Health and Health Care Use of Elderly Immigrants in the Netherlands

A comparative study

Semiha Denktaş

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Gezondheid en zorggebruik van oudere immigranten in Nederland
Een vergelijkende studie

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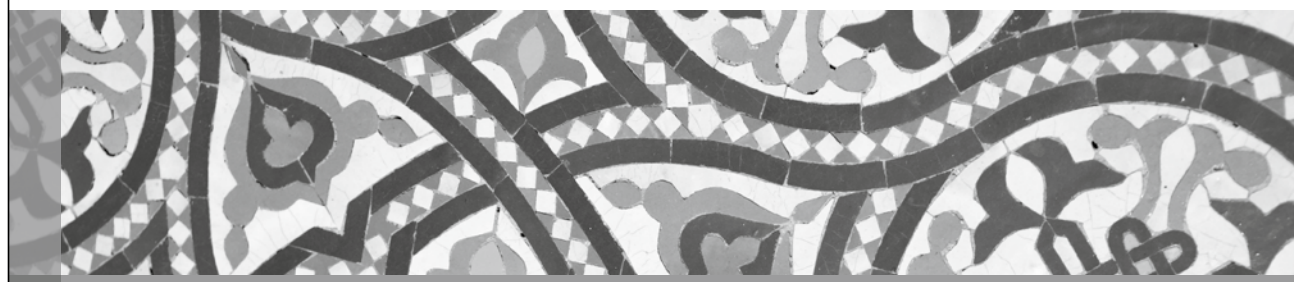

General introduction

CHAPTER 1

History shows an ongoing voluntary or involuntary migration flow of people from their birthplaces to other societies. Many Western countries have become multi-ethnic societies. The number of elderly immigrants in those countries is rapidly rising. Contrary to the situation in the United States, little information is yet available on the health status and health care use of elderly immigrants in Europe, including the Netherlands. In Europe, elderly are often included as part of the study population whereas in the United States separate studies on elderly have been conducted indicating more health problems but a relatively low health care use.[1-18]

Ethnic differences in health and health care use in Europe and in the Netherlands

The prevalence of health poblems of immigrants in the Netherlands and in other European countries is higher than among the native population.[19-26] From the few studies conducted among elderly immigrants a pattern of more chronic conditions, more limitations in activities in the daily living and more mental health problems emerge.[27-31] On the other hand, mortality statistics In Western countries illustrate lower mortality rates among older first generation immigrants.[32, 33]

Health care utilization between immigrants and natives usually differ too, as has been demonstrated in several Dutch studies.[34-42] Utilization of General Practicionar (GP) services is in general higher whereas utilization of specialised health care is lower. The precise dynamics behind these patterns are unknown. Genuine need seems higher, as prevalences of most medical conditions are higher among immigrants. Expressed need, however, might be lower as a low educational level, economic barriers and other socio-economic factors may decrease actual utilization. Even after taking these factors into account variation is not entirely explained.

Determinants of health and health care use

Little information is available about health and health care use of elderly immigrants in Europe. Large-scale studies seldomly include sufficient numbers of elderly to enable conclusions, and if so, they are limited to only one of the large cities. The latter is a disadvantage in view of the distinct features of each of the large cities. Moreover, available studies usually include only a limited number of explanatory variables with often emphasis on primarily socio-economic factors.

Supplemental qualitative studies are available[43-45]; these provide more information on the experience of immigrant elderly regarding their health and regarding their experience with specific services for elderly. However, in these studies explanations are usually limited to cultural factors, while the focus is usually on one migrant group only. This thesis broadens the scope and applies an explanatory model which includes socioeconomic status, acculturation and ethnic descent, separately. The following sections elaborate on our broader explanatory model, starting with a description of migration.

Migration: change and adaptation

Irrespective of the country of origin and the host country, migration typically implies changes at the personal and family level, and at the social level as defined by the organization of the social network in the country of origin. We thus observe a number of phenomena among first generation immigrants that are related to the life events of change of social, cultural, religious, economic and/or political environment, and to those of manifestly change of physical (climate) and communicative (language) environment. As with all life events, human beings naturally tend to accommodate, to reposition, to cope with the new environment, and to start building a new life under the changed conditions. The success of this adaptation depends on several factors such as the capacity of the person to transform difficulties in challenges referred to as personal resources, and the sensitivity and capacity of the host country to facilitate this two-sided demanding process. If the migrant successfully redefines his of her's cultural and personal heritage we speak of succesful acculturation. In the optimal case he or she is recognized as new but undisputed member of the nation, civis mundi. Sofar little attention has been paid to the elderly first generation migrants, persons who have passed decades of lifetime in the host country, and who went though the process of acculturation. Acute transitional effects are no longer relevant here, and are not part of our analysis.

Acculturation as adaptational strategy

Culture is a dynamic concept, especially when it is studied in immigrant groups and their offspring. Second, culture acquisition or acculturation involves 'those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural pattern of either or both groups.[46] Earlier models of acculturation consider it as a linear, unidirectional phenomenon, from no adaptation in the new society to completely assimilated in the new society. Two-axial models of acculturation are now leading, which better fit the assumption of multiple dimensions of acculturation. Of these two-axial models the one of Berry is leading.[47] Berry distinguishes two

fundamental issues, which immigrants have to face. The first pertains to the decision whether one has to maintain his own cultural / ethnic identity. The second involves the decision of importance of being engage in relations (contact and participation) with the larger society.

Socio-economic status in adaptational processes: resource or result

Socio-economic status (SES) is technically speaking a basket variable reflecting underlying traits, capacities and resources which are in general measured by three components: the educational level attained, the professional activity employed, and finally the income received or wealth collected. The context of analysis decides on the precise interpretation of SES effects. In case of immigrant health SES is also a resource for adaptation; the SES effect may be partially mediated through acculturation. The relation may also be reverse: low SES may be a direct result from poor health, and even the intermediate role of acculturation may be the other way round: better adaptation and acculturation could result in improved SES.
In the context of the elderly population, SES is assumed to be cause rather than consequence, as in general SES is a fairly static characteristic in first generation migrants.

Study population

The study population of this thesis is comprised of the four major immigrant groups that have been in the Netherlands for decades, i.e. Turkish, Moroccan, Antillean and Surinamese immigrants.These first generation immigrants have now reached old age and together they respresent almost 80% of all non-Western immigrant elderly in the Netherlands.
In the sixties and early seventies Turks and Moroccans were recruited by the Dutch government as guest workers After the 1970's, it gradually became clear that contrary to the initial expectations the stay of these immigrants was not temporary especially since families were reunited. Surinamese and Antillean elderly have a different migration history. In the fifties and sixties, especially Surinamese youth from higher class came to the Netherlands to study. Generally, they returned to Surinam after they had graduated. In the seventies, economic and political motives played a role for Surinamese to migrate to the Netherlands. People from all social classes of the Surinamese society came to the Netherlands. To a certain extent, Antilleans have a similar migration history. In the eighties the economic migration to the Netherlands increased as result of the closure of the oil refineries in Curaçao and Aruba.

Data collection design

In December 2002, preparations were made for the sampling and development of the survey conducted by the Social and Cultural Planning Office (SCP) and the Department of Health Policy and Management of the Erasmus University Rotterdam. The data in this study were all collected by survey methods. The questionnaire was categorized in blocks. The following topics were included: a) context data and composition of household, b) educational position, c) labour position, presently and in the past, d) income, sources and level, e) ties with country of origin, f) social network, g) language skills, h) health status, i) health care use, j) living and environment, k) satisfaction with living in the Netherlands, l) leisure time, m) conceptions about ageing and n) acculturation.

This thesis

The aim of this thesis is to describe health and health care use among immigrant and Dutch elderly, and to provide explanations for differences or inequalities observed. The explanatory strategy encompasses socio-economic and acculturation pathways. It will be explored whether ethnic specific profiles of health/health care use exist, which perhaps can be related to these pathways.The following specific questions will be addressed, where comparison will universally be among the four major immigrant groups and Dutch, indicated with 'the elderly groups':

Ethnic differences in health

1. What is the prevalence of chronic diseases and limitations in activities in daily living and instrumental activities in daily living among the elderly groups? How can these differences be explained? (Chapter 2)
2. To what extent do differences in functional limitations exist amongst the elderly groups, and which background factors are most responsible for different limitation patterns observed (if any)? (Chapter 3)

Ethnic differences in health care use

3. To what extent utilization differences exist among the elderly groups and are explained by health status and by socio-economic factors, and are remaining differences further explained by acculturation and ethnic background? (Chapter 4)
4. To what extent does ethnicity related variation exist in the use of prescribed drugs, distinguishing between underutilization in diseased subjects and overutilization in healthy persons? (Chapter 5)
5. Do ethnic inequalities exist in formal home care utilization, and, if so, do they relate to different needs and/or to different demands? (Chapter 6).

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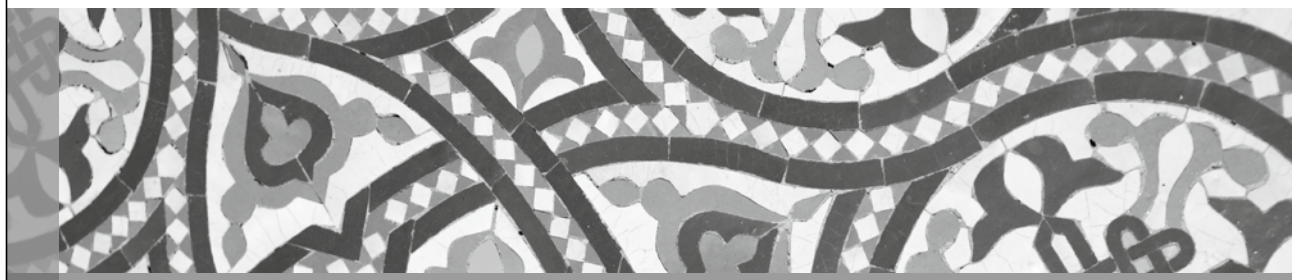

The health of first generation immigrant elderly in the Netherlands
A comparative study

CHAPTER 2

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Submitted

Abstract

Objective: To investigate ethnic differences in (1) prevalence of chronic diseases, limitations in mobility, personal care and instrumental activities of daily living, and mental health among first generation immigrants and Dutch elderly, and (2) to explain these differences.

Design: Cross-sectional study

Method: Using data from the survey “Social Position, Health and Well-being of Older Immigrants”, conducted in the Netherlands in 2003. The study population consisted of first generation immigrants aged 55 years or more from four immigrant populations in the Netherlands and a Dutch reference group (Turkey n=307, Morocco n=284, Surinam n=308, the Netherlands Antilles n=300, the Netherlands n= 304). Ethnic differences in prevalences were investigated with ANOVA.

Results: Antillean elderly are by far the healthiest, directly followed by the Dutch elderly. Turkish and Moroccan are the least healthy. Surinamese have a position in between. A higher socioeconomic status and more acculturation result in less health problems. Living in a deprived neighbourhood has in particular an additional negative effect on physical health. Among Turkish and Moroccan elderly, ethnic background also plays a negative role in health.

Conclusion: The coming years a considerable increase of immigrant elderly will take place. Clear ethnic health differences exist and there is not a single type of immigrant elderly. Social and contextual mechanisms play an important role in the explanation of health differences. Currently, immigrant elderly appeal to health care services is relatively limited. In the near future this will certainly increase and health care providers need to be prepared for these developments.

Introduction

The proportion of non-Western elderly in the Netherlands is growing rapidly. In January 2010, the number of non-Western elderly older then 55 years was 181,768 and expected to increase to 353,985 in 2020.[1] They are descendents mostly from Suriname, the Netherlands Antilles, Turkey and Morocco. Surinamese and Antillean elderly came to the Netherlands in the 50s, initially because of educational opportunities. In the 60s and 70s adult Turkish and Moroccan men were recruited as migrant workers, later followed by their wives for reasons of family reunification.

The health situation of immigrants in the Netherlands, as in other Western countries, is unfavourable.[2-8] There are at least three explanations for this notion. First, immigrants occupy a low socioeconomic status (SES). Second, acculturation may have a negative impact on health. Acculturation refers to the process of mutual adaptation of migrants and the host society.[9] Depending on the situation on arrival, the health effects of acculturation is favourable or unfavourable, and the longer migrants are staying the more (convergence) or less (divergence) they mimic the health of the dominant population. One of the first studies on the effect of acculturation on health showed an increase in heart disease among Japanese immigrants in California and Hawaii, caused by convergence to the risk factors.[10] Thirty years later, researchers found a similar phenomenon in the Netherlands on specific types of cancer: adaptation of immigrant groups (except for Moroccans) to smoking habits deteriorated rapidly in the initially favourable rates of smoking-related cancers.[11] A third explanation is the environment. Immigrants live mainly in the four largest cities (Rotterdam, The Hague, Amsterdam, and Utrecht, along the “G4”). Especially living in deprived neighbourhoods has a separate illness effect.[12,13]

Little is known about the health situation of immigrants who have been living for some decades in the Netherlands. This is in particular true for the potential beneficial and detrimental effects of acculturation on health. If no selective repatriation took place, increasing individual prosperity should improve health, even if some deterioration occurred through convergence of lifestyle. On the other hand, if at the beginning the health situation was already bad, and if acculturation stagnates possibly as a consequence of the a priori unfavourable health situation, the health gap between immigrant and indigenous elderly will with ageing not become smaller.

In this article we compare the prevalence of diseases and limitations between the four largest immigrant groups and indigenous elderly. We study the explanatory role of acculturation effects, living in a poor neighbourhood and socioeconomic factors.

Methods

Data were collected as part of the study ‘Social Position, Health and Well-being of Elderly Immigrants’ survey, conducted in the Netherlands in 2003.[14]

Population and data collection

A sample of 3284 people aged 55 years or more was drawn from the Municipal Administration of 11 large and medium large cities in the Netherlands. Point of departure was to achieve a

representative sample in terms of ethnicity (the proportion of each ethnic group, but also both large and smaller cities). Ethnic origin was determined by country of birth since the study focused only on first generation immigrants. The sample was stratified into sex and age (55-64 years, 65 + years). In advance all respondents were informed in writing to announce the visit of an interviewer. For the Turkish and Moroccan respondents a translated summary of the letter was sent and they were approached by bilingual interviewers.

Response

A total of 3284 people (808 Turks, 455 Moroccans, 688 Surinamese, Antillean and 697 Dutch 636) aged 55 years or more were approached. 1503 respondents participated in the study. The response was 44% among Turks, Moroccans 65%, 49% Surinamese, Antillean below 54% and 47% among the Dutch. Apart from the respondents with a wrong address (<5%) the main reasons for non-response were: (1) absent: 35% Turks, Moroccans 16%, 21% Surinamese, Antillean and Dutch 23% 11% (2) refusal: 11% Turks, Moroccans 14%, 21% Surinamese, Antillean and Dutch 16% 33% (3) in own words too sick: Turks and Antilleans 7%, 3% Moroccans, Surinamese 8%, 9% Dutch. Other reasons: <5%.

Measuring instruments

The survey distinguished five outcomes (chronic conditions, three types of physical limitations, mental (ill) health and various non-medical determinants). The official scoring of the instruments was used, sometimes resulting in a higher score indicating better health, sometimes in a less good health (see below).

The occurrence of 11 specific chronic diseases was measured by questions from the CBS Dutch national health survey.[15] The three measures used for physical limitations developed by the SCP, concerned limitations in (1) how to move and walk, (2) performing daily activities related to personal care and (3) with instrumental daily activities, such as preparing hot meals.[16] In this context, a higher score means more limitations. Mental health was measured with the Short-Form-12 (SF-12).[17] In the latter context, a higher score means better mental health.

The four major cities of Rotterdam, Amsterdam, The Hague and Utrecht were classified by postcode area. Following the government decision of May 2007 disadvantaged neighbourhoods, called “prachtwijken”, were based on postal codes.[18] Indicators of SES were education and household income (measured in ten categories with standardization by household size). Educational attainment level was classified as the highest diploma achieved. Acculturation was developed in two areas namely (1) command of the Dutch language and (2) modernization. Modernization was measured by 15 questions concerning (a) attitudes about care for family, (b) attitudes about gender roles, and (c) views on family values. Both language proficiency and modernization were expressed in a score of 1 to 3, with a higher score indicating more acculturation. Most Surinamese and Antillean elderly speak Dutch because of the colonial background. For verification of the Dutch language proficiency the question was asked: ‘the last time you visited you GP could you understand him/her?’ (Yes / no). If not, the language proficiency was still regarded as mediocre, rather than good. The degree of acculturation was expressed by the sum score of modernization and language.

Analysis

By using ANOVA we initially tested the effect of ethnic origin on one of the five health outcomes. Next, we tested the effect, estimated by linear regression, of the other determinants on the various health outcomes, and whether any ethnic differences could be explained by these results. Based on theoretical considerations 3 ‘nested’ models were formulated (equal to 5 outcomes): Model 1 with only socio-demographic determinants and acculturation, model 2 with additional living in a disadvantaged neighbourhood, and in model 3 were finally yes / no variables are added for each of the ethnic groups. Model 1 is the standard analysis. Model 2 shows the added value of deprived area. Model 3 additionally adjusts for ethnic background, taking into account the effect of the specific role of acculturation and neighbourhood. If Model 3 is essentially different from model 2 there is an ethnic effect, not adequately explained by the specific factors of model 2. Analyses were performed using SPSS 13.0 for Windows.

Results

Turkish, Moroccan and Surinamese elderly live more often in the four largest cities. Especially Turkish and Moroccan elderly have a low SES. They are also less acculturated; in this respect Surinamese and Antillean elderly seem to be more like native Dutch elderly.

Table 1: Socio-demographic and socio-economic status, and acculturation by ethnic background in the Netherlands (2003).

	NETH (n=304)	TURK (n=307)	MOROC (n=284)	SURI (n=308)	ANTIL (n=300)	p-value
Socio-demographics						
In Age: 55-64 y (%)						0.904
Male (%)	47.1	51.3	43.8	45.0	48.6	
Female (%)	47.3	49.3	51.8	50.5	51.9	
Inhabitant 4 largest cities (%)	69.4	74.3	85.2	85.1	71.0	<0.001
Socio-economic status						
No education (%)	17.3	70.5	94.0	37.2	39.0	<0.001
Primary education (%)	14.0	12.5	3.2	11.9	9.9	
Lower secondary education (%)	33.0	14.9	0.7	21.8	19.9	
Higher secondary education (%)	20.3	1.0	1.8	17.2	17.0	
Higher vocational college/university (%)	15.3	1.0	0.4	11.9	14.2	
Standardised income per month in €, mean (sd)	1226 (497)	708 (215)	571 (193)	952 (425)	967 (500)	<0.001
Acculturation, mean (sd)	2.7 (0.3)	1.6 (0.4)	1.5 (0.3)	2.2 (0.3)	2.3 (0.4)	<0.001

Health outcomes show a consistent picture. Antillean elderly are the healthiest, followed by Dutch elderly. Turks and Moroccans are by far the least healthy. Surinamese elderly hold a position in between.

Table 2: Prevalence of the average number of chronic diseases, limitations in mobility, personal care, instrumental activities in daily living and mental health by ethnic background in the Netherlands (2003).

	NETH (n=304)	TURK (n=307)	MOROC (n=284)	SURI (n=308)	ANTIL (n=300)	p-value
Chronic conditions, mean (sd)	1.7(1.6)	3.4 (2.0)	2.8 (1.8)	2.3 (1.8)	1.6 (1.4)	<0.001
Limitations in mobility, mean (sd)	1.1 (2.3)	2.8 (2.8)	3.4 (2.8)	1.5 (2.5)	1.0 (2.1)	<0.001
Limitations in personal care, mean (sd)	0.6 (2.2)	1.8 (3.3)	1.8 (3.6)	1.2 (3.2)	0.4 (1.9)	<0.001
Limitations in instrumental activities in daily living, mean (sd)	0.2 (0.8)	0.9 (1.1)	1.2 (1.2)	0.6 (1.2)	0.2 (0.7)	<0.001
Mental health, mean (sd)	51.7 (11.4)	41.6 (11.6)	42.0 (10.0)	46.2 (12.9)	49.7 (11.1)	<0.001

The role of determinants gives a reasonably clear picture. We discuss the significant associations. Men have fewer diseases than women while limitations increase with age. Elderly with a higher SES have less health problems and limitations. The more acculturated elderly immigrants in Dutch society are, the less health problems they have. Living in a deprived neighbourhood has an additional illness effects next to acculturation in 3 of the 5 health indicators, especially the somatic. Ethnic-specific factors explain health inequalities somewhat better than both acculturation and living in a poor neighbourhood. Especially Turkish and Moroccan elderly suffer a bad health, not explained by the specific factors measured.

Table 3: The explanatory meaning of socio-demographic, socio-cultural and specific ethnic factors for (1) chronic diseases, (2) limitations in instrumental activities of daily living, (3) limitations in mobility, (4) limitations in personal care, (5) mental health, n = 1503, Netherlands 2003.

	Chonic conditios			Limitations in mobility			Limitations in personal care			IADL			Mental Health		
	M1	M2	M3	1	2	3	1	2	3	1	2	3	1	2	3
Male	-	-	-	-	-	-				-	-	-	-	-	-
Age				+	+	+	+	+	+	+	+	+			
Educational level	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Standardized income	-		-	-	-								-	-	-
Acculturation	-	-		-	-		-	-		-	-		-	-	
Disadvantaged neighbourhood		+	+		+	+					+				
Turkish			+			+			+			+			+
Moroccan						+						+			+
Antillean			-												
Surinamese												+			+
Adj.R2	0.127	0.131	0.182	0.165	0.173	0.199	0.046	0.047	0.061	0.144	0.147	0.185	0.089	0.089	0.116

Model 1 = sex, age, education, standardized income, acculturation; Model2 = sex, age, education, standardized income, acculturation, neighbourhoods, Model3 = sex, age, education, standardized income, acculturation, neighbourhoods, Turkish, Moroccan, Antillean, Surinamese. A - or + indicates a significant illness reinforcing or health improving relation. The detailed results including the values of the beta coefficients and p-values are available from the author.

Discussion

The main finding of this study is a consistent pattern of ethnicity-related ill health among the elderly. Compared with native Dutch elderly, Turkish and Moroccan elderly have a much poorer health, while Antilleans are as healthy as or even healthier than Dutch elderly, and Surinamese elderly hold a position in between. In terms of ill health these elderly immigrant groups can not be approached by a common measure or one-fits all approach. With regard to three potential explanatory factors the theoretical model appears appropriate, with some nuances. Socio-economic position plays a dominant role, while education is more important than income. Acculturation appears important for health. Living in a disadvantaged neighbourhood is additionally important. The absence of an effect on mental health is could be explained by (a) the presence of dominating physical negative factors in poor neighbourhoods, or (b) positive, socially supportive effects of living in a deprived area with more immigrants. The prevalence of psychotic disorders is increased among most immigrants living in neighbourhoods with relatively few others of their own ethnic group.[12] Unmeasured factors probably play an additional role in explaining the poor health of Turks and Moroccans. Besides the exposition-effects, inadequate use of health care services are mentioned.[19-21]

We compared our results with other studies on the health of immigrants, with the restriction that acculturation and environmental influence (poor neighbourhood) are rarely included. Of chronic diseases and mental health problems the higher prevalence is more frequently reported.[22-25] The prevalence of schizophrenia among Surinamese, Antillean and Moroccan is higher than among native Dutch. Poort et al. has shown previously that elderly Turkish and Moroccans have more limitations in daily life than native elderly.[26] Among Turkish elderly in Denmark similar results were reported.[27] Turkish and Moroccan elderly are more often depressed than indigenous elderly, Turkish more often than Moroccans.[28]

In this context mortality patterns published earlier indicate a sharp caesura between the older first-generation migrants, and the younger, often, second-generation.[29,30] The younger immigrant groups have significantly increased mortality rates while for the older groups - for men and women alike - the relative mortality is decreased. Nevertheless, there is a clear hierarchy in mortality at 55 years and over, which is remarkably similar to the morbidity figures in our paper. With one exception: Moroccan immigrants have by far the lowest age-specific mortality, mainly due to a lower prevalence of smoking-related cancers.[11] These lethal diseases have little relationship with the prevalence of morbidity, which explains the discrepancy. We interpret our findings in relation to the mortality patterns as follows. The older immigrant was a positive health selection, which applies to both guest workers (who were selected specifically on good health) as the colonial immigrants from the upper class who came to the Netherlands to study. Both groups were relatively healthy, 'healthy migrants', which explains their low mortality. Antillean and Surinamese have a morbidity pattern corresponding with native Dutch. On the other hand, the integration and socio-economic growth - at the start-healthy – non-Dutch speaking Turkish and Moroccan immigrants, stagnated. This is illustrated by a pattern of non-lethal disease with a higher prevalance.

Strength and limitations of the study

Considering the target population the response rates are relatively high. The age-sex distribution of the realized sample was similar to that of the sample design. There was no selective non-response.

