.9%	32.1%	109
	12000-17999 euro	59.5%	40.5%	210
	18000-29999 euro	56.0%	44.0%	464
	30000-59999 euro	55.3%	44.7%	521
	60000 or more	57.2%	42.8%	187
<b>Total</b>		<b>57.4%</b>	<b>42.6%</b>	<b>1523</b>

In table 4.30 the odds for the model on preference of formal advice on basis of background characteristics for the Netherlands are outlined. In this model can be seen that the variables age and education level have are significantly related to the preference for formal advice. Thus, only the odds-ratios within the variable age are significant, according to the p-values. Furthermore,



some coefficients denominating the difference in income are significant, while the overall variable isn't. Thus, the p-value for the variable income is 0.062, which just falls out of the 95 percent significance range.

The odds to prefer formal advice seem to increase with age. For the group aged 28-42 years, the odds to prefer formal advice are 88 percent higher than for the youngest category. The odds to prefer formal advice for the group aged 43-57 years are 2.2 times the odds for the youngest age-group, 3.96 times the odds of the reference category for the group aged 58-72 years, and 4.23 times the odds of the reference category for the oldest age group.

For income, the preference for formal advice is lower for all categories than for the reference-category. There is a significant difference between the group earning less than 6000 euro and the part of the population earning 12000-17999 euro, 18000-29999 euro and 30000-59999 euro. The odds to prefer formal advice for someone earning less than 6000 euro annually are 92 percent higher than the odds for someone earning 12000-17999, 94 percent higher than for someone earning 18000-29999 euro, and 85 percent higher than for someone earning 30000-59999 euro annually.

**Table 4.30** Odds for preference of formal first advice on medical problem, Netherlands

	Odds Ratio (CI)	p-value
Sex (RC: Male)		
Female	1.004 <sup>-1</sup> (1.238 <sup>-1</sup> -1.229)	0.973
age15ycat (RC:27 years and younger)		0.000
28-42 years	1.882 (1.283-2.761)	0.001
43-57 years	2.202 (1.519-3.192)	0.000
58-72 years	3.961 (2.657-5.905)	0.000
73 years and older	4.238 (2.563-7.010)	0.000
edulvlcat (RC: primary education)		0.029
secondary education	1.174 (1.199 <sup>-1</sup> -1.652)	0.359
post-secondary and tertiary education	1.175 <sup>-1</sup> (1.715 <sup>-1</sup> -1.242)	0.404
Annual Household income tot net. (RC: less than 6000 €)		0.062
6000-11999 €	1.235 <sup>-1</sup> (2.151 <sup>-1</sup> -1.410)	0.456
12000-17999 €	1.919 <sup>-1</sup> (3.155 <sup>-1</sup> -1.168 <sup>-1</sup> )	0.010
18000-29999 €	1.942 <sup>-1</sup> (3.086 <sup>-1</sup> -1.222 <sup>-1</sup> )	0.005
30000-59999 €	1.845 <sup>-1</sup> (2.933 <sup>-1</sup> -1.161 <sup>-1</sup> )	0.010
60000 € or more	1.618 <sup>-1</sup> (2.695 <sup>-1</sup> -1.027)	0.063
Chi <sup>2</sup> (df=12)	107.376	

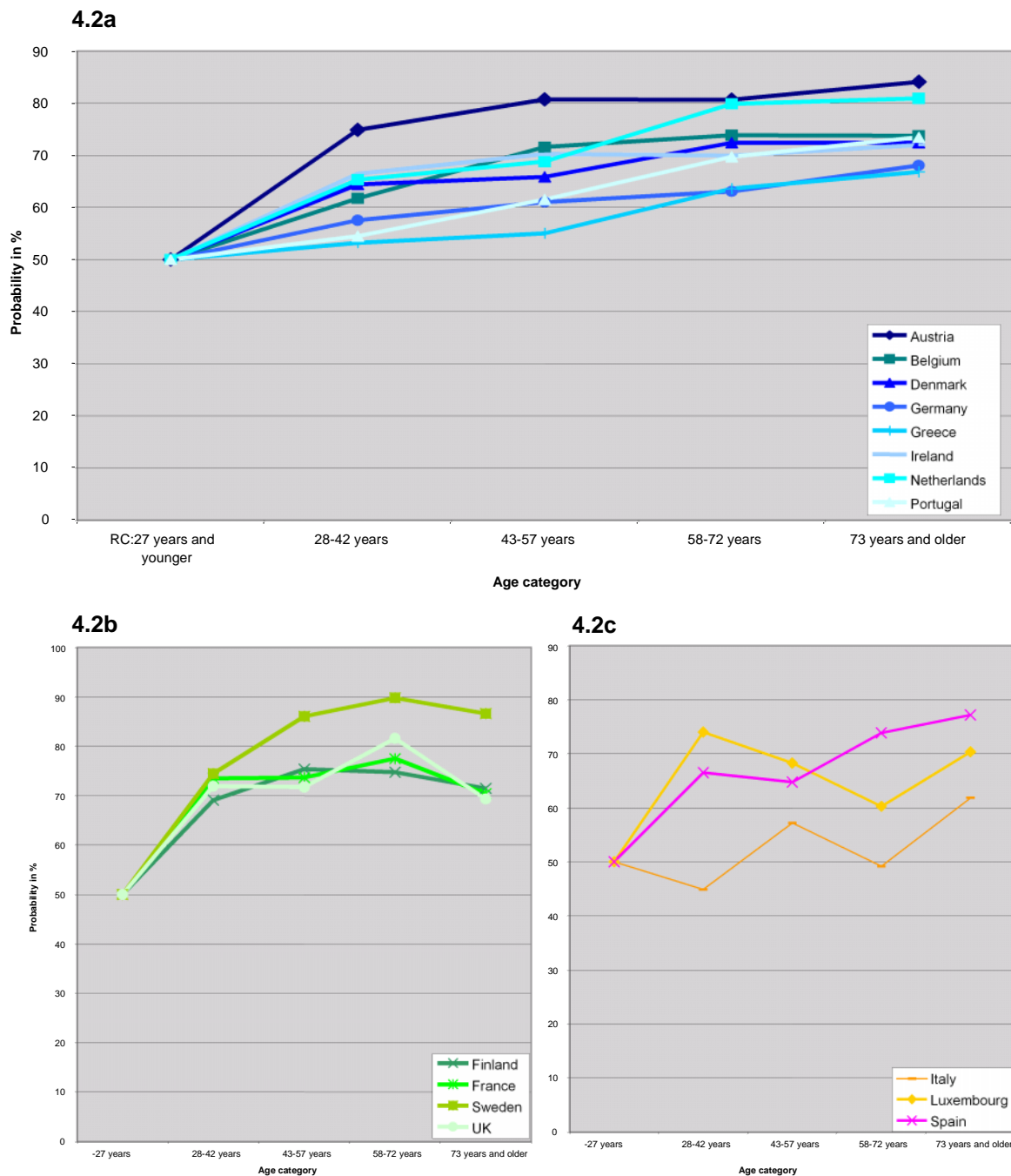
#### 4.5 Conclusion

In the last paragraph of this chapter, a comparison will be made on basis of the relations in preference of formal advice on a medical problem between the analysed EU-countries. This will be done, by comparing the probabilities of the different countries. In this way we can see whether there are differences in probabilities between every country. The probabilities of the individual variables in the formula are calculated by the following formula:  $p = \exp(b) / (1 + \exp(b))$ . First we are going to take a look at the variable age, after which the variables education, sex and income will also be analysed. Overall, it can be said that there are some differences in the researched countries when comparing the background characteristics to the overall preference for formal advice. The background characteristics vary in weight and direction per country on the effect on preference of formal advice. These differences will be described in the rest of this paragraph.

### 4.5.1 Age

Comparing the probabilities in age shows some clear, thus different directions in which the preference for formal advice with a medical problem moves. For most countries, as can be seen in figure 4.2a, the probability that someone prefers formal health advice rises with age. This is the case in Austria, Belgium, Denmark, Germany, Greece, Ireland, the Netherlands and Portugal. The level to which this probability eventually rises is highest in the Netherlands and Austria, while it is lowest in Greece and Germany. The second direction, occurring in Finland, Sweden, France and the UK, is that the preference for formal advice first rises with age and for the oldest group decreases again, as can be seen in figure 4.2b.

**Figure 4.2** Probabilities of preference for formal advice by age



For Spain, Italy and Luxembourg, there is no clear direction in probabilities, as can be seen in figure 4.2c. In Spain, the preference for formal advice mainly gets higher with age, thus this preference for formal advice is decreasing in the group aged 43-57 years. For Luxembourg, the preference for formal advice first increases till the group aged 28-42 years, then decreases till the group aged 58-72, and increases again for the oldest age-group. In Italy, the preference for formal advice first decreases, than increases, than decreases again and after this, the preference for formal advice increases again. Whether the difference in probabilities is significant or not can be seen in the figures by the fact that a line is bold. The difference in probabilities by age is significant in almost all countries, except for Italy.

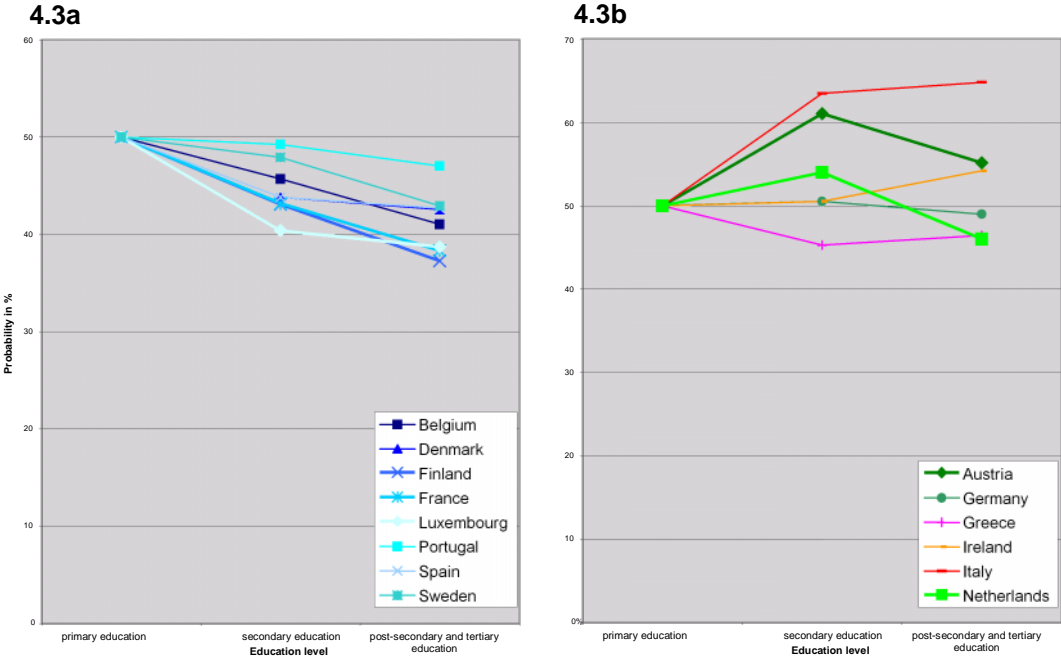
4.5.2 Education

In making a comparison at the effects of education level on the probability to prefer formal advice the preference for formal advice for most countries decreases with a higher education, as can be seen in figure 5.3a. This is happening in Belgium, Denmark, Finland, France, Luxembourg, Portugal, Spain and Sweden.

