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Differential mortality risks and causes of death among non-western foreigners in the Netherlands

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For most ages, non-western foreigners in the Netherlands have a higher mortality risk than native Dutch people. For infants the risk is 35 percent higher. Young children with a non-western background have higher mortality risks from both external and natural causes. Among foreigners aged 15-29 years a large part of mortality is from non-natural causes, with above average rates of murder/manslaughter and suicide. In the past decades the mortality risk among adult Turkish men has developed unfavourably. They now have a slightly higher than average incidence of cardiovascular diseases at relatively young ages. The risk of dying from cancer, especially lung cancer, is also relatively high for Turkish men, partly because relatively more of them smoke - and smoke more - than other population groups.
By contrast, Moroccan men aged 35 and older have a considerably lower mortality risk. Their risk of dying from cardiovascular disease in their forties, fifties or sixties, is only half that for native Dutch men. Their mortality risk with respect to lung cancer is also much smaller. Moroccans smoke less than their Dutch peers, but the differences in the percentages of smokers seem to be too small to fully account for the difference in mortality. Selective immigration and remigration do not seem to contribute significantly, either. As there have been few studies of nutritional habits among Moroccan men, research into these and other health-related factors that might reduce the mortality risk for Moroccan men has a high relevance for public health in the Netherlands.

1. Introduction

Foreigners, and in particular non-western foreigners, have been making up an increasing share of the Dutch population in recent years. The group of non-western foreigners is considerably younger on average that the native Dutch population and the age composition of will probably remain youthful for a long time to come. Although the influx of (relatively young) asylumseekers has decreased in recent years, the immigration of marriage partners from Turkey and Morocco in particular is still in full swing.

Because they are so young, the various non-western population groups still have only relatively modest overall morbidity and mortality rates. However, as some of the groups inevitably grow older, they will create a substantial increase in the demand for medical and other care in the coming years; even more so if non-western foreigners have a relatively unfavourable health status. This is one of the reasons why the Ministry of Health, Welfare and Sports has designated non-western foreigners in the Netherlands as a health policy target group.

In spite of this priority position, information on the health status of foreigners is still relatively scarce (Brussaard et al., 2001). Although many 'local' studies have been done into the health of foreign groups, the representativeness of the results is uncertain (Merens et al., 1999), as the numbers concerned were usually small and the samples were not random. A recent study of the literature by the Netherlands Institute for Public Health and the Environment RIVM, at the request of the Dutch Heart Foundation, presenting a statistical picture of lifestyle and risk factors and the incidence of

cardiovascular diseases among foreign population groups also illustrates this problem (Van Leest et al., 2002). It is difficult to interpret many results, partly because they make use of subjective criteria and self-reported information, partly because survey populations are very small and partly because the studies are sometimes outdated. Some conclusions in the literature are contradictory: according to a survey by the Amsterdam municipal health authorities a smaller percentage of Turks and Moroccans eat fruit and vegetables daily than their Dutch peers (Dijkshoorn, 2002), while a study by TNO among Turkish and Moroccan mothers and their children shows the exact opposite (Brussaard et al., 1999). In part these contradictory findings may be the consequence of how food consumption is measured.

The overview by RIVM mentions only one article which presents hard data on differential mortality among foreigners. The main objections to this article, by Hoogenboezem and Israëls (1990), are the fact that the figures have now become outdated (1979-1988), the small number of deaths among older foreigners and the limitation of the study to Turkish and Moroccan groups in the Netherlands. These drawbacks are eliminated to some extent by a recent study – not included in the RIVM overview - by Garssen and Sprangers (2002). The latter study covered the four main non-western foreign groups in the Netherlands in the period 1997-2000. Because of the increase in the survey population the number of deaths in the study were higher than in the study by Hoogenboezem and Israëls, although no results are presented for the still relatively small population of over-sixties.

2. Previous results and survey questions

Before the study by Hoogenboezem and Israëls (1990), Statistics Netherlands (1983) published a short article about mortality among Turks and Moroccans in the Netherlands. This revealed that in the period 1977-1981, mortality among children aged 1-14 with a Turkish or Moroccan background was two to four times as high as among children of Dutch parents. From the age of 15 the difference diminished as age increased. From age group 45-49 years, the higher mortality among Turks turned into a lower mortality rate than among the native Dutch population. For Moroccans this turning point was from the age of 35-39 years. Nearly no difference in mortality was observed among infants. These data and other qualitative findings were described by Gründemann (1985) in an overview of publications in the period 1975-1985. These results prompted questions in the Lower House of the Dutch parliament about the high mortality among Turkish and Moroccan children in the Netherlands.

Hoogenboezem and Israëls have aimed to find out the causes of the higher mortality with the aid of the causes of death statistics. They established that many of the diagnoses were unknown, mainly with regard to deaths outside the Netherlands. No less than 38 percent of all mortality among Turks and Moroccans was coded as 'symptoms, signs and ill-defined conditions'; nearly half of deaths among Moroccan women were in this category. To be able to compare population groups, the researchers left with no alternative than distributing these cases pro rata among the known causes of death.