An advantage but at the same time a restriction is that the study relies on self-reporting. Bio-medical measurements or medical registrations were not available. Also, the self-reported medical conditions has not been validated and graded for degree; experience shows that the validity of diagnostic data from these questionnaires in this research context is sufficient.[31] Applied health questionnaires have wide distribution in the Netherlands. Finally, with these response rates, the relationship between morbidity and mortality can not be directly examined.

Conclusion

The proportion of elderly immigrants is growing rapidly in the coming years. Our study shows that there are clear ethnic health disparities and that 'the immigrant elderly' does not exist. Social and contextual mechanisms play an important role in the explanations. Currently, immigrant elderly make a relatively limited appeal on health care services. In the near future this will certainly increase and health care providers have to be prepared for these developments.

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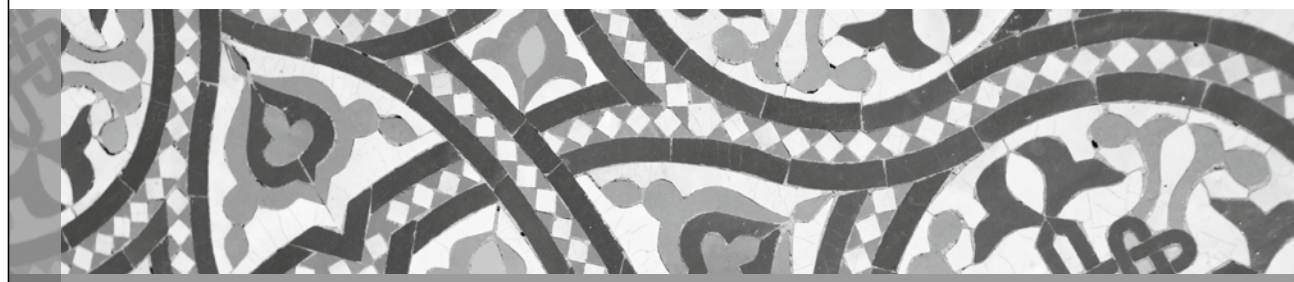

Ethnic differences in functional limitations: a national study of native Dutch and elderly immigrants in the Netherlands

CHAPTER 3

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Submitted

Abstract

Background: Information about the health of elderly immigrants in Europe is scarce. We explore the presence of ethnicity related differences in functional limitations and analyse whether these differences persist after accounting for age, sex, self-rated health and socio-economic status and acculturation.

Methods: Cross-sectional study using data from the survey 'Social Position, Health and Well-being of Elderly Immigrants' (the Netherlands, 2003). Ethnicity-matched interviewers conducted the survey among first generation immigrants aged 55 years and older. Outcome measures are limitations in activities in daily living (ADL) and limitations in instrumental activities of daily living (IADL).

Results: The study population consisted of immigrants from Turkey (n=307), Morocco (n=284), Surinam (n=308) and the Netherlands Antilles (n=300), and a native Dutch reference group (n= 304). The prevalence of limitations, given an ill health condition, is higher in immigrant groups compared to native Dutch elderly. Ethnic disparities in ADL and IADL are primarily explained by differences in mental health and in some limitations by language proficiency.

Conclusions: Given the uniform effect of mental health on limitations, it is important for health care providers to focus on this health aspect of immigrant population.

Background

There is a growing interest in the health status of immigrant elderly, as their number is rapidly rising. In the Netherlands, demographic projections show a threefold increase of the number of (55 years and older) non-western immigrant elderly, from 116.446 in 2003 to 353.984 in 2020.[1] The largest groups of Dutch immigrants came from Turkey, Morocco, Surinam and the Dutch Antilles in the 60ties and 70ties of the 20th century. Turkish and Moroccan immigrants essentially were recruited; Surinamese and Antillean immigrants travelled to the Netherlands in search of schooling and as a result of decolonisation, with frequently the intent of remigration. Like all older people, the prevalence of health problems of immigrants generally increases with age. Moreover, immigrant elderly suffer from chronic diseases which progressively affect daily activities due to restrictions or functional limitations.[2,3] Previous research showed increased prevalence of the majority of chronic diseases among most immigrant groups in the Netherlands.[4] Yet, only little health information is available on the consequences of having a chronic disease in terms of functional limitations: what different limitation patterns are present among immigrant groups, and what factors explain ethnic differences, if any. Incidental data suggest that socioeconomic status and mental health play a role, but also other factors such as failing acculturation have been proposed as a pathway to more functional limitations.[5]

The current study explores to what extent differences in functional limitations exist amongst elderly migrant groups, and explores which background factors are most responsible for different limitation patterns observed (if any).

Methods

Data source and population

We used data from the 'Social Position, Health and Well-being of Elderly Immigrants' survey, conducted in 2003 in the Netherlands.[6,7] To achieve a truly representative sample, first, on the basis of municipality and region size, all municipalities in the Netherlands were classified into 16 strata with different percentages of immigrant persons. From these 16 strata, 9 strata with the highest percentage of the immigrants were selected. Secondly, within the 9 strata, for each migrant group separately, the 11 municipalities with the largest prevalence of that particular migrant group were selected; ex post this strategy emerged into the same 11 municipalities, with, of course, slightly different patterns of ethnicity prevalences. This method has been used in large household surveys among immigrants in the Netherlands.[8] Samples were drawn from the municipal population registers. Ethnic background was established by country of birth, as documented in these registers. Compared to the Dutch population, immigrant elderly are less represented in the oldest age groups, while men are overrepresented because e.g. not all male immigrants were reunited with their spouses in the host country. Therefore, the sample was stratified into sex and two age groups (55-64 years and 65 years and older) and equal numbers per stratum were randomly selected. A total sample of 3284 people (808 Turks; 455 Moroccans; 688 Surinamese, 636 Antilleans and 697 Dutch) aged 55 years and above was drawn from the municipal registers. Of the 3284 subjects sampled, 1503 completed the questionnaire. The response rates were amongst Turkish 43.6%, Moroccans 65.3%, Surinamese 48.7%, Antilleans 54.2% and amongst native Dutch 47.3%. Excluding those with incorrect home addresses (amongst Turkish 5.6%, Moroccans 2.9%, Surinamese

3.9%, Antilleans 7.1% and Dutch 3.7%), the reasons for non-response were the following: (1) respondents could not be reached during the fieldwork: amongst Turkish 35.0%, Moroccans 16.2%, Surinamese 21.1%, Antilleans 22.7% and amongst Dutch 10.9%; (2) language problems: amongst Turkish 3.5%, Moroccans 0.7%, Surinamese 0.4%, amongst Antillean and Dutch 0%; (3) some elderly considered themselves too ill: amongst Turkish 6.7%, Moroccans 3.5%, Surinamese 8.4%, Antilleans 6.9% and amongst Dutch 8.6%; (4) respondents refused participation: amongst Turkish 11.3%, Moroccans 13.8%, Surinamese 21.4%, Antilleans 16.2% and amongst Dutch 33.1%; and finally other specified reasons: amongst Turkish 0.5%, Moroccans 0.4% and amongst Surinamese, Antilleans and Dutch 0%.

Data collection method

The survey was translated into Turkish and Moroccan Arab and extensively tested in a pilot study. For the primary study 202 interviewers were trained: 61 native Dutch, 19 Antillean, 50 Moroccan, 27 Surinamese and 45 Turkish. Between April 2003 and December 2003, data collection took place: trained interviewers from a similar ethnic background conducted structured face-to-face interviews at home. The respondents were approached personally on their home addresses for two reasons: (1) to enhance participation and explain any respondent's questions raised on the aims and procedures of the study, and (2) possession and/or the proportion of secret telephone numbers among some ethnic groups are at a low respectively high level. For the approach of respondents interviewers were instructed to pay visits during daytime and evening to avoid work-related non-response. If the respondent was absent, the interviewer was instructed to re-visit the same address at least two times. All respondents received a 5,- euro's gift certificate. Reluctance to participate was related to not being convinced of the usefulness, apparent oversampling of immigrant groups for other studies, and a changing societal context which was clearly less tolerant towards immigrants.

Measurements

To determine functional limitations we used the validated Short Form-12 Health Survey Questionnaire (SF-12)[9] and the measure of functional limitations of the Netherlands Institute for Social Research, which is a validated Dutch instrument used for national surveys.[10] The SF-12 survey assesses limitations in role functioning as a result of physical (2 items) and emotional health (2 items). An example of an item on limitations in role functioning as a result of physical health is: 'During the pas 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?'(1) Accomplish less than you would like (yes/no); (2) were limited in the kind of work or other activities (yes/no). Item scores are weighted and summed into 0 to 100 scores (a high score indicates better physical or emotional role functioning).[9]

Limitations in ADL, following the Netherlands Institute for Social Research instrument, are measured by 4 items on mobility and 4 items on personal care. Mobility questions include the ability to walk up and down the stairs, to leave and enter the house, to move outside the house, to sit down and stand up from a chair. Personal care questions include the ability to step in and out of bed, to wash face and hands, to wash back and feet, to dress and undress. Response options are: without difficulty, with some difficulty, with much difficulty, only with helping device. Limitations in IADL are subsequently measured by 4 items concerning the ability to prepare a hot meal, to do small reparations and chores in the house, to clean the house and to do the shopping. Response options are: without difficulty, with difficulty, cannot do it and never do it, and can do it, but never do it. People responding with the latter answering category are classified as if they had answered: without difficulty.

A weighted summary score for limitations in mobility, personal care and IADL is calculated ranging for mobility from -0.16 to 9.25, for personal care from -0.07 to 15.86 and for IADL form -0.21 to 4.61 (higher scores indicating more limitations). The principal statistical method underlying these weights is PRINCALS[11], a documented method to derive a factor structure from nominal or ordinal data/responses. This method, like Principal Component Analysis, enables the selection of subsets of items representing a scale and provides a scoring algorithm, which assigns a specific summary value to any combination of responses (pattern) of items belonging to that scale. Responses are allowed to have ordinal measurement level. PRINCALS is particularly suitable for analysis of skewed data, which is usual the case in health surveys.Two indicators of health status were included: the number of self-reported chronic conditions, from which the respondents suffered in the 12 months preceding the interview (diabetes, heart disease, hypertension, cancer, stroke, migraine, asthma, arthritis, back complaints, stomach ulcers, other chronic conditions; ranging from 0 to 11)[12], and mental health as measured by the SF-12 Mental Component Summary (MCS). Mental health was covered by four questions referring to the past 4 weeks: (1) Have you felt calm and peaceful? (All of the time, most of the time, a good bit of the time, some of the time, a little of the time, or none of the time); (2) Did you have a lot of energy?; (3) Have you felt downhearted and blue?; (4) How much of the time has your physical health or emotional problems interfered with your social activities like visiting with friends, relatives etc? Sum scores have a range of 0 to 100.[9] Indicators of socio-economic position were educational level and household income.[13] Educational level concerned the highest degree achieved (no education/primary education, lower secondary education, higher secondary education, and higher vocational college/university). Household income was divided in ten levels (<500 euro; between 500 and 700 euro; [..]; between 1900 and 2100 euro; >2100 euro) and weighted post hoc to adjust for the number of household members depending on this income level.

The developed indicators of acculturation is based on the concept of 'modernity', which by Ester et al.[14] is regarded as the most fundamental feature of Western societies. Modernisation, defined as the transition of an agricultural to an (post)industrial society, involves individualisation, secularisation, pluralisation, emancipation and democratisation.[15,16] Driving forces are equality across groups, secularism and rationality. Clearly, these values underlying modernity are not endorsed to the same degree even in the native Dutch population, and they change over time. Language proficiency is added because it is an important condition to maintain oneself in a host country: it is an important requisite for interethnic contacts; engaging in relations (contact and participation) with the larger society, and having native friends, in turn

are theoretically acknowledged as important aspects of acculturation.[17] Also growing evidence supports a critical role for language proficiency in adequate use of health care.[18]
These indicators of acculturation were conceptualised by 5 domains and measured accordingly: (1) mastery of Dutch language, (2) religiosity, (3) attitudes on care for family, (4) attitudes on male-female role and (5) attitudes on family values.[7]

Dutch language proficiency was measured among Turkish and Moroccan elderly by three questions: (1) when someone talks to you in Dutch, are you able to understand (yes often, yes sometimes, no); (2) do you have difficulty in speaking Dutch (yes often, yes sometimes, no); (3) when you read a Dutch paper or a letter do you have difficulty in understanding (yes often, yes sometimes, no). A summated score was calculated which was subsequently recoded in 3 categories indicating mastery of Dutch language (1) poor, (2) mediocre, (3) good. Dutch language proficiency was not measured directly among Dutch, Surinam and Antillean elderly. Surinamese and Antillean elderly speak fluent Dutch because of their colonial background. As a proxy the question was asked whether the last time you went to the GP you were able to understand fully the GP (yes/no). If no, the proficiency variable as described above was coded 2, otherwise 3.

Religiosity was measured by asking whether one considers oneself as belonging to a religion, and if yes, how frequently one attends religious meetings (every day, at least once a week, at least once a month, once or several times a year, almost never). Attitudes regarding care for family, male-female-roles and family values was measured by means of a set of 14 propositions, e.g., children should take care of their parents when they are old, an education is more important for boys than for girls etc. (agree, partly agree/partly disagree, do not agree). A summated score was calculated which was subsequently recoded in 3 categories indicating a (1) traditional, (2) moderate traditional, (3) modern attitudes on care for family, male-female-roles and family values.

Item scores on language proficiency and the three attitudes on modernity were each summated into 3 ordinal categories. Religiosity response was left unchanged.

Analysis
First, we described the sociodemographic status, other background variables, and health according to ethnic background (Table 1).
We then tested whether the number functional limitations differed according to the presence of none, one or 2 or more chronic conditions and to ethnic background (two way ANOVA, Table 2). Natural log transformation was used for dependent variables with too skewed score ranges.
Linear regression analyses were conducted to explain the ethnic differences to the extent observed in Table 2. We first explained functional limitations by the number of chronic conditions and ethnicity alone (Table 3a). Next we added the covariables age and gender as independent factors and the potential intermediary variables for SES (educational level, standardized income) and acculturation (Dutch language proficiency, religiosity, traditional/modern attitudes on care for family, on male-female role and on family values; and finally mental health) to investigate their role as explanation for any ethnicity effect observed (Table 3b). Cases with missing values were excluded in the analyses. The analyses were performed using SPSS 13.0 for Windows.

Results

The study includes 304 native Dutch, 307 Turkish, 284 Moroccan, 308 Surinamese and 300 Antillean elderly (see Table 1).

Table 1: Socio-demographic and socio-economic status, acculturation and self-perceived health by ethnic background in the Netherlands (2003).

	NETH (n=304)	TURK (n=307)	MOROC (n=284)	SURI (n=308)	ANTIL (n=300)	*p-value
Socio-demographics						
Age: 55-64y (%)						0.904
Men	47.1	51.3	43.8	45.0	48.6	
Women	47.3	49.3	51.8	50.5	51.9	
Socio-economic status						
No education (%)	17.3	70.5	94.0	37.2	39.0	<0.001
Primary education (%)	14.0	12.5	3.2	11.9	9.9	
Lower secondary education (%)	33.0	14.9	0.7	21.8	19.9	
Higher secondary education (%)	20.3	1.0	1.8	17.2	17.0	
Higher vocational college/university (%)	15.3	1.0	0.4	11.9	14.2	
Standardised income per month in €, mean (sd)	1226 (497)	708 (215)	571 (193)	952 (425)	967 (500)	<0.001
Acculturation						
Mastery of Dutch language (%)						<0.001
Poor	0.0	48.2	44.7	0.0	0.0	
Mediocre	1.3	48.5	49.6	2.4	1.6	
Good	98.7	3.3	5.6	97.6	98.4	
Religious (%)	47.2	97.7	99.6	90.5	88.3	<0.001
Attendance religious meetings (%)						<0.001
Every day	0.7	26.5	27.5	2.0	2.7	
At least once a week	14.5	23.8	39.8	29.7	26.3	
At least once a month	6.9	12.9	4.2	16.7	15.7	
Once or several times a year	10.6	15.6	6.3	21.9	22.3	
Almost never	14.5	18.9	21.8	20.3	21.3	
Attitudes on care for family (%)						<0.001
Traditional	3.6	40.7	55.9	12.1	21.5	
Moderate traditional	36.3	48.3	41.6	57.0	47.0	
Modern	60.1	10.9	2.5	30.9	31.5	
Attitudes on male-female roles (%)						<0.001
Traditional	13.9	47.4	45.4	13.7	8.1	
Moderate traditional	29.7	35.1	25.7	35.9	36.2	
Modern	56.4	17.5	28.9	50.3	55.7	
Attitudes on family values (%)						
Traditional	11.3	30.7	36.2	20.9	14.3	<0.001
Moderate traditional	61.6	58.1	63.1	65.9	70.4	
Modern	27.2	11.2	0.7	13.2	15.3	
Health status						
No. of self-rated chronic conditions (%)						<0.001
0	28.0	6.2	10.9	17.5	24.3	
1-2	42.8	29.6	34.5	41.9	51.7	
≥3	29.3	64.2	54.6	40.6	24.0	
MCS SF-12, mean (sd)	51.7 (11.4)	41.6 (11.6)	42.0 (10.0)	46.2 (12.9)	49.7 (11.1)	<0.001
Self-rated health (%)						<0.001
Excellent	2.0	0.0	0.0	0.8	6.2	
Very good	4.0	1.2	0.0	0.8	1.0	
Good	38.6	17.9	8.6	21.7	27.8	
Fair	43.6	48.8	60.4	48.8	59.8	
Poor	11.9	32.1	30.9	27.9	5.2	

* χ^2 test was performed

In Table 2, Turkish, Moroccan and Surinamese elderly *without* chronic conditions show more physical limitations, limitations in mobility and in IADL than native Dutch and Antillean elderly ($p<0.001$). Turkish and Moroccan elderly *with* a chronic condition, also show more physical and mobility limitations as compared to other groups ($p <0.001$). Compared to native Dutch, all immigrant elderly, particularly Turkish and Moroccan elderly, report more limitations in usual role activities because of emotional problems ($p <0.001$). For elderly with any chronic condition, this also applies for limitations in personal care and IADL ($p <0.001$), except for Antilleans. When immigrant elderly have 2 or more chronic conditions, they generally have more physical limitations and more limitations in usual role activities because of emotional problems and limitations in IADL ($p<0.001$). Regarding limitations in mobility and personal care Turkish, Moroccan and Surinamese elderly report more limitations than native Dutch elderly ($p<0.001$). Model fit parameters and interpretation of results did not improve after log transformation of skewed variables.

Table 2: Mean levels of physical and emotional role limitations and limitations in mobility, personal care and instrumental activities in daily living without, with any and with 2 or more chronic conditions according ethnic background (mean scores), in the Netherlands, 2003

	SF-12 –physical limitations *			**SF-12 –emotional limitations***			**Limitations in mobility****			**Limitations in personal care****			**Limitations in IADL****		
Chronic conditions	none	any	≥2	none	any	≥2	None	any	≥2	none	any	≥2	none	any	≥2
Netherlands	50.8	45.4	41.2	51.6	48.9	46.6	0.26	1.3	1.9	0.4	0.5	1.1	0.0	0.3	0.4
Turkey	49.5	42.8	35.2	51.8	44.1	38.2	0.5	1.9	3.2	0.1	1.0	2.2	0.3	0.6	1.1
Morocco	48.3	40.9	36.3	50.3	42.9	37.7	2.3	3.0	4.0	1.0	1.7	2.2	0.8	1.0	1.4
Surinam	49.5	45.4	35.8	51.9	46.7	43.0	0.5	0.7	2.4	0.3	0.6	2.1	0.1	0.4	1.0
Antilles	51.7	47.3	40.1	52.2	47.8	45.6	0.3	1.0	1.7	0.2	0.4	0.8	0.1	0.1	0.6

* A higher score indicates better functioning

** A higher score indicates more limitations

Anova test was performed

In tables 3 A and B linear regression models are shown. Most linear regressions show that the covariates sex, age, number of self-rated chronic conditions, mental health and self-rated health contribute significantly to limitations as measured by the 5 different scales. Except for limitations in IADL, ethnicity has no additional independent explanatory role. The contribution of acculturation varies: in the explanation of limitations in mobility and IADL the contribution is substantial and significant. Interaction terms ethnic group * number of chronic conditions and ethnic group* attitudes on family values were tested. Only in case of 4 out of 20 possible interaction effects proved significant. Foremost, the interaction effect ethnic group * number of chronic conditions was significant explaining limitations in usual role activities because of emotional problems (3 terms: Turkish, Moroccan, and Antillean). As the original model performed quite well, relevance of extension with interaction terms was limited as the proportion of variance explained increased only marginally (adjusted R-square 0.583 instead of 0.575). In the second case, main effects both were significant, but the increase in proportion of variance explained was small and not significant in all cases.

Tables 3A and B: Physical and emotional role limitations and limitations in mobility, personal care and instrumental activities in daily living assessed by linear regression analysis (β's), in the Netherlands, 2003.

	SF12 –phys.limit.	SF12–emot.limit.	Limit. in mobility	Limit. in pers. care	Limit. in iadl
TABLE 3A					
Adjusted R²	0.21	0.13	0.23	0.08	0.19
Number of self-rated chronic conditions	-3.88***	-2.86***	0.68***	0.48***	0.22***
Turkish elderly	-3.18**	-4.78***	0.78***	0.50*	0.42***
Moroccan elderly	-3.46***	-5.48***	1.83***	0.79**	0.81***
Antillean elderly	0.41	-0.52	-0.12	-0.20	-0.03
Surinamese elderly	-2.52**	-1.52	0.08	0.37	0.25**
TABLE 3B					
Adjusted R²	0.30	0.57	0.34	0.15	0.27
Number of self-rated chronic conditions	-3.02***	-1.09***	0.52***	0.42***	0.15***
Turkish elderly	0.18	0.17	-0.09	0.40	0.29
Moroccan elderly	1.30	0.65	0.60	0.49	0.58***
Antillean elderly	1.04	0.22	-0.06	-0.16	0.05
Surinamese elderly	-2.09	1.20	0.17	0.48	0.34***
Age	-0.11*	-0.08	0.05***	0.03**	0.02***
Male	2.64***	0.87	-0.35**	-0.00	-0.23***
Mental health	0.26***	0.82***	-0.04***	-0.05***	-0.01***
Educational level	-0.26	-0.91	-0.19	-0.21	-0.12
Standardized income	0.002*	0.00	0.00	0.00	0.00
Dutch language proficiency	1.72	1.02	-0.76***	-0.14	-0.18**
Attitudes on care for family	0.05	0.03	0.18	0.07	0.07
Attitudes on male-female roles	-0.19	-0.61	-0.04	0.14	-0.03
Attitudes on family values	0.93	0.56	-0.42***	-0.22	-0.13*
Religiosity	0.30	0.04	-0.17***	-0.12*	-0.07***

* p<0.05, ** p<0.01, *** p<0.001

Discussion

The main finding of this study in four representative elderly immigrant groups in the Netherlands is that there are large ethnic disparities in functional limitations, number of chronic conditions and self-report health status measures. Our study also adds to the knowledge that the prevalence of limitations, given an ill health condition, is higher in immigrant groups compared to native Dutch elderly. These facts imply the presence of two separate, reinforcing inequities: inequities regarding aetiology contribute to higher disorder prevalence, and once affected, prognostic inequities yield worse outcome - limitations - for those already affected more often. Surprisingly, this excess disability due to prognostic inequity varied according to ethnic group, and could - unlike the aetiological inequity - very well be explained by a limited set of specific indicators. Acculturation has an equivocal role here. Finally, interaction effects which could expose differential response of ethnic groups towards the same condition were infrequent.

One previous study among Moroccan and Turkish elders between the age of 55 and 74 in Amsterdam after adjusting for age, sex and socio-economic position, showed significant differences in ADL between Turkish, Moroccan and native Dutch elderly.[19] In Turkish elderly, similar results have been reported in a study in Denmark.[20] Pudaric and colleagues.[21,22] reported two studies in Sweden. In the first study ethnic differences in limitations in mobility were investigated among elderly from 55 - 74 years old in six immigrant groups, of which the South European immigrants can be compared with our study population. Age adjusted (not sex adjusted) impaired mobility was higher among Southern European elderly. In the second study Southern European immigrants still exhibited an increased risk of impaired IADL compared to Swedish older people despite adjustment for sex, age and level of education.

While ethnicity related differences in functional limitations have been reported before, studies on ethnic differences in health that distinguish between the prevalence of a condition and its severity and impact, are rare. Neither of the above mentioned studies adjusted for 'severity' or 'number of conditions', like we do.

There are several limitations to our study, predominantly related to our reliance on self report data rather than physical examination and medical validation of conditions and function level. Kriegsman et al.[23] reported adequate or at least sufficient accuracy of patients' self-report data as compared to general practitioners' information, regarding the presence of specific chronic diseases. More specific, people who claimed, for example, to have musculoskeletal disorders were highly likely to actually have this disorder. Hughes et al.[24] showed similar results in musculoskeletal diseases. A disadvantage of asking the prevalence of a condition is that it disregards the severity of the reported chronic diseases, which could introduce heterogeneity in reporting.