There are a few exceptions on this direction though, as can be seen in figure 5.3b. In Italy, the preference for formal advice seems to increase, while in Austria, the Netherlands and to a lesser extent in Germany, the preference for formal advice first seems to increase with education level, and after this is decreasing.

Last, in Ireland and Greece, the preference for formal advice is first decreasing and than increasing. Of the countries where the preference for formal advice is decreasing with a higher education level, the relation between preference for formal advice and education is significant in Luxembourg, France and Finland. In both the Netherlands and Austria, where the preference for formal advice first rises, and than decreases again for the highest educated group, the relation between preference for formal advice and education is also significant.

Figure 4.3 Probabilities of preference for formal advice divided by education level



### 4.5.3 Sex

When looking at the different probabilities for a woman to prefer formal advice compared to men, as can be seen in table 4.31, it seems that in most countries the probability that a woman is choosing formal first advice is higher than the probability that a man chooses formal advice. The only country where according to the logistic regression model, the probability for men to choose formal advice is lower, is in the Netherlands. Thus, in the model this is an insignificant relation, not significantly contributing to the individual country-model.

**Table 4.31** Probabilities of preferences divided by gender\*

Country	Female probability
Netherlands	0.499
Austria	0.500
Finland	0.508
Luxembourg	0.514
France	0.541
Portugal	0.550
<b>Denmark</b>	<b>0.561</b>
<b>Germany</b>	<b>0.564</b>
Italy	0.580
<b>Belgium</b>	<b>0.585</b>
<b>Spain</b>	<b>0.586</b>
<b>Ireland</b>	<b>0.593</b>
<b>Sweden</b>	<b>0.597</b>
<b>Greece</b>	<b>0.603</b>
<b>UK</b>	<b>0.657</b>

\*RC:male probability =0,5

There is a significant relation between preference for formal advice and sex in Denmark, Germany, Belgium, Spain, Ireland, Sweden Greece and the UK. The preference for formal advice between the two sexes is almost equal in the Netherlands, Austria and Finland.

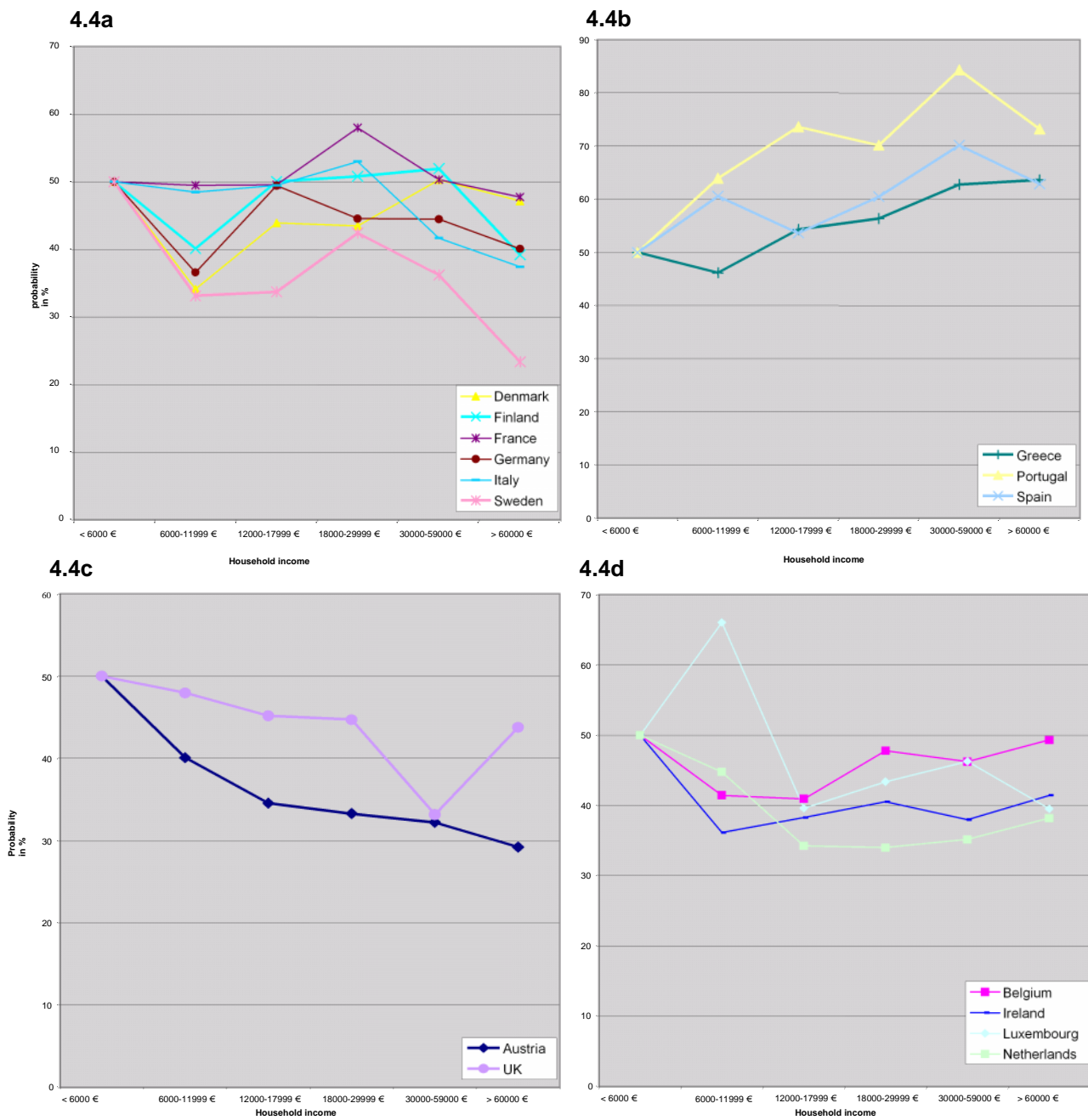
### 4.5.4 Income

When comparing the effects on probabilities between countries by income-group, the directions are not as clear as with different age or educational groups. In most countries the probability for preference of formal advice is lower for other income groups than for the lowest income group. This is the case in Austria, Belgium, Denmark, Germany, Ireland, the Netherlands, Sweden and the UK. In Spain, Portugal and Greece, the preference for formal advice for other income groups is higher than for the poorest group, while the preference for formal advice is shifting from higher to lower in Finland, France, Italy and Luxembourg. The different directions the probabilities further have are described further in figure 4.4a till 4.4d.

The direction that is occurring most in the researched countries is that the preference for formal advice first decreases from the group with lowest household income to the group with an income of 6000-11999 annually, than increases till the group earning 18000-29999 or 30000-59999 euro, and after this decreases again for the richer groups. This direction, described in figure 4.4a, is seen in Denmark, Finland, France, Germany, Italy and Sweden. Of these countries, the relation between income and preference for formal advice is thus only significant in Finland and Sweden. The next direction described in figure 4.4b, is the overall rise in preference for formal advice in Spain, Portugal and Greece. The association between income and preference for formal advice is significant in these three countries in the individual country logistic regression models.

Of the other countries, in Austria and the UK there is an overall decrease in preference for formal advice, as can be seen in figure 4.4c in both countries the relation with income is again significant.

**Figure 4.4** Probabilities of preference for formal advice divided by income



In the Netherlands, as shown in figure 4.4d, the probability for preference of formal advice first decreases till the group with an income between 12000 and 17999 euros, and then steadily increases again with the rise of income. For Belgium, Ireland and Luxembourg, no direction can be seen between probability of choosing formal advice, and income. In these countries, the relation between income and preference for formal advice is not significant.

## 5. Healthcare seeking behaviour explained by differences in healthcare systems

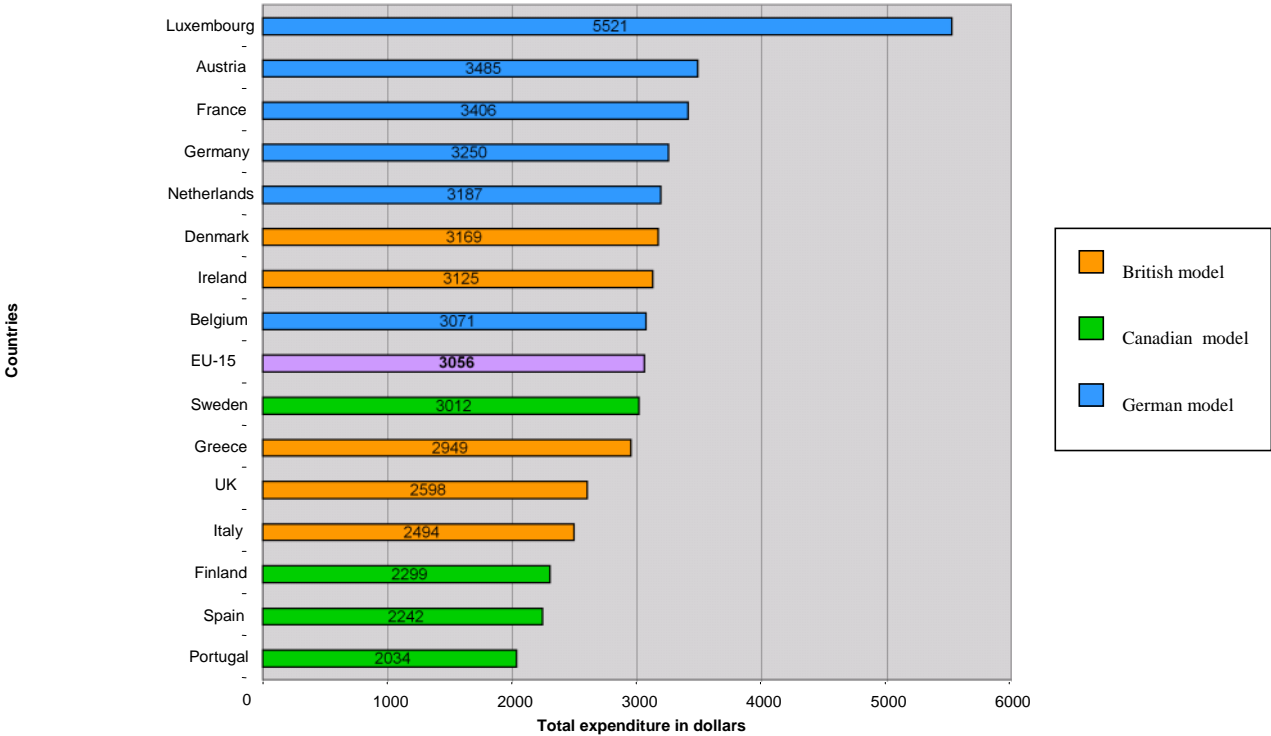
In this chapter, first the differences in financing the National Healthcare Systems (NHS) will be analysed between Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK. The variables derived from these analyses will be used in comparing differences in healthcare seeking behaviour due to the national health system. In the last part of chapter 5, the focus will be on associations between healthcare seeking behaviour and the differences in the national health systems. First the focus will be on differences in the healthcare seeking behaviour between countries separated in either using the British, Canadian or German model. Further the effect of differences in private payments, described in paragraph 5.1, on the preference for formal advice for different groups will be analysed. This chapter will again end with a short concluding paragraph, showing the main results from the analysis done in this chapter.