Even after this redistribution relatively few Turks had died of malignant neoplasm (cancer), but relatively many from infectious diseases and non-natural causes of death (more traffic accidents and murder, though fewer suicides). Among 0-14 year-olds infectious diseases and non-natural causes of death also played a prominent role in the higher mortality. From around the age of 45 years, Turks (men and women) had clearly lower mortality rates from cancer and to a lesser extent from diseases of the blood and blood forming organs.

A similar pattern was found for Moroccans: infectious diseases and non-natural causes of death accounted for more mortality, and relatively fewer people died of cancer and suicide. Mortality was higher among 0-14 year-olds, just as for the Turks, with traffic accidents an important factor. Mortality rates from cancer and diseases of the blood and blood forming organs were lower from the age of 35 years.

Lower mortality among Moroccans from around the age of 40 was also observed by Garssen and Sprangers (2002) from data for 1997-2000. Again mortality from cardiovascular diseases and cancer was remarkably low at these ages.

Non-natural causes of death – mainly traffic accidents – appeared to be relatively frequent, also among other non-western population groups in the study. The proportion of deaths from these causes in total mortality was four times as high for Antilleans as for the native Dutch population. Child mortality (0-4

4

years) too was significantly higher among non-westerners than among the Dutch population in the period 1997-2000. Non-western boys had a 67 percent higher risk of dying before their fourth birthday, non-western girls even an 85 percent higher risk. The highest child mortality rates were found among the Moroccans: both boys and girls were twice as likely to die between the ages of 0 and 4 years as native Dutch children in this age group.

Van Duin (2002) found a 30 percent higher mortality risk for 0-1 year-olds in all non-western groups in the Netherlands. One third of this higher infant mortality can be attributed to the weaker economic position of non-western foreigners. According to Maas et al. (1997) perinatal mortality – stillbirths plus mortality the first week – among foreigners is even one and a half to two times as high as among the Dutch population. For people with a Surinamese and Antillean background, premature births are assumed to be part of the reason for this. For Moroccans and Turks the relatively high numbers of teenage mothers and high parity mothers are an important factor. Based on data from the national obstetrics registration for 1990-1993, Van Enk et al. (2000) also report a doubled risk of unfavourable outcome for teenage pregnancies, such as premature births and perinatal deaths.
The fact that the data for 1979-1988 do not show a higher infant mortality while later data do is probably caused by the way nationality (the criterion at that time) was registered. Until 1987 the nationality of children registered as stillborn, which included children who died before they were registered in the population register, was not recorded. This practice meant that too many babies who died in their first week were counted as having the Dutch nationality, and thus too few as having other nationalities.

As more favourable mortality rates were found for older non-western foreigners, this group appears to have a higher life expectancy than the native Dutch population, in spite of their less favourable socio-economic position. Similar findings have been reported, outside the Netherlands too, by several studies (among others: Weitoft et al., 1999; Uitenbroek and Verhoeff, 2002). One of the problems in calculating life expectancy, however, is the relatively great weight allocated to mortality at higher ages. Because of the relatively small numbers concerned and the possible occurrence of selective migration and remigration, precisely these latter figures are sensitive to distortion. The findings also give rise to extensive discussion in the relevant scientific literature (Uitenbroek et al., 2002). Possible explanations for lower mortality among older non-western foreigners mentioned are:
- problems with the registration of mortality and the population size of foreign groups;
- migration patterns among older foreigners, leading to underestimation of mortality and overestimation of the population size;
- foreigners are a 'healthy selection' from the population of the country of origin;
- foreigners have a healthier lifestyle;
- genetic factors.

On the basis of the above, the following problem definition was formulated for the present study:
- Is the pattern of higher mortality among young non-western foreigners in the Netherlands observed in the period 1979-1988 still present? Are there pronounced differences between people from the main non-western countries of origin (Turkey, Morocco, Suriname, Antilles/Aruba, and other non-western countries) and between the sexes? To what extent do specific causes of death contribute to a possible higher mortality among young people?
- Do mortality rates by age and sex continue to show the remarkable patterns observed in 1979-1988? To what extent may selective immigration and remigration have played a part in this respect?
- To what extent can problems with observation – more specifically a higher share of unknown causes of death - of both total mortality and mortality from specific causes of death have played a part in the sometimes significantly lower mortality rates for specific causes of death at older ages? Are there concrete and unambiguous signs that people from certain countries of origin have a healthier lifestyle, and is this reflected in a lower mortality risk from the relevant causes of death?

3. Survey population

3.1 Size and changing composition

The large differences in the age composition between native Dutch and non-western foreign population groups in the Netherlands complicate the comparison of mortality risks between these groups. This is particularly true for the comparison of mortality at older ages and life expectancy at birth, which - given the present low level of child mortality - is predominantly determined by mortality at the oldest ages.

However, in recent years the non-western population in the Netherlands has increased sharply, and the growth in the older age groups has been larger than average. Although population numbers for combinations of specific countries of origin, age groups and causes of death are still too small to establish significant differences, the numbers are now large enough to give reliable findings for the older – although not the oldest – age groups.

Between the beginning and end of the period under review (1996-2001), the number of non-western foreigners rose by one third, from 1.17 million to 1.59 million. The population increase was present in nearly all age classes, but was relatively strongest for the oldest age categories. The number of Turks and Moroccans aged 65 and older tripled in this period. *Graph 1* shows the number of over-65s at the beginning and at the end of the period under review. For all non-western foreigners together, the increase was largest among people in their sixties (an increase of 92 percent), followed by people in their seventies (73 percent).