Evidence on the validity of the outcome measures in immigrant populations is limited. Ng et al.[25] provided evidence of cross-cultural validity of a comparable IADL measure in Asian elders. Further, Merrill and colleagues[26] provided evidence that both man and women report their disability accurately, and that the higher reporting of functional limitations probably reflects true disability. Li et al.[27] developed a self administered Chinese (mainland) version of the Short-Form Health Survey (SF-36) for use in health related quality of life measurements in China. The Chinese version of the

SF-36 in the general population of Hangzhou produced results similarly to the American population. In our study we used the SF-12 which reproduces the eight-scale profile of the SF-36. We believe that the SF-36 construct has shown to be reasonably robust to justify its use as universal instrument in studies like ours: response differences in our view represent true health differences rather than a testing artefact.

Further, non-response rates may have affected our results. The age/sex distributions in our samples are as expected due to the stratified sampling procedure, indicating no selective non-response in this regard. The most frequent reason for non-response is unavailability of the respondent at the address at the time of visit and to a lesser extent being ill and outright refusal. The reasons for non-response did not differ systematically according to ethnic background. Hence, while non-response could affect disease prevalence in the responding group (lower), it is unlikely that this will affect associations of determinants across groups, as the pattern of selection is similar across *all* groups.

Furthermore, we can make estimations on the likely effect of non-response on outcomes. We are aware of two thorough studies on the effect of selective non-response. One study conducted by Statistics Netherlands, the organisation being responsible for national surveys, reported on to the presence of ethnic-related non-response in a key survey ('POLS 2004').[28] The approach rested on sophisticated weighting experiments, using personal administrative data. Statistics Netherlands reported grossly unaffected prevalences of intended key indicators (including subjective health), and moreover their report showed that correction by weighting for ethnic-specific imbalance of determinants of those indicators, for which national numbers were known, yielded negligible effects on the aggregate indicator score distribution. Apparently the association between key variables and determinants is the same among non-respondents and respondents. The second study is the Amsterdam Born Children and their Development-study on ethnicity related perinatal health.[29] This study was able to pursue an empirical approach of non-response effects: data on non-respondents (outcomes and determinants) could be retrieved anonymously from national registries.[30] Again it was observed that prevalence of outcomes and determinants (like e.g. education) was affected due to selected participation. However, associations and results from regression analysis for a number of known perinatal relations of social and medical determinants with perinatal health were not affected to any relevant degree. While, in our case, some of the prevalence numbers of non-health are underrated, we assume that our primary research on relations and comparisons are valid.

Finally, we deliberately use registered country of birth as indicator of immigrant background. As opposed to self-assessment this offers several advantages: high reliability, no missing data and yields culturally homogenous groups regarding Moroccans, Turks and Antilleans. A disadvantage is that it ignores heterogeneity within the Surinamese groups (Creole and Hindustani populations, among others).

Conclusions

Our results invite to improve outcome inequalities among those already diseased. If the pathway truly rests on 'biological reserve', this inborn or natural reserve or 'fitness' is difficult to improve, but socio-economic deprivation and poor mental health can be addressed. Given the uniform effect of mental health, it is a challenge for public and health care providers to focus on these key health indicator in the immigrant population. We believe that in addition proficiency of the Dutch language will help. Especially regarding mental health problems it is outmost important to have a good communication between patient and care giver. However, it is a fact that among elderly Turkish and Moroccan immigrants and especially among women, illiteracy is high and therefore very difficult to master a second language. Peer educators can be a helpful tool.[31] Future intervention studies should not solely be directed at physical health but also at mental and at combining health and non-health interventions to reduce ethnic inequalities.

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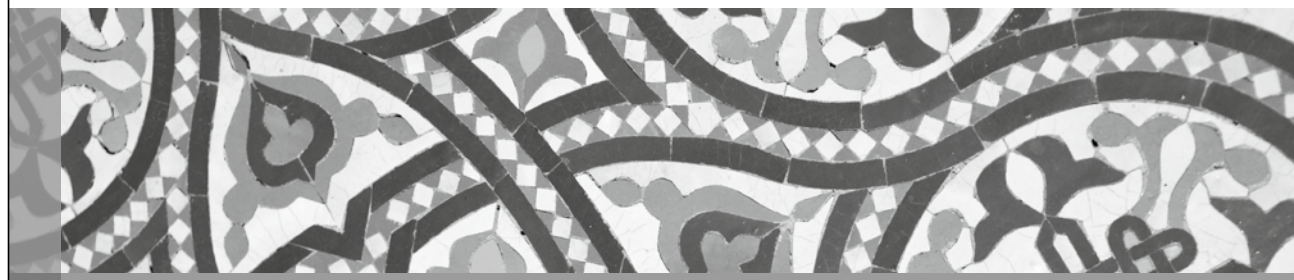

Ethnic background and differences in health care use: a national cross-sectional study of native Dutch and immigrant elderly in the Netherlands

CHAPTER 4

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Abstract

Background: Immigrant elderly are a rapidly growing group in Dutch society; little is known about their health care use. This study assesses whether ethnic disparities in health care use exist and how they can be explained. Applying an established health care access model as explanatory factors, we tested health and socio-economic status, and in view of our research population we added an acculturation variable, elaborated into several sub-domains.

Methods: Cross-sectional study using data from the 'Social Position, Health and Well-being of Elderly Immigrants' survey, conducted in 2003 in the Netherlands. The study population consisted of first generation immigrants aged 55 years and older from the four major immigrant populations in the Netherlands and a native Dutch reference group. The average response rate to the survey was 46% (1503/3284; country of origin: Turkey n=307, Morocco n=284, Surinam n=308, the Netherlands Antilles n=300, the Netherlands n= 304).

Results: High ethnic disparities exist in health and health care utilisation. Immigrant elderly show a higher use of GP services and lower use of physical therapy and home care. Both self-reported health status (need factor) and language competence (part of acculturation) have high explanatory power for all types of health services utilisation; the additional impact of socio-economic status and education is low.

Conclusions: For all health services, health disparities among all four major immigrant groups in the Netherlands translate into utilisation disparities, aggravated by lack of language competence. The resulting pattern of systematic lower health services utilisation of elderly immigrants is a challenge for health care providers and policy makers.

Background

Europe's history is one of emigration and immigration. Half a century ago West European countries witnessed the arrival of the first labour immigrants and immigrants from (former) colonies. By now, these groups have come to age and as remigration is a rare event, the number of aged immigrants (age 55 years and older) is rapidly rising. In the Netherlands, the proportion of older immigrants will grow from 7.2% in 2003 to 14.6% in 2020 in the immigrant population.[1] The largest groups came from Turkey, Morocco, Surinam, and the Dutch Antilles in the 60ties and 70ties of the 20th century. Turkish and Moroccan people moved to the Netherlands as labour migrants. Surinamese and Antilleans came to the Netherlands primarily for higher education and as a result of decolonisation.

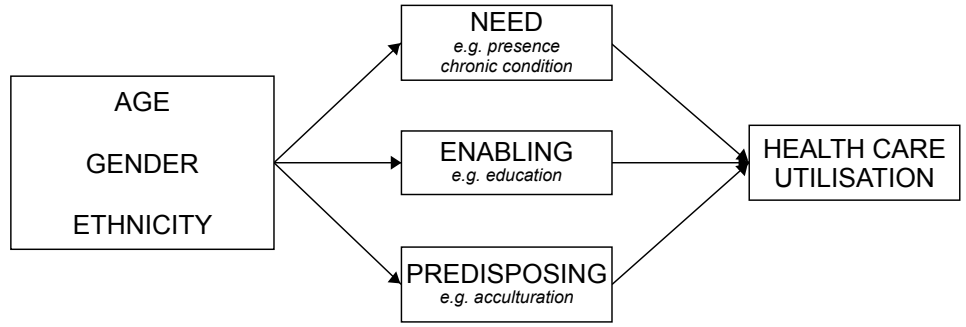
In developed countries, health care utilisation between immigrant and indigenous groups differs.[2-10] Lower use of specialised health care has been observed, in particular if actual need and social position are taken into consideration.[7] Studies in the Netherlands show a similar pattern of decreased utilisation of clinical care.[4] However, some immigrant groups visit their GP more frequently than the native Dutch.[e.g. 4, 11] Available studies are often limited to selected immigrant groups, to populations in large cities, and focus on one type of health care service. Moreover, the explanatory role of cultural and socio-economic factors is not or only partially elaborated on[12-14] and differences in health are usually not separated from differences in health care utilisation. Consequently the 'ethnic factor' in health care utilisation remains an enigma, and this black box position hampers evidence based improvement of both inequities in health and health care use, to the extent that these are present. The Andersen model, an established model of access to health care, offers tools to study health services utilisation.[15]
In this study, we will investigate to what extent utilisation differences between elderly among the four largest immigrant groups in the Netherlands and native elderly can be explained by health status and by socio-economic factors, and whether remaining differences can further be explained by acculturation and ethnic background.

Methods

Conceptual model

We used Andersen's behavioural model as a framework to study health services utilisation.

Figure 1: Adapted Andersen model



The model structure rests on three individual determinants of health care use, which we elaborate below, illustrated by Dutch immigrant examples.

(1) Need, which refers to ill-health conditions or deficits in health status. Especially self-perceived health is relevant here, since it initiates the decision to seek care. Most elderly immigrants perceive their health worse then natives and they experience more problems in Activities in Daily Living (ADL), pain, chronic conditions and a worse mental health.[4, 16, 17]

(2) So-called enabling factors, which reflect the economic means (e.g., income) and human capital (e.g., education, knowledge) which enable people to use health services. In this context a lower socioeconomic position implies less knowledge on available services, less financial resources, and less self-reliance. In the Netherlands, first generation elderly immigrants from Turkey and Morocco are low educated and women often are illiterate.[16] Turkish and Moroccan elderly often have been unemployed for a long time and consequently have low income. Compared to Turkish and Moroccan elderly, Surinamese and Antillean elderly are better off resulting in an intermediate social economic position.[18]

(3) Predisposing factors, the third determinant group, refers to the propensity of individuals to use services, including beliefs and attitudes regarding health and use of specific services. In the context of migrant use of health services, these attitudes primarily are a function of acculturation.[19] The general concept of acculturation, including acculturation in the domain of health care, is defined as 'those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural pattern of either or both groups'.[20] As our paper is focussed on migrant use of health services, we added to the Andersen model two complementary operationalisations of acculturation, derived from Berry and Ester respectively. Berry[21] articulates the process of any migrant's acculturation into two decisions. The first pertains to the decision whether one maintains his or her own cultural identity. The second one involves the decision whether to engage in relations (contact and participation) within the larger society. Both decisions can co-exist, and strongly relate to (acquired) language proficiency. The gradual adaptation to modernity can be considered a part of acculturation. 'Modernity' in Ester's[22] view is the most fundamental feature of Western societies and is defined as the transition of an agricultural to an (post)industrial society characterized by individualisation, secularisation, pluralisation, emancipation and democratisation.[23,24] Most of these processes also apply to health care. The dominant migrant groups in the Netherlands show different patterns of modernisation according to their background and generation.[25, 26]

Data source and population

We used data from the 'Social Position, Health and Well-being of Elderly Immigrants' survey, conducted in 2003 in the Netherlands.[16, 27] To achieve a truly representative sample, first, on the basis of municipality and region size, all municipalities in the Netherlands were classified into 16 strata with different percentages of immigrant persons. From these 16 strata, 9 strata with the highest percentage of the immigrants were selected. Secondly, within the 9 strata, for each migrant group separately, the 11 municipalities with the largest prevalence of that particular migrant group were selected; ex post this strategy emerged into the same 11 municipalities, with, of course, slightly different patterns of ethnicity prevalences. This method has been used in large household surveys among immigrants in the Netherlands.[11] Samples were drawn from the municipal population registers. Ethnic background was established by country of birth, as documented in these registers. Compared to the Dutch population, immigrant elderly are less represented in the oldest age groups, while men are overrepresented because e.g. not all male immigrants were reunited with their spouses in the host country. Therefore, the sample was stratified into sex and two age groups (55-64 years and 65 years and older) and equal numbers per stratum were randomly selected. A total sample of 3284 people (808 Turks; 455 Moroccans; 688 Surinamese, 636 Antilleans and 697 Dutch) aged 55 years and above was drawn from the municipal registers. Of the 3284 subjects sampled, 1503 completed the questionnaire. The response rates were amongst Turkish 43.6%, Moroccans 65.3%, Surinamese 48.7%, Antilleans 54.2% and amongst native Dutch 47.3%. Excluding those with incorrect home addresses (amongst Turkish 5.6%, Moroccans 2.9%, Surinamese 3.9%, Antilleans 7.1% and Dutch 3.7%), the reasons for non-response were the following: (1) respondents could not be reached during the fieldwork: amongst Turkish 35.0%, Moroccans 16.2%, Surinamese 21.1%, Antilleans 22.7% and amongst Dutch 10.9%; (2) language problems: amongst Turkish 3.5%, Moroccans 0.7%, Surinamese 0.4%, amongst Antillean and Dutch 0%; (3) some elderly considered themselves too ill: amongst Turkish 6.7%, Moroccans 3.5%, Surinamese 8.4%, Antilleans 6.9% and amongst Dutch 8.6%; (4) respondents refused participation: amongst Turkish 11.3%, Moroccans 13.8%, Surinamese 21.4%, Antilleans 16.2% and amongst Dutch 33.1%; and finally other specified reasons: amongst Turkish 0.5%, Moroccans 0.4% and amongst Surinamese, Antilleans and Dutch 0%.

Data collection method

The survey was translated into Turkish and Moroccan Arab and extensively tested in a pilot study. For the primary study 202 interviewers were trained: 61 native Dutch, 19 Antillean, 50 Moroccan, 27 Surinamese and 45 Turkish. Between April 2003 and December 2003, data collection took place: trained interviewers from a similar ethnic background conducted structured face-to-face interviews at home. The respondents were approached personally on their home addresses for two reasons: (1) to enhance participation and explain any respondent's questions raised on the aims and procedures of the study, and (2) possession and/or the proportion of secret telephone numbers among some ethnic groups are at a low respectively high level. For the approach of respondents interviewers were instructed to pay visits during daytime and evening to avoid work-related non-response. If the respondent was absent, the interviewer was instructed to re-visit the same address at least two times. All respondents received a 5,- euro's gift certificate. Reluctance to participate was related to not being convinced of the usefulness, apparent oversampling of immigrant groups for other studies, and a changing societal context which was clearly less tolerant towards immigrants.

Measurements

Utilisation of five types of health care (yes/no) was investigated: (1) GP and (2) specialist consultations [frequency in the past two months], (3) physical therapy [at least one session of

in the past 12 months], (4) hospital admission [at least one overnight stay in the past 12 months], and (5) home care [any use in the past 5 years].
Three indicators of health status (need factors) were included: self-rated health measured by the single-item question 'In general would you describe your health as: excellent, very good, good, poor, very poor', subsequently dichotomised into very poor/poor and good/very good/excellent[28]; the number of self-reported chronic conditions (ranging from 0 to 11) from which the respondents suffered in the 12 months preceding the interview [checklist of conditions is part of the Dutch national health survey[29]]; mental health as measured by the SF-12 Mental Component Summary (MCS). Mental health was covered by four questions referring to the past 4 weeks: (1) Have you felt calm and peaceful? (All of the time, most of the time, a good bit of the time, some of the time, a little of the time, or none of the time); (2) Did you have a lot of energy?; (3) Have you felt downhearted and blue?; (4) How much of the time has your physical health or emotional problems interfered with your social activities like visiting with friends, relatives etc.? Sum scores have a range of 0 to 100.[28, 30]

Indicators of socio-economic position (enabling factors) were educational level and household income.[31] Educational level concerned the highest degree achieved (no education/primary education, lower secondary education, higher secondary education, and higher vocational college/university). Household income was divided in ten levels (<500 euro; between 500 and 2100 by steps of 200 Euro increase; >2100 euro) and was consecutively adjusted for the number of persons in the household.
Acculturation (the added explanatory factor) was operationalized into 5 domains: (1) mastery of Dutch language as a proxy for contact with native Dutch according to the model of Berry, (2) religiosity, (3) attitudes on care for family, (4) attitudes on male-female roles, and (5) attitudes on family values according to Ester. Dutch language proficiency was evaluated among Turkish and Moroccan elderly by three questions: (1) when someone talks to you in Dutch, are you able to understand (yes often, yes sometimes, no); (2) do you have difficulty in speaking Dutch (yes often, yes sometimes, no); (3) when you read a Dutch paper or a letter do you have difficulty in understanding (yes often, yes sometimes, no). A summated score was calculated which was subsequently recoded in 3 categories indicating mastery of Dutch language (1) poor, (2) mediocre, (3) good. Dutch language proficiency was not measured directly among Dutch, nor among Surinam and Antillean elderly who fluently speak Dutch because of their colonial background. As a proxy we asked whether the last time you went to the GP you were able to understand fully the GP (yes/no). If no, proficiency was considered mediocre; if yes, good.

Religiosity was measured by asking whether one considers oneself as belonging to a religion, and if yes, how frequently one attends religious meetings (every day, at least once a week, at least once a month, once or several times a year, almost never). Attitudes regarding care for family, male/female roles and family values were assessed by means of 14 propositions, e.g., children should take care of their parents when they are old, an education is more important for boys than for girls (agree, partly agree/partly disagree, do not agree). A summated score was calculated which was subsequently recoded in 3 categories indicating (1) traditional, (2) moderate traditional, or (3) modern attitudes on family care, male/female roles and family values.

Analysis
First we described the respondent groups by socio-demographic and socio-economic status, acculturation, and self-perceived health according to ethnic background. Next we compared health care utilisation according to ethnic background, for each type of health service separately. The impact of determinants on specific utilisation (yes/no) was evaluated with logistic regression. First, we determined crude odds ratios (ORs) per ethnic group for the use of the five separate health care services. Second, we added the intended set of explanatory variables which might explain ethnic background effects to the extent present (self-perceived health, age, sex and socio-economic status, acculturation). This two-step procedure should reveal whether important 'unexplainable' ethnic differences remain. The analyses were performed using SPSS 13.0 for Windows. A two-sided test approach was chosen, where a p-value of 0.05 was considered a significant difference.

Results
Immigrant elderly have a lower socio-economic position as indicated by their low educational and income level. Particularly Turkish and Moroccan elderly have a lower educational and income level compared to the native Dutch as well as Surinamese and Antilleans (see Table 1). As expected, there are also large differences in Dutch language proficiency: Surinamese and Antilleans are overall Dutch speaking while language proficiency among Turks and Moroccans on average is mediocre to poor. Compared to the native Dutch, immigrant elderly report more religious participation, particularly the Turkish and Moroccan group, and more often have a traditional attitude on family care, male/female roles and family values. Turkish, Moroccan and Surinamese elderly more often report a poor self-assessed health and more chronic conditions. Moreover, Turkish and Moroccan elderly more often report poor mental health.

Table 1: Socio-demographic and socio-economic status, acculturation and self-perceived health by ethnic background in the Netherlands (2003).

	NETH (n=304)	TURK (n=307)	MOROC (n=284)	SURI (n=308)	ANTIL (n=300)	*p-value
Socio-demographics						
Age: 55-64y (%)						0.904
Men	47.1	51.3	43.8	45.0	48.6	
Women	47.3	49.3	51.8	50.5	51.9	
Socio-economic status						
No education (%)	17.3	70.5	94.0	37.2	39.0	<0.001
Primary education (%)	14.0	12.5	3.2	11.9	9.9	
Lower secondary education (%)	33.0	14.9	0.7	21.8	19.9	
Higher secondary education (%)	20.3	1.0	1.8	17.2	17.0	
Higher vocational college/university (%)	15.3	1.0	0.4	11.9	14.2	
Standardised income (€/mnth, mean (sd))	1226 (497)	708 (215)	571 (193)	952 (425)	967 (500)	<0.001
Acculturation						
Mastery of Dutch language (%)						<0.001
Poor	0.0	48.2	44.7	0.0	0.0	
Mediocre	1.3	48.5	49.6	2.4	1.6	
Good	98.7	3.3	5.6	97.6	98.4	
Religious (%)	47.2	97.7	99.6	90.5	88.3	<0.001
Attendance religious meetings (%)						<0.001
Every day	0.7	26.5	27.5	2.0	2.7	
At least once a week	14.5	23.8	39.8	29.7	26.3	
At least once a month	6.9	12.9	4.2	16.7	15.7	
Once or several times a year	10.6	15.6	6.3	21.9	22.3	
Almost never	14.5	18.9	21.8	20.3	21.3	
Attitudes on care for family (%)						<0.001
Traditional	3.6	40.7	55.9	12.1	21.5	
Moderate traditional	36.3	48.3	41.6	57.0	47.0	
Modern	60.1	10.9	2.5	30.9	31.5	
Attitudes on male-female roles (%)						<0.001
Traditional	13.9	47.4	45.4	13.7	8.1	
Moderate traditional	29.7	35.1	25.7	35.9	36.2	
Modern	56.4	17.5	28.9	50.3	55.7	
Attitudes on family values (%)						
Traditional	11.3	30.7	36.2	20.9	14.3	<0.001
Moderate traditional	61.6	58.1	63.1	65.9	70.4	
Modern	27.2	11.2	0.7	13.2	15.3	
Health status						
No. of self-rated chronic conditions (%)						<0.001
0	28.0	6.2	10.9	17.5	24.3	
1-2	42.8	29.6	34.5	41.9	51.7	
≥3	29.3	64.2	54.6	40.6	24.0	
MCS SF-12, mean (sd)	51.7 (11.4)	41.6 (11.6)	42.0 (10.0)	46.2 (12.9)	49.7 (11.1)	<0.001
Self-rated health (%)						<0.001
Excellent	2.0	0.0	0.0	0.8	6.2	
Very good	4.0	1.2	0.0	0.8	1.0	
Good	38.6	17.9	8.6	21.7	27.8	
Fair	43.6	48.8	60.4	48.8	59.8	
Poor	11.9	32.1	30.9	27.9	5.2	

* χ^2 test was performed

The prevalence of immigrants consulting a GP is significantly higher than among Dutch elderly (see Table 2). Use of hospital care is about equal among groups. Turkish and especially Moroccan elderly use physical therapy and homecare services significantly less frequent.

Table 2: Self-reported health care use according to ethnic background in the Netherlands (2003).

Health care use (%)	NETH (N=304)	TURK (N=307)	MOROC (N=284)	SURI (N=308)	ANTIL (N=300)	*p-value
GP	48.3	72.2	70.1	68.9	60.3	<0.001
Outpatient specialist	37.2	34.9	38.0	44.8	36.2	0.102
Hospital admission	14.5	19.8	13.2	18.8	14.5	0.106
Physical therapy	26.7	22.7	17.3	29.6	26.8	0.006
Homecare	21.7	11.7	3.6	24.2	14.3	<0.001

* χ^2 test was performed

Table 3 shows that more self-rated chronic conditions (OR 1.44; CI 1.28-1.62), worse self-rated health (OR 1.51; CI 1.27-1.80) and modern attitudes on male-female values (OR 1.12; CI 0.91-1.37) all contribute significantly to GP services use. In other words: for each extra chronic condition [OR1.44], the probability of GP services use rises 44%. Outpatient specialist services too are explained by more self-rated chronic conditions (OR 1.49; CI 1.34-1.67), worse self-rated health (OR 1.57; CI 1.31-1.88), and additionally by higher age (OR 1.02; CI 1.00-1.04) and good Dutch language proficiency (OR 1.46; CI 1.18-1.81). The same variables, with gender, significantly explain the presence of at least one hospital admission last year self-rated chronic conditions (OR 1.53 CI 1.33-1.76), self-rated health (OR 1.53; CI 1.20-1.94), gender (OR 1.66 CI 1.16-2.36) and good Dutch language proficiency (OR 1.33 CI 1.03-1.73). Physical therapy utilisation depends on the number of self-rated chronic conditions (OR 1.35; CI 1.20-1.53), worse self-rated health (OR 1.43; CI 1.17-1.74), male gender (OR 0.60; CI 0.45-0.81), higher age (OR 0.98; CI 0.96-1.00) and good Dutch language proficiency (OR 1.71; CI 1.35-2.18). Finally, home care utilisation is explained by the number of self-rated chronic conditions (OR 1.32; CI 1.13-1.55), self-rated health (OR 1.77; CI 1.36-2.31), gender (OR 0.53; CI 0.36-0.78), age (OR 1.09; CI 1.07-1.12) and good Dutch language proficiency (OR 2.49; CI 1.80-3.46). The remaining role of ethnic group after the above adjustments for health, socio-economic and socio-cultural background is: a significantly low OR regarding outpatient specialist use for Turkish and Moroccan elderly (OR 0.21; CI 0.09-0.46 and OR 0.31; CI 0.14-0.67), for Moroccan elderly regarding hospital admission (OR 0.28; CI 0.10-0.78) and again for Turkish and Moroccan elderly regarding home care (OR 0.19; CI 0.05-0.68/ OR 0.07; CI 0.02-0.29). No substantial interaction effects between ethnic background and need factors were found.