### 5.1 Financing of national healthcare systems in the EU-15

In this paragraph, the differences in average costs for the healthcare system per person in the different countries will be analysed. Hereby, first the focus will be on how the government systems are paid for, and what the share of public and private sources is in this. Next, the share of Out-of-pocket payments in the countries is analysed.

First, to give a general overview of the expenditures per person per country, the total expenditures on health for the year 2005 are summarised in figure 5.1. In the figure, a separation is made on basis of the three models used for national health systems. It can be seen that generally countries using the Canadian model have relatively lower costs per capita on health, than countries using the British or the German model, and countries using the German model all have an above average expenditure on health.

**Figure 5.1** Total per capita expenditure on health in 2005 (PPP in \$)

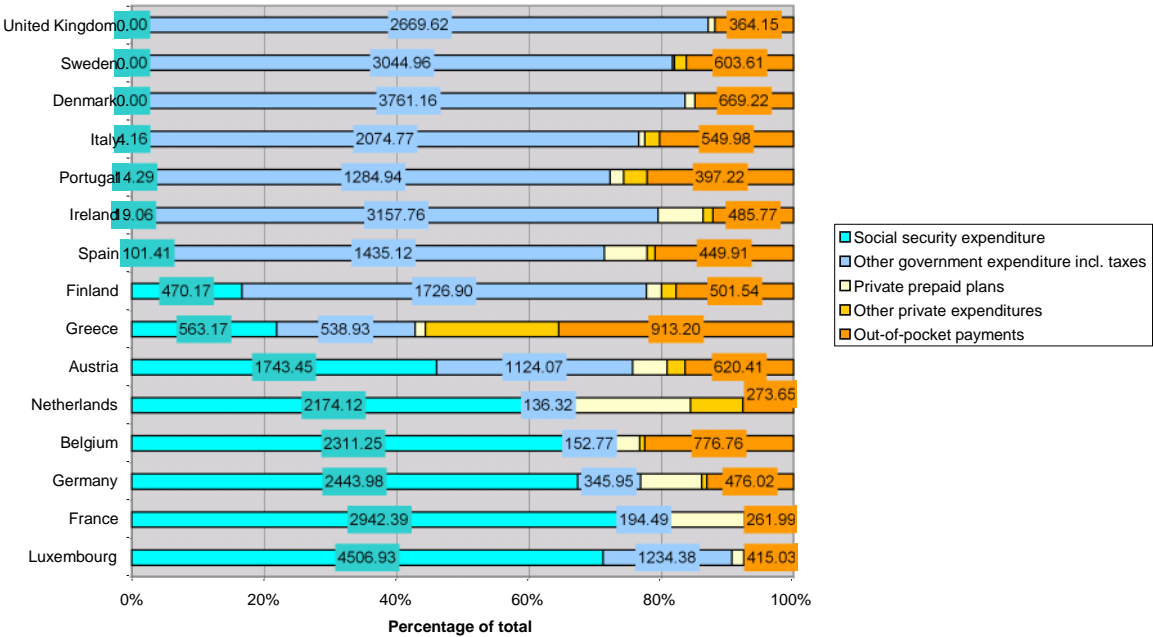


Source: adapted from WHOSIS, 2009

The main reason why the costs in countries using the Canadian model are relatively low is, because the government in countries using this model have a strong governmental regulatory control in setting the prices for health care. These fee controls on the provision of care are the main factor why the costs have been limited over time (Kornai & Eggleston, 2001, cf. Tajnikar en Bon a, 2007). This limitation of fees also accounts for countries using the British model.

In the countries included in research, the main financing source for the NHS are taxes, social insurances, combination of taxes and social insurance, and a combination of private sources and social insurance (Kornai & Eggleston, 2001, 102-103, cf. Tajnikar en Bon a, 2007). In figure 5.2 the expenditure on health in 2005 by government and private sources in the EU-15 are set out. Government expenditures are split in two categories, namely government payments done through social insurance systems, and other government expenditures on the health system. Tax is forming the main part of these 'other government expenditures'. The reason why it wasn't specified in an individual category is because the WHOSIS-data used was not specific about the exact amount paid through taxes directly. Private expenditures are split between expenditure by private insurance companies, out-of-pocket payments and other private expenditures.

**Figure 5.2** Per capita government and private expenditure on health in % and \$ (2005)



First a division can be seen in government expenditures on social insurance systems, compared to countries where the government contribute to the health system directly with taxes. Similarities can be seen in this with the national health systems already described, where a clear difference the countries using the German model, in comparison to countries using either the Canadian or the British model is present.

Where governments in countries using the German model mainly contribute to social security expenditures, most of the countries using the Canadian model or the British model mainly contribute in the form of other government expenditures. Exceptions on this pattern are Finland, Greece and Austria. In Finland the government also contributes to some extent to social security expenditures, where in Greece the government payments to social security expenditures as well as other government expenditures have an almost equal share of per capita payments. In Austria the other governmental expenditures are relatively high, in comparison to other countries using the



German model. The relation between these different models and the healthcare seeking behaviour will be analysed in paragraph 5.2.

Figure 5.2 further shows the average shares of different private expenditures in the countries. In the figure can be seen that the share of private payments is relatively high in Greece, the Netherlands, Belgium, Spain and Portugal. The share of private payments is lowest in Sweden, the UK, Denmark and Luxemburg. When looking at the costs to out-of-pocket payments, it can be seen that this is highest again in Greece and Belgium, as well as in Sweden and Denmark. The out-of-pocket costs are thus lowest in the Netherlands, France and the UK.

These average costs for private payments and out-of-pocket payments will be corrected with the PPP in the country. This leads to two continuous variables that show the differences in private costs and OOP-payment-costs between the countries. This leads to the following division of variables in the countries, as can be seen in table 5.1.

**Table 5.1** Share of PPP paid on private expenditure and OOP-payments, 2005

<i>Country</i>	<i>NHS-model</i>	<i>Share of PPP to private expenditure</i>	<i>Share of PPP to OOP-payment-</i>
		<i>on healthcare in %, 2005</i>	<i>expenditure on healthcare in %, 2005</i>
Austria	German	1.726%	1.217%
Belgium	German	2.460%	0.817%
Denmark	British	2.492%	1.416%
Finland	Canadian	3.239%	2.549%
France	German	4.215%	0.923%
Germany	German	3.018%	2.034%
Greece	British	5.772%	3.578%
Ireland	British	1.647%	1.318%
Italy	British	2.218%	1.621%
Luxembourg	German	1.170%	0.694%
Netherlands	German	1.434%	1.144%
Portugal	Canadian	3.174%	2.749%
Spain	Canadian	2.706%	2.454%
Sweden	Canadian	2.132%	1.887%
UK	British	1.252%	1.153%

The country with the lowest share of PPP on private expenditure in health care is now Luxembourg, followed by the UK, the Netherlands and Ireland. The highest share of PPP on private expenditure on healthcare is occurring in Greece, followed by France, Finland and Portugal. When looking at the share of PPP on OOP-payments in healthcare, this is highest in Greece, Portugal and Finland, while it is lowest in Luxembourg, Belgium and France.

The relation between share of all private payments combined and healthcare seeking behaviour will be analysed in paragraph 5.3, and the specific relation between out-of-pocket payments will be further analysed in paragraph 5.4.

## 5.2 Healthcare seeking behaviour explained by the NHS-model

The first analysis that is going to be done in this chapter is to see whether there is a relation between preference for formal advice on the one side, and the type of National healthcare system which is used in one of the countries analysed on the other. The results for the different logistic regression models derived from this analysis can be seen in table 6.1.

In model 1 which is described in table 6.1, only the NHS-model include as variable related to preference for formal advice is shown. There is a significant relation between preference for formal advice and the NHS-model. The overall p-value for the variable NHS-model in this first model is 0.000. The preference for formal advice according to the first model is lowest in the reference category British model and highest in countries using the Canadian model.



**Table 5.2** Relations between the NHS-model and HSB in logistic regression

	model 1 only NHS-models included		model 2 all variables, excl interactions		model 3 all variables, incl interactions with NHSmodel	
	Odds ratio (CI.)	p-value	Odds ratio (CI.)	p-value	Odds ratio (CI.)	p-value
<b>NHSmodel (RC: British model)</b>		0.000		0.000		0.421
Canadian model	2.281 (2.155-2.414)	0.000	1.293 (1.198-1.395)	0.000	1.050 (1.215 <sup>-1</sup> -1.340)	0.692
German model	1.536 (1.469-1.606)	0.000	1.134 <sup>-1</sup> (1.215 <sup>-1</sup> -1.059 <sup>-1</sup> )	0.000	1.194 (1.097 <sup>-1</sup> -1.565)	0.198
<b>eduys</b>			1.032 <sup>-1</sup> (1.040 <sup>-1</sup> -1.025 <sup>-1</sup> )	0.000	1.034 <sup>-1</sup> (1.042 <sup>-1</sup> -1.026 <sup>-1</sup> )	0.000
<b>household income (RC: less than 6000 euro)</b>				0.005		0.003
6000-11999 euro			1.025 (1.105 <sup>-1</sup> -1.162)	0.693	1.007 <sup>-1</sup> (1.230 <sup>-1</sup> -1.213)	0.946
12000-17999 euro			1.156 (1.024-1.305)	0.019	1.196 (1.015 <sup>-1</sup> -1.452)	0.071
18000-29999 euro			1.214 (1.085-1.360)	0.001	1.285 (1.083-1.524)	0.004
30000-59999 euro			1.158 (1.030-1.302)	0.014	1.237 (1.042-1.469)	0.015
60000 or more			1.105 (1.040 <sup>-1</sup> -1.271)	0.160	1.419 (1.160-1.735)	0.001
<b>Gender (RC: male)</b>						
female			1.280 (1.208-1.357)	0.000	1.512 (1.363-1.676)	0.000
<b>Age (RC: younger than 27 years)</b>				0.000		0.000
28-42			1.939 (1.774-2.120)	0.000	1.746 (1.495-2.039)	0.000
43-57			2.253 (2.064-2.460)	0.000	1.850 (1.588-2.155)	0.000
58-72			2.599 (2.371-2.850)	0.000	2.187 (1.867-2.563)	0.000
73 and older			2.538 (2.251-2.861)	0.000	2.126 (1.726-2.620)	0.000
<b>Interactions</b>						
hinctntcat * NHSmodel						0.002
age15ycat * NHSmodel						0.001
gndr * NHSmodel						0.019
Nagelkerke R <sup>2</sup>	0.081		0.150		0.153	
Chi <sup>2</sup> (df)	1244.712 (df=2)		2363.732 (df=13)		2421.407 (df=33)	