1. Number of non-western foreigners aged 65 or older, by country of origin, 1/1/1996 and 31/12/2001
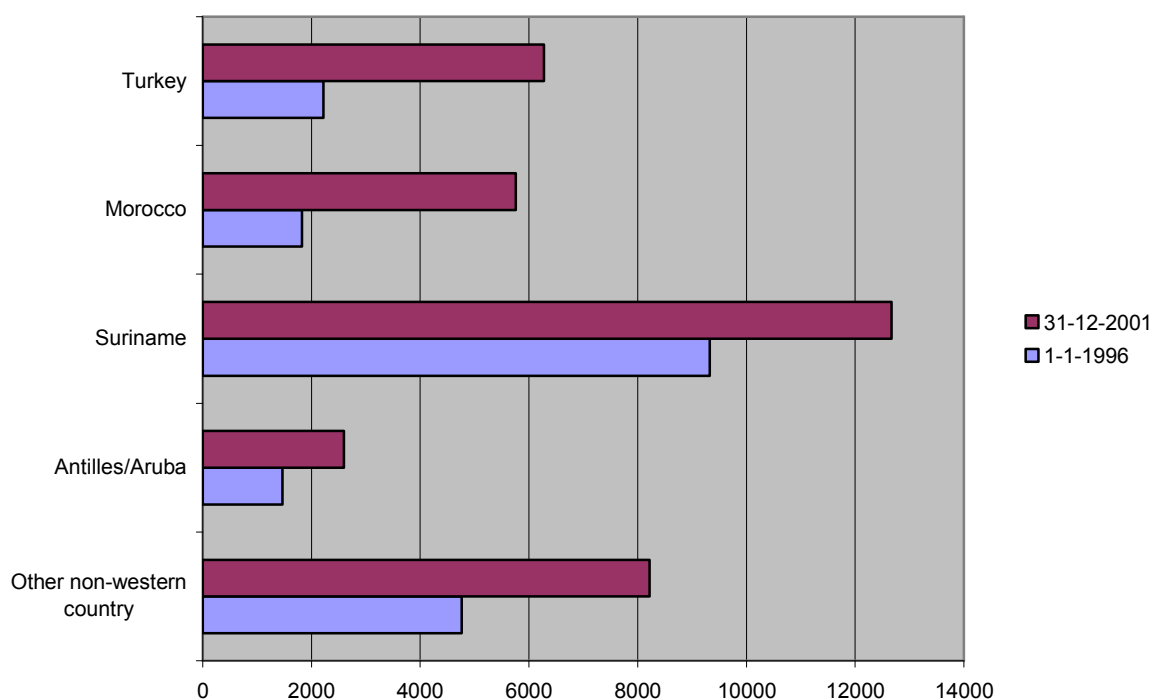
Table 1 shows the average population in the period 1996-2001. The mortality rates in this article are calculated on the basis of these averages. Within the group of non-western foreigners, the four 'traditional' foreign groups are distinguished - Turks, Moroccans, Surinamese and Antilleans/ Arubans - as well as the total of persons from other non-western countries.

A person with a foreign background is defined as someone of whom at least one parent was born outside the Netherlands. This article does not distinguish between first and second generation

**Table 1. Average population 1996-2001, by age, sex and origin**

	Native Dutch	Western foreigners	Non-western foreigners	of whom:				
								Other non-western
				Turks	Moroccans	Surinamese	Antilleans / Arubans	
	x 1000							
Men								
0	79,6	6,1	15,6	3,6	3,4	2,4	1,0	5,3
1-4	317,2	25,1	60,7	14,5	13,0	9,7	4,1	19,4
5-9	400,0	32,4	72,4	17,6	15,2	13,2	5,3	21,0
10-14	384,1	33,1	66,3	14,8	13,8	14,0	5,0	18,7
15-19	376,3	34,5	64,5	13,5	13,3	13,0	4,9	19,8
20-24	402,5	39,5	60,2	14,1	12,4	12,1	5,6	16,0
25-29	489,7	52,6	71,0	17,7	13,4	13,5	5,6	20,8
30-34	537,9	59,5	75,4	17,8	13,2	13,9	4,8	25,7
35-39	536,1	56,6	64,7	13,9	10,2	13,1	4,2	23,2
40-44	507,9	53,9	46,0	7,8	6,0	11,6	3,4	17,1
45-49	495,7	57,8	32,6	5,1	4,8	9,0	2,6	11,1
50-54	469,0	54,8	24,9	5,1	5,3	6,2	1,9	6,4
55-59	360,0	45,6	20,5	5,9	5,7	4,2	1,1	3,6
60-64	301,6	38,0	13,8	4,0	4,0	2,9	0,6	2,3
65-69	267,8	27,0	6,6	1,5	1,6	1,8	0,3	1,4
70-74	221,1	18,3	2,8	0,4	0,5	1,1	0,2	0,7
75+	302,0	19,5	2,2	0,1	0,2	1,1	0,1	0,6
Total	6448,4	654,5	700,1	157,4	135,9	143,0	50,7	213,1
Women								
0	75,9	5,8	14,9	3,4	3,3	2,3	0,9	5,0
1-4	302,7	23,7	58,2	13,7	12,4	9,3	3,9	18,8
5-9	382,2	31,2	68,7	16,5	14,5	12,8	5,1	19,9
10-14	368,0	31,6	62,9	13,8	13,4	13,7	4,9	17,2
15-19	360,5	33,2	59,7	13,1	12,9	12,9	4,8	16,1
20-24	385,9	41,6	63,1	16,1	13,5	12,7	5,6	15,2
25-29	471,1	55,4	68,8	17,0	12,2	15,0	5,3	19,4
30-34	518,1	61,9	63,8	14,0	9,2	15,8	4,6	20,2
35-39	519,3	59,7	55,0	10,2	6,9	15,6	4,2	18,1
40-44	491,5	57,4	42,8	6,2	5,7	13,2	3,6	14,1
45-49	477,3	58,9	31,5	5,5	4,5	9,5	2,9	9,1
50-54	454,2	53,0	21,8	5,0	3,0	6,5	2,2	5,2
55-59	356,9	43,7	15,6	3,9	2,8	4,6	1,4	3,0
60-64	313,2	38,9	10,6	2,3	1,9	3,4	0,9	2,0
65-69	299,4	32,5	6,4	1,2	0,7	2,5	0,6	1,4
70-74	279,4	27,9	4,0	0,5	0,2	1,9	0,3	1,0
75+	560,1	48,7	4,4	0,4	0,2	2,4	0,4	1,1
Total	6615,8	704,9	652,3	142,6	117,2	154,1	51,6	186,8