Table 3: Self-reported use of GP care, outpatient care, hospital care, physical therapy, and home care, explained by ethnic background. Comparison of crude analysis (ethnic background only as independent) and full analysis (a theoretically defined set of explanatory factors is added to the ethnic background variable). Odds Ratios and 95% Confidence Intervals obtained with univariate (crude) and multivariate (adjusted) logistic regression analysis.

	GP	Outpat. Specialist	Hospital admiss.	Physical therapy	Homecare
N	1090	1088	1084	1085	1076
Crude analysis					
Ethnic background (Dutch=ref)					
-Turkish	2.78(1.98-3.90)***	0.91(0.65-1.26)	1.45(0.95-2.23)	0.80(0.55-1.16)	0.48(0.31-0.75)***
-Moroccan	2.50(1.78-3.51)***	1.04(0.74-1.45)	0.89(0.56-1.43)	0.57(0.39-0.86)**	0.13(0.07-0.27)***
-Antillean	1.63(1.17-2.25)***	0.96(0.69-1.34)	1.00(0.63-1.57)	1.01(0.70-1.44)	0.61(0.40-0.93)*
-Surinamese	2.36(1.70-2.29)***	1.37(0.99-1.90)	1.37(0.89-2.10)	1.16(0.81-1.64)	1.15(0.79-1.69)
Adjusted analysis					
Self-reported number of chronic conditions in respondent (cf. prespecified list; range 0 - 11)	1.44 (1.28-1.62)***	1.49 (1.34-1.67)***	1.53 (1.33-1.76)***	1.35 (1.20-1.53)***	1.32 (1.13-1.55)***
Self-rated general health (range: 1 to 5; 1=excellent)	1.51 (1.27-1.80)***	1.57 (1.31-1.88)***	1.53 (1.20-1.94)***	1.43 (1.17-1.74)***	1.77 (1.36-2.31)***
Self-rated mental health (range: 0 to 100; the higher the score the better the mental health)	1.00 (0.99-1.01)	0.99 (0.98-1.01)	0.99 (0.98-1.01)	1.01 (1.00-1.02)	1.00 (0.98-1.01)
Gender (male=1, female=2)	0.83 (0.63-1.11)	0.91 (0.70-1.20)	1.66 (1.16-2.36)**	0.60 (0.45-0.81)*	0.53 (0.36-0.78)***
Age (continuous in years)	1.00 (0.98-1.02)	1.02 (1.00-1.04)*	1.02 (0.99-1.04)	0.98 (0.96-1.00)***	1.09 (1.07-1.12)***
Educational level (no/primary education vs secondary and higher education)	1.17 (0.83-1.67)	1.16 (0.83-1.63)	0.96 (0.62-1.48)	1.03 0.71-1.49)	1.41 (0.90-2.21)
Standardized income (continuous in Euros)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (1.00-1.01)	1.00 (1.00-1.01)
Good Dutch language proficiency	1.10 (0.88-1.39)	1.46 (1.18-1.81)***	1.33 (1.03-1.73)*	1.71 (1.35-2.18)***	2.49 (1.80-3.46)***
Modern attitudes on care for family	0.98 (078-1.23)	1.01 (0.81-1.25)	1.06 (0.81-1.40)	0.90 (0.71-1.14)	1.22 (0.91-1.65)
Modern attitudes on male-female roles	1.12 (0.91-1.37)*	1.04 (0.86-1.30)	0.86 (0.67-1.11)	0.86 (0.69-1.07)	0.82 (0.62-1.09)
Modern attitudes on family values	0.74 (0.58-0.96)	1.04 (0.82-1.33)	1.23 (0.91-1.66)	0.93 (0.72-1.22)	1.20 (0.86-1.67)
Religiosity	1.06 (0.97-1.16)	0.99 (0.90-1.08)	0.93 (0.83-1.04)	0.91 (0.83-1.01)	1.07 (0.95-1.21)
Ethnic background (Dutch=ref)					
- Turkish	0.54 (0.25-1.18)	0.21 (0.09-0.46)***	0.40 (0.15-1.08)	0.67 (0.29-1.55)	0.19 (0.05-0.68)**
- Moroccan	0.57 (0.26-1.24)	0.31 (0.14-0.67)**	0.28 (0.10-0.78)*	0.50 (0.21-1.18)	0.07 (0.02-0.29)***
- Antillean	1.06 (0.68-1.66)	0.84 (0.53-1.34)	1.07 (0.58-1.96)	0.78 (0.47-1.24)	0.67 (0.37-1.24)
- Surinamese	1.34 (0.85-2.13)	0.67 (0.40-1.02)	0.92 (0.51-1.65)	0.88 (0.55-1.42)	0.90 (0.52-1.58)

*p<0.05, **p<0.01, ***p<0.001

Discussion

This study among the four largest elderly immigrant groups in the Netherlands shows that substantial ethnic disparities exist in self-rated chronic conditions, self-rated mental health and self-rated overall health, with Turkish elderly being the worst off. Even more remarkable are the ethnic disparities in health care utilisation: use of GP services is higher among all immigrant groups, while use of physical therapy and home care is low to absent. Antilleans show a pattern in between the remaining three immigrant groups and the indigenous group. Health status (need factor) shows high explanatory power for all types of utilisation across all ethnic groups; however, income and educational level, both enabling factors, provide no additional explanation. These factors apparently are indirectly related to different utilisation patterns *through* their effect on health.

Acculturation, the concept we introduced as an additional predisposing factor in this context, appeared partly relevant. The instrumental role of language proficiency was remarkable: the ability of immigrant elderly to speak good Dutch has large impact on ethnic differences in secondary and tertiary health care use; e.g. the use of home care, which is typical for chronic conditions, increases with 150% if proficient. No other aspects of acculturation beyond language proficiency played a prominent role.

Without additional medical information it is impossible to set a threshold criterion to define over- or underutilisation of care; our analysis compares lower or higher utilisation compared to the reference use of the indigenous group. This interpretational uncertainty is particularly important in case of GP use by Turkish and Moroccan elderly, where the large overutilisation of GP care changes into strong underutilisation after taking our explanatory factors into account (fivefold reduction due to adjustment). Despite this uncertainty we believe that our data are suggesting underutilisation of all care except GP care.

Our study reveals inequalities among elderly immigrants. A recent study by Poort et al.[32] investigated the health care use of Turkish and Moroccan elderly (55-74y) in Amsterdam. Their results can be compared validly with ours, showing similar patterns of these two immigrant groups. Acculturation and language competence was not part of that study.

There are some limitations and therefore cautious interpretation is required. First, this study is based on self-reports of health status and of health care use. Regarding health care use, a study by Reijneveld showed that self-reports of hospitalisation and physical therapy provide fairly valid estimations in cross-cultural research.[33] Regarding health status, however, verified medical diagnosis information was lacking; this would be especially relevant to judge over- versus underutilisation in GP and specialist care.

Secondly, except for GP use, health care utilisation data did not provide quantitative information on the intensity of treatment, reflecting differential severity of medical conditions.

Thirdly, our ethnic coding could be challenged. We deliberately used recorded country of birth as indicator of immigrant background. As opposed to self-assessment this offers a double advantage: high reliability and lack of missing information. While it results in culturally homogenous groups for Moroccans and Turks, it covers relevant cultural differences in the Antillean and Surinamese group. The latter includes different groups such as Creole and Hindustani populations.

Fourthly, although language proficiency is a straightforward instrumental variable to explain a considerable amount of the disparities, the mechanisms behind it are unclear. Insufficient communication of need is a direct pathway, but language incompetence may also impair knowledge on health and health care services in the host country. We measured language proficiency among native Dutch, Surinamese and Antilleans with a proxy, namely whether they were able to understand their GP. We cannot exclude that with this proxy a broader concept of health literacy instead of only language proficiency was measured. The lack of explanatory power of the remaining acculturation factors does not exclude a role for specific factors: immigrants could prefer making use of informal care instead of home care, because they may consider these services not adapted to their needs, or because they expect care from their family. Here, supportive qualitative research should add to our quantitative results.[34-36]

Finally, non-response rates may affect our results. The age/sex distributions in our samples are as expected due to the stratified sampling procedure, indicating no selective non-response in this regard. The most frequent reason for non-response is absence of the respondent at the address at the time of visit and to a lesser extent being ill and outright refusal. The reasons for non-response did not differ systematically according to ethnic background. Hence, while non-response could affect disease prevalence in the responding group (lower), it is unlikely that this will affect associations of determinants across groups, as the pattern of selection is similar across *all* groups. We are aware of two thorough studies on the effect of selective non-response. One study conducted by Statistics Netherlands, the organisation being responsible for national surveys, reported on to the presence of ethnic-related non-response in a key survey.[37] The approach rested on sophisticated weighting experiments, using personal administrative data. Statistics Netherlands reported grossly unaffected prevalences of intended key indicators (including subjective health). Moreover, their report showed that adjustment by weighting for ethnic-specific imbalance of determinants of those indicators, for which national numbers were known, yielded negligible effects on the aggregate indicator score distribution. Apparently the association between key variables and determinants is the same among non-respondents and respondents. The second study is the Amsterdam Born Children and their Development-study on ethnicity related perinatal health.[38] This study was able to pursue an empirical approach of non-response effects: data on non-respondents (outcomes and determinants) could be retrieved anonymously from national registries. Again it was observed that the prevalence of outcomes and determinants (like e.g. education) were affected due to selective participation. However, associations and results from regression analysis for a number of known perinatal relations of social and medical determinants with perinatal health were not affected to any relevant degree. Moreover, a study by Reijneveld et al.[3] showed that specialist and paramedic care use is lower among non-respondents than among respondents, unexplained by demographic and socio-economic factors, including country of birth. This implies that our estimates of the use of outpatient care and of physical therapy use may be to low, but that differences between native and immigrant elderly probably are unaffected.

To conclude, our methodological choice to extend the standard Anderson model with acculturation paid off: in the context of analysis of ethnic disparities in health care utilisation it provided an explanatory tool limited to the introduction of language competence as important instrumental variable.

While the first part of our hypothesis (health disparities translate into utilisation disparities) could be confirmed, our hypothesis on the role of other determinants has to be revised. Rather than the conventional socio-economic and educational factors, language proficiency was the single instrumental predisposing (but probably also enabling) factor. The resulting pattern of systematic and sizable underutilisation is a challenge for health care providers and policy makers. Non-Dutch speaking patients should definitively be recognized as a high-risk group. Generally, intervention targets are present at both sides: new comers should be offered facilities to learn and improve language skills, while first generation elderly immigrants primarily rely on peer educators.

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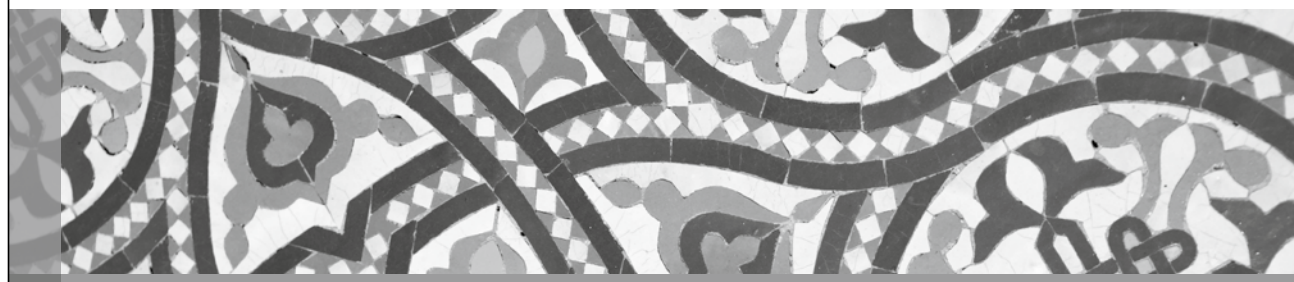

Underutilization of prescribed drugs use among first generation elderly immigrants in the Netherlands

CHAPTER 5

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Abstract

Background: In developed countries, health care utilization among immigrant groups differs where the dominant interpretation is unjustified overutilization due to lack of acculturation. We investigated utilization of prescribed drugs in native Dutch and various groups of immigrant elderly.

Methods: Cross-sectional study using data from the survey 'Social Position, Health and Well-being of Elderly Immigrants' (the Netherlands, 2003). Ethnicity-matched interviewers conducted the survey among first generation immigrants aged 55 years and older. Outcome measure is self-reported use of prescribed drugs. Utilization is explained by need, and by enabling and predisposing factors, in particular acculturation; analysis is conducted by multiple logistic regression.

Results: The study population consisted of immigrants from Turkey (n = 307), Morocco (n = 284), Surinam (n = 308) and the Netherlands Antilles (n = 300), and a native Dutch reference group (n = 304). Prevalence of diabetes mellitus (DM), COPD and musculoskeletal disorders was relatively high among immigrant elderly. Drug utilization in especially Turkish and Moroccan elderly with DM and COPD was relatively low. Drugs use for non-mental chronic diseases was explained by more chronic conditions (OR 2.64), higher age (OR 1.03), and modern attitudes on male-female roles (OR 0.74) and religiosity (OR 0.89). Ethnicity specific effects remained only among Turkish elderly (OR 0.42). Drugs use for mental health problems was explained by more chronic conditions (OR 1.43), better mental health (OR 0.95) and modern attitudes on family values (OR 0.59). Ethnicity specific effects remained only among Moroccan (OR 0.19) and Antillean elderly (OR 0.31). Explanation of underutilization of drugs among diseased with diabetes and musculoskeletal disorders are found in number of chronic diseases (OR 0.74 and OR 0.78) and regarding diabetes also in language proficiency (OR 0.66) and modern attitudes on male-female roles (OR 1.69).

Conclusions: Need and predisposing factors (acculturation) are the strongest determinants for drugs utilization among elderly immigrants. Significant drugs underutilization exists among migrants with diabetes and musculoskeletal disorders.

Background

Health care utilization in developed countries is known to differ between immigrant and indigenous groups.[1] In some cases, especially General Practitioner (GP) services, immigrant's utilization of health care is higher.[2]; more often, however, utilization is lower than expected.[3] Lower utilization is commonly explained by more or higher thresholds immigrant groups may experience when seeking for medical help. Once medical help is provided, the nature or intensity of the care provided often varies by ethnic group, mediated by several medical and sociological processes.

Prescribed drugs are among the health services studied for the presence of such ethnicity-related utilization differences. High prescription variability has been reported among immigrant groups within Western countries including the Netherlands.[4-7] This variability cannot simply be explained by inequality of need alone. Whether drug utilization in general is increased among immigrants regardless the disease status, or whether specific patterns of over- and maybe underutilization exist, requires separating healthy and diseased persons in the analysis. Joining healthy and diseased persons into one analysis implicitly assumes that one common mechanism is responsible for utilization level in diseased persons and in healthy people. In fact a higher utilization level in diseased may point to adequate use, while it may point to overutilization in healthy. As most studies are population studies with overrepresentation of healthy subjects, these existing studies primarily explain overutilization in healthy persons.

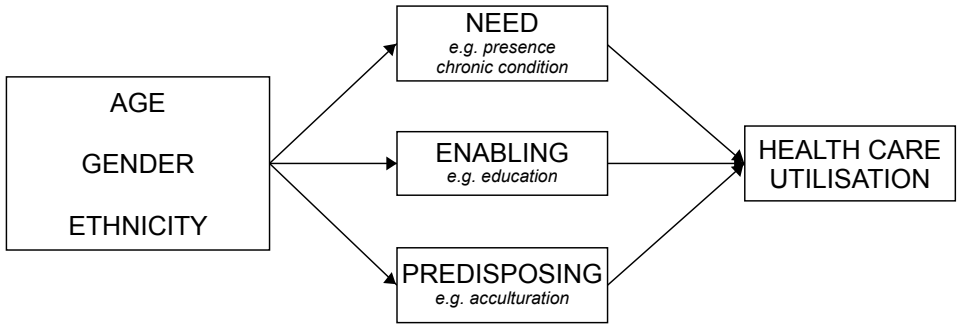
This paper focuses on ethnicity related variation in the utilization of prescribed drugs, focussing on underutilization in diseased subjects as being different from overutilization in healthy persons. Furthermore we distinguished between mental and physical morbidity/drugs as acculturation-induced variation is present here. We used data from a group of first generation immigrants of 55 years and older, all from the four largest immigrant groups in the Netherlands: Turkish, Moroccan, Surinamese and Antillean immigrants. Our age selection had the advantage of sufficiently high prevalence of unambiguously diseased subjects among all ethnic groups. Our aim is to establish whether condition-specific utilization of defined drugs was lower among ethnic groups, to evaluate the relevance of several factors of utilization put forward, and to demonstrate whether so-called 'convergence' towards the utilization levels of the indigenous group is related to the degree of broadly measured acculturation. We used the well known Andersen's health care access model as analytic framework and hypothesized that health status would explain ethnicity-related drug utilization in terms of need, socio-economic status in terms of knowledge in general, while lack of acculturation could account for underutilization of care. We additionally explored whether ethnicity-related differences existed between the utilization patterns in case of mental vs. predominantly physical morbidity.

Methods

Conceptual model

Andersen's behavioural model[8] is presented in figure 1.

Figure 1: Adapted Andersen model.



His model rests on three individual determinants of health care use, which we elaborate below illustrated by Dutch immigrant examples.

(1) *Need* refers to ill-health conditions or deficits in health status. Especially self-perceived health is relevant here, since it initiates the decision to seek care. Most elderly immigrants perceive their health worse then natives and they experience more limitations in Activities of Daily Living (ADL), pain chronic conditions and worse mental health.[9,10]

(2) *Enabling factors* reflect the economic means (e.g., income) and human capital (e.g., education, knowledge) which enable people to utilize health services. In this context a lower socioeconomic position implies less knowledge on available services, less financial resources, and less self-reliance. In the Netherlands, first generation immigrants from Turkey and Morocco are low educated and women often are illiterate. Turkish and Moroccan elderly often have been unemployed for a long time and consequently have low income. Compared to Turkish and Moroccan elderly, Surinamese and Antillean elderly are better off resulting in an intermediate social economic position.[11] Under the Dutch health insurance system, the great majority of immigrants - in particular the elderly - fall under the public compulsory scheme, which fully covers prescribed drugs, without, at the time of data collection, copayment. Indigenous elderly are covered more often by a private insurance scheme, but last decade has shown that drug utilization is insensitive to the current low levels of copayment which are alleviated by tax compensation in case of chronic disease.

(3) *Predisposing factors*, the third determinant group, refers to the propensity of individuals to use services, including beliefs and attitudes regarding health and use of specific services. In the context of migrant's use of health services these attitudes primarily are a function of acculturation.[12] The general concept of acculturation, including acculturation in the domain of health care, is defined as 'those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural pattern of either or both groups'.[13] Since we focus on migrant use of health services, we added two complementary operationalisations of acculturation to the Andersen model, derived from Berry and Ester respectively. Berry[14] articulates the process of any migrant's acculturation into two decisions. The first pertains to the decision whether one maintains his or her own cultural identity. The second one involves the decision whether to engage in relations (contact and participation) within the larger society. Both decisions can co-exist, and strongly relate to (acquired) language proficiency. The gradual adaptation to modernity can be considered part of acculturation. 'Modernity' in Ester's[15] view is the most fundamental feature of Western societies and is defined as the transition of an agricultural to an (post)industrial society characterized by individualisation, secularisation, pluralisation, emancipation and democratisation.[16,17] Most of these processes also apply to health care. The dominant migrant groups in the Netherlands show different patterns of modernisation according to their background and generation.[18,19]

Data source and population

We used data from the 'Social Position, Health and Well-being of Elderly Immigrants' survey, conducted in 2003 in the Netherlands.[10,20] To achieve a representative sample, we adopted a sampling method that has been used in large household surveys among immigrants in the Netherlands.[21] First, on the basis of municipality and region size, all municipalities in the Netherlands were classified into 16 strata with different percentages of immigrant persons. From these 16 strata, 9 strata with the highest percentage of the immigrants were selected. Secondly, within these 9 strata, for each migrant group separately, the 11 municipalities with the largest prevalence of that particular migrant group were selected. Ex post this strategy emerged into the same 11 municipalities, with, of course, slightly different patterns of ethnicity prevalences. Samples were drawn from the municipal population registers. Ethnic background was established by country of birth as documented in these registers. Compared to the Dutch population, immigrant elderly are less represented in the oldest age groups, while men are overrepresented because e.g. not all male immigrants were reunited with their spouses in the host country. Therefore, the sample was stratified into sex and two age groups (55-64 years and 65 years and older).

A total sample of 3284 people (808 Turks; 455 Moroccans; 688 Surinamese, 636 Antilleans and 697 Dutch) aged 55 years and above was drawn from the municipal registers. Of the 3284 subjects sampled, 1503 completed the questionnaire. The response rates were amongst Turkish 43.6%, Moroccans 65.3%, Surinamese 48.7%, Antilleans 54.2% and amongst native Dutch 47.3%. Excluding those with incorrect home addresses (amongst Turkish 5.6%, Moroccans 2.9%, Surinamese 3.9%, Antilleans 7.1% and Dutch 3.7%), the reasons for non-response were the following: (1) respondents could not be reached during the fieldwork: amongst Turkish 35.0%, Moroccans 16.2%, Surinamese 21.1%, Antilleans 22.7% and amongst Dutch 10.9%; (2) language problems: amongst Turkish 3.5%, Moroccans 0.7%, Surinamese 0.4%, amongst Antillean and Dutch 0%; (3) some elderly considered themselves

too ill: amongst Turkish 6.7%, Moroccans 3.5%, Surinamese 8.4%, Antilleans 6.9% and amongst Dutch 8.6%; (4) respondents refused participation: amongst Turkish 11.3%, Moroccans 13.8%, Surinamese 21.4%, Antilleans 16.2% and amongst Dutch 33.1%; and finally other specified reasons: amongst Turkish 0.5%, Moroccans 0.4% and amongst Surinamese, Antilleans and Dutch 0%.

Data collection method

The survey was translated into Turkish and Moroccan Arab and extensively tested in a pilot study. For the primary study 202 interviewers were trained: 61 native Dutch, 19 Antillean, 50 Moroccan, 27 Surinamese and 45 Turkish. Data were collected between April 2003 and December 2003. Trained interviewers from a similar ethnic background conducted structured face-to-face interviews at home. The respondents were approached personally on their home addresses for two reasons: (1) to enhance study participation, and (2) telephone possession and/or the amount of secret numbers among some ethnic groups are at a low respectively high level. Interviewers were instructed to pay visits during daytime and evening to avoid work-related non-response. If the respondent was absent, the interviewer was instructed to visit the same address on at least two further occasions. All respondents received a €5 gift certificate. Reluctance to participate was related to not being convinced of the usefulness, apparent oversampling of immigrant groups for other studies, and a changing societal context being clearly less tolerant towards immigrants.

Measurements

The survey contained questions on prescribed pharmaceutical use, health status, socio-demographic background and acculturation, all self-report measures. The dependent variable was pharmaceutical use in the preceding 14 days (yes/no). Since we anticipated different patterns of utilization relevant factors particularly a larger role for acculturation in mental problems and mental drug use, we distinguished two types of pharmaceuticals: (1) pharmaceuticals prescribed in the case of physical chronic diseases [diuretics, heart drugs, skin drugs, rheumatoid arthritis drugs, allergy drugs, asthma drugs and insulin] and (2) pharmaceuticals prescribed in the case of mental health problems [psycho-pharmaceuticals and sleep medications]. Information on dosage was not included; in case of type 1 pharmaceuticals, we could compare head-to-head self-report presence of disease with the use of an indicated pharmaceutical (diabetes, COPD, musculoskeletal disease).

The independent variables were measured as follows. Three indicators of health status were included: self-rated health as measured by a single-item question 'In general would you describe your health as: excellent, very good, good, poor, very poor.[22] Secondly the number of self-reported chronic conditions from which the respondents suffered in the 12 months preceding the interview (ranging from 0 to 11).[23] Finally, mental health was measured by the SF-12 Mental Component Summary (MCS) which is composed of four questions referring to the past 4 weeks: (1) Have you felt calm and peaceful? (All of the time, most of the time, a good bit of the time, some of the time, a little of the time, or none of the time); (2) Did you have a lot of energy?; (3) Have you felt downhearted and blue?; (4) How much of the time has your physical health or emotional problems interfered with your social activities like visiting with friends, relatives etc? A higher MCS (range: 0-100) indicates better mental health.[22]

The second group of independent variables consisted of indicators of socio-economic position: educational level and monthly household income.[24] Educational level concerned the highest degree achieved (no education/primary education, lower secondary education, higher secondary education, and higher vocational college/university). Household net income was standardized for the number of persons in the household.