When the four background characteristics are included in the model, as in model 2, it can be seen that all variables included in the model are significantly explaining a difference in preference for formal advice. There is a shift within the variable NHS-model, where the preference for formal advice for countries using the Canadian model is still higher than in countries using the British model, but the preference for formal advice is lower in countries using the German system. The variable NHS-model in this second model still is highly significant, with a p-value of 0.000. Further it can be seen in the second model, that an increase in education years has a negative effect on the preference for formal healthcare advice. The preference for formal advice decreases with 3.2 percent per year of extra education, according to the model. When looking at the effect of income in the model, it can be seen that the preference for formal advice first increases till the group earning 18000-29999 euro, and then decreases again for the higher income groups. The preference for formal advice of females seems to be 28 percent higher than for males, and last the preference for formal advice seems to increase with age till the population is aged 58-72 years, and then slightly decreases again for the oldest age-category.

In the last model can be seen, that the variable NHS-model is interacting highly with other variables, to such an extent that the overall effect of the variable by itself isn't significantly explaining a difference no more. The overall p-value of the variable NHS-model is decreased to 0.421. Income as well as age and sex interact with the type of NHS-model in relation to the preference for formal advice. The only variable with a single effect in the last model is years of education, for which the preference for formal advice is decreasing with 3.4 percent for every years of extra education.

Because the other variables are interacting, it would make much sense to describe the single effects. Instead, in table 5.2 the effects of the interactions of the variables on the preference for formal advice are described. When looking at the effect of the variables NHS-model and income, and the interaction between these variables in relation to the preference for formal advice, it can be seen that in the countries using the British model, the preference for formal advice first decreases a little for the group earning 6000-11999 euro, then increases till the group earning 18000-29999 euro, decreases again for the income group earning 30000-59999 euro, and last increases for the richest group. Overall an increase in preference for formal advice can be seen in the effects of these variables combined for countries using the British model.

**Table 5.3** Effect on probabilities due to interactions in model 3 of table 5.2

	x	British model	Canadian model	German model
<b>Income</b>	less than 6000 euro	RC	51.2%	54.4%
	6000-11999 euro	49.8%	55.5%	50.5%
	12000-17999 euro	54.5%	59.2%	51.0%
	18000-29999 euro	56.2%	61.2%	51.5%
	30000-59999 euro	55.3%	60.4%	50.0%
	more than 60000 euro	58.7%	51.8%	47.5%
<b>Gender</b>	male	RC	51.2%	54.4%
	female	60.2%	55.7%	58.5%
<b>Age</b>	younger than 27 years	RC	51.2%	54.4%
	28-42 years	63.6%	67.2%	71.5%
	43-57 years	64.9%	74.2%	73.8%
	58-72 years	68.6%	76.5%	76.4%
	73 years or older	68.0%	75.0%	77.1%

RC: reference category, Probability for RC=50%

In countries using the Canadian model, the overall preference for formal advice first increases due to the effect with income, and then decreases again for the two richer groups. In countries using the German model, the preference for formal advice first decreases for the group earning 6000-11999 euro, compared to the group earning 6000 euro. The preference for formal advice then slowly increase till the group earning 18000-29999 euro, after which the preference for formal advice decreases for the two richer groups.

In the effect of sex and NHS-model and the interaction between these variables can be seen, that in all systems the preference for formal advice seems to be higher for females than for males. The difference in preference for formal advice between sexes is highest in countries using the British model. For females, the preference for formal advice is lowest in countries using the Canadian model, according to the effect of these variables in the model. The preference for formal advice thus is highest for females in countries using the British model. For males than, the preference for formal advice is lowest in countries using the British model, while the preference for formal advice is highest in countries using the German model.

When looking at the effect of the variables age and NHS-model combined, the preference for formal advice seems to increase till the group aged 58-72, and then decrease again for the oldest group, in countries using the British and Canadian model. The increase in countries using the Canadian model is thus higher with age than in countries using the British model. In countries using the German model, the preference for formal advice is increasing with age due to the effect of the variables NHS and age.

When comparing the fit of the different models, it can be seen in table 5.2 that the Nagelkerke pseudo- $R^2$  is increasing from 0.081 in the first model, to 0.15 in the model including the background characteristics, and 0.153 for the model including the interactions. This means that the third model, including interactions, explains most difference in preference for formal advice against preference for informal advice, and that entering the variables is contributing to the explained difference in the model between formal and informal advice.

### 5.3 Healthcare seeking behaviour explained by private payments

In table 5.4, the logistic regression models for the relation between share of PPP paid to private payments and preference of formal advice are shown. In the first model, only describing the relation between preference for formal advice and percentage of private payments, it seems that overall the preference for formal advice is significantly higher in the countries where the share of private payments is higher. The p-value for the variable share of private payments is 0.000, which thus shows a highly significant relation. The preference for formal advice thus increases with a raise of share in private payments, when only looking at the relation between preference for formal advice and the share of private payments.

In the second model, the effect of the private payments in a model corrected by background characteristics is shown. When the background characteristics are included in the model, the preference for formal advice isn't significantly explained by the share of PPP paid to private payments anymore. The overall p-value for share of PPP paid to private payments in healthcare decreases to 0.814. An increase in the share of PPP on private payments leads to a small decrease in preference for formal advice. The background characteristics on the other hand again all show a significant relation to the preference of formal advice. Similar effect as in the second model of table 5.2 can be seen, where the odds-ratio decreases with more education years, is higher for females than for males. For age, again the pattern of an increase in odds till the age-category 58-72 years, after which the odds slightly decrease, , and as in the second model in table 5.2, the odds to prefer formal advice first increase till the group earning 18000-29999 euro and then decreases again in the second model of table 5.4.

**Table 5.4** Relations between share of private payments and HSB in logistic regression

	model 1 only share of private payments included		model 2 all variables included excl interactions		model 3 all variables included, with interactions between NHSmodel and 1	
	Odds ratio (Cl.)	p-value	Odds ratio (Cl.)	p-value	Odds ratio (Cl.)	p-value
<b>percpripay</b>	1.203 (1.191-1.215)	0.000	1.003 <sup>-1</sup> (1.025 <sup>-1</sup> -1.020)	0.814	1.038 <sup>-1</sup> (1.080 <sup>-1</sup> -1.002)	0.062
<b>eduys</b>			1.032 <sup>-1</sup> (1.040 <sup>-1</sup> -1.025 <sup>-1</sup> )	0.000	1.030 <sup>-1</sup> (1.038 <sup>-1</sup> -1.022 <sup>-1</sup> )	0.000
<b>household income (RC:less than 6000 euro)</b>				0.008		0.010
6000-11999 euro			1.071 (1.059 <sup>-1</sup> -1.214)	0.284	1.443 (1.125-1.850)	0.004
12000-17999 euro			1.169 (1.036-1.319)	0.011	1.074 (1.168 <sup>-1</sup> -1.347)	0.539
18000-29999 euro			1.213 (1.085-1.356)	0.001	1.050 (1.146 <sup>-1</sup> -1.263)	0.607
30000-59999 euro			1.156 (1.030-1.296)	0.013	1.150 <sup>-1</sup> (1.385 <sup>-1</sup> -1.047)	0.139
60000 or more			1.081 (1.062-1.241)	0.271	1.003 (1.289 <sup>-1</sup> -1.296)	0.983
<b>Gender (RC: Male)</b>						
female			1.289 (1.216-1.366)	0.000	1.303 (1.228-1.382)	0.000
<b>Age (RC: younger than 27 years)</b>				0.000		0.000
28-42			1.973 (1.803-2.159)	0.000	2.029 (1.850-2.226)	0.000
43-57			2.276 (2.083-2.488)	0.000	2.345 (2.138-2.572)	0.000
58-72			2.642 (2.405-2.903)	0.000	2.741 (2.482-3.027)	0.000
73 and older			2.602 (2.305-2.937)	0.000	2.713 (2.387-3.083)	0.000
<b>Interactions</b>						
hinctntcat * percpripay						0.000
Nagelkerke R <sup>2</sup>	0.088		0.143		0.145	
Chi <sup>2</sup> (df)	1355.353 (df=1)		2258.422 (df=12)		2287.610 (df=17)	

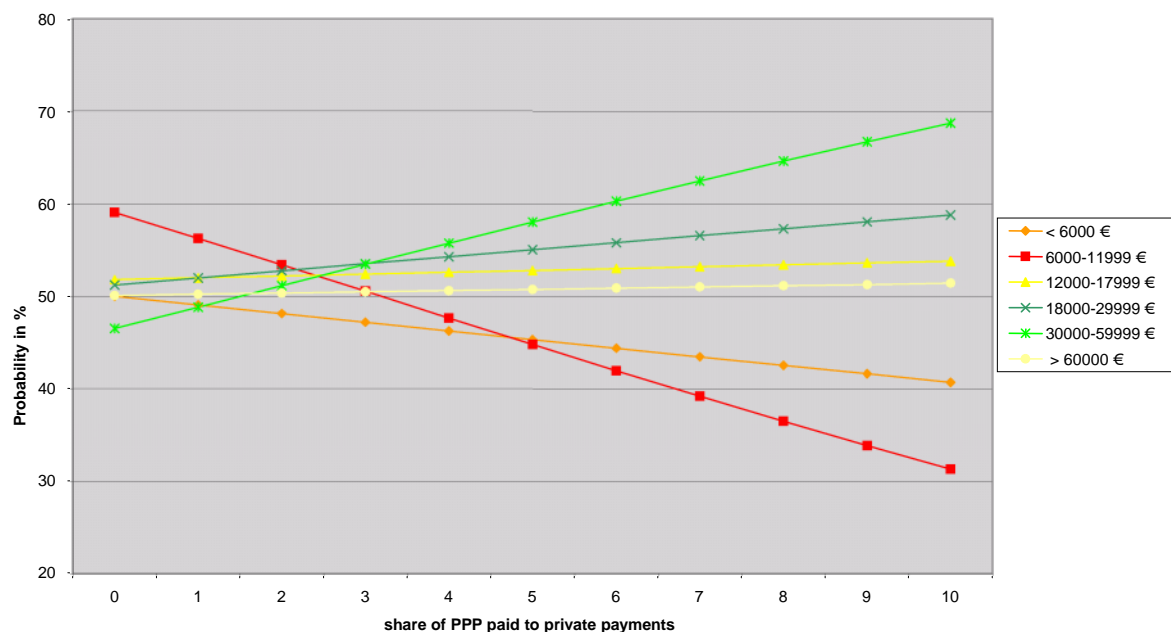
In the last model shown in table 5.4, the interactions of the background characteristics with share of private payments are also included in the model. From this third model becomes clear, that the share of private payments is interacting significantly with income in explaining a relation between these variables and the preference for formal advice. The p-value of share of PPP paid to private payments also increases again in comparison to the previous model. The p-value for the overall effect of the variable is 0.062, and thus still showing an insignificant relationship. Further overall effects that can be seen in the model are that the odds to prefer formal advice decrease with more years of education, thus slightly less than in the second model. Further again the odds for females to prefer formal advice are higher than for males, and the odds to prefer formal advice increase with age again, with the exception of the eldest age-group.