foreigners. The definition differs from that used by Hoogenboezem and Israëls (1990). They selected only persons with Turkish and Moroccan nationalities for their study, which probably led to some distortion in the results, as immigrants granted the Dutch nationality were excluded. It is plausible that in respect of health and mortality patterns they do not constitute a representative reflection of the groups of Turkish and Moroccan descent.

3.2 Remigration by age

One possible explanation for the relatively low mortality among older non-western foreigners found in earlier studies, is selective remigration (Uitenbroek et al., 2002). If people who are perhaps less healthy leave the country, their deaths are not recorded in the Dutch municipal population registration. No data are available on the health status of remigrants, but it cannot be discounted that they include people who return to their country of origin because of bad health. If this is indeed the case, then it is plausible that it would mainly have an effect on relatively long-term illnesses, such as some forms of cancer. To quantify the exact downward effect of selective remigration on mortality in certain age categories, annual numbers of remigrants (including administrative corrections) by age, sex, and origin were related to the average annual populations concerned. These percentages are illustrated in *graphs 2a and 2b*, and refer to the first generation only. The number of second generation foreigners who emigrate to their parents' country of birth is negligible.

2a. Annual percentage of foreign men returning to their country of origin, by age and country of origin, 1996-2001
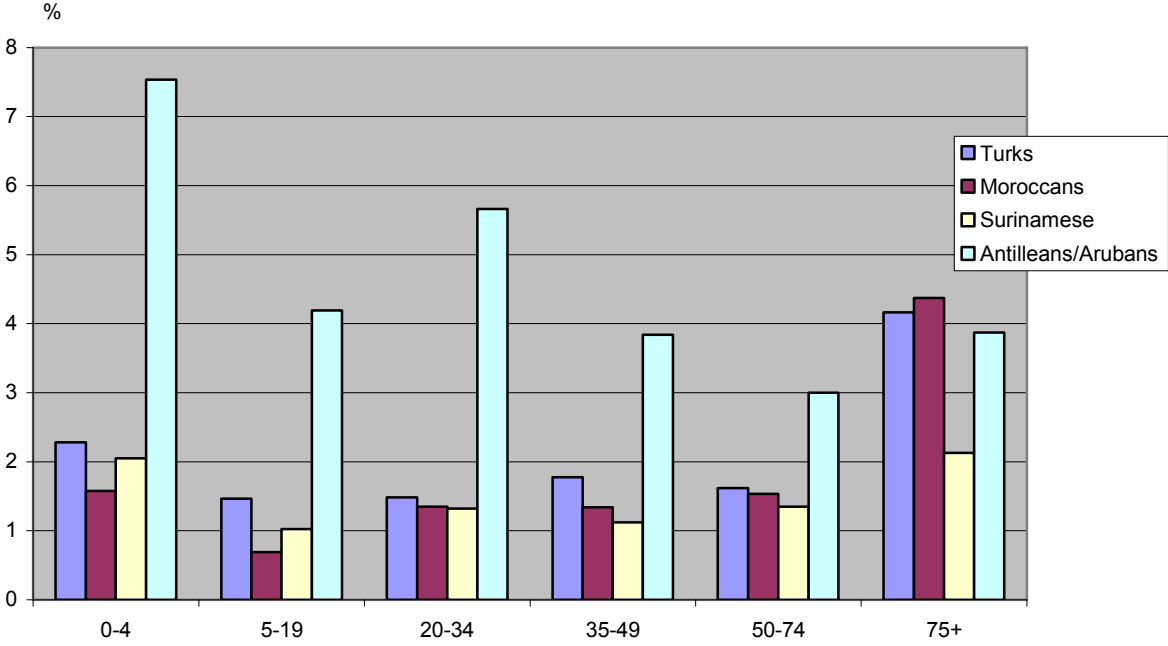
The graphs show clearly that the considerable differences in mortality cannot be explained by selective remigration. Remigration of Moroccan men from age 35 years, for example, a group with very low mortality, is smaller than remigration of Turkish men of these ages, who have above average mortality rates. In view of the relatively low mortality rates for Moroccan and Turkish women aged over 30, there would have to have been a substantial remigration rate for these women for it to have had an effect on mortality. Their remigration, however, is not unusually high. Up to age 75, remigration among these women is even similar to the rates for Surinamese women , who have a relatively high rate of mortality up to this age.