The third group consisted of our two acculturation concepts, operationalized into 5 domains and measured accordingly through validated questions[11,19]: (1) mastery of Dutch language as a proxy for contact with native Dutch, (2) religiosity, (3) attitudes on care for family, (4) attitudes on male-female role and (5) attitudes on family values. Dutch language proficiency was measured among Turkish and Moroccan elderly by three questions: (1) when someone talks to you in Dutch, are you able to understand (yes often, yes sometimes, no); (2) do you have difficulty in speaking Dutch (yes often, yes sometimes, no); (3) when you read a Dutch paper or a letter do you have difficulty in understanding (yes often, yes sometimes, no). A summated score was calculated which was subsequently recoded in 3 categories indicating the relative level of mastery of Dutch language (1) poor, (2) mediocre, (3) good. Since most Surinamese and Antillean elderly speak fluently Dutch because of their colonial background, we used the following proxy question to evaluate Dutch language proficiency among Dutch, Surinam and Antillean elderly: Did you fully understand the GP (yes/no) during the last GP visit? If no, the proficiency variable was coded 'mediocre', otherwise 'good'.

Religiosity was measured by asking whether one considers oneself as belonging to a religion (yes/no). Attitudes regarding care for family, male-female-roles and family values were measured by means of a set of 14 statements, e.g., children should take care of their parents when they are old, an education is more important for boys than for girls (with a Likert type response mode: agree, partly agree/partly disagree, do not agree). A summated score was calculated and subsequently recoded in 3 categories indicating a (1) traditional, (2) moderate traditional, (3) modern attitudes on the above values.

Analysis

First we described the socio-demographic status, acculturation, and self-perceived health according to ethnic background of the full sample. Additionally, we described ethnicity-related under-utilization in three specific chronic conditions: diabetes mellitus, Chronic Obstructive Pulmonary Disease (COPD), and musculoskeletal disorders. As disease-specific pharmaceutical treatment is generally mandatory in all three diseases, we defined underutilization as the lack of specific treatment. Next, the aim of the first general analysis was to explain drug utilization for non-mental chronic conditions and mental conditions separately. The roles of need (presence of any chronic condition), enabling (higher socio-economic class, higher education) and predisposing factors (here: indicators of acculturation) were determined, and compared between drugs utilization for mental and chronic disease separately. The second, explanatory analysis investigated these associations among respondents with any of the three previously mentioned specific conditions, to detect drug underutilization.

All explanatory analysis applied conventional multiple linear logistic regression models (method enter), with presence/absence of drug utilization as the dependent variable. The crude and adjusted odds ratios (95% Confidence Intervals) are the primary measure to express the strength of the association. The analyses were performed using SPSS 13.0 for Windows. A two sided p-value < 0.05 was considered a statistically significant difference.

Results

The study included 304 native Dutch, 307 Turkish, 284 Moroccan, 308 Surinamese and 300 Antillean elderly (see table 1).

Table 1: Socio-demographic characteristics and socio-economic status, acculturation and, self-perceived health by ethnic background in the Netherlands (2003)

	NETH (n=304)	TURK (n=307)	MOROC (n=284)	SURI (n=308)	ANTIL (n=300)	*p-value
Socio-demographics						
Age (55-64y) (%)						0.904
Men	47.1	51.3	43.8	45.0	48.6	
Women	47.3	49.3	51.8	50.5	51.9	
Socio-economic status						
No education (%)	17.3	70.5	94.0	37.2	39.0	<0.001
Primary education (%)	14.0	12.5	3.2	11.9	9.9	
Lower secondary education (%)	33.0	14.9	0.7	21.8	19.9	
Higher secondary education (%)	20.3	1.0	1.8	17.2	17.0	
Higher vocational college/university (%)	15.3	1.0	0.4	11.9	14.2	
Standardised net income per month in €, mean (sd)	1226 (497)	708 (215)	571 (193)	952 (425)	967 (500)	<0.001
Acculturation						
Mastery of Dutch language (%)						<0.001
Poor	0.0	48.2	44.7	0.0	0.0	
Mediocre	1.3	48.5	49.6	2.4	1.6	
Good	98.7	3.3	5.6	97.6	98.4	
Religious (%)	47.2	97.7	99.6	90.5	88.3	<0.001
Attitudes on care for family (%)						<0.001
Traditional	3.6	40.7	55.9	12.1	21.5	
Moderate traditional	36.3	48.3	41.6	57.0	47.0	
Modern	60.1	10.9	2.5	30.9	31.5	
Attitudes on male-female roles (%)						<0.001
Traditional	13.9	47.4	45.4	13.7	8.1	
Moderate traditional	29.7	35.1	25.7	35.9	36.2	
Modern	56.4	17.5	28.9	50.3	55.7	
Attitudes on family values (%)						
Traditional	11.3	30.7	36.2	20.9	14.3	<0.001
Moderate traditional	61.6	58.1	63.1	65.9	70.4	
Modern	27.2	11.2	0.7	13.2	15.3	
Health status						
Self-rated chronic conditions, mean (sd)	1.7(1.6)	3.4 (2.0)	2.8 (1.8)	2.3 (1.8)	1.6 (1.4)	<0.001
MCS SF-12, mean (sd)	51.7 (11.4)	41.6 (11.6)	42.0 (10.0)	46.2 (12.9)	49.7 (11.1)	<0.001

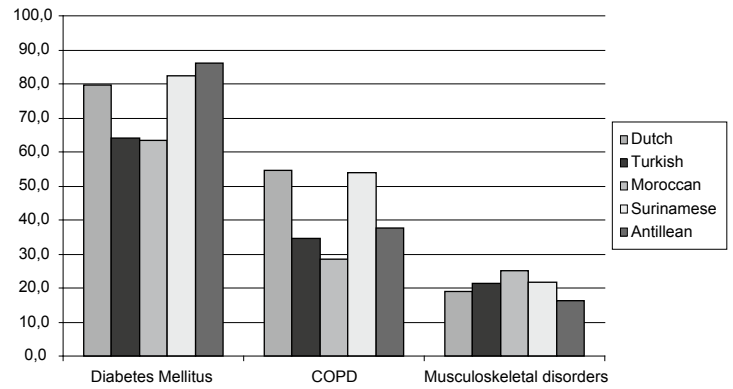
* χ^2 test was performed

Immigrant elderly, particularly from Turkish or Moroccan descent, had a lower socio-economic position. The degree of acculturation also differed according to ethnic group. Parallel to socio-economic inequalities, large differences in Dutch language proficiency exist. While Surinamese, Antilleans were relatively good Dutch speaking as expected, the mastery of Dutch among Turks and Moroccans was mediocre to low. Compared to native Dutch all immigrant elderly groups were more religious. Moreover, immigrant elderly, especially Turks and Moroccans, more often reported traditional attitudes on care for family, male-female roles and family values. Inequality of health was abundant; Turkish, Moroccan and Surinamese elderly more often reported poor health and more chronic conditions than native Dutch. Especially Turkish and Moroccan elderly reported relatively poor mental health. Indigenous and Antilleans showed the highest prevalence of a healthy state.

Figure 2a illustrates the higher prevalence of diabetes mellitus in all immigrant elderly groups. As Figure 2b depicts, drugs utilization among diseased (the prevalent cases of Figure 2a) was lower in Turkish and Moroccan elderly as compared to the other immigrant groups. Prevalence of COPD was high among Turkish elderly, but again the related drugs utilization of Turkish was relatively low. Finally, the prevalence of musculoskeletal disorders was higher among Surinamese, Moroccan and Turkish elderly. Unlike diabetes and COPD, drug utilization for musculoskeletal disorders was comparatively higher in most of the immigrant groups with this condition. All differences were statistically significant ($p < 0.001$).

Figure 2: *Panel a:* Prevalence of three self-reported chronic conditions and *panel b*: specific drug utilisation for that condition among the diseased (panel a) five ethnic groups (Dutch N=49; Turkish N=168; Moroccan N=132; Surinamese N=145; Antillean N=93) in the Netherlands (2003)

a.



b.

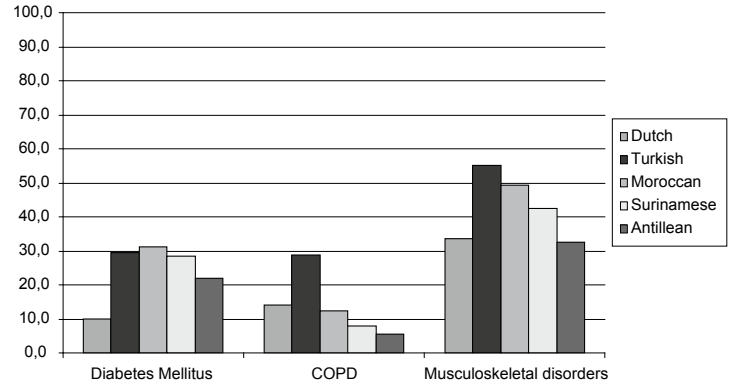


Table 2 shows the impact of need, enabling and predisposing factors and the additional impact of specific ethnic background (full model) on drugs utilization for chronic diseases. We first discuss the results without adjusting for ethnic background (not shown in table). Drugs utilization was significantly associated with more self-rated chronic conditions (OR 2.55), higher age (OR 1.03), and better Dutch language proficiency (OR 1.63). Modern attitudes on male-female roles (OR 0.76) and religiosity (OR 0.87) were significantly associated with lower utilization of drugs for chronic diseases. When adjusted for specific ethnic background (full model), more chronic conditions (OR 2.64), higher age (OR 1.03), modern attitudes on male-female roles (OR 0.74) and religiosity (OR 0.89) significantly contributed to drug utilization. Only Turkish background (OR 0.42) appeared to play an additional, ethnic-specific role, lowering utilization. Testing for interaction between need factors and ethnic group resulted in

two statistically significant interactions: between Turkish background and number of chronic diseases (OR 0.44; CI 0.27-0.71; p < 0.01) and between Moroccan background and number of chronic disease (OR 0.56; CI 0.34-0.91); p < 0.05). The explanatory analysis of drugs use for mental health problems showed an almost identical pattern, apart from the more pronounced specific ethnic effects in persons from Moroccan (OR 0.19) and Antillean (OR 0.31) descent. Interaction between need factors and ethnic background was also tested. Only one interaction appeared significant: between Moroccan background and self rated mental health (OR 0.95; CI 0.91-0.99; p < 0.05).

Table 2: Prescribed drug utilization for chronic diseases and for mental health problems, assessed by multiple logistic regression (N=691; Odds Ratios and 95% Confidence Intervals).

	Drugs use for chronic diseases	**Drugs use for mental health problems**
Need factors & basic demographics	**Full model**	**Full model**
No.self-rated chronic conditions (cf. prescribed list, range 0-11)	2.64 (2.31-3.02)***	1.43 (1.18-1.74) ***
Self-rated mental health (MCS SF12, range: 0-100; a higher score represents better mental health)	1.00 (0.99-1.02)	0.95 (0.93-0.97)***
Male	1.13 (0.84-1.52)	1.17 (0.71-1.83)
Age (years)	1.03 (1.01-1.05)**	1.00 (0.98-1.03)
Enabling factors		
Educational level (no/primary education vs secondary and higher education)	0.93 (0.65-1.34)	0.99 (0.62-1.97)
Standardized net household income (Euros)	1.00 (1.00-1.01)	1.00 (0.99-1.01)
Predisposing factors		
Good Dutch language proficiency	0.97 (0.66-1.43)	1.64 (1.19-2.58)
Modern attitudes on care for family	0.98 (0.77-1.24)	1.04 (0.82-1.73)
Modern attitudes on male-female roles	0.74 (0.60-0.91)**	1.01 (0.65-1.30)
Modern attitudes on family values	0.84 (0.64-1.11)	0.59 (0.40-0.95)*
Religiosity	0.89 (0.80-0.97)**	0.93 (0.79-1.10)
Ethnic background (Dutch=reference)		
Turkish	0.42 (0.19-0.95)*	0.50 (0.13-1.99)
Moroccan	0.54 (0.24-1.21)	0.19 (0.04-0.81)*
Antillean	1.59 (0.99-2.57)	0.31 (0.13-0.76)*
Surinamese	1.44 (0.88-2.34)	0.54 (0.26-1.12)

*P<0.05, **P<0.01, **P<0.001

The explanatory analysis of drug underutilization in three specific conditions is showed in Table 3. In diabetes mellitus, a higher number of self-rated chronic conditions (OR 0.74) and good Dutch language proficiency (0.66) were associated with lower underutilization, whereas modern attitudes on male-female roles (OR 1.69) was associated with higher underutilization of drugs for DM. In COPD none of the proposed variables explained the presence of drugs underutilization. In musculoskeletal conditions more self-rated chronic conditions (OR 0.78) significantly contributed to lower underutilization of drugs for musculoskeletal disorders.

Table 3: Prescribed drug underutilization for diabetes mellitus, COPD and musculoskeletal disorders, assessed by multiple logistic regression (Odds Ratios and 95% Confidence Intervals).

	Underutilization of drugs for DM (N=274)	**Underutilization of drugs for COPD (N=161)**	**Underutilization of drugs for musculo skeletal disorders (N=483)**
Need factors & basic demographics			
No. of self-rated chronic conditions (cf. prespecified list; range 0 - 11)	0.74 (0.56-0.98)*	1.03 (0.76-1.40)	0.78 (0.64-0.93)**
Self-rated mental health (range: 0 to 100; a higher score represents better mental health)	0.98 (0.96-1.01)	0.99 (0.97-1.03)	1.01 (0.99-1.03)
Male	1.19 (0.63-2.24)	1.03 (0.49-2.14)	1.40 (0.87-2.25)
Age (years)	0.99 (0.96-1.02)	1.03 (0.99-1.07)	1.00 (0.97-1.02)
Enabling factors			
Educational level (no/primary education vs secondary and higher education)	0.53 (0.22-1.24)	0.68 (0.27-1.72)	1.04 (0.45-1.59)
Standardized net household income (Euros)	1.00 (0.99-1.01)	1.00 (0.99-1.00)	1.00 (0.99-1.01)
Predisposing factors			
Good Dutch language proficiency	0.66 (0.43-0.996)*	0.85 (0.50-1.43)	0.88 (0.62-1.23)
Modern attitudes on care for family	0.71 (0.43-1.16)	0.72 (0.42-1.23)	0.92 (0.64-1.33)
Modern attitudes on male-female roles	1.69 (1.08-2.66)*	1.07 (0.66-1.76)	1.32 (0.94-1.84)
Modern attitudes on family values	1.57 (0.89-2.75)	1.05 (0.58-1.89)	0.96 (0.64-1.46)
Religiosity	1.04 (0.86-1.30)	1.05 (0.83-1.34)	0.93 (0.80-1.08)

*P<0.05, **P<0.01, **P<0.001

Discussion

This study on drugs use among the four major elderly immigrant groups in the Netherlands shows considerable ethnicity-related variation in prescribed drug utilization.

Within three specific chronic disease categories, we found evidence of underutilization among immigrant groups.

The augmented Andersen model proved useful in explaining these general and disease-specific patterns. Foremost, the prevalence of chronic diseases for which drug treatment is available is generally higher in ethnic groups and this health status factor (*need* factor) primarily explains ethnicity related variation. So-called *enabling* factors, in particular education and income, do not add to the explanation of drugs use. Acculturation as *predisposing* factor, however, was effective in explaining intergroup variation.

Three components of acculturation contributed to drug use: good language proficiency, modern attitudes on male female roles and religiosity. From the results of specific diseases it could be deduced that language proficiency primarily reduced the observed underutilization of among ethnic groups. Unexpectedly, modern attitudes on male-female roles enhanced underutilization.

Apparently, being able to communicate properly with the doctor enhances the likelihood of patients to get drug therapy. The consistent utilization-lowering effect of modern attitudes regarding male-female roles is difficult to interpret. We can offer one potential explanation: this attitude question selects a specific group of higher-educated elderly with modern attitudes, which - more than we could account for by the standard education question - decrease drug use (residual confounding).

In a local study with Reijneveld[1] reported a similar strong effect of need to explain drug utilization in an Amsterdam sample of elderly immigrants. Our study adds the significant contribution of acculturation, especially language proficiency, to drugs use. Comparison with other continental studies is limited since this is the first European study focusing on disease specific drugs use in an ethnic diverse elderly population. However, the lower rate of drugs use among immigrant elderly without command of the native language is consistent with results from similar studies in the US among non-native language speaking immigrant groups.[25-28] A study conducted in Turkey among elderly diabetics also found underutilization of drugs indicating a trend among physicians to under prescribe insulin.[29] Since our study did not address prescribing behaviour of physicians we do not know if underutilization among immigrant elderly in the Netherland can be explained by lack of knowledge among physicians.

There are several limitations to our study. First we used self-reported survey data on both the prevalence of chronic diseases and the drug utilization, without clinical data or pharmaceutical registries to verify accuracy. Kriegsman et al.[30], however, reported adequate accuracy and validity of patients' self-reports on the presence of specific chronic diseases, using essentially the same questions. Respondent's report of a musculoskeletal disorders was confirmed by GP standards, according to Hughes et al.[31] Reijneveld[32] and Wagner[33] also showed self-report use of prescription drugs to be fairly accurate in general, and among ethnic minority groups. Only in case of the mental domain, some underestimation of disease and treatment could result from ethnicity-related reluctance to report. We therefore do not expect our results to be biased due to the general reliance on self-report data.

Secondly, a related disadvantage of asking the presence/absence of a condition is the lack of information on the severity or the disease stage of the reported chronic disease, both which usually affect the likelihood of drugs treatment. Our examples, however, represent diseases for which drug treatment is standard practice.

As a third issue one could challenge, is our deliberate use of registered country of birth as indicator of immigrant background. As opposed to self-assessment the major advantages are high reliability and lack of missing information. It validly assumes culturally homogeneous groups in case of Moroccans and Turks but neglects ethnic subgroups within the Surinamese group (South-Asian Hindustani, African Creoles). However, in our context they share an important acculturation factor: adequate language proficiency, hence the effect of the disadvantage may be small in our context. First vs. second generation issues were not relevant in this study, as the share of second generation immigrants in elderly population is small. We admit that the relevance of this comparison over time will increase.

A fourth limitation is the non-response rates. The age/sex distributions of our samples were as expected due to the sampling procedure, indicating absence of selective non-response. The most frequent reason for non-response was the respondent's absence at the address at the time of visit and less frequent being ill and refusal. While non-response is likely to lower disease prevalence in the responding group, we think it is unlikely that the primary relation between explanatory factors and drugs use is different for diseased respondents vs. non-respondents. Two previous studies in the context of population-based research among immigrants demonstrated small to ignorable effects of selective non-response on these types of outcome variables.[34,35]

Finally, by focussing on the diseased, we ignored those without self reported disease, yet using drugs. These cases of our sample are interesting enough, but additional information is mandatory to safely analyze and interpret these cases. Such respondents could suffer from some disease not included on our list or misinterpret our question on chronic disease -in that case utilization is valid. It is also possible that these respondents are truly without disease -in our terms- and their drug use remains to be explained. Qualitative research is indicated in our view.

Overall, our results fitted to our hypothesis, but some findings were unexpected.

First is the overriding impact of reported health status (need) compared to e.g. socio-economic factors (enabling). We regard it reassuring as it primarily implies that health care inequalities in our study reflect health status inequalities.

Second, the augmentation of the Andersen model with various acculturation factors had one unexpected result. Acculturation indeed was important with language proficiency as a tool to access. Surprisingly, modern attitudes appeared to have effects opposed to our expectation (see above). The 'simple' education variable did not show relevant effects which may be the consequence of introducing the language variable. If true, in that case the education pathway is different between immigrants and the indigenous group.

On the practical level, the pattern of systematic and sizable underutilization is a challenge for health care providers and policy makers. Non-Dutch speaking first generation immigrant

patients should be recognized as a high-risk group for inadequate care, even if they stay a lifetime in the country. Generally, intervention targets are present at both sides: newcomers should be offered facilities to learn and improve language skills, while long stay first generation immigrants most likely have to rely on peer educators and translation services.

Conclusions

This study is among the first to investigate at the national level, differences in drugs use between immigrant and native elderly. The bad news is that immigrants are in a disadvantaged position regarding disease prevalence and drugs use and predominantly will remain so if language proficiency is insufficient, even if being resident for a long time in the Netherlands. The good news is that we believe this disadvantage can be rationally addressed.

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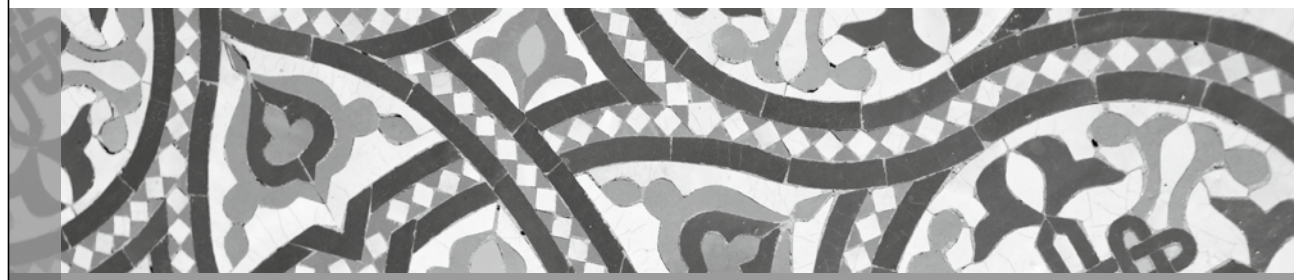

Ethnic differences in home care use: a national study of native Dutch and immigrant elderly in the Netherlands

CHAPTER 6

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Submitted

Abstract

Background: Immigrant elderly are a rapidly growing group in Dutch society, yet little is known about their health care use and especially their home care use. This study assesses whether differences in home care use between immigrant and Dutch elderly can be explained by health status, socio-economic status, acculturation and ethnic background.

Methods: Cross-sectional study using data from the survey 'Social Position, Health and Well-being of Elderly Immigrants' (the Netherlands, 2003). Ethnicity-matched interviewers conducted the survey among first generation immigrants aged 55 years and older. Outcome measure is home care utilisation. Utilisation is explained by need, and by enabling and predisposing factors, in particular acculturation. Analysis is performed by multiple logistic regression.

Results: The study population consisted of immigrants from Turkey (n=307), Morocco (n=284), Surinam (n=308) and the Netherlands Antilles (n=300), and a native Dutch reference group (n= 304). In general Moroccan and Turkish elderly make less use of formal home care with two thirds of the diseased Moroccan elderly using only informal care. Reasons for non use of formal home care differ considerably among ethnic groups. Lack of familiarity with home care, and lack of knowledge how to access are the reasons most frequently mentioned. The multivariate adjusted analysis confirmed a significant role for gender, age and number of self-rated chronic conditions, self-rated health. Socio-economic factors did not show a significant role. Dutch language proficiency was the single, yet strong determinant. Controlling for the measured factors increased the role of Turkish and Moroccan background.

Conclusions: The use of home care strongly depends on need factors and Dutch language proficiency in a multi-ethnic elderly group. For Moroccan and Turkish immigrants, utilisation additionally depends on their ethnic background.

Introduction

Formal or so-called professional home care is a type of care which characterizes a modern, individualistic society. Various care functions which in the past were routinely performed by family members, neighbours, and e.g. members of the clergy, now have been transformed into a professional profile. Examples from such a societal transition of duties are the care for children if one of either parents falls ill or dies, and the care for the elderly with or without a disabling condition. In modern societies formal home care utilisation is strongly related to age and gender (as expression of need and of asymmetrical care roles respectively), with elderly and females utilising more. Family care still is present, but, in current language, case management usually rests with the formal care provider. In more traditional, collectivistic societies, responsibilities for home care still lay with the greater family and societal institutes such as the church, conventional called 'informal' home care.

As part of a study into the health care use of elderly immigrants in the Netherlands, we studied home care utilisation, both formal and informal. Immigrants in the Netherlands origin for the larger part from traditional collectivistic societies, with strong family ties. Now that the first wave of migrants become aged (in this paper conventionally defined as an age over 55 years), their need for home care increases as a natural consequence of ageing. However, they can not entirely depend on traditional resources: only part of the family actually lives in the same country; family members living at close distance usually are the children of the migrant. Even if children are present, they are not always available as care provider, as they work (most relevant in case of daughters as candidate informal caregiver), as they may have children themselves posing practical difficulties, and as children grown up in the Netherlands possibly do not share the traditional view on caring responsibilities.[1] In cases of undisputed need for home care, lack of informal solutions can only be compensated by an increased professional care if the migrant can find his/her way in this part of the health care system.