The effect that this interaction has on the preference for formal advice can be seen in figure 5.4. In this figure the effects on preference for formal advice when the share of PPP paid for private payments in the healthcare system is increased for different income groups.

From figure 5.4 can be concluded that the preference for formal advice decreases with the rise of share for private payments for the groups earning less than 6000 euro and 6000-11999 euro annually. On the other hand the preference for formal advice increases for the groups earning 18000-29999 euro and 30000-69999 euro annually, according to the effect between private payments and income and their interaction effect. For the groups earning 12000-17999 euros and more than 60000 euros annually, the preference for formal advice seems to be only increasing slightly, and thus could be said that for these groups the preference for formal advice stays almost the same when the private payments are increased.

In figure 5.4 can further be seen, that preference for formal advice is most increasing for the group earning 30000-59999 euros annually. The decrease in preference for formal advice due to income and a rise in private payments are highest for the group earning 6000-11999 euro annually.

**Figure 5.3** Effect of income and share of private payments on preference for formal advice



When looking at the increase in fit by analysing the Nagelkerke pseudo-  $R^2$ 's, it can be seen that the Nagelkerke pseudo- $R^2$  for the first model is 0.088. With inclusion of the background characteristics, the Nagelkerke  $R^2$  increases till 0.143, and when interactions with the percentage of private payments are also included, the fit of the model according to the Nagelkerke  $R^2$  goes up to 0.145.

**Table 5.5** Relations between share of OOP payments and HSB in logistic regression

	model 1 only share of OOP payments included		model 2 all variables included excl interactions		model 3 all variables included, with interactions between NHSmodel and 1 of	
	Odds ratio (Cl.)	p-value	Odds ratio (Cl.)	p-value	Odds ratio (Cl.)	p-value
<b>percOOPpay</b>	1.334 (1.313-1.355)	0.000	1.038 (1.004-1.074)	0.027	1,040 (1.031 <sup>-1</sup> -1.117)	0.271
<b>eduys</b>			1.035 <sup>-1</sup> (1.042 <sup>-1</sup> -1.027 <sup>-1</sup> )	0.000	1.034 <sup>-1</sup> (1.043 <sup>-1</sup> -1.026 <sup>-1</sup> )	0.000
<b>household income (RC:less than 6000 euro)</b>				0.018		0.000
6000-11999 euro			1.029 (1.103 <sup>-1</sup> -1.167)	0.661	1.001 <sup>-1</sup> (1.327 <sup>-1</sup> -1.324)	0.994
12000-17999 euro			1.137 (1.008-1.283)	0.037	1.347 <sup>-1</sup> (1.733 <sup>-1</sup> -1.046 <sup>-1</sup> )	0.021
18000-29999 euro			1.186 (1.061-1.326)	0.003	1.188 <sup>-1</sup> (1.477 <sup>-1</sup> -1.047)	0.122
30000-59999 euro			1.140 (1.016-1.279)	0.026	1.596 <sup>-1</sup> (1.990 <sup>-1</sup> -1.280 <sup>-1</sup> )	0.000
60000 or more			1.073 (1.070 <sup>-1</sup> -1.233)	0.318	1.349 <sup>-1</sup> (1.798 <sup>-1</sup> -1.012 <sup>-1</sup> )	0.041
<b>Gender (RC: Male)</b>						
female			1.279 (1.207-1.355)	0.000	1.288 (1.214-1.367)	0.000
<b>Age (RC: younger than 27 years)</b>				0.000		0.000
28-42			1.934 (1.767-2.116)	0.000	2.974 (2.409-3.672)	0.000
43-57			2.225 (2.036-2.432)	0.000	3.213 (2.602-3.967)	0.000
58-72			2.569 (2.339-2.822)	0.000	3.714 (2.962-4.656)	0.000
73 and older			2.522 (2.235-2.847)	0.000	3.167 (2.360-4.250)	0.000
<b>Interactions</b>						
hinctntcat * percOOPpay						0.000
age15ycat * percOOPpay						0.001
<b>Nagelkerke R<sup>2</sup></b>	0.093		0.144		0.147	
Chi <sup>2</sup> (df)	1429.009 (df=1)		2263.273 (df=12)		2294.109 (df=17)	

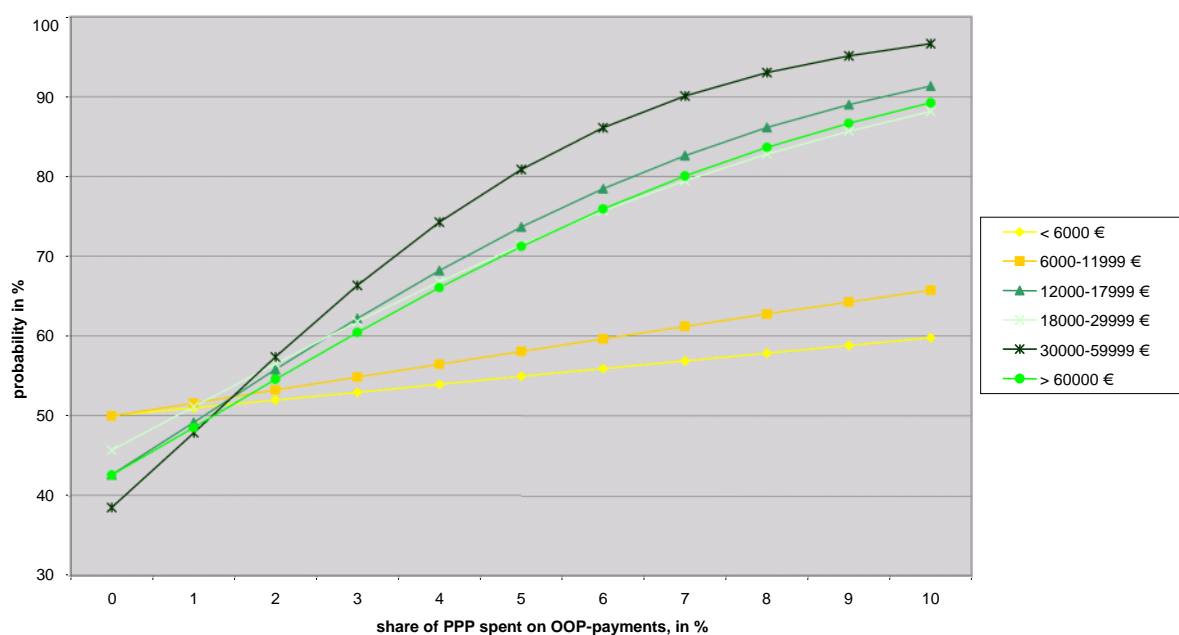
#### 5.4 Healthcare seeking behaviour explained by OOP-payments

In table 5.4, different models are summed up, that show the relation between preference for formal advice and the share of Out-of-pocket payments. In the first model, describing only the relation between out-of-pocket payments and preference for formal advice, it can be seen that the preference for formal advice significantly increases with a higher share of out-of-pocket payments. The odds-ratio increases with 33 percent for every percent of PPP paid to out-of-pocket payments. The overall p-value for share of out-of-pocket payments in the first model of 0.000 is showing a highly significant relation between OOP-payments and preference for formal advice.

When looking at the effect of a raise in out-of-pocket payments, corrected by background characteristics, the preference for formal advice is still significantly increases with a higher share of OOP payments, thus the effect on the odds to prefer formal advice due to out-of-pocket payments is much lower, with only an 3 percent increase of the odds-ratio per percent share of PPP paid on out-of-pocket payments. The p-value for the overall effect of OOP-payments is 0.027, thus showing that the significant difference explained by the variable has decreased in comparison to the first model. Further the preference for formal advice decreases with more years of education and is higher for females than for males in this model, as is the case in table 5.2 and 5.4. Also again the preference for formal advice first increases for income groups earning till 18000-29999 euros, and the decrease for the richer income groups, and the preference for formal advice again increases with rise of age till the age category 58-72 years, and then decreases for the oldest age-group.

In the last model can be seen that the share of OOP-payments is significantly interacting with income and age, in explaining a relation with preference for formal advice. The effects of the interacting variables on the preference for formal advice can be seen in figure 5.5 and 5.6. The overall effect of OOP-payments is thus not significant anymore, with a p-value of 0.271. The overall effects that are not interacting with out-of-pocket payments are the effect of education and of gender. The odds to prefer formal advice again decrease with more years of education, as in the second model of table 5.5. Thus, the decrease of preference for formal advice is slightly less than in the model without the interactions. Further, the female preference for formal advice is again higher than the preference for formal advice for males.