2b. Annual percentage of foreign women returning to their country of origin, by age and country of origin, 1996-2001
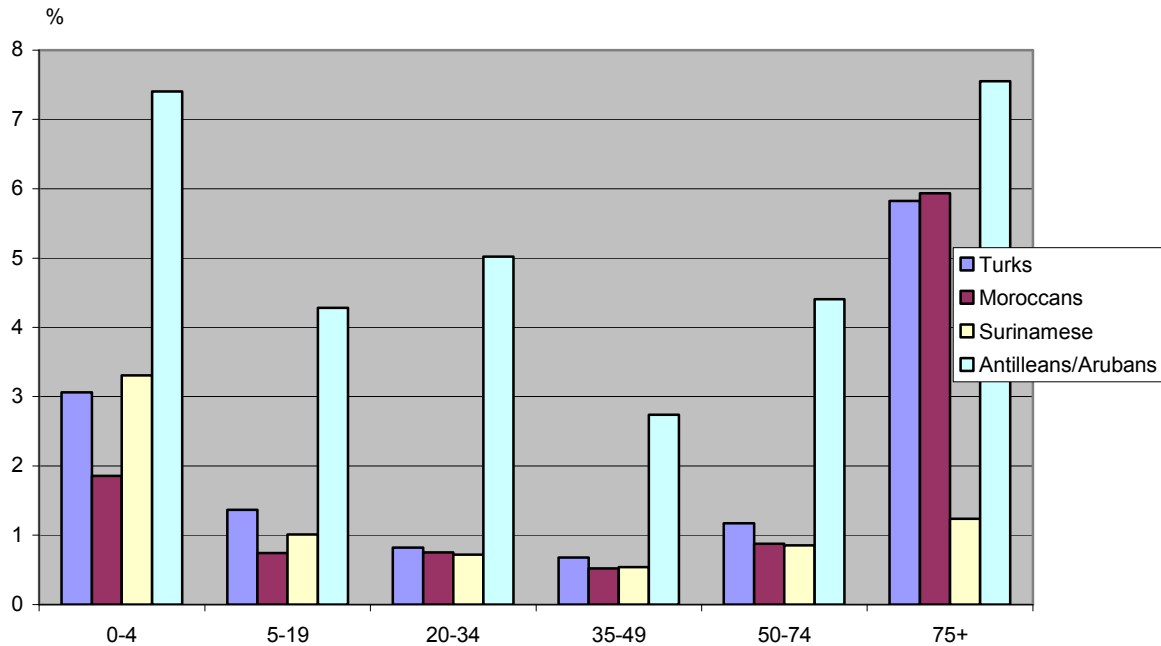
For all age groups and for both men and women, remigration among Antilleans and Arubans is highest by far of all the foreign groups in the population. Again, there is no probable downward effect of selective migration on mortality to speak of: the mortality rate of Antilleans and Arubans is significantly higher than that of the native Dutch population for all ages.

An overestimation of the size of the survey population caused by remigration – one of the mentioned possible causes of a lower mortality rate, was not corroborated by this study. The annual population numbers take into account the downward effect of emigration in the course of the year, including administrative corrections. The latter corrections are completely attributed to emigration.

4. Deaths and mortality rates

The annual number of deaths among the various non-western foreign population groups in the Netherlands is still relatively low because of their young age composition. To be able to draw conclusions on mortality by cause in the various age categories therefore, numbers of deaths for a number of years are taken together, as was the case in previous studies. The present study is based on causes of death data for the period 1996 to 2001. For each death, these data comprise information on sex, age, country of origin and cause of death. The absolute numbers of deaths by age, sex and country origin in the period 1996-2001 are shown in *table 2*. In the overall period some 830 thousand people died, of whom 2 percent were non-western foreigners.

Exactly how great the effect of the age composition is on the number of deaths, is shown by the differences between western and non-western foreigners. Although the average numbers of western and non-western foreigners were almost the same in the survey period, a total of 68.1 thousand western foreigners died, compared with 16.4 thousand non-western foreigners. In relative terms, the lowest number of deaths was for Moroccans. Their proportion in the total population was over six times higher than their proportion in the total number of deaths. With a factor of 2.7 this difference was smallest for the Surinamese population in the Netherlands, a population with an older age composition than other non-western groups.

