Diabetic nephropathy in Surinamese South Asian subjects

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Een dorp in de omgeving van Calcutta, India, ca. 1870.

Chapter 2

Study population

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Abstract

This chapter describes the recruitment, origins and selection process of the South Asian immigrant to Suriname and the Netherlands. Subsequently, we describe the two South Asian study cohorts used for this thesis: the HinDiNef (family study) and the HinDia project (out-patient clinic study).

Introduction

South Asian immigrants originally descend from the Indian Subcontinent, previously called British India (nowadays India, Pakistan and Bangladesh). The social-scientific literature uses the term East-Indians to refer to immigrated Indians to the Caribbean. However, in the medical literature, immigrated Indians are referred to as South Asians or Indo-Asians. In this thesis we will use the term South Asians because this is currently the most used term to refer to immigrated Indians in the medical literature.

Due to the abolishment of slavery the number of plantations in Suriname dropped dramatically from 452 to 131 during the years 1832-1873. [1] From 1835 to 1917, approximately 500000 British Indians were introduced into the Caribbean. About half of them (239000) went to British Guyana, the neighbour country of Suriname. Trinidad received 144000 Indians, and the remainder entered Jamaica, Guadeloupe, Martinique and Suriname. [2] The plantations in British-Guyana which suffered the same problems with the abolishment of slavery, flourished again. In agreement with a Dutch-British Treaty of September 8, 1870 immigration to Suriname from British India became organized. [3] From 1873 until 1916 some 64 ship transports were made. About 34000 South Asian people were shipped to Suriname. In that same period about 11000 contract workers returned when their 5 year contract was finished. [1]

The migration from India to Suriname

The recruitment of immigrants was only done in a circumscriptive area of North India called Uttar Pradesh , Uttarakhand and West-Bihar (see **figure 1**). This area was known for its overpopulation, poverty and shortage of employment and food. There was a large pressure of soil due to high population growth. According to the Registry of the immigration office in Paramaribo in Suriname, about 80% of the South Asian immigrants originally came from the Uttar Pradesh.

The main motive to migrate was the economic situation in North India. In those days, it was difficult to find an existence due to unemployment, food shortages and social structures like caste system, large(-scale) land ownership and usurers. [4;5]

The Dutch government established a medical selection of the South Asian immigrants because of a high mortality among the South Asian immigrants. [2] Following the agreement the first ship Lalla Rookh arrived on 5 June 1873 in Paramaribo and was followed by 7 more ships. The first two years were disastrous. More than 20% of the immigrants died during the voyage and at the plantations. [6] In June 1874 the British government became alarmed of the mortality rate and stopped the sea traffic

to Suriname and demanded the betterment of the conditions of the immigrants by giving better medical support. During 1877-78 the traffic was resumed but it was again interrupted in the years of 1879, 1886 and 1888. In later transports only 2% died during the journey. Because the South Asians stayed British Indian citizen, the Dutch government had to improve the medical and social circumstances. Therefore the South Asian immigrants had to pass five medical examinations before shipping to Suriname in order to prevent diseases and mortality. [2;7] South Asian contract laborers were examined on physical wellness, height, and fractures. They were also screened on venereal diseases, contageous diseases like cholera, tuberculosis and typhoid fever. Compared to the British Indian colonies like Mauritius and British Guyana, medical selection, supplies and life circumstances were better for Surinamese South Asian immigrants. [8]

Figure 1: *Circumscript area of recruitment of South Asian immigrants. (Adapted from C.J.M. de Klerk: "De immigratie der Hindostanen in Suriname", Amsterdam 1953: Urbi et Orbi.)*

South Asian population in Suriname

Upon arrival in Suriname the South Asian migrants worked on the plantations for 5 years as indentured labourers in agriculture and sugar cane fields. After 5 years, they had the option to go back to India with a free passage. About 34% of the South Asian immigrants went back to India. [1] Most of them stayed and received governmental farming land to stimulate the colonisation of Suriname. During and after the second World War most South Asians migrated from the rural areas to Paramaribo. This offered them better opportunities finding work, education and all the comforts of city living. After 1945, the means of higher education improved and more South Asians graduated from the university. Many South Asians were also attracted to politics. [9]

Migration to The Netherlands

In a short time a relatively young South Asian population went to the Netherlands. This was mainly due to the political climate in Suriname. There were two large migration waves. The first was around the independence of Suriname in 1975 and the second wave was around the revolution coup of Desi Bouterse in February 1980. See **figure 2**. After migration to the Netherlands most South Asians settled in the resident city The Hague and in Rotterdam. According to the records of the Statistics Netherlands (CBS statline 2002), The Hague and surroundings have about 35000 and Rotterdam has about 28000 South Asian inhabitants. [10]