**Figure 5.4** Effect of income and share of OOP payments on preference for formal advice

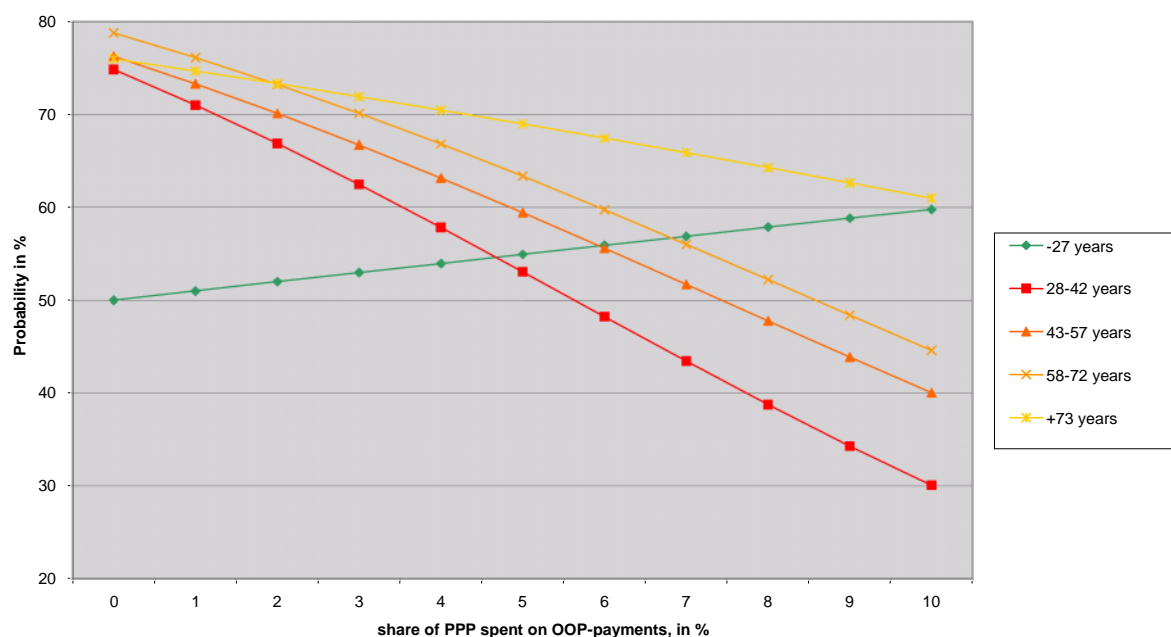


In figure 5.5 and 5.6, the differences in preference for formal advice for all groups according to the interactions in the last model are shown. First the strongest interaction, namely between income and OOP payments, will be analysed, after which a description is followed of the effects of age and OOP payments on the preference for formal advice.

The graph made in figure 5.5 shows the effect of a rise in share of the PPP on OOP-payments on the preference for formal advice for different income groups. Overall, the effect of a higher share of OOP-payments is that the preference for formal advice increases. Thus, the increase-effect in the probability to prefer formal advice is lower for groups with lower incomes than for the groups earning 12000 euro or more annually. The preference for formal advice is increasing most for the group earning 30000-59999 euro.

In the last model in table 5.5, also an interaction is included between OOP-payments and age. The effect of both variables and the interaction between the variables is shown in figure 5.6. Within the figure can be seen that the preference for formal advice for the reference category is increasing for the group younger than 27 years, while decreasing for the other age-groups. For the part of the population aged 28-42 years, the preference for formal advice is mostly decreasing with an increase in OOP-payments, while for the people aged 73 years or more, the decrease in preference for formal advice with increase of OOP-payments is lowest.

**Figure 5.5** Effect of age and share of OOP payments on preference for formal advice



Comparing the different models again on goodness of fit, it seems that the third model including interactions is again the model explaining most preference for formal advice. The Nagelkerke pseudo-  $R^2$  for the model only including the variable out-of-pocket payments as an explaining variable is 0.093. With the background characteristics included in the model, the Nagelkerke pseudo  $R^2$  increases to 0.144, and for the model also including interactions, the Nagelkerke pseudo-  $R^2$  is again increasing to 0.147.



## 5.5 Conclusion

In the first part of this chapter, three differences between National Healthcare Systems are extracted from the comparison. The overall effects of variables that don't interact with one of the differences in NHS will only be described shortly in this paragraph, because this is shown in more detail in chapter 4. Thus, only the differences in NHS and the interaction of differences with background characteristics will be analysed in detail.

The overall effects of the background characteristics in the models including background characteristics, is that the preference for formal advice is higher in all models for females than for males, and decreases with more years of education. Further the preference for formal advice in general seems to increase with income and age.

Next a comparison will be made between different NHS-models that occur in the countries. For Denmark, Greece, Ireland, Italy and the United Kingdom, or the countries using the British model, or national health system-model, it can be seen that when looking at the effect of the most fitting model including interactions, the preference for formal advice first decreases for groups with an income of 6000-11999 euro, in comparison to the reference category. The preference for formal advice for the richer groups generally increases, with an exception of the group earning 30000-59999 euros annually. Furthermore it can be seen that the preference for formal advice for females in countries using the British model is higher than for males, and that the preference for formal advice increases with age till the group aged 58-72 years, and then decreases for the oldest age-group.

In countries using the Canadian model or national health insurance model, namely Finland, Sweden, Portugal and Spain, it can be seen that the preference for formal advice increases till the income of 18000-29999 euro, after which it decreases again. With regards to gender, the preference for formal advice of females is higher than the preference for formal advice of males, thus the difference between sexes is lower than for the countries using the British system. When looking at the interacting effect of age and the Canadian model, in explaining the difference between preference for formal and informal advice, it can be seen in paragraph 5.2 that the preference for formal advice increases with age for all age categories except for the eldest age-group.

When looking at the effect in the probabilities for income and NHS-model in explaining a difference between formal and informal advice in Austria, Belgium, France, Germany, Luxembourg and the Netherlands, or the countries using the German, or social insurance model in this thesis. It seems that the preference for formal advice first decreases from the group earning less than 6000 euros in comparison to the group earning 6000-11999 euro. The preference for formal advice then slowly increases till the income category earning 18000-29999 euro. For the richer two income categories in countries using the German model, the preference for formal advice then decreases again. When looking at the preference for formal advice by sex in countries using the German model, it can be seen that the preference for formal advice for males for formal advice is higher than in countries using the British or the Canadian model. The preference for formal advice of females is thus still higher than the preference of formal advice for males in countries using the German model. Last, when looking at the relation between age and the use of the German model in the countries, it can be seen that the preference for formal advice increases with an increase in age.

In the last part of this conclusion, the main effects of private payments and within this the out-of-pocket payments are summarised. When looking at the effect of a higher share of private payments on the healthcare system on the preference for formal advice, it seems that when the preference for formal advice is only compared to the share of private payments, it significantly increases with an increase in share of private payments. When the relation between private payments and preference for formal advice is corrected by the background characteristics the preference for formal advice for all countries decreases with an increase in share of private payments, thus insignificantly.

When significant interactions are included in the model, there is an interaction between income and share of private payments. From the effect of this interaction can be seen, that the preference for formal advice decreases with a rise of private payments for the groups with a lower incomes, while the preference for formal advice relatively increases for the two groups earning 18000-59999 euro annually.

The overall effect of the share of OOP payments is that the preference for formal advice significantly increases with a rise in OOP payments. When the interactions are included in the model, the share of out-of-pocket payments is interacting with both income and age.

Since the OOP payments are part of the private payments, the effect of OOP payments on the preference for formal advice can't be formally interpreted without the effect of the share of private payments on the preference for formal advice.

The effects of a rise in share of OOP payments thus probably has got a more positive effect on increase of preference of formal advice than an increase in share of other types of private payments. The preference for formal advice is increasing more though for the groups with a higher income in relation to a rise of OOP payments, than for the lower income groups, which thus still lead to an unequal division of preference for formal advices for formal advice for different income groups.

## 6. Conclusion

In this last chapter, the answers for the research questions asked in the introduction and explained in the data and methods will first be summarised. This will be followed by a paragraph discussing the findings in this thesis in relation to other literature, as well as some recommendations for further research and policy-makers related to the subject of healthcare seeking behaviour in Europe. The answers to the different research questions eventually lead to the answer of the main question asked in this thesis:

Are the differences in healthcare seeking behaviour between the countries in Europe explained by differences in population distribution or by differences in national healthcare systems?

To answer this research question, first a comparison is made in healthcare seeking behaviour for groups separated by different background characteristics. In this the question will be answered:

1. 'Are the differences in healthcare seeking behaviour between countries explained by differences in population distribution?'

In this part of the analysis, it is researched whether the preference for formal healthcare advice is different for different parts of the individual populations in the EU-countries. The population was first split by 'sex', 'age', 'education level' and 'income', and after this the significant difference between these populations is described on a proportional basis, as well as on basis of logistic regression-models made for every country. The main conclusions in this part of the research are thus based on the logistic regression models.

In the logistic regression models of most countries researched, when looking at more biological aspects of the respondents, the preference for formal advice mainly increases with age and is higher for females. The difference between sexes is significantly explained in the logistic regression model in Denmark, Greece, Ireland, the United Kingdom, Spain, Sweden, Belgium and Germany.

The relation between age and preference of formal advice is significant in almost all countries, except Italy. There are thus some exceptions on the general increase in preference for formal advice with an increase in age. In Finland, France Sweden and the UK, the preference for formal advice rises for almost all groups except for the eldest age-group. In Spain, the preference for formal advice mostly increases with age, except for a decrease in preference for formal advice for the group aged 43-57 years. In Luxembourg the preference for formal advice first increases till the group aged 28-42 years, then decreases till the group aged 58-72 years, and increases again for the oldest age-group. Last, in Italy no direction can be discovered in the relation between preference for formal advice and age.

Furthermore, when looking at variables denominating socio-economic status, the preference for formal advice decreases with an increase in education level in most countries. The relation between education and differences in preference for formal advice is only significant in Luxembourg, Finland, France, Austria and in the Netherlands.

There are also some exceptions on the decrease of preference for formal advice in the rise of education-level. In Austria and the Netherlands, the preference for formal advice first increases for the groups educated at secondary level, and then decrease for the group educated at tertiary level. The preference for formal advice increases with an increase in education level in Italy. In Germany, the preference for formal advice stays almost the same for all education levels, while in Ireland the preference for formal advice stays the same for people with primary and secondary education, and increases with people that finished post-secondary education or higher.

For the other variable of socio-economic status, household income, no all encompassing similarities are seen when the countries are compared. Income is significantly explaining a difference in the logistic regression model of Sweden, Finland, Greece, Portugal, Spain, Austria and for the United Kingdom. In Greece, Spain and Portugal, the preference for formal advice is increasing with age, while in Austria and in the UK, the preference for formal advice is decreasing significantly with a rising income. The direction most occurring in the EU-countries analysed, is that the preference for formal advice first decreases with income, than increases till a certain income level, after which the preference for formal advice decreases again for the richer income groups. This pattern is seen in Sweden, Finland, Denmark, France, Germany and Italy. In the Netherlands, the preference for formal advice first decreases till the income level 12000-17999 euro, after which the preference for formal advice steadily increases again. An almost similar pattern is seen for differences in preference for formal advices for formal advice with income in Belgium. For Finland and Luxembourg, no clear line can be seen in differences in preference for formal advice between different income groups.

The second part of the research focuses on healthcare seeking behaviour explained by differences in national healthcare systems between the countries. As kind of an introduction to this analysis, first the differences between the national healthcare systems and the differences in share of ways to finance the system need to be outlined, by answering the question:

'What is the share of public and private financing in national healthcare systems in the selected EU-countries?'