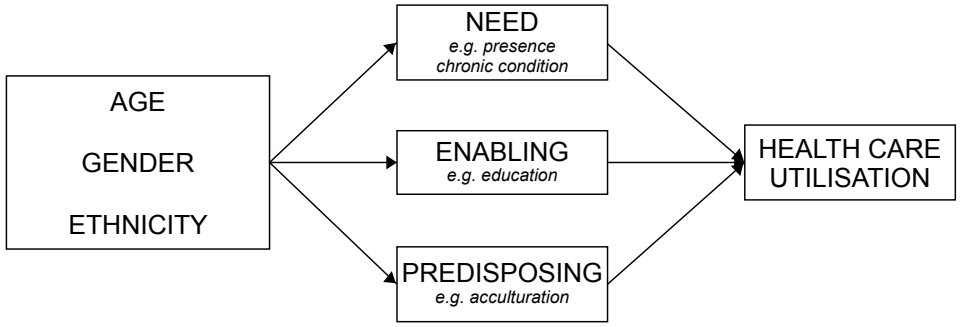
Our hypothesis was that ethnic inequalities exists in formal home care utilisation, which can be related to different *need* as migrants usually have more conditions requiring home care, and to different *demand* as a result of enabling (education) and predisposing (a.o. acculturation) factors (the Anderson health utilisation model).[2,3] We also expect that the actual utilisation of formal home care is dependent on the use of informal home care, which in turn relates to ethnic background as explained above.

Methods

Conceptual model of health care utilisation

We used Andersen's model as a framework to study home care utilisation which is illustrated in figure 1.

Figure 1: Adapted Andersen model



His model rests on three individual determinants of health care use, which we elaborate below illustrated by Dutch immigrant examples.

(1) *Need* refers to ill-health conditions or deficits in health status. Especially self-perceived health is relevant here, since it initiates the decision to seek care. Most elderly immigrants perceive their health worse then natives and they experience more limitations in Activities of Daily Living (ADL), pain chronic conditions and worse mental health.[4,5]

(2) *Enabling factors* reflect the economic means (e.g., income) and human capital (e.g., education, knowledge) which enable people to utilize health services. In this context a lower socioeconomic position implies less knowledge on available services, less financial resources, and less self-reliance. In the Netherlands, first generation immigrants from Turkey and Morocco are low educated and women often are illiterate. Turkish and Moroccan elderly often have been unemployed for a long time and consequently have low income. Compared to Turkish and Moroccan elderly, Surinamese and Antillean elderly are better off resulting in an intermediate social economic position.[6] Under the Dutch health insurance system, the great majority of immigrants - in particular the elderly - fall under the public compulsory scheme, which covers formal home care, but with income dependent copayment.

(3) *Predisposing factors*, the third determinant group, refers to the propensity of individuals to use services, including beliefs and attitudes regarding health and use of specific services. In the context of migrant's use of health services these attitudes primarily are a function of acculturation.[7] The general concept of acculturation, including acculturation in the domain of health care, is defined as 'those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural pattern of either or both groups'.[8] Since we focus on migrant use of health services, we added two complementary operationalisations of acculturation to the Andersen model, derived from Berry[9] and Ester[10] respectively. Berry articulates the process of any migrant's acculturation into two decisions. The first pertains to the decision whether one maintains his or her own cultural identity. The second one involves the decision whether to engage in relations (contact and participation) within the larger society. Both decisions can co-exist, and strongly relate to (acquired) language proficiency. Language proficiency proved to be a strong determinant of health care utilisation among elderly immigrants.[2] The gradual adaptation to modernity can be considered part of acculturation. 'Modernity' in Ester's view is the most fundamental feature of Western societies and is defined as the transition of an agricultural to an (post)industrial society characterized by individualisation, secularisation, pluralisation, emancipation and democratisation.[11,12] Most of these processes also apply to health care. The dominant migrant groups in the Netherlands show different patterns of modernisation according to their background and generation.[13,14]

Data source and population

We used data from the 'Social Position, Health and Well-being of Elderly Immigrants' survey, conducted in 2003 in the Netherlands.[15] Details on sampling strategy and data collection have been described before.[16,2] In short a stratified sample was drawn from 11 municipalities which had been selected to obtain a nationally representative sample. Ethnic background was established by country of birth, as documented in these population registers. The sample was stratified into sex and two age groups (55-64 years and 65 years and older) and equal numbers per stratum were randomly selected. A total sample of 3284 people (808 Turks; 455 Moroccans; 688 Surinamese, 636 Antilleans and 697 Dutch) aged 55 years and above was drawn from the municipal registers. Of the 3284 subjects sampled, 1503 completed the questionnaire. The response rates were amongst Turkish 43.6%, Moroccans 65.3%, Surinamese 48.7%, Antilleans 54.2% and amongst native Dutch 47.3%. Excluding those with incorrect home addresses (amongst Turkish 5.6%, Moroccans 2.9%, Surinamese 3.9%, Antilleans 7.1% and Dutch 3.7%), the reasons for non-response were the following: (1) respondents could not be reached during the fieldwork: amongst Turkish 35.0%, Moroccans 16.2%, Surinamese 21.1%, Antilleans 22.7% and amongst Dutch 10.9%; (2) language problems: amongst Turkish 3.5%, Moroccans 0.7%, Surinamese 0.4%, amongst Antillean and Dutch 0%; (3) some elderly considered themselves too ill: amongst Turkish 6.7%, Moroccans 3.5%, Surinamese 8.4%, Antilleans 6.9% and amongst Dutch 8.6%; (4) respondents refused participation: amongst Turkish 11.3%, Moroccans 13.8%, Surinamese 21.4%, Antilleans 16.2% and amongst Dutch 33.1%; and finally other specified reasons: amongst Turkish 0.5%, Moroccans 0.4% and amongst Surinamese, Antilleans and Dutch 0%.

Data collection method

The survey was translated into Turkish and Moroccan Arab and extensively tested in a pilot study. For the primary study 202 interviewers were trained: 61 native Dutch, 19 Antillean, 50 Moroccan, 27 Surinamese and 45 Turkish. Between April 2003 and December 2003, data

collection took place by trained interviewers from a similar ethnic background; they conducted structured face-to-face interviews at home. The respondents were approached personally on their home addresses for two reasons: (1) to enhance participation and explain any respondent's questions raised on the aims and procedures of the study, and (2) to avoid non response due to the fact that a secret telephone number is much more common among some ethnic groups are at a low respectively high level. For the approach of respondents interviewers were instructed to pay visits during daytime and evening to avoid work-related non-response. If the respondent was absent, the interviewer was instructed to re-visit the same address at least two times. All respondents received a 5,- Euro's gift certificate. Reluctance to participate was related to not being convinced of the usefulness, apparent oversampling of immigrant groups for other studies, and a changing societal context in the Netherlands by the time of the data collection which was clearly less tolerant towards immigrants.

Measurements

Utilisation of home care (both formal and informal) in the past 5 years (yes/no) was investigated. Informal care was defined as any structured care as provided by partner, family members including children, friends, neighbours and acquaintances. Three indicators of health status (need factors) were included: self-rated health measured by the single-item question 'In general would you describe your health as: excellent, very good, good, poor, very poor', subsequently dichotomised into very poor/poor and good/very good/excellent[17]; the number of self-reported chronic conditions (ranging from 0 to 11) from which the respondents suffered in the 12 months preceding the interview [checklist of conditions is part of the Dutch national health survey[18]; mental health as measured by the SF-12 Mental Component Summary (MCS), for details see Ware et al.[17]

Indicators of socio-economic position (enabling factors) were educational level and household income.[19] Educational level concerned the highest degree achieved (no education/primary education, lower secondary education, higher secondary education, and higher vocational college/university). Household income was adjusted for the number of persons in the household.

Acculturation (the added explanatory factor, derived from Berry and Ester) was operationalised into 5 domains: (1) mastery of Dutch language as a proxy for contact with native Dutch according to the model of Berry, (2) religiosity, (3) attitudes on care for family, (4) attitudes on male-female roles, and (5) attitudes on family values, all according to Ester.

Ad (1) Dutch language proficiency was evaluated among Turkish and Moroccan elderly by three questions: (1) when someone talks to you in Dutch, are you able to understand (yes often, yes sometimes, no); (2) do you have difficulty in speaking Dutch (yes often, yes sometimes, no); (3) when you read a Dutch paper or a letter do you have difficulty in understanding (yes often, yes sometimes, no). A summated score was calculated which was subsequently recoded in 3 categories indicating mastery of Dutch language (1) poor, (2) mediocre, (3) good. Dutch language proficiency was not measured directly among Dutch, nor among Surinam and Antillean elderly who fluently speak Dutch because of their colonial background. As a proxy we asked whether the last time you went to the GP you were able to understand fully the GP (yes/no). If no, proficiency was considered mediocre; if yes, good. Ad (2) Religiosity was measured by asking whether one considers oneself as belonging to a religion, and if yes, how frequently one attends religious meetings (every day, at least once a week, at least once a month, once or several times a year, almost never). Ad (3,4,5) Attitudes regarding care for family, male/female roles and family values were assessed by means of 14 propositions, e.g., children should take care of their parents when they are old, an education is more important for boys than for girls (agree, partly agree/partly disagree, do not agree). A summated score was calculated which was subsequently recoded in 3 categories indicating (1) traditional, (2) moderate traditional, or (3) modern attitudes on family care, male/female roles and family values.

Analysis

All analyses focussed on the comparison across the 5 ethnic groups, with the indigenous group as a reference. First we described socio-demographic and socio-economic status, level of acculturation, self-perceived health and GP care utilisation. Next we compared prevalence of home care use, according to age and sex. To analyse home care use according to need, we described formal and informal home care use among those with at least one chronic condition. Reasons for not using formal home care are separately described. To study the separate role of need, enabling and predisposing factors we evaluated the impact of these determinants on formal home care utilisation (yes/no), by multivariate logistic models. First, we showed crude OR's per ethnic group for the use of formal home care. Second, we adjusted for self-perceived health, age, sex and socio-economic status (need and enabling factors). Next, we investigated the additional role – if any - of acculturation (predisposing factor). If we had included all relevant variables and applied the correct model for mediation of the ethnic effect should it exist, one would expect no further role for the ethnic group variable. The analyses were performed using SPSS 13.0 for Windows. A two-sided p-value was considered a significant difference.

Results

Immigrant elderly, in particular Turkish and Moroccan, have a lower socio-economic position as indicated by their low educational and income level (see Table 1). There are also large differences in Dutch language proficiency: Surinamese and Antilleans are overall Dutch speaking while language proficiency among Turks and Moroccans ranges from mediocre to poor. Compared to the Dutch, immigrant elderly are more religious, particularly the Turkish and Moroccan group, and more often have a traditional attitude on family care, male/female roles and family values. Turkish, Moroccan and Surinamese elderly report more often poor health with all three indicators. GP services use among all immigrant groups is higher.

Table 1: Socio-demographic and socio-economic status, acculturation and, self-perceived health according to ethnic background in the Netherlands (2003).

	NETH (n=304)	TURK (n=307)	MOROC (n=284)	SURI (n=308)	ANTIL (n=300)	*p-value
Socio-demographics						0.904
Age (55-64y) (%)						
Men	47.1	51.3	43.8	45.0	48.6	
Women	47.3	49.3	51.8	50.5	51.9	
Socio-economic status						
No education (%)	17.3	70.5	94.0	37.2	39.0	<0.001
Primary education (%)	14.0	12.5	3.2	11.9	9.9	
Lower secondary education (%)	33.0	14.9	0.7	21.8	19.9	
Higher secondary education (%)	20.3	1.0	1.8	17.2	17.0	
Higher vocational college/university (%)	15.3	1.0	0.4	11.9	14.2	
Standardised income per month in €, mean (sd)	1226 (497)	708 (215)	571 (193)	952 (425)	967 (500)	<0.001
Acculturation						
Mastery of Dutch language (%)						<0.001
Poor	0.0	48.2	44.7	0.0	0.0	
Mediocre	1.3	48.5	49.6	2.4	1.6	
Good	98.7	3.3	5.6	97.6	98.4	
Religious (%)	47.2	97.7	99.6	90.5	88.3	<0.001
Attendance religious meetings (%)						<0.001
Every day	0.7	26.5	27.5	2.0	2.7	
At least once a week	14.5	23.8	39.8	29.7	26.3	
At least once a month	6.9	12.9	4.2	16.7	15.7	
Once or several times a year	10.6	15.6	6.3	21.9	22.3	
Almost never	14.5	18.9	21.8	20.3	21.3	
Attitudes on care for family (%)						<0.001
Traditional	3.6	40.7	55.9	12.1	21.5	
Moderate traditional	36.3	48.3	41.6	57.0	47.0	
Modern	60.1	10.9	2.5	30.9	31.5	
Attitudes on male-female roles (%)						<0.001
Traditional	13.9	47.4	45.4	13.7	8.1	
Moderate traditional	29.7	35.1	25.7	35.9	36.2	
Modern	56.4	17.5	28.9	50.3	55.7	
Attitudes on family values (%)						
Traditional	11.3	30.7	36.2	20.9	14.3	<0.001
Moderate traditional	61.6	58.1	63.1	65.9	70.4	
Modern	27.2	11.2	0.7	13.2	15.3	
Health status						
Self-rated chronic conditions, mean (sd)	1.7(1.6)	3.4 (2.0)	2.8 (1.8)	2.3 (1.8)	1.6 (1.4)	<0.001
MCS SF-12, mean (sd)	51.7 (11.4)	41.6 (11.6)	42.0 (10.0)	46.2 (12.9)	49.7 (11.1)	<0.001
Self-rated health (%)						<0.001
Excellent	2.0	0.0	0.0	0.8	6.2	
Very good	4.0	1.2	0.0	0.8	1.0	
Good	38.6	17.9	8.6	21.7	27.8	
Fair	43.6	48.8	60.4	48.8	59.8	
Poor	11.9	32.1	30.9	27.9	5.2	

* χ^2 test was performed

As expected, age determines the use of home care, as does gender. The effect of age and gender is less clear in Turkish immigrants (see Figure 2). In general Moroccan and Turkish elderly make little use of formal home care.

Figure 2: Prevalence of formal home care use among native Dutch and immigrant elderly according to age and sex, in percentages (n=1503)

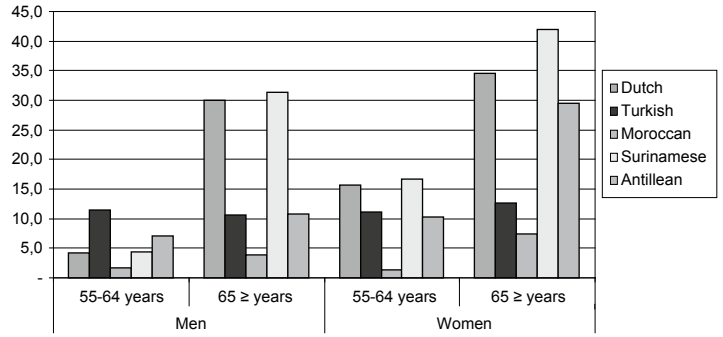
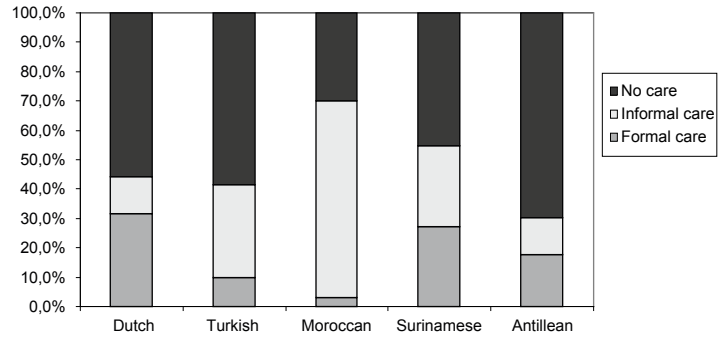


Figure 3: Prevalence of home care, informal care and no care use among native Dutch and immigrant elderly with one or more chronic conditions, in percentages (n= 1241)



The pattern of formal home care among those with one or more chronic condition (about 86% of the sample) is similar to that of the group as a whole (see Figure 2 & 3). However, the utilisation of informal home care is different, with two thirds of the diseased Moroccan elderly using informal care. Antilleans show the least use of any home care, with no use in almost 70% of cases.

As table 2 demonstrates, reasons for non use of formal home care differ considerably among ethnic groups, with the exception of the availability/provision of informal care which is relevant to all. Lack of familiarity with home care, and lack of knowledge how to access are the reasons most frequently mentioned by Turkish and Moroccan non-users.

Table 2: Reasons for not using formal home care according to ethnic background (percentage of no-users stating the reason, more than 1 reasons permitted) the Netherlands, 2003

	NETH (n=23)	TURK (n=39)	MOROC (n=144)	SURI (n=26)	ANTIL (n=16)
I am/was not familiar with it	0.0	41.0	21.5	3.8	6.3
I do/did not know how/where to ask for it	4.3	25.6	43.8	7.7	12.5
My family provided care	34.8	38.5	60.4	30.8	43.8
I expected language problems	0.0	7.7	10.4	0.0	0.0
I do/did not expect to be helped properly	0.0	0.0	9.7	0.0	0.0
It is expensive	0.0	7.7	9.0	3.8	0.0
I was not entitled to	0.0	2.6	0.7	11.5	6.3
I am on a waiting list	0.0	5.1	0.0	15.4	0.0
Other reasons	69.6	0.0	5.6	38.5	37.5

Language problems and low quality expectations were reported by Moroccan and Turkish elderly. For some elderly home care was reported to be too expensive. A high percentage of Dutch elderly reported ‘other reasons’ without specification.
The crude regression analysis (see Table 3) confirmed the ethnic differences in utilisation, with Moroccan elderly showing only 13% (7 % - 27%) of the indigenous utilisation level.

Table 3: Determinants of home care use, assessed by logistic regression (n=1076; crude and adjusted analysis)

Crude analysis (ethnic background only)	***Odds Ratio (95% confidence interval)***
- Dutch	1 (ref)
- Turkish	0.48(0.31-0.75)***
- Moroccan	0.13(0.07-0.27)***
- Antillean	0.61(0.40-0.93)*
- Surinamese	1.15(0.79-1.69)
Adjusted analysis	
Need	
Self-reported number of chronic conditions in respondent (cf. prespecified list; range 0 - 11)	1.32 (1.13-1.55)***
Self-rated general health (range: 1 to 5; 1=excellent)	1.77 (1.36-2.31)***
Self-rated mental health (range: 0 to 100; the higher the score the better the mental health)	1.00 (0.98-1.01)
Gender (male=1, female=0)	0.53 (0.36-0.78)***
Age (continuous in years)	1.09 (1.07-1.12)***
Enabling factor	
Educational level (no/primary education vs secondary and higher education)	1.41 (0.90-2.21)
Standardized income (continuous in Euros)	1.00 (1.00-1.01)
Acculturation (predisposing factor)	
Good Dutch language proficiency (no=0, yes=1)	2.49 (1.80-3.46)***
Modern attitudes on care for family	1.22 (0.91-1.65)
Modern attitudes on male-female roles	0.82 (0.62-1.09)
Modern attitudes on family values	1.20 (0.86-1.67)
Religiosity	1.07 (0.95-1.21)
Ethnicity	
- Dutch	1 (ref)
- Turkish	0.19 (0.05-0.68)**
- Moroccan	0.07 (0.02-0.29)***
- Antillean	0.67 (0.37-1.24)
- Surinamese	0.90 (0.52-1.58)

*p<0.05, **p<0.01, ***p<0.001

The multivariate adjusted analysis confirmed a significant role for the need factors such as number of self-rated chronic conditions (OR 1.32 per additional condition, translating in 32% extra use; CI 1.13-1.55), self-rated health (OR 1.77; CI 1.36-2.31), gender (OR 0.53; CI 0.36-0.78; female implies reduction to 53%), and age (OR 1.09; CI 1.07-1.12; 9% extra per year) respectively. Enabling factors did not show a significant role. Of all predisposing factors Dutch language proficiency was the single, yet strong determinant (OR 2.49; CI 1.80-3.46). Controlling for the measured factors as specified by our extended Anderson model, did increase rather than decrease the role of Turkish and Moroccan background (Turkish OR 0.19; CI 0.05-0.68; Moroccan OR 0.07; CI 0.02-0.29), and left the other ethnic impact essentially unaltered. No interaction effect of the presence of informal care and ethnicity was present, for women and men separately; a primary effect of ethnicity provided by far the best model.

Discussion

This comparative study among a large representative sample of the four largest elderly immigrant groups in the Netherlands and an indigenous references group shows that use of home care strongly depends on need factors and language proficiency. For Moroccan and Turkish immigrants, utilisation additionally depends on their ethnic background. This ethnic role surprisingly could not be further accounted for by specific factors of our model which was devised to detect ethnic-specific pathways of (non)utilisation. While the pattern of informal care use suggested a complementary effect to the use of formal care, this was not true in a statistical sense, perhaps because Surinamese elderly are both high users of formal and informal care. Unexpectedly, no use of any home care, despite the presence of one or more chronic conditions, is rather common among all ethnic groups with the exception of Moroccan elderly.

Health status (need factor) shows high explanatory power across all ethnic groups. Income and educational level, both enabling factors, provide no additional explanation. These factors are, however, indirectly related to different utilisation patterns *through* their effect on health. The effect of language competence apparently overrides effects of other enabling afactors.

Acculturation, the concept we introduced as an additional predisposing factor in this context, appeared only partially relevant. The instrumental role of language proficiency was remarkable: the ability of immigrant elderly to speak good Dutch language has shown to have large impact on ethnic differences in secondary and tertiary health care use.[2,20] No other aspects of acculturation beyond language proficiency, however, played a prominent role through the same mechanism mentioned with enabling factors. Our study reveals rather extreme inequalities among elderly immigrants in their use of home care, as defined by the Dutch health care system. For an international comparison of results we selected studies which within their national context could be interpreted as a comparable care facility.

In a study about ethnic differences of residents in a large sample of assisted living facilities in central Florida (US), Dietz & Wright reported obvious underrepresentation of ethnic minorities; they suggested a role for enabling factors (income).[21] Mui & Burnette examined factors associated with long-term care service use by African American, Hispanic and white elderly living in the community, applying a design which showed much resemblance to ours.[22] Need variables included, apart from age and gender, e.g. cognitive impairment and number of physical illnesses. Enabling factors included a.o. income and living arrangement. An extensive set of predisposing factors was included too, yet not ethnic-specific. Whites reported more use of in-home and nursing home services and ethnic minorities reported more informal home care. Need and enabling factors were the strongest predictors of nursing home use. Ethnicity remained a very strong predictor of nursing home use with both black and Hispanic elderly being less likely than whites to use these services. Wallace et al. examined the impact of demographic, social, environmental and health indicators on utilisation of home and community-based services among black and white female elderly.[23] Determinants used were gender, marital status, living arrangement, payment source, transportation capability, presence of health conditions and sensory impairment. Enabling and predisposing factors like environmental resources, previous health care experiences, living alone and being widowed were predictors of use. Specific need conditions were more often predictors for white than black elderly. Although the US are in many ways not comparable to the Netherland, e.g. the large differences in health insurance policies between the Netherlands and the US and the different immigration history of the populations studied, some mechanisms were comparable.

There are some limitations to our study and therefore cautious interpretation is required. First, this study is based on self-reports of health status and of health care use. Regarding health care use, a study by Reijneveld showed that self-reports of hospitalisation and physical therapy provide fairly valid estimations in cross-cultural research.[24] Regarding health status, however, verified medical diagnosis information was lacking.

Secondly, our ethnic coding could be challenged. We deliberately used recorded country of birth as indicator of immigrant background. As opposed to self-assessment this offers a double advantage: high reliability and lack of missing information. While it results in culturally homogenous groups for Moroccans and Turks, it covers relevant cultural differences in the Antillean and Surinamese group. The latter includes different groups such as Creole and Hindustani populations.

Thirdly, although language proficiency is a straightforward instrumental variable to explain a considerable amount of the disparities, the mechanisms behind it are unclear. Insufficient communication of need is a direct pathway, but language incompetence may also impair knowledge on health and health care services in the host country. We measured language proficiency among native Dutch, Surinamese and Antilleans with a proxy, namely whether they were able to understand their GP. We cannot exclude that with this proxy a broader concept of health literacy instead of only language proficiency was measured. The lack of explanatory power of the remaining acculturation factors does not exclude a role for specific factors. The availability of informal care showed no interaction with ethnic background but the lack of familiarity with home care, and lack of knowledge how to access were important reasons for Turkish and Moroccan elderly not to use formal home care. Supportive qualitative research should add to our quantitative results in order to understand the mechanisms better.[25, 26]

Finally, non-response rates may affect our results. The age/sex distributions in our samples are as expected due to the stratified sampling procedure. The most frequent reason for non-response is absence of the respondent at the address at the time of visit and to a lesser extent being ill and outright refusal. Non-response could affect disease prevalence in the responding group (lower), but it is unlikely that this will affect associations of determinants across groups, as the pattern of selection is similar across *all* groups. We are aware of two thorough studies on the effect of selective non-response. One study conducted by Statistics Netherlands, the organisation being responsible for national surveys, reported on to the presence of ethnic-related non-response in a key survey.[27] The approach rested on sophisticated weighting experiments, using personal administrative data. Statistics Netherlands reported grossly unaffected prevalences of intended key indicators (including subjective health). Moreover, their report showed that adjustment by weighting for ethnic-specific imbalance of determinants of those indicators, for which national numbers were known, yielded negligible effects on the

aggregate indicator score distribution. Apparently the association between key variables and determinants is the same among non-respondents and respondents. The second study is the Amsterdam Born Children and their Development-study on ethnicity related perinatal health.[28] This study was able to pursue an empirical approach of non-response effects: data on non-respondents (outcomes and determinants) could be retrieved anonymously from national registries. Again it was observed that the prevalence of outcomes and determinants (like e.g. education) were affected due to selective participation. However, associations and results from regression analysis for a number of known perinatal relations of social and medical determinants with perinatal health were not affected to any relevant degree.