Table 2. Number of deaths in the period 1996-2001, by age, sex and origin

	Native Dutch	Western foreigners	Non-western foreigners	of whom: Turks	Moroccans	Surinamese	Antilleans/ Arubans	Other non-western
Men								
0	2628	184	663	151	157	110	47	198
1-4	528	44	186	55	46	24	5	56
5-9	333	33	110	35	24	18	2	31
10-14	379	29	85	28	17	12	6	22
15-19	1023	92	254	59	45	52	27	71
20-24	1506	171	310	70	61	66	39	74
25-29	1860	221	399	86	81	81	40	111
30-34	2386	308	464	100	62	99	40	163
35-39	3263	394	551	118	56	161	42	174
40-44	5182	617	569	85	50	202	51	181
45-49	8398	1086	688	89	70	273	77	179
50-54	13215	1678	795	171	101	284	72	167
55-59	16881	2179	1012	374	156	294	53	135
60-64	24707	3149	1213	402	258	337	52	164
65-69	38562	4097	939	244	158	327	38	172
70-74	53840	4534	624	92	63	279	34	156
75+	192510	11696	1067	77	46	585	60	299
Total	367201	30512	9929	2236	1451	3204	685	2353
Women								
0	2026	131	556	119	126	89	43	179
1-4	394	29	138	48	31	17	9	33
5-9	217	18	62	18	13	10	4	17
10-14	279	17	59	20	18	11	4	6
15-19	490	45	89	20	15	14	5	35
20-24	589	63	139	30	32	32	17	28
25-29	936	101	205	43	30	42	18	72
30-34	1435	179	222	39	23	66	18	76
35-39	2431	290	247	37	28	90	28	64
40-44	3974	484	326	36	35	120	35	100
45-49	6194	851	346	48	33	142	33	90
50-54	8924	1042	360	87	38	120	38	77
55-59	10259	1275	477	110	65	171	56	75
60-64	13933	1877	528	100	82	205	40	101
65-69	21726	2668	521	78	44	245	58	96
70-74	33920	3865	547	57	20	313	37	120
75+	267357	24696	1677	131	48	972	141	385
Total	375084	37631	6499	1021	681	2659	584	1554

Table 3. Annual number of deaths by age, sex and country of origin, per 100 thousand of the category concerned, 1996-2001

|	native Dutch	Western foreign	Non-western foreign	of whom				
				Turks	Moroccans	Surinamese	Antilleans / Arubans	Other non-western
Men								
0*	547	520	715	709	750	777	818	647
1-4	28	29	51	63	59	41	20	48
5-9	14	17	25	33	26	23	6	25
10-14	16	15	21	31	21	14	20	20
15-19	45	44	66	73	56	66	92	60
20-24	62	72	86	83	82	91	116	77
25-29	63	70	94	81	101	100	119	89
30-34	74	86	103	94	78	119	140	106
35-39	101	116	142	142	92	204	166	125
40-44	170	191	206	181	139	290	249	176
45-49	282	313	351	290	243	504	490	269
50-54	470	510	533	557	319	761	637	437
55-59	782	796	823	1065	457	1155	788	626
60-64	1365	1381	1463	1656	1064	1959	1528	1189
65-69	2400	2525	2376	2726	1615	3061	1959	2106
70-74	4058	4126	3654	4144	2234	4196	3711	3489
75+	10626	9985	8101	10116	4560	8625	7874	7754
Total	949	777	236	237	178	373	225	184
Women								
0*	441	388	629	586	631	660	785	613
1-4	22	20	40	58	42	30	38	29
5-9	9	10	15	18	15	13	13	14
10-14	13	9	16	24	22	13	14	6
15-19	23	23	25	26	19	18	17	36
20-24	25	25	37	31	40	42	51	31
25-29	33	30	50	42	41	47	56	62
30-34	46	48	58	47	42	69	65	63
35-39	78	81	75	60	67	96	111	59
40-44	135	140	127	97	103	151	160	118
45-49	216	241	183	147	122	248	192	164
50-54	327	328	275	293	212	307	294	247
55-59	479	486	508	472	387	623	680	416
60-64	741	803	829	717	702	997	746	832
65-69	1209	1369	1354	1109	1045	1609	1638	1132
70-74	2024	2308	2292	1966	1576	2752	1827	1906
75+	7955	8453	6337	6143	5072	6752	5802	5870
Total	945	890	166	119	97	288	189	139

* per 100,000 live births

To be able to compare mortality between the various population groups, the numbers per age group, sex, and country of origin are calculated in proportion to the population numbers in the groups concerned (*table 3*). Western foreign men turn out to have similar mortality risks as native Dutch men in all age groups. For all non-western foreign men together, however, mortality up to age 65 years is significantly higher than for Dutch men. Generally speaking this is also the case for the each component non-western group, with the exception of Moroccans. From the age of around 35 years mortality among Moroccans is significantly lower than that among native Dutch men. For Moroccans aged over 75 the mortality risk is even nearly half. However, up to the age of 35 Moroccan men have a higher mortality risk than Dutch men. In the age group 1-4 years it is even twice as high as among Dutch boys, as it is for Turkish boys in this age group. There are also large differences for Antillean and Aruban men aged 20 to 34: they are twice as likely to die as native Dutch men in this age category. For women the pattern is similar, although the differences between the population groups are smaller than for men. Mortality rates among Moroccan women follow the same remarkable pattern with age as those for Moroccan men. One of the main differences with the male pattern is that Turkish women above age 30 have a lower mortality risk than their Dutch peers. Turkish men on the other hand have higher risks than Dutch men in all age groups. The mortality rate for Turkish women is similar to that for Moroccan women.