One main difference between the National Healthcare Systems is the way it is financed from the government perspective. In short, there are three different models underlying this financing from the government side as well as the ownership of the healthcare provision. These models are the British or national health system-model, the Canadian model or national health insurance model and the German model or social insurance model. From the private side of financing the National Healthcare System, the difference in share of private payments is included in the analysis. Of these private payments, the differences in share of out-of-pocket payments are outlined more specifically.

In the last research question, the effects of the relations between the difference in National healthcare systems and the preference for formal advice are analysed, following the research question:

'Are the differences in Healthcare seeking behaviour between countries explained by differences in National Healthcare Systems?'

Concluding from the analysis done in the last part of chapter 5, it seems that some significant relations exist between Healthcare seeking behaviour and the differences in NHS's. The preference for formal advice in Denmark, Greece, Ireland, Italy and the United Kingdom, or countries using the British system, seems to be lowest in the model uncontrolled with background characteristics. Thus when the background characteristics are included to correct the model the preference for formal advice is lowest in the countries using the German model, which encompass Austria, Belgium, France, Germany, Luxembourg and the Netherlands. The preference for formal advice is higher in countries using the Canadian system, namely Finland, Sweden, Spain and Portugal, than in countries using the British or the German system.

When looking at the effect of private payments, in the model excluding background characteristics, preference for formal advice first seems to increase with an increase in share of private payments. When corrected by background characteristics, the preference for formal advice is decreasing with an increase in private payments in the model, thus this decrease shows an insignificant difference.

For the model including interactions, it seems that the share of private payments interacts significantly with income, in which the relation between both variables show a decrease for lower income groups and an increase for higher income groups.

Additionally an increase in the share of Out-of-pocket payments shows an increase in preference for formal advice in the model uncorrected, as well as in the model corrected by background characteristics.

Because the effect of OOP-payments can't be seen without the effect of private payments, it seems that an increase in OOP payments have a less negative effect on the preference for formal advice with the poorer groups than other types of private payments. When looking at the effect of out-of-pocket payments and income interacting, it seems that the increase in preference for formal advice with an increase of out-of-pocket payments mostly occurs in groups with a higher income, while the increase in preference for formal advice for the lower income groups grows to a lesser extent.

In answering the main question whether the difference between countries in healthcare seeking behaviour is explained by population distribution or differences in national health care and healthcare costs, it seems that there are differences in which background characteristics explain a difference significantly between the countries, thus the healthcare seeking behaviour could in general be explained by both healthcare system differences and background characteristics. There are some similarities and differences between the countries when looking at the relations between preference for formal advice, background characteristics and differences in NHS. It seems clear, that the population distribution and differences between national healthcare systems form a contribution in explaining the differences between the countries in healthcare seeking behaviour. Furthermore, these variables significantly interact with income. A critical note should thus be added to this conclusion. In the models explaining the difference between formal and informal advice due to either background characteristics or NHS-differences, for almost all countries the Nagelkerke  $R^2$  is not very high<sup>6</sup>. Thus, although the variables significantly relate to the preference for formal advice, the differences in preference for formal advice are explained only partially by as well background characteristics as the differences between National Healthcare Systems, and most possibly further explained by other, unknown variables.

## 6.1 Discussion

### Methodological constraints to research

In this thesis, the healthcare costs are the countries average share of the private costs, instead of the actual costs per respondent. These actual costs could be lower for lower income groups, and higher for higher income groups. To fully see the effects of differences in NHS between countries, the individual healthcare costs should be compared. Thus because this data was unavailable, the country averages where the best next option.

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<sup>6</sup> Although the Nagelkerke  $R^2$ 's aren't included in the tables describing the logistic regression for individual countries in chapter 4, they are compared to each other.

### Relation to previous research

In this thesis, it is tried to see whether there is a difference in Healthcare Seeking Behaviour between the different populations in the EU-15 countries. This is done, by looking at differences in healthcare seeking behaviour for the populations looking at background characteristics and differences in the Healthcare system.

First, the analysis shows that there are similarities between the populations, when looking at the healthcare seeking behaviour compared to age, education level and sex. For the variable sex, in almost all cases it is shown that females prefer formal advice more than males. This conclusion is similar to the conclusions about the effect of sex-differences on healthcare seeking behaviour, found in other researches (Pinquart & Sørensen, 2002; Sharp and Arnold, 1997 cf. Galdas et al, 2004).

When dividing the populations by age, it seems that for most countries the preference for formal advice increases with age, at least till the group aged 58-72 years old. For the oldest age group, aged 73 years or older, in some countries the preference for formal advice increases, while in other countries this preference for formal advice strangely enough decreases again. The pattern of higher preference for formal advice of formal care for older groups is also found in the research done by Pinquart & Sørensen (2002). Thus, the reason why this preference for formal advice is decreasing in some countries for the eldest age group, while increasing in some other countries, doesn't come forward from the results in this thesis. It could thus be that the decrease of preference for formal advice in the eldest age-group is a consequence of policies of active integration of kin in primary care for the eldest age-group, which for instance is used in the UK (Harper, 2006). No sources could be found describing the reason for this decrease in preference for formal advice for the group aged 73 years and older in some countries, in comparison to an increase in other countries. The reason why the preference for formal advice for the younger groups is lower, could have to do with the fact that younger people tend to use the internet more than older groups as a source of health information, as exemplified by Gray et al.(2005).

With regards to differences due to socio-economic position, when looking at the education level, two main patterns can be seen, namely mostly a decrease of preference for formal care with a rising education level in eight of the countries researched, with a significant decrease in Luxembourg, Finland and France. Second significant pattern that was seen when comparing education levels, is that the preference for formal advice first increases, and then decreases again for the highest education group.

For income no clear similarities could be found between the different countries, although it seems that in the poorer countries of the EU-15, namely Spain, Portugal and Greece, the preference for formal advice significantly increases with income, while in Austria and the UK, the preference for formal advice significantly decreases with a rise of income. This is inconsistent with previous researches, where a clear pattern is seen for a rise of preference for formal advice with an increase in income (Smith et al., 2009; Mortimer et al., 2003).

When looking at the interaction of income with differences in national healthcare systems, the differences in preference for formal advice between income groups seem to relate strongly to the differences in national healthcare systems. The effect of an increase of private payments seems to be that the preference for formal advice decreases for lower income groups, when the private payments increase. The main hypothesis for income that the preference increases with a rise in income was only found to occur with when the private payments to the system were increased. On the other hand, it seems that the preference for formal advice increases with a higher share of out-of-pocket payments. This effect occurs for all income groups, thus for some groups this increase is higher than for the groups earning less than 12000 euro.

## 6.2 Recommendations for further research

The main recommendation I would like to do for further research, is that next time the rotating module on health is included in the European Social Survey, it includes a variable describing the private annual costs for healthcare. In this way, it can be seen whether the individual healthcare seeking behaviour is influenced by the costs made on the healthcare system, probably in combination to the background characteristics.

The effect of the liberalisation of the health market in recent years in most countries isn't incorporated yet in this research. It thus will be recommended that when in some of the countries this liberalisation has set foot on healthcare, this research is done again, to see whether differences a change in preference for formal advice occurs. This research could then be used as a baseline research for further investigation.

Next it seems interesting to investigate the personal rationales behind the differences in preference for formal advice for at least certain groups within some countries. For instance, it seems interesting to further investigate the reasons behind the lower preference of formal advice for the group aged 73 years or older in some countries, and the reasons why in some of the countries the preference for formal advice decreases with the rise of education level.

## 6.3 Recommendations for policymakers in healthcare

The main recommendation for policy makers would be first to be careful with liberalising the healthcare system. In this thesis is shown that the preference for formal advice in countries using the most government-detached 'German model', like Germany, the Netherlands and Belgium is lower than in countries using the British or Canadian model, where the healthcare system is more state controlled. Furthermore, it would be recommended that for the lowest income groups, the price of healthcare is reduced or at least not increased, for it has a negative effect on the preference for formal advice. A decreasing effect is shown with the increase of private payments.

The interpretation of the increasing effect of out-of-pocket payments on preference for formal advice should be taken carefully, because it should be kept in mind that the out-of-pocket payments are just one of the private payments that is researched, and although the rise of out-of-pocket payments show an increase in preference for formal advice, this preference is increasing more for the higher income groups than for lower income groups.

Because the decrease in preference mainly occurs with lower income groups, a system of restitutions for healthcare to inhabitants with lower income could be used. It thus seems more reasonable to make sure the costs for healthcare don't rise due to government control of prices, instead of making a strange bureaucratic restitution system to prevent that healthcare preference is only decreased among the people with lesser income.



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## Appendix: used syntaxes in analysis SPSS

### Syntax for individual countries<sup>7</sup> in analysis background characteristics

WEIGHT BY dweight.

```
RECODE hinctnt (1 thru 3=1) (4=2) (5=3) (6 thru 7=4) (8 thru 9=5) (10 thru 12=6) (77 thru 99=SYSMIS) INTO hinctntcat.
```

```
VARIABLE LABELS hinctntcat 'household income total net in categories'.
```

```
VALUE LABELS hinctntcat 1 'less than 6000 euro' 2 '6000-11999 euro' 3 '12000-17999 euro' 4 '18000-29999 euro' 5 '30000-59999 euro' 6 '60000 or more'.
```

```
EXECUTE.
```

```
COMPUTE age=2005 - yrbrn.
```

```
VARIABLE LABEL age 'age on 31th dec 2005'.
```

```
EXECUTE.
```

```
RECODE age (13 thru 27=1) (28 thru 42=2) (43 thru 57=3) (58 thru 72=4) (73 thru 103=5) INTO age15ycat.
```

```
VARIABLE LABELS age15ycat 'age in 15 years age categories'.
```

```
VALUE LABELS age15ycat 1 'younger than 27' 2 '28-42' 3 '43-57' 4 '58-72' 5 '73 and older'.
```

```
EXECUTE.
```

```
RECODEedulvl (0 thru 1 =1) (2 thru 3 =2) (4 thru 6=3) (7 thru 9=SYSMIS) INTOedulvlcat.
```

```
VARIABLE LABELSedulvlcat 'highest level of education in categories'.
```

```
VALUE LABELSedulvlcat 1 'primary' 2 'secondary' 3 'post-secondary & tertiary'.
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (edulvl=1 OR edulvl=2 OR edulvl=3).
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (gndr=1 OR gndr=2).
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (hinctntcat=1 OR hinctntcat=2 OR hinctntcat=3 OR hinctntcat=4 OR hinctntcat=5 OR hinctntcat=6).
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (age15ycat=1 OR age15ycat=2 OR age15ycat=3 OR age15ycat=4 OR age15ycat=5).
```

```
EXECUTE.
```

```
RECODEadvsthr (1 thru 2=1) (3 thru 5=2) (6=1) (7=2) (8= SYSMIS) INTOadvsthrcat.
```

```
VARIABLE LABELSadvsthrcat 'who would you go to first if very sore throat in categories'.
```

```
VALUE LABELSadvsthrcat 1 'informal first advice' 2 'formal first advice'.
```

```
EXECUTE.
```

```
RECODEadvhach (1 thru 2=1) (3 thru 5=2) (6=1) (7=2) (8= SYSMIS) INTOadvhachcat.
```

```
VARIABLE LABELSadvhachcat 'who would you go to first if serious headache in categories'.
```

```
VALUE LABELSadvhachcat 1 'informal first advice' 2 'formal first advice'.
```

```
EXECUTE.
```