Conclusion

Our methodological choice to extend the standard Anderson model with acculturation paid off: in the context of analysis of ethnic disparities in health care utilisation it provided an explanatory tool limited to the introduction of language competence as a key instrumental variable.

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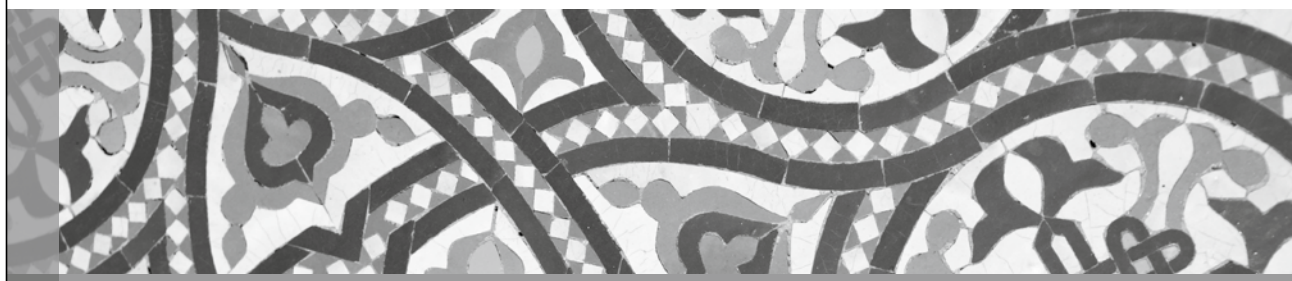

Discussion

CHAPTER 7

The topic of this thesis was the health and health care use of elderly immigrants.
The aim of this thesis was to describe health and health care use among immigrant and Dutch elderly, and to provide explanations for differences in inequalities observed. The explanatory strategy encompassed socio-economic pathways, and pathways through acculturation. Ethnic specific profiles of health and health care use were thus explored.

Ethnic differences in health
This study among four representative elderly immigrant groups in the Netherlands demonstrated large ethnic differences in chronic conditions, mental health problems, and limitations in activities in daily living (ADL), and instrumental activities in daily living (IADL). More specifically, a higher prevalence of diabetes mellitus, COPD and musculoskeletal disorders in immigrant elderly groups was observed. The prevalence of limitations, in the presence of an ill health condition, was higher in immigrant groups compared to native Dutch elderly. Overall, Turkish and Moroccan elderly had the worst health status, Antillean elderly were as healthy, or even healthier, than native Dutch elderly and Surinamese elderly were at an intermediate position.

Ethnic differences in health care utilization
We observed ethnic disparities in health care utilization. Use of General Practitioner (GP) services was higher among all immigrant groups, while use of physical therapy and home care was low to absent. Drugs utilization was lower in diabetic Turkish and Moroccan elderly as compared to the other immigrant groups. Prevalence of COPD was high among Turkish elderly, but again the related drug utilization of Turkish was relatively low. Unlike diabetes and COPD, drug utilization for musculoskeletal disorders was comparatively higher in most of the immigrant groups who reported this condition. The health care utilization pattern in Antilleans was somewhere in between the remaining three immigrant groups and the native Dutch group.
Relating the individual health and health care utilization data demonstrated a systematic and sizable underutilization of specialised health care services by Turkish and Moroccan elderly. Surinamese elderly also had more health problems than native Dutch but health care utilization matches better, whereas the Antillean elderly seem to be the healthiest group among all elderly with matching low health care utilization.

Acculturation
Acculturation, the concept we introduced as an additional factor to explain health and health care use, appeared relevant as explanatory concept. Three components of acculturation contributed most to the explanation of ethnic differences: good language proficiency, modern attitudes on male female roles, and manifest religiosity. The instrumental role of language proficiency was remarkable: the ability of immigrant elderly to speak Dutch properly has a large impact on ethnic differences in secondary and tertiary health care use; e.g. the use of home care, which is typical for chronic conditions, increases with 150% if an immigrant is proficient in Dutch.

Our results versus the literature

~ Health

Literature about ethnicity in relation to *health* reports immigrants to experience more health problems than native Dutch.[1-4] Our study confirms this finding for Turkish, Moroccan and Surinamese elderly but not for Antillean elderly. Regarding mental health, another study among Turkish and Moroccan elderly found more depression in Turkish and Moroccan elderly as compared to Dutch elderly.[5] Poort et al. investigated Turkish and Moroccan elderly in Amsterdam and reported more limitation in activities in daily living among these immigrants as compared to the Dutch elderly; from Denmark comparable results among Turkish immigrants were reported.[6]

From our findings we conclude that a statement like 'health of immigrants is worse than native Dutch' is unjustified. Most important, this statement does not apply to Antillean elderly. Secondly, when morbidity patterns are compared with mortality patterns of elderly immigrants, all first generation immigrant groups show low age-specific mortality rates at higher age.[7]

~ Health care utilization

Our study showed GP service use to be higher among all immigrant groups, while use of outpatient specialist, physical therapy and home care was low to absent. Antilleans showed a pattern in between the remaining three immigrant groups and the indigenous group. Especially among Turkish and Moroccan elderly with DM and COPD drug utilization was relatively low. These (unadjusted) differences were highly similar to those observed in previous studies in the Netherlands.[8-10] In particular our study confirmed the higher than expected use of GP services, and the simultaneous lower use of more specialized services.[11]

The results of our study suggest, and to the extent information available confirm that underuse rather than overuse is the characteristic pattern for elderly immigrant groups in the Netherlands.

Explanations - Health

~ Socioeconomic status

Socio-economic status (SES), especially educational attainment level played an important explanatory role in observed health differences between ethnic groups. While this observation confirms results from mainstream research in this area, our study showed that this explanatory factor is a necessary, yet not sufficient, explanatory factor in this context: even after taking full SES into account, ethnic disparities in health remain.

The effect of SES has been reported not to be equivalent across all ethnic groups[12], as we observed in the outcome differences between Surinamese and Antillean elderly. Apparently, SES combines in a complex way with ethnicity when influencing health. For further exploration of this observation we introduced two new elements, acculturation and living in a deprived neighbourhood as discussed below.

~ Acculturation

The first important element is acculturation. We found that more elderly are acculturated, the healthier they are. Comparison with other studies for the additional health-related role of acculturation is difficult. Most research on the relationship between acculturation and health is in the field of mental health and is carried out in the framework of stress theories[13-16], assuming ill-mental health arises from acculturative stress. We think the stress concept can be considered in this context, be it in a more specific way. Acute stress from migration is in our context unlikely as our study population lives in the Netherlands for a long time already. Stress could, however, be induced by the latent wish to remigrate which can not be satisfied because of children and grandchildren living permanently in the Netherlands. The changing social environment, in particular in the larger cities, regarding acceptance of immigrants, especially those dependent on social security, could be another source of stress. As we aimed at a general explanatory framework suitable for both mental and physical morbidity, we did not include a specific stress-concept in our explanatory model.

For the role of acculturation in explaining etnicity-related physical health differences, other mechanisms than stress have been suggested. Acculturation may change behaviours relevant for physical health (in either direction: healthy or unhealthy) and may increase knowledge which is generally assumed to benefit the health of the immigrant.[17-23]

Existing literature on the above issues is difficult to compare as acculturation is usually represented by only one indicator or a few survey questions. While attractive from a feasibility point of view, single indices are unidimensional whereas the concept is clearly multidimensional.[e.g. 24,25]

In the context of acculturation and physical health the notion of convergence and divergence is often used. It refers to the degree to which a migrant adapts to (or not) health-related behavior of the native population, be it healthy or unhealthy (e.g. smoking).

While valuable in the short run, such a unidimensional approach of acculturation is descriptive only and may easily obscure the impact of several underlying social and psychological factors.[26]

An example of a unidimensional indicator which may be flawed is duration of stay in the host country. If one would observe worse health with longer duration of stay (as indicator of acculturation; this observation is known as the immigrant paradox[27,28]), one could conclude easily that more acculturated immigrants have a bad health. However, acculturation is not necessarily higher with increased stay (as we also observed in our study). Hence this interpretation is false, and actually limits the use of duration of stay as single indicator in this context.

Recently more attention has been given to the multidimensional concept acculturation.[29,30] The multi-dimensional instruments we aim at so far have been primarily developed by cross cultural psychologists, while research on acculturation and physical health is usually conducted by epidemiologists. We tried to capture this broader concept rather than focussing on convergence/divergence alone.

~ Deprived neighbourhood

In the previous section we discussed the rationale to add acculturation to the standard set of explanatory factors, SES in particular. A second additional factor we introduced was living in a disadvantaged neighbourhood. There are multiple pathways through which living in a deprived

neighbourhood adversely affects health. For example, concentration of disadvantage may lead to elevated levels of chronic and acute stressors at the individual, household and neighbourhood level and conditions created by disadvantage make it more difficult for residents to adhere to good health practices. Good examples are difficult to find. Generally the lack of recreational facilities limits leisure time physical exercise.

The role of community and neighbourhood infrastructure in deprived areas may affect interpersonal relationships, both adversely and positively. For example, in a study examining the associations between social characteristics of individuals and neighbourhoods and physical activity, results showed that the extent to which women reported participating in both informal and more structured social activities - was positively associated with the likelihood of women engaging in any leisure-time physical activity, walking, and walking in their own neighbourhood[31]. This mechanism fits to the observations in the few studies addressing the individual-level social participation as a predictor of physical activity.[32-34] In another study on contextual influences on children's mental health and school performance, results showed that individual socioeconomic disadvantage should be separated from aggregate effects of the living environment: children living in recent immigrant families showed compartively lower levels of emotional–behavioral problems and higher levels of school performance. Living in a neighbourhood characterized by higher concentration of immigrants was associated with lower levels of emotional–behavioral problems among children living in immigrant families; the reverse was true for children living in nonimmigrant families. This suggests that the balance of immigrants and nonimmigrants in neighbourhoods may have both positive (for immigrants) and negative (for nonimmigrants) health consequences for residents.[35]

Explanations - Health care utilization

Health status showed high explanatory power for all types of utilization across all ethnic groups. Surprisingly, income and educational level provided no additional explanation. Socioeconomic factors apparently seem to be related to different utilization patterns through their effect on health, not directly, after ill health has emerged. Acculturation appeared partly relevant, with a key instrumental role of language proficiency. For Moroccan and Turkish immigrants, home care utilization still additionally depends strongly on their ethnic background. Results from the United States[36-38] showed health status, income and ethnic background to be important determinants of home care. The role of income is substantial here, which is not surprising in view of the rather extreme differences in insurance coverage.

Regarding drug utilization our results partly confirmed similar results in an Amsterdam sample of elderly immigrants. Our study adds the significant contribution of acculturation, especially language proficiency, to drugs use. Again comparison with other continental studies is limited since ours is one of the first European studies focusing on disease specific drugs use in an ethnic diverse elderly population. The lower rate of drugs use among immigrant elderly without mastery of the native language is consistent with results from similar studies in the US among non-native language speaking immigrant groups.[39-42]

Summary of explanatory findings

We propose the following interpretation of our results on health and health care utilization. First generation labour immigrants are a positive selection of the target population in terms of health. First generation immigrants from the former colonies, in search of educational opportunities, came from higher socioeconomic strata and also represented a positive selection, most likely also in terms of health. We consider both as 'healthy migrants'.

While the starting position regarding health of the various Dutch immigrant groups was more or less the same, their development during their stay in the Netherlands diverged. Development of Turkish and Moroccan first generation immigrants stagnated in terms of socioeconomic position and acculturation; the morbidity level of primarily non-lethal diseases in these two subpopulations was higher than in other ethnic groups. The development Surinamese and Antilleans progressed, and their socioeconomic and acculturation level increased resulting - as we believe - in a morbidity pattern comparable to the Dutch. Health of Antilleans was even better. Health care utilization shows a distinct pattern. GP use was universal, and higher among the unhealthiest groups. Specific care, however, lags behind in particular if one takes their need (presence of disease) into account.

Methods

Below we discuss four methodological choices in our studies regarding the health indicators, the acculturation concept, the reliance on self-report information, and the cross-sectional design.

Health indicators

Health status was decribed by four indicators: chronic conditions, self-rated health, limitations in ADL and iADL and mental health. In particular the chronic conditions depend on self-report, and are GP-service diseases. We are aware that two disease groups are not or partially represented.

First, we did not include acute health problems (e.g. injuries): we expect emergency care to depend less on the initiative and background characteristics of patients, but primarily on need; including this health problem would also, in a technical sense, require another design.

Second, in view of the reserach population, the neurological component of mental health (in particular dementia) was not specifically addressed; the self report design of this study limits the determination if this type of morbidity.

Acculturation

Generally our multidimensional approach of acculturation proved valuable in this context. As pointed out earlier, recent research into ethnicity-related health tends to favour this approach. We are aware that still some distinct specific features were uncovered. Health (il)literacy in particular could be regarded as part of acculturation, and is not addressed in the instruments we used. Another point is a 'one size fits all' approach characterizing all immigrants equally - regardless of the type of migrant, the countries of origin and settlement, and the ethnic group in question. Many approaches exist to conceptualize acculturation. For instance, Berry uses

terms such as acculturation strategies, implying that individual differences in acculturation outcomes are the result of specific choices made by immigrants. Although migrants likely are at choice regarding some aspects of their acculturation, other aspects are constrained by demographic or contextual factors. A more balanced approach - based on Berry's model but adjusting for the many variations among migrants and among their circumstances - may have more explanatory power and broader applicability than a 'one size fits all' perspective.[50] To some extent we already did by including neighbourhood characteristics in our model.

Although our approach tried to capture several aspects of language competence, one may consider elaboration of the concept in view of its profound impact on both health and health care use. For instance, one could try to capture the pathways of acquiring health 'messages' in daily life (written, oral, television, new media, etc). Also one should wish to separate its effect on health and health care (utilization). From reseach on compliance we know that some immigrant groups fail to comply with therapy instructions (see e.g 51). We adhered to the conventional strategy of measuring acculturation by survey instruments. We accepted the inevitable potential of distorsion by this method.

Reliance on self-reported survey information

Where language and culture are the focus of our study, the use of a survey-based design and the choice of the instruments are of key importance.[43,44] We included, whenever possible, instruments translated (sometimes adapted) and used among these groups in previous research. Nevertheless, issues of validaity remain. The perception of (own) health between the ethnic groups is strongly influenced by socio–cultural values and norms.[45] Two identical responses on a questionnaire may therefore actually represent different health states.

This cultural dependency was demonstrated in research on the validity of a single-item question on self-rated health status in first generation Turkish and Moroccan elderly versus the native Dutch elderly.[46] In this paper the authors suggested that the meaning attached to the studied single-item question - which was also part of our study - differs between the ethnic groups. This observation suggests not to rely on single-item questions to rate health status in research among immigrants.

We relied entirely on self report. For instance, chronic conditions were measured by the Dutch Health Survey asking elderly from which they suffered in the 12 months preceding the interview: diabetes, heart disease, hypertension, cancer, stroke, migraine, asthma, arthritis, back complaints, stomach ulcers, other chronic conditions. This design may induce recall bias and bias due to social desirability of respons.

As always memory effects need to be considered; we assumed no ethnic differences in this regard. Kriegsman et al. and of Hughes et al. in our view provide sufficient evidence that bias if present is limited.[47,48] Elderly are inclined to rate their health better than objectively justified, but again we assume this mechanism to be applicable to all groups.[49]

A disadvantage of asking the prevalence of a condition is that it disregards the severity of the reported chronic diseases. Future research should preferably connect medical and pharmaceutical registry data to data sources like ours.

Cross sectional design

Our study essentially addressed a complex longitudinal process through a cross sectional design. Our study model defined determinants and mediating variables relevant from birth (gender, age) and from the time of immigration onwards (acculturation). Outcomes were defined within the timeframe of the last 5 year (homecare) or at a shorter timespan. We aimed at a causal analytical approach - within the limits given - through two assumptions. First we assumed that information on past events was provided unbiased (with regard to our study goals). While memory effects can not be excluded we judge it unlikely that specific relations are distorted in a predictable way such as language competence being reported more accurately if one's health is better or worse. Second, for some variables we defined a sequence of effects through our model even when the actual information was collected cross-sectionally. Here we have to accept the potential of reverse causality in case an association found, or that differences already existed at onset, rather than that they emerged over time. For instance, eduaction and language competence: achieved educational level may have resulted from better language competence, but also educational level at immigration may determine the acquisition of the host language. This uncertainty is known from the discussion on the direction of causality in case of SES and health (selection vs. causation).

Finally a cross-sectional study is susceptible to bias through (1) loss to selective remigration (2) loss to selective mortality, although the latter selection bias most likely is ignorable (see before).

Future perspective

Our descriptive study provides pieces of evidence which could be useful in health policy.

A general focus on health care provision rather than on risks for health per se seems justified.

To attain equal access and appropriate use will require active educational efforts in case of imigrants with insufficient language competences. We cannot trust on the principal of self-reliance for which language skills and health literacy and familiarity with the Dutch health care system are a precondition. If such competences are present - as in the Antillean ethnic group - the goals of equal access for equal needs and appropriate use are within reach.

Where such compentences are absent, we define a role for society and health policymakers in their enhancement.

As a group the elderly immigrants are growing in size, especially in the larger cities. They deserve special attention as the assumption of presence of these competences is not self-evident: the duration of stay is not a guarantee in this regard. A one-size-fits all approach is not recommended since our study proved that immigrant groups are not the same regarding health and health care utilization.

We foresee ongoing socio-demographic changes will intensify this responsibility. The assumption that informal care through the family will remain a substantive part of care for the traditional immigrants coming from collectivistic societies may be wrong. Here, we expect acculturation of second and higher generations gradually will have an adverse effect on the willingness and opportunities to fulfill care taks.

The knowledge and experience with past immigrants should also add to improved strategies regarding health policy for new immigrants.

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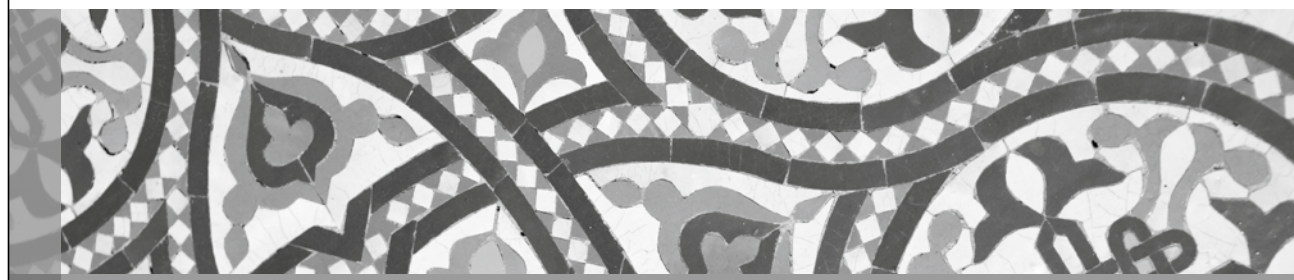


Summary

Ethnic differences in health and health care use are observed in studies among the general population. Immigrant elderly are a growing group in the Netherlands but we have only little knowledge about their health and health care use. In this thesis we provided insight in the health and health care use of the four largest immigrant groups who have now reached old age. We compared Turkish, Moroccan, Surinamese and Antillean elderly to Dutch elderly with regard to health (problems) and with regard to health care utilization. Then we provided explanations for differences or inequalities observed. The explanatory strategy encompassed socio-economic and acculturation pathways. It was explored whether ethnic specific profiles of health/health care use exist, which perhaps could be related to these pathways. The following specific questions were addressed:

Ethnic differences in health

1. What is the prevalence of chronic diseases and limitations in activities in daily living and instrumental activities in daily living among the elderly groups? How can these differences be explained? (Chapter 2)
2. To what extent do differences in functional limitations exist amongst the elderly groups, and which background factors are most responsible for different limitation patterns observed (if any)? (Chapter 3)

Ethnic differences in health care use

3. To what extent utilization differences exist among the elderly groups and are explained by health status and by socio-economic factors, and are remaining differences further explained by acculturation and ethnic background? (Chapter 4)
4. To what extent does ethnicity related variation exist in the use of prescribed drugs, distinguishing between underutilization in diseased subjects and overutilization in healthy persons? (Chapter 5)
5. Do ethnic inequalities exist in formal home care utilization, and, if so, do they relate to different needs and/or to different demands? (Chapter 6).

Five participant samples were selected from the municipal registry system of 11 cities based on country of birth data. The study included 304 native Dutch, 307 Turkish, 284 Moroccan, 308 Surinamese and 300 Antillean elderly in the ages 55 years and older. The data in this study were all collected by survey methods in face-to-face interviews, carried out by bilingual interviewers matched on gender and ethnicity.

Part 1 of this thesis described the results of the studies on the health status and functional limitations as well as the associations with socioeconomic status (SES), acculturation and living in deprived neighbourhoods. In **chapter 2** the prevalence of chronic diseases, limitations in mobility, personal care and instrumental activities of daily living, and mental health and the association with SES, acculturation and living in a deprived neighbourhood were described. SES was measured by educational level and household income. The general concept of acculturation was defined as ‘those phenomena which result when groups of individuals

having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural pattern of either or both groups'. We defined indicators of acculturation and conceptualised these into 5 domains and measured accordingly: (1) mastery of Dutch language, (2) religiosity, (3) attitudes on care for family, (4) attitudes on male-female role and (5) attitudes on family values. Deprived neighbourhood was defined on the basis of postal codes following the governmental descision of May 2007. Our results illustrated that Antillean elderly were by far the healthiest, directly followed by the Dutch elderly. Turkish and Moroccan were the unhealthiest elderly; prevelance of chronic and mental diseases and limitations were much higher than in the other groups. Surinamese had a position in between. A higher socioeconomic status and a better acculturation were associated with less health problems. Living in a deprived neighbourhood had an additional negative effect on especially physical health. Among Turkish and Moroccan elderly, ethnic background also played a negative role in health. This study proved clear ethnic health differences and that there is not a single type of immigrant elderly. Especially Turkish and Morocaan elderly are a group at risk. Social and contextual mechanisms play an important role in the explanation of health differences. Health care providers have to prepare for the increase of the number of immigrant elderly and for those who are more at risk of multiple health problems.

In **chapter 3**, the presence of ethnicity related differences in functional limitations (limitations in activities in daily living (ADL) and limitations in instrumental activities of daily living (IADL)) were described and their associations with SES and acculturation. Turkish, Moroccan and Surinamese elderly *without* chronic conditions had more physical limitations, limitations in mobility and in IADL than native Dutch and Antillean elderly. Turkish and Moroccan elderly *with* a chronic condition, also had more physical and mobility limitations as compared to other groups. Ethnic disparities in ADL and IADL were primarily explained by differences in mental health and in some limitations by language proficiency. Given the uniform effect of mental health on limitations, it is important for health care providers to focus on this health aspect of immigrant population.

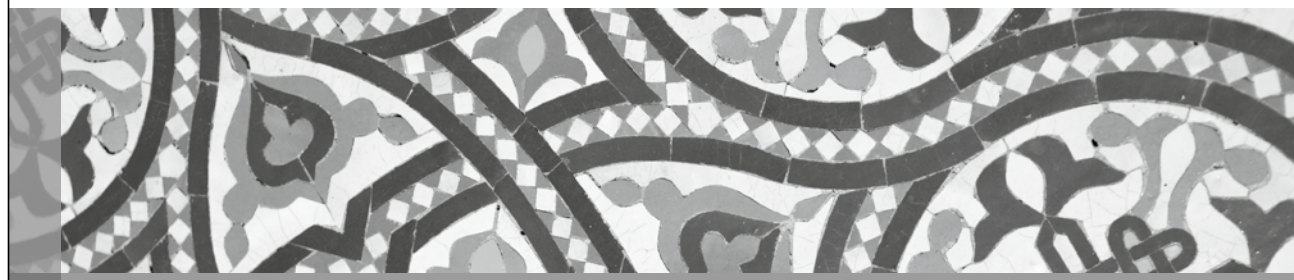
Part 2 of this thesis addressed ethnic differences in health care utilization. In **chapter 4** we described to what extent utilization differences between elderly among the four largest immigrant groups in the Netherlands and native elderly are explained by health status and by socio-economic factors, and whether remaining differences are further explained by acculturation and ethnic background. We used Andersen's behavioural model as a framework to study health services utilization. The model structure rests on three individual determinants of health care use: need, enabaling and predisposing factors. We found that use of GP services was higher among all immigrant groups, while use of physical therapy and home care was low to absent. Antilleans showed a pattern in between the remaining three immigrant groups and the native Dutch group. Health status (need factor) showed high explanatory power for all types of utilization across all ethnic groups; however, income and educational level, both enabling factors, provided no additional explanation. These factors apparently are indirectly related to different utilization patterns through their effect on health. Acculturation, the concept we introduced as an additional predisposing factor in this context, appeared partly relevant. The instrumental role of language proficiency was remarkable: the ability of immigrant elderly to speak good Dutch had large impact on ethnic differences in secondary and tertiary health care use; e.g. the use of home care, which is typical for chronic conditions, increased with 150% if proficient. No other aspects of acculturation beyond language proficiency played a prominent role. The resulting pattern of systematic and sizable underutilization is a challenge for health care providers and policy makers. Non-Dutch speaking patients should definitively be recognized as a high-risk group. Generally, intervention targets are present at both sides: new comers should be offered facilities to learn and improve language skills, while first generation elderly immigrants primarily rely on peer educators.