5. Mortality among infants, children and teenagers

Graph 3a shows the differences in infant mortality – the number of deaths in the first year of life per 100 thousand live born babies – by country of origin and sex. Boys have about 20 percent more chance of dying in their first year and babies of non-western origin about 35 percent more. This confirms Van Duin's (2002) finding, which showed a 30 percent higher chance of death for the period 1995-2000. Compared with native Dutch babies, Antillean/Aruban babies, and to a lesser extent Surinamese babies, have unfavourable mortality risks. Baby girls with an Antillean/Aruban background in particular have a relatively high mortality risk: the chance of their dying before their first birthday is nearly 80 percent greater than that for Dutch baby girls.

3a. Infant mortality by sex and origin, per 100 thousand live births, 1996-2001
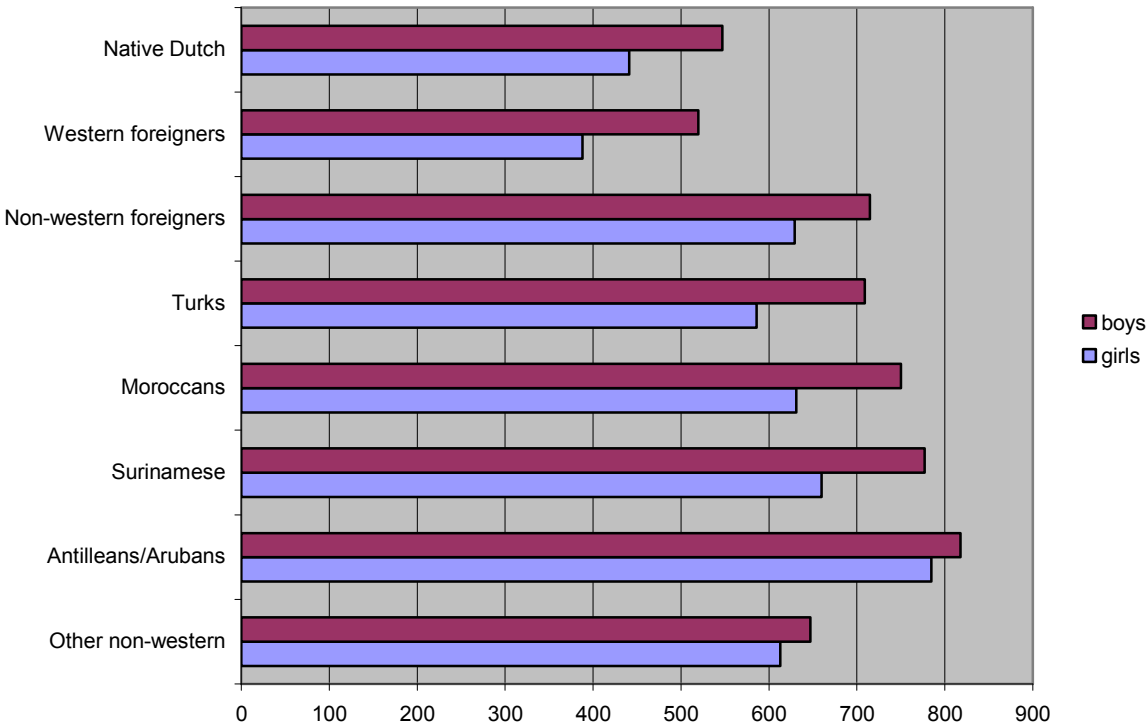
'Conditions originating in the perinatal period' was the largest category of causes of death for infants in all population groups with the exception of Turks. Such conditions occur more frequently among Surinamese, Antilleans and the group 'other non-western foreigners' than among Dutch, Turkish and Moroccan babies. For Surinamese boys and Surinamese and Antillean/Aruban and other non-western baby girls the frequency of this cause of death is statistically significantly higher than for native Dutch babies (*tables 4a and 4b*).

For Turkish babies the largest number of deaths are from congenital anomalies (40 percent of the total). About half of infant mortality among Dutch babies is caused by conditions originating in the perinatal period. For Turkish and Moroccan babies this is slightly lower, for Surinamese and Antillean/Aruban babies slightly higher. Infectious and parasitic diseases claim relatively few lives among the youngest children. This is also the case for groups of non-western foreign origin, although in previous years these causes of death were thought to have occurred significantly more frequently (Hoogenboezem and Israëls, 1990). According to the causes of death registration, about 4 percent of Turkish babies died of infectious or parasitic diseases, compared with just under 3 percent of native Dutch babies.

Around 5 percent of Dutch babies who died died from 'symptoms, signs and ill-defined conditions'. This category accounted for 7 percent among non-western foreign babies, with a highest value of 10 percent for Moroccan babies. Some of these were babies who died outside the Netherlands, although such an event is less common among babies under 1 year of age than among older children.

Non-natural causes of death – including traffic accidents – are very rare in the 0 year age group and the differences between the countries of origin are not significant.