---

<sup>7</sup> except UK. Because of lack education level variable in ESS2 database of UK, it is excluded from syntax for the UK. the rest of the syntax for the UK is the same.

```
RECODE advslep (1 thru 2=1) (3 thru 5=2) (6=1) (7=2) (8= SYSMIS) INTO advslepcat.  
VARIABLE LABELS advslepcat 'who would you go to first if serious sleeping problem in categories'.  
VALUE LABELS advslepcat 1 'informal first advice' 2 'formal first advice'.  
EXECUTE.
```

```
COMPUTE advall=$sysmis.  
IF (advsthrcat=1 & advhachcat=1 & advslepcat=1) advall=0.  
IF (advsthrcat=2 & advhachcat=1 & advslepcat=1) advall=0.  
IF (advsthrcat=1 & advhachcat=2 & advslepcat=1) advall=0.  
IF (advsthrcat=1 & advhachcat=1 & advslepcat=2) advall=0.  
IF (advsthrcat=2 & advhachcat=2 & advslepcat=1) advall=1.  
IF (advsthrcat=2 & advhachcat=1 & advslepcat=2) advall=1.  
IF (advsthrcat=1 & advhachcat=2 & advslepcat=2) advall=1.  
IF (advsthrcat=2 & advhachcat=2 & advslepcat=2) advall=1.  
VARIABLE LABELS advall 'overall preference as combination of three symptoms'.  
VALUE LABELS advall 0 'always or mostly preference informal advice' 1 'always or mostly preference formal advice'.  
EXECUTE.
```

```
CROSSTABS  
  /TABLES= edulvl BY advall  
  /FORMAT=AVALUE TABLES  
  /STATISTICS=CHISQ CC PHI LAMBDA UC  
  /CELLS=ROW COUNT  
  /COUNT ROUND CELL.
```

```
CROSSTABS  
  /TABLES= hinctntcat BY advall  
  /FORMAT=AVALUE TABLES  
  /STATISTICS=CHISQ CC PHI LAMBDA UC  
  /CELLS=ROW COUNT  
  /COUNT ROUND CELL.
```

```
CROSSTABS  
  /TABLES=age15ycat BY advall  
  /FORMAT=AVALUE TABLES  
  /STATISTICS=CHISQ CC PHI LAMBDA UC  
  /CELLS=ROW COUNT  
  /COUNT ROUND CELL.
```

```
CROSSTABS  
  /TABLES=gndr BY advall  
  /FORMAT=AVALUE TABLES  
  /STATISTICS=CHISQ CC PHI LAMBDA UC  
  /CELLS=ROW COUNT  
  /COUNT ROUND CELL.
```

```
LOGISTIC REGRESSION VARIABLES advall  
  /METHOD=FSTEP(LR) age15ycat hinctntcat gndr edulvl  
  /CONTRAST (edulvl)=Indicator(1)  
  /CONTRAST (gndr)=Indicator(1)  
  /CONTRAST (age15ycat)=Indicator(1)  
  /CONTRAST (hinctntcat)=Indicator(1)  
  /ORIGIN  
  /PRINT=GOODFIT CI(95)  
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
```

## Syntax used for analysis differences in NHS in chapter 5

WEIGHT BY dweight.

```
RECODE hinctnt (1 thru 3=1) (4=2) (5=3) (6 thru 7=4) (8 thru 9=5) (10 thru 12=6) (77 thru 99=SYSMIS) INTO hinctntcat.
```

```
VARIABLE LABELS hinctntcat 'household income total net in categories'.
```

```
VALUE LABELS hinctntcat 1 'less than 6000 euro' 2 '6000-11999 euro' 3 '12000-17999 euro' 4 '18000-29999 euro' 5 '30000-59999 euro' 6 '60000 or more'.
```

```
EXECUTE.
```

```
COMPUTE age=2005 - yrbrn.
```

```
VARIABLE LABEL age 'age on 31th dec 2005'.
```

```
EXECUTE.
```

```
RECODE age (13 thru 27=1) (28 thru 42=2) (43 thru 57=3) (58 thru 72=4) (73 thru 103=5) INTO age15ycat.
```

```
VARIABLE LABELS age15ycat 'age in 15 years age categories'.
```

```
VALUE LABELS age15ycat 1 'younger than 27' 2 '28-42' 3 '43-57' 4 '58-72' 5 '73 and older'.
```

```
EXECUTE.
```

```
RECODE cntrycode (15=1) (3=1) (7=1) (8=1) (9=1) (4=2) (12=2) (13=2) (14=2) (6=3) (1=3) (11=3) (10=3) (5=3) (2=3) INTO NHSmodel.
```

```
VARIABLE LABELS NHSmodel 'model of National Health system used in country'.
```

```
VALUE LABELS NHSmodel 1 'British model' 2 'Canadian model' 3 'German model'.
```

```
EXECUTE.
```

```
RECODE cntrycode (1=1.726) (2=2.460) (3=2.492) (4=3.239) (5=4.215) (6=3.018) (7=5.772) (8=1.647) (9=2.218) (10=1.170) (11=1.434) (12=3.174)
```

```
(13=2.706) (14=2.132) (15=1.252) INTO percpripay.
```

```
VARIABLE LABELS percpripay 'avarage share of private payments in PPP per capita in NHS'.
```

```
EXECUTE.
```

```
RECODE cntrycode (1=1.217) (2=0.817) (3=1.416) (4=2.549) (5=0.923) (6=2.034) (7=3.578) (8=1.318) (9=1.621) (10=0.694) (11=1.144) (12=2.749)
```

```
(13=2.454) (14=1.887) (15=1.153) INTO percOOPpay.
```

```
VARIABLE LABELS percOOPpay 'avarage share of OOPpayments in PPP per capita in NHS'.
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (gndr=1 OR gndr=2).
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (hinctntcat=1 OR hinctntcat=2 OR hinctntcat=3 OR hinctntcat=4 OR hinctntcat=5 OR hinctntcat=6).
```

```
EXECUTE.
```

```
FILTER OFF.
```

```
USE ALL.
```

```
SELECT IF (age15ycat=1 OR age15ycat=2 OR age15ycat=3 OR age15ycat=4 OR age15ycat=5).
```

```
EXECUTE.
```

```
RECODE advsthr (1 thru 2=1) (3 thru 5=2) (6=1) (7=2) (8= SYSMIS) INTO advsthrcat.
```

```
VARIABLE LABELS advsthrcat 'who would you go to first if very sore throat in categories'.
```

```
VALUE LABELS advsthrcat 1 'informal first advice' 2 'formal first advice'.
```

```
EXECUTE.
```



```

RECODE advhach (1 thru 2=1) (3 thru 5=2) (6=1) (7=2) (8= SYSMIS) INTO advhachcat.
VARIABLE LABELS advhachcat 'who would you go to first if serious headache in categories'.
VALUE LABELS advhachcat 1 'informal first advice' 2 'formal first advice'.
EXECUTE.

```

```

RECODE advslep (1 thru 2=1) (3 thru 5=2) (6=1) (7=2) (8= SYSMIS) INTO advslepcat.
VARIABLE LABELS advslepcat 'who would you go to first if serious sleeping problem in categories'.
VALUE LABELS advslepcat 1 'informal first advice' 2 'formal first advice'.
EXECUTE.

```

```

COMPUTE advall=$sysmis.
IF (advsthrcat=1 & advhachcat=1 & advslepcat=1) advall=0.
IF (advsthrcat=2 & advhachcat=1 & advslepcat=1) advall=0.
IF (advsthrcat=1 & advhachcat=2 & advslepcat=1) advall=0.
IF (advsthrcat=1 & advhachcat=1 & advslepcat=2) advall=0.
IF (advsthrcat=2 & advhachcat=2 & advslepcat=1) advall=1.
IF (advsthrcat=2 & advhachcat=1 & advslepcat=2) advall=1.
IF (advsthrcat=1 & advhachcat=2 & advslepcat=2) advall=1.
IF (advsthrcat=2 & advhachcat=2 & advslepcat=2) advall=1.
VARIABLE LABELS advall 'overall preference as combination of three symptoms'.
VALUE LABELS advall 0 'always or mostly preference informal advice' 1 'always or mostly preference formal advice'.
EXECUTE.

```

```

LOGISTIC REGRESSION VARIABLES advall
/METHOD=ENTER NHSmodel
/METHOD=ENTER eduyrs hinctntcat gndr age15ycat
/METHOD=FSSTEP(LR) eduyrs*NHSmodel hinctntcat*NHSmodel gndr*NHSmodel age15ycat*NHSmodel
/CONTRAST (NHSmodel)=Indicator(1)
/CONTRAST (gndr)=Indicator(1)
/CONTRAST (hinctntcat)=Indicator(1)
/CONTRAST (age15ycat)=Indicator(1)
/ORIGIN
/PRINT=GOODFIT CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).

```

```

LOGISTIC REGRESSION VARIABLES advall
/METHOD=ENTER percpripay
/METHOD=ENTER eduyrs hinctntcat gndr age15ycat
/METHOD=FSSTEP(LR) eduyrs*percpripay hinctntcat*percpripay gndr*percpripay age15ycat*percpripay
/CONTRAST (NHSmodel)=Indicator(1)
/CONTRAST (gndr)=Indicator(1)
/CONTRAST (hinctntcat)=Indicator(1)
/CONTRAST (age15ycat)=Indicator(1)
/ORIGIN
/PRINT=GOODFIT CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).

```

```

LOGISTIC REGRESSION VARIABLES advall
/METHOD=ENTER percOOPpay
/METHOD=ENTER eduyrs hinctntcat gndr age15ycat
/METHOD=FSSTEP(LR) eduyrs*percOOPpay hinctntcat*percOOPpay gndr*percOOPpay
age15ycat*percOOPpay
/CONTRAST (NHSmodel)=Indicator(1)
/CONTRAST (gndr)=Indicator(1)
/CONTRAST (hinctntcat)=Indicator(1)
/CONTRAST (age15ycat)=Indicator(1)
/ORIGIN
/PRINT=GOODFIT CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).

```