In **chapter 5** we described ethnicity related variation in the utilization of prescribed drugs, focussing on underutilization in diseased subjects as being different from overutilization in healthy persons distinguishing between mental and physical morbidity/drugs. We used Andersen's behavioural model as a framework to study drugs utilization. The augmented Andersen model proved useful in explaining general and disease-specific patterns. Foremost, the prevalence of chronic diseases for which drug treatment is available was generally higher in immigrants and this health status factor (*need*) primarily explained ethnicity related variation. So-called *enabling* factors, in particular education and income, did not add to the explanation of drugs use. Acculturation as *predisposing* factor, however, was effective in explaining intergroup variation. Three components of acculturation contributed to drug use: good language proficiency, modern attitudes on male female roles and religiosity. From the results of specific diseases it could be deduced that language proficiency primarily reduced the observed underutilization of drugs among ethnic groups. Apparently, being able to communicate properly with the doctor enhances the likelihood of patients to get drug therapy. In conclusion health (problems) and acculturation were the strongest determinants for drugs utilization among elderly immigrants. Significant drugs underutilization existed among immigrants with diabetes and musculoskeletal disorders.

Chapter 6 described the results on the home care use of elderly immigrants. This study assessed whether differences in home care use between immigrant and Dutch elderly are explained by health status, socio-economic status, acculturation and ethnic background. Again whe used the Andersen model to explain home care utilization. In general Moroccan and Turkish elderly made less use of formal home care with two thirds of the diseased Moroccan elderly using only informal care. Reasons for non use of formal home care differed considerably among ethnic groups. Lack of familiarity with home care, and lack of knowledge how to access were the reasons most frequently mentioned. Health problems were an important determinant, socio-economic factors not. Dutch language proficiency as indicator of acculturation was a strong determinant. Controlling for the measured factors increased the role of Turkish and Moroccan background. In conclusion the use of home care strongly depended on health factors and Dutch language proficiency in a multi-ethnic elderly group. For Moroccan and Turkish immigrants, utilization additionally depends on their ethnic background.

In **chapter 7** the observed findings and associations were discussed. From our findings we concluded that a statement like 'health of immigrants is worse than native Dutch' is unjustified since this statement certainly did not apply to Antillean elderly. Secondly, when morbidity patterns were compared with mortality patterns of elderly immigrants, all first generation immigrant groups showed low age-specific mortality rates at higher age. Third, the results of our study suggested, and to the extent information available, confirmed that underuse rather than overuse was the characteristic pattern for elderly immigrant groups in the Netherlands. The effect of SES was not equivalent across all ethnic groups. Apparently, SES combines in a complex way with ethnicity when influencing health. For further exploration, we introduced two new elements, acculturation and living in a deprived neighbourhood. Acculturation, the concept we introduced as an additional factor to explain health and health care use, appeared relevant as explanatory concept. Three components of acculturation contributed most to the explanation of ethnic differences: good language proficiency, modern attitudes on male female roles, and manifest religiosity. Generally our multidimensional approach of acculturation proved valuable in this context. Our descriptive study provided pieces of evidence which could be useful in health policy.

A general focus on health care provision rather than on risks for health per se seems justified. Equal access and appropriate use will require active educational efforts in case of imigrants with insufficient language competences. We cannot trust on the principal of self-reliance for which language skills and health literacy and familiarity with the Dutch health care system are a precondition.



Samenvatting

Etnische verschillen in gezondheid en in het gebruik van gezondheidszorg worden in verschillende studies onder de algemene bevolking waargenomen. De groep van oudere immigranten groeit in Nederland, maar wij weten weinig over hun gezondheid en hun gebruik van gezondheidszorg. In dit proefschrift brachten wij de gezondheid en het gebruik van gezondheidszorg van de vier grootste immigrantengroepen in beeld, die nu hun oude dag hebben bereikt. Wij vergeleken Turkse, Marokkaanse, Surinaamse en Antilliaanse ouderen met Nederlandse ouderen, met betrekking tot gezondheid (problemen) en met betrekking tot het gebruik van gezondheidszorg. Daarna gaven wij verklaringen voor waargenomen verschillen of ongelijkheden. De verklarende strategie omvatte sociaal-economische factoren en acculturatie. We onderzochten of etnisch specifieke profielen van gezondheid en van gezondheidszorggebruik bestaan, die wellicht aan de genoemde factoren konden worden gerelateerd. De volgende specifieke vragen werden beantwoord:

Etnische verschillen in gezondheid

1. Wat is de prevalentie van chronische ziekten en beperkingen in activiteiten in het dagelijkse leven, en beperkingen in de instrumentale activiteiten in dagelijkse het leven onder de groep ouderen? Hoe kunnen deze verschillen worden verklaard? (Hoofdstuk 2)
2. In welke mate bestaan verschillen in functionele beperkingen onder de groep ouderen, en welke achtergrondfactoren zijn verantwoordelijk voor de verschillende waargenomen patronen van beperkingen (als deze er zijn)? (Hoofdstuk 3)

Etnische verschillen in gebruik van gezondheidszorg

3. In welke mate bestaan verschillen in zorggebruik tussen de groepen ouderen en worden deze door gezondheidsstatus en door sociaal-economische factoren verklaard, en worden deze nader verklaard door acculturatie en etnische achtergrond? (Hoofdstuk 4)
4. In welke mate bestaat etniciteit gerelateerde variatie in het gebruik van voorgeschreven medicatie, met daarin het onderscheid tussen ondergebruik bij zieken en overgebruik bij gezonde personen? (Hoofdstuk 5)
5. Bestaan er etnische ongelijkheden in het formele gebruik van de thuiszorg, en als deze er zijn, hebben zij dan betrekking op verschillende behoeften en/of op verschillende eisen? (Hoofdstuk 6).

Er werden steekproeven getrokken uit gemeentelijke registratiesystemen van 11 steden, waarbij de selectie van de vijf groepen werd gebaseerd op het geboorteland. De studie omvatte 304 Nederlandse, 307 Turkse, 284 Marokkaanse, 308 Surinaamse en 300 Antilliaanse ouderen, in de leeftijden 55 jaar en ouder. De gegevens in deze studie werden verzameld via face-to-face interviews door tweetalige, op geslacht en etniciteit gematchte, interviewers.

Deel 1 van deze thesis beschreef de resultaten van de studies over de gezondheidsstatus en de functionele beperkingen, evenals de associaties met sociaal-economische status (SES), acculturatie en het leven in een achterstandswijk. In **hoofdstuk 2** werd de prevalentie van chronische ziekten, beperkingen bij mobiliteit, persoonlijke verzorging en instrumentale

activiteiten in het dagelijkse leven en geestelijke gezondheid beschreven. Daarnaast werden de associaties met SES, acculturatie en het wonen in een achterstandswijk beschreven. SES werd gemeten door het onderwijsniveau en het huishoudensinkomen. Het algemene concept van acculturatie werd gedefinieerd als: 'those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural pattern of either or both groups'.
We definieerden indicatoren van acculturatie en conceptualiseerden dienovereenkomstig vijf domeinen en maten: (1) beheersing van de Nederlandse taal, (2) religiositeit, (3) attituden op zorg voor familie, (4) attituden op de man-vrouw verhoudingen en (5) attituden op familiewaarden. Op basis van postcodes [de lijst van 40 Prachtwijken na het regeringsbesluit van mei 2007] werden achterstandswijken bepaald. Onze resultaten illustreerden dat Antilliaanse ouderen veruit het gezondst waren, direct gevolgd door de Nederlandse ouderen. Turkse en Marokkaanse ouderen waren het meest ongezond; de prevalentie van chronische en geestelijke ziekten en beperkingen was veel hoger dan in de andere groepen. De Surinaamse ouderen namen een tussenpositie in. Een betere sociaal-economische status en meer acculturatie werden geassocieerd met minder gezondheidsproblemen. Het leven in een achterstandswijk had een extra negatief effect op vooral de fysieke gezondheid. Bij Turkse en Marokkaanse ouderen speelde de etnische achtergrond ook een negatieve rol in gezondheid. Deze studie bewees duidelijke etnische gezondheidsverschillen en dat er geen sprake is van dè oudere immigrant. Vooral Turkse en Marokkaanse ouderen vormen een risicogroep. De sociale en contextuele mechanismen spelen een belangrijke rol in de verklaring van de gezondheidsverschillen. De gezondheidszorg moet zich voorbereiden op een toename van het aantal oudere immigranten met vaak een meervoudige gezondheidsproblematiek.

In **hoofdstuk 3** beschreven we de aanwezigheid van etniciteit gerelateerde verschillen in functionele beperkingen (beperkingen in activiteiten in het dagelijkse leven (ADL) en beperkingen in instrumentale activiteiten in het dagelijkse leven (IADL)) en associaties met SES en acculturatie. Turkse, Marokkaanse en Surinaamse ouderen zonder chronische condities hadden meer fysieke beperkingen, beperkingen in mobiliteit en in IADL dan Nederlandse en Antilliaanse ouderen. Turkse en Marokkaanse ouderen met een chronische conditie hadden ook meer fysieke en mobiliteitsbeperkingen in vergelijking met de andere groepen. De etnische ongelijkheden in ADL en IADL werden hoofdzakelijk verklaard door verschillen in geestelijke gezondheid en in sommige beperkingen door taalvaardigheid. Gezien het eenduidige effect van geestelijke gezondheid op beperkingen, is het belangrijk voor de gezondheidszorg om zich te concentreren op dit gezondheidsaspect van immigranten.

Deel 2 van deze thesis richtte zich op etnische verschillen in gebruik van gezondheidszorg. In **hoofdstuk 4** beschreven wij in welke mate de verschillen in zorggebruik tussen de ouderen uit de vier grootste immigrantengroepen in Nederland en de autochtone ouderen, door hun gezondheidsstatus en door sociaal-economische factoren, worden verklaard. En of de verschillen verder door acculturatie en etnische achtergrond worden verklaard. Om het gebruik van gezondheidszorg te bestuderen gebruikten wij het gedragsmodel van Andersen.

Dit model is gebaseerd op drie individuele determinanten van gebruik van gezondheidszorg: *need* factoren die de behoefte aan zorg reflecteren, *enabaling* factoren die de toegang tot zorg vergemakkelijken en *predisposing* factoren die persoonlijke kenmerken betreffen die vooraf bepalen of iemand gebruik maakt van de zorg. Wij vonden dat het gebruik van huisartsenzorg hoger was onder alle immigrantengroepen, terwijl het gebruik van fysiotherapie en thuiszorg zeer laag tot afwezig was. Antillianen namen tussen de drie andere immigrantengroepen en de Nederlandse groep, qua zorggebruik een tussenpositie in. Gezondheidsstatus (*need*) toonde een hoge verklaringskracht voor alle typen van zorggebruik bij alle etnische groepen. Het inkomens- en het onderwijsniveau, allebei *enabling* factoren, boden geen extra verklaring. Deze factoren zijn blijkbaar door hun effect op de gezondheid indirect gerelateerd aan verschillende patronen van zorggebruik. Acculturatie, het concept dat wij als een *predisposing* factor in deze context introduceerden, leek gedeeltelijk relevant. De instrumentele rol van taalvaardigheid was opmerkelijk. De Nederlandse taalvaardigheid van oudere immigranten had grote invloed op etnische verschillen in het secundaire en tertiaire gebruik van gezondheidszorg. Het gebruik van thuiszorg, veelvoorkomend bij chronische condities, steeg met 150% bij een goede Nederlandse taalvaardigheid. Naast taalvaardigheid speelden geen andere aspecten van acculturatie een prominente rol. Het resulterende patroon van systematisch en aanzienlijk ondergebruik van gezondheidszorg is een uitdaging voor de gezondheidszorg en haar beleidsmakers. Niet-Nederlandssprekende patiënten dienen beschouwd te worden als een hoogrisico groep. Over het algemeen zijn de interventiedoelstellingen aan beide kanten aanwezig: aan nieuwkomers zouden faciliteiten moeten worden aangeboden om de Nederlandse taal te leren èn te verbeteren, terwijl de eerste generatie ouderen hoofdzakelijk op Voorlichters in Eigen Taal en Cultuur of gezondheidsvoorlichters moet kunnen vertrouwen.

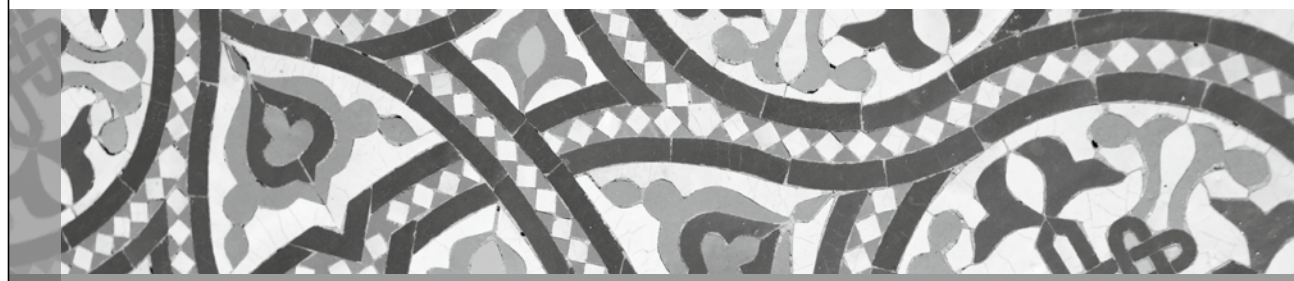
In **hoofdstuk 5** beschreven wij de etniciteit gerelateerde variatie in het gebruik van voorgeschreven medicatie. We richtten ons op het ondergebruik bij zieke personen dat verschilt van het overgebruik bij gezonde personen, met onderscheid naar geestelijke en fysieke morbiditeit en medicatie. Bij het bestuderen van het medicatiegebruik gebruikten wij als kader ook hier het gedragsmodel van Andersen. Het uitgebreide model van Andersen bleek nuttig in het verklaren van algemene en ziektegebonden patronen. De prevalentie van chronische ziekten, waarvoor behandeling met medicatie mogelijk is, bleek over het algemeen hoger bij immigranten; etniciteit gerelateerde variatie werd primair door deze *need* factor verklaard. De zogenoemde *enabling* factoren, in het bijzonder onderwijs en inkomen, boden geen verklaring voor medicatiegebruik. Acculturatie als onderdeel van *predisposing* factoren, was echter wel effectief in het verklaren van de intergroep-variatie.
Drie componenten van acculturatie droegen bij tot medicatiegebruik: goede Nederlandse taalvaardigheid, moderne attituden betreffende de man-vrouw rollen en religiositeit. Vanuit de resultaten van specifieke ziekten zou men kunnen afleiden dat vooral de taalvaardigheid het waargenomen ondergebruik onder etnische groepen verminderde. Blijkbaar verbetert het behoorlijk kunnen communiceren met een arts de waarschijnlijkheid van patiënten om medicatie te krijgen. Samenvattend waren de gezondheid (problemen) en de acculturatie de

sterkste determinanten voor medicatiegebruik onder allochtone ouderen. Significant ondergebruik bestond onder allochtonen met diabetes en gewrichtsklachten.

Hoofdstuk 6 beschreef de resultaten van het thuiszorggebruik van oudere immigranten. In deze studie werd onderzocht of verschillen in het gebruik van de thuiszorg tussen oudere immigranten en Nederlandse ouderen kon worden verklaard door gezondheidsstatus, sociaal-economische status, acculturatie en etnische achtergrond. Om het gebruik van de thuiszorg te verklaren gebruikten we opnieuw het model van Andersen. Over het algemeen maakten Marokkaanse en Turkse ouderen minder gebruik van de formele thuiszorg; tweederde van de zieke Marokkaanse ouderen maakten slechts gebruik van informele thuiszorg. De redenen voor het niet gebruiken van formele thuiszorg verschilden aanzienlijk onder etnische groepen. Frequent gerapporteerde redenen waren het gebrek aan vertrouwdheid met de thuiszorg, en de onwetendheid over hoe toegang te krijgen tot de thuiszorg. Gezondheidsproblemen waren belangrijke determinanten, sociaaleconomische factoren waren dit echter niet. De Nederlandse taalvaardigheid als indicator van acculturatie was een sterke determinant. Controle voor de gemeten factoren vergrootte de rol van Turkse en Marokkaanse etnische achtergrond. Samenvattend hing het gebruik van thuiszorg sterk af van gezondheidsfactoren en Nederlandse taalvaardigheid in een multi-etnische ouderengroep. Voor Marokkaanse en Turkse ouderen hangt het gebruik van thuiszorg bovendien af van hun etnische achtergrond.

In **hoofdstuk 7** werden de waargenomen bevindingen en relaties besproken. Ten eerste, op basis van onze bevindingen concludeerden wij dat een uitspraak zoals ‘dè gezondheid van immigranten is slechter dan die van autochtone Nederlanders’ ongerechtvaardigd is, aangezien dit zeker niet van toepassing was op de groep van Antilliaanse ouderen.
Ten tweede, toen de morbiditeitspatronen met mortaliteitspatronen van allochtone ouderen werden vergeleken, lieten alle eerste generatie allochtonen lage leeftijdsgebonden sterftecijfers op hogere leeftijd zien. Ten derde, suggereerde de resultaten van onze studie eerder een ondergebruik dan een overgebruik van zorg, als kenmerkend patroon voor allochtone ouderen in Nederland. Het effect van SES was niet gelijksoortig voor alle etnische groepen. Blijkbaar combineert SES op een complexe manier met het behoren tot een bepaald etnische groep, wanneer het gaat om de invloed op gezondheid. Voor verdere exploratie, introduceerden wij twee nieuwe elementen: acculturatie en het leven in een achterstandswijk. Acculturatie, het concept dat wij als extra factor hebben geïntroduceerd om verschillen in gezondheid en gebruik van gezondheidszorg te verklaren, leek relevant als verklarend concept. Drie componenten van acculturatie droegen het meest bij tot de verklaring van etnische verschillen: goede Nederlandse taalvaardigheid, moderne attituden op man-vrouw rollen en religiositeit. Over het algemeen bleek onze multidimensionele benadering van acculturatie in deze context waardevol. Onze beschrijvende studie verstrekte bewijsmateriaal dat voor gezondheidszorgbeleid nuttig zou kunnen zijn.

Aandacht voor gezondheidszorgvoorzieningen in plaats van alleen aandacht voor gezondheidsrisico’s, lijkt gerechtvaardigd. Een gelijkwaardige toegang en een adequaat zorggebruik zullen in het geval van immigranten met een taalachterstand actieve onderwijsinspanningen vereisen. Wij kunnen niet vertrouwen op de zelfredzaamheid van oudere immigranten waarvoor een goede Nederlandse taalvaardigheid, gezondheidsgeletterdheid en vertrouwdheid met het Nederlandse gezondheidszorgsysteem een preconditie zijn.



Dankwoord

Een proefschrift tot stand brengen doe je niet alleen. De medewerking, hulp en steun van velen zijn daarbij onmisbaar. Op deze plaats wil ik een aantal personen in het bijzonder noemen.
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De overgang van ouderen naar baby's leek niet logisch, maar ook nu richten mijn werk-zaamheden zich op de relatie tussen achterstand, kwetsbare groepen en gezondheid. Ik werk

sinds twee jaar in het Erasmus MC op de afdeling Verloskunde en Gynaecologie voor het programma Klaar voor een Kind. De diversiteit in het programma is in allerlei opzichten groot. Er zijn enkele personen die ik hier in het bijzonder wil noemen. Allereerst Hajo Wildschut die ik nu al een paar jaar ken vanwege ons gezamenlijke werk voor ECMEH. Hajo, naast het feit dat we een gedeelde belangstelling hebben voor etniciteit, cultuur, gezondheid en taal, wil ik je bedanken voor het feit dat jij in de afgelopen jaren op enkele momenten een belangrijke steun voor mij bent geweest. Ook wil ik je hartelijk bedanken voor het meelezen van teksten. Daniëlle van Veen is de volgende die ik hier wil bedanken. Daniëlle, naast het feit dat ik je als persoon en collega erg waardeer, ben je in de afronding van dit proefschrift zeer betrokken en ondersteunend geweest. Het gemak waarop jij het traject van de vormgeving en lay-out van het boek begeleidde, was voor mij een grote lastenverlichting. Eric Steegers, afdelingshoofd Verloskunde en Prenatale Geneeskunde, wil ik bedanken voor de mogelijkheden die hij mij in mijn huidige werkzaamheden biedt. Eric, de samenwerking met jou ervaar ik als erg plezierig en ik heb grote waardering voor de wijze waarop jij je dagelijks inspant voor de verbetering van perinatale uitkomsten in Nederland.

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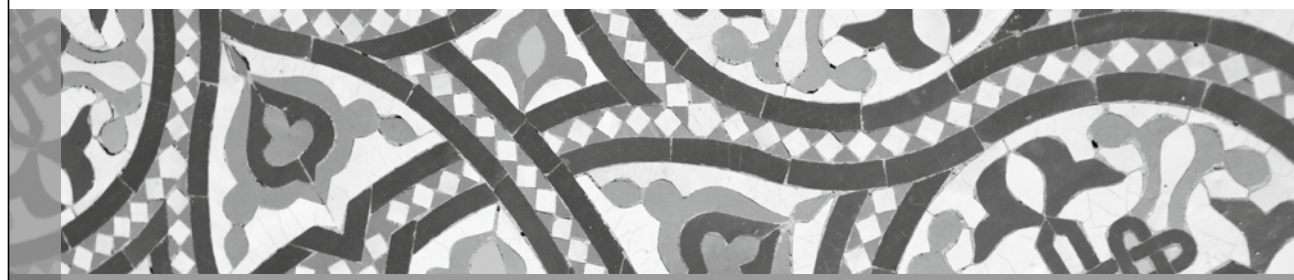

Over de auteur

Semiha Denktaş werd geboren op 26 maart 1973 te Istanbul in Turkije. In 1980 verhuisde zij met haar familie naar Nederland. In 1992 behaalde zij haar VWO diploma en startte zij haar studie psychologie aan de Universiteit van Utrecht die zij in 1997 afrondde. Daarna trad zij in dienst van het Instituut voor Sociologisch-Economisch Onderzoek van de Erasmus Universiteit, waar zij diverse onderzoeksprojecten deed op het terrein van landelijk en lokaal beleid betreffende de onderwijs- en arbeidsmarktpositie van allochtonen. In 2002 maakte zij de overstap naar het instituut voor Beleid en Management van de Gezondheidszorg (iBMG) aan dezelfde universiteit, om onderzoek te doen naar de gezondheid en zorggebruik van allochtonen. In hetzelfde jaar begon ze aan haar Master Integratie en Migratiestudies bij de vakgroep Sociologie van de Erasmus Universiteit die ze in 2004 afrondde. Bij verschillende vakgroepen was ze als docent of coördinator betrokken bij het onderwijs en in 2003 werd ze co-directeur van het Erasmus Centre for Migration, Ethnicity and Health. Ook was ze actief betrokken bij het Netwerk Cultuur en Gezondheid van ZonMW. In deze periode werkte ze aan diverse onderzoeksprojecten. Het onderzoek naar de toegankelijkheid van zorgvoorzieningen voor allochtone ouderen in Nederland resulteerde in dit proefschrift. Naast haar academische werkzaamheden was ze tot 2005 lid van de Stedelijke Adviescommissie Multi-culturele Stad (SAMS) en daarna tot 2008 lid van het Sociaal Platform Rotterdam (SPR), beiden adviesorganen van de Gemeente Rotterdam.

In 2008 kwam ze in dienst bij de afdeling Verloskunde en Vrouwenziekten van het Erasmus MC waar ze als projectleider betrokken is bij het meerjarig programma genaamd Klaar voor een Kind.

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