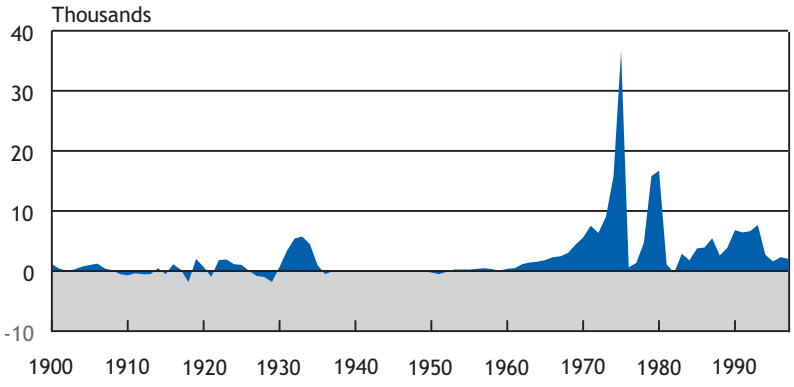

Figure 2: *Net migration from Suriname to the Netherlands.*

The immigrated Surinamese South Asians are much younger than the Native Dutch population. See **figure 3**.

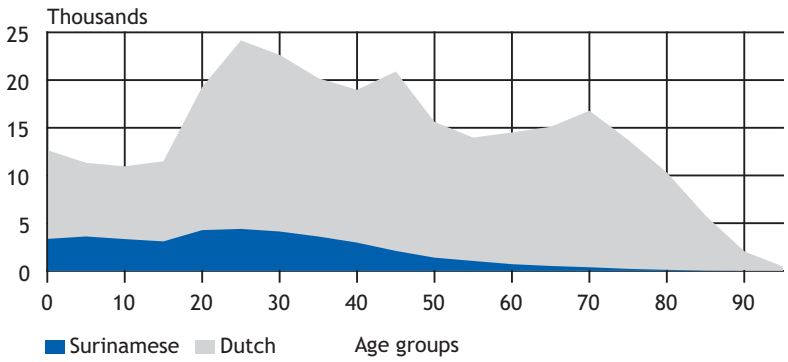

Figure 3: *Population composition of the city The Hague in the Netherlands. South Asians are relative young and older age groups are virtually absent.*

Selection of the study population for this thesis

In the subsequent paragraphs, we describe the different South Asian groups who were selected for this thesis. We used two study populations: a family cohort (chapter 3, 5 and 6) and a diabetic out-patient clinic cohort (chapter 4). See **figure 4**.

Chapter 3 We first performed a case-control study to determine the risk for end-stage diabetic nephropathy in the South Asian population, in comparison to Dutch European (native Dutch) persons. In the Netherlands patients are assigned to a regional dialysis centre based on the place of residence of the patient. The overall population figures per region are known and new patients are registered within three months after start of renal replacement therapy. This permitted us to determine the relative risk of end-stage diabetic nephropathy in these two ethnic groups. Because of the regional allocation of patients for renal replacement therapy, patients who live in The Hague are therefore treated in only three dialysis centres. In this case-control investigation, the case group is formed by dialysis patients with end-stage diabetic nephropathy. The control group comprises the general population in the city of The Hague. The investigated risk factor is South Asian ethnicity. If this ethnicity would be associated with a higher risk for end-stage diabetic nephropathy, this would result in an excess of South Asians in the dialysis wards in The Hague.

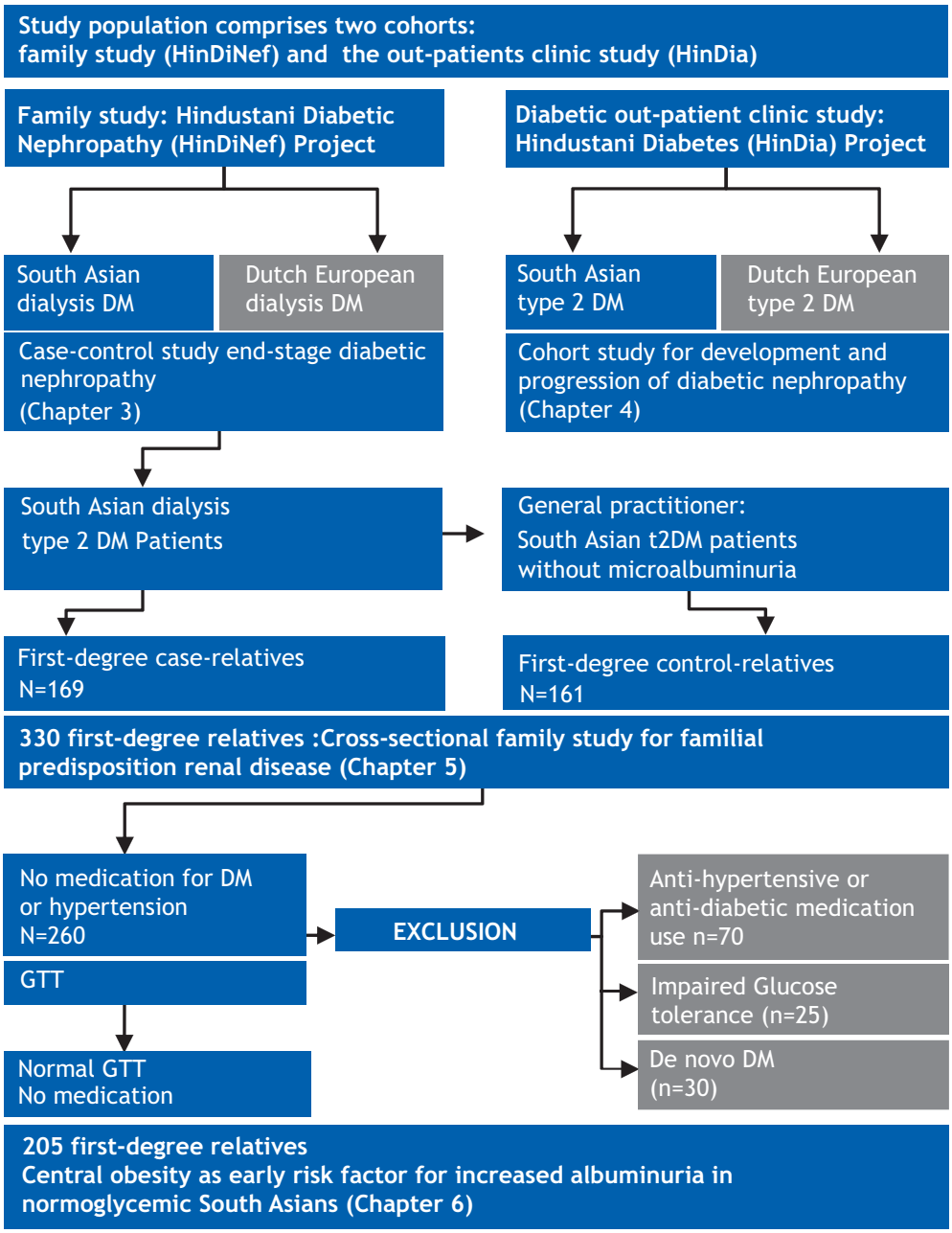

***Figure 4**: Description of the two study populations for this thesis.*

All newly started dialysis patients between 1990 and 1998 with end-stage diabetic nephropathy were identified through this registry. General population: this was based on the average population figures in the period 1995 to 1998 derived from the Central Bureau of Statistics. Patients were selected because they were coded by their nephrologist as having diabetic nephropathy. The medical records of all patients were examined for type of diabetes mellitus, presence of proteinuria, diabetic retinopathy and the absence of other causes of nephropathy like infections, tuberculosis, renal stones or obstructive nephropathy.

Chapter 5 We subsequently performed a family study for familial predisposition of renal disease among first-degree family members of South Asian type 2 diabetic patients. We contacted first-degree family members of the South Asian dialysis patients who participated in the case-control study of chapter 3. We visited the general practitioners of the dialysis patients, and for every dialysis patient, a type 2 diabetic patient was randomly drawn from the registry of the general practitioner. The control diabetic patients had to be of South Asian origin, same sex as the dialysis patient without microalbuminuria. We subsequently contacted their first-degree relatives as control families. We compared nephropathy prevalence between these two groups of first-degree relatives of South Asian patients with type 2 diabetes; the first group (case-relatives) consisted of 169 relatives of patients with end-stage diabetic nephropathy; the second group (control-relatives) consisted of 161 relatives of diabetic patients who had no nephropathy. A total of 330 case- and control-relatives were examined for diabetes, blood pressure, renal function, microalbuminuria and urine dipstick measurements.

Chapter 6 We explored the hypothesis that central obesity is associated with the development of renal injury, prior to the manifestation of diabetes mellitus. In the former family study of Chapter 5, we had 330 first degree family members. To prevent confounding by the antihypertensive or antidiabetic medication on the outcome of albuminuria, we excluded 70 patients. The remaining 260 relatives underwent glucose tolerance testing (GTT) using the classic WHO criteria. After testing, 205 subjects were normoglycemic and eligible for our study. We excluded 25 subjects with impaired glucose tolerance and 30 subjects with de novo diabetes from further analysis. Central obesity was measured by waist-to-hip ratio (WHR). Albuminuria was measured as albumin/creatinine ratio (ACR) in the early morning urine.

Chapter 4 We performed a cohort study in South Asian and Dutch European type 2 diabetic patients to compare the incidence of microalbuminuria and progression of renal failure between both ethnic groups. We used the registry of the out-

patient diabetic clinic of the Haga Teaching Hospital, during the period 1994-1996. The ethnicity was self-stated. Migrants who originally descended from the Indian subcontinent were reported as South Asian. Patients who were of Dutch descent were reported as European. We selected a cohort of 149 South Asian type 2 diabetic patients and matched them for sex and level of urinary albumin excretion with 155 European patients. Urinary albumin excretion and creatinine clearance were measured at inclusion and after 5 years follow-up.

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