Although it cannot be simply deduced from the causes of death, certain genetic conditions contribute to infant mortality in population groups where it is more common to marry relatives (mainly Turks and Moroccans). The higher number of deaths in some population groups will partly be caused by this. Another important factor in infant mortality is the difference in rates of teenage motherhood. Children of teenage mothers have a 60 percent greater risk of dying before their first birthday (Van Duin, 2002). Although teenagers give birth more easily, the outcome of their pregnancies is more unfavourable, even after correction for country of origin. Their babies are more likely to be born prematurely, to have a low birth weight and to die. This phenomenon is probably not only biological, but also related to socio-cultural and socio-economic or behavioural factors (Vogels et al., 2002).

Because higher infant mortality among babies of teenage mothers occurs particularly among single mothers (Achterberg and Kramers, 2001), this factor is less significant among Turkish and Moroccan teenage mothers who marry young on average, than among Antillean teenage mothers, who are relatively often single.

On the basis of the national obstetrics register, Van Enk et al. (2000) also established large differences between ethnic groups in the period 1990-1993, but they used a classification by origin based on other, partly racial, criteria. They found unfavourable values for black (non-Hindu) Surinamese girls. About one in twenty pregnancies among black teenage girls resulted in stillbirth, while one in seven babies were born prematurely. Van Enk et al. attributed this partly to the higher prevalence of sexually transmitted diseases in this group. These diseases increase the chance of premature birth, and thus the chance of perinatal mortality. Earlier studies (Van der Hoek et al., 1999) had shown a prevalence of *chlamydia* of 23 percent among black teenagers in Amsterdam, a considerably higher rate than among the rest of the population. Gonorrhoea also occurs remarkably more often among Surinamese, Antilleans and Arubans (Vogels et al., 2002).

Although mortality in age groups 1-4 and 5-14 years is relatively rare, it is more common among non-western foreign children than among western foreign and native Dutch children in this age group. Mortality at these ages is particularly unfavourable among Turks and Moroccans (*graphs 3b and 3c*). Non-natural causes are in general the largest individual category of causes of death in this age group, followed by malignant neoplasms (cancer). Twenty-eight percent of mortality among native Dutch children in this age group is caused by non-natural causes; about half of these non-natural causes are traffic accidents, and 6 percent – i.e. nearly 2 percent of total mortality – are murder or manslaughter. Twenty percent of deaths are caused by cancer. The corresponding figures for foreigners are too small to be compared with the Dutch population.

3b. Mortality per 100 thousand 1-4 year-olds, by sex and origin, 1996-2001
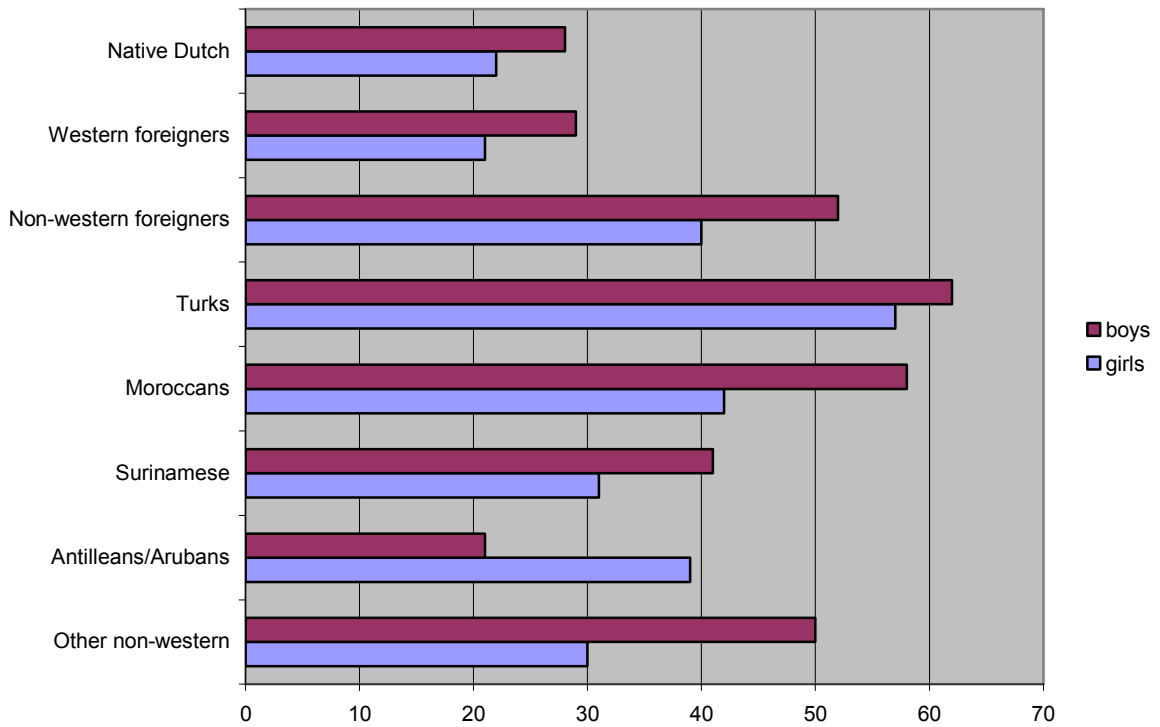
**3c. Mortality per 100 thousand 5-14 year-olds, by sex and origin, 1996-2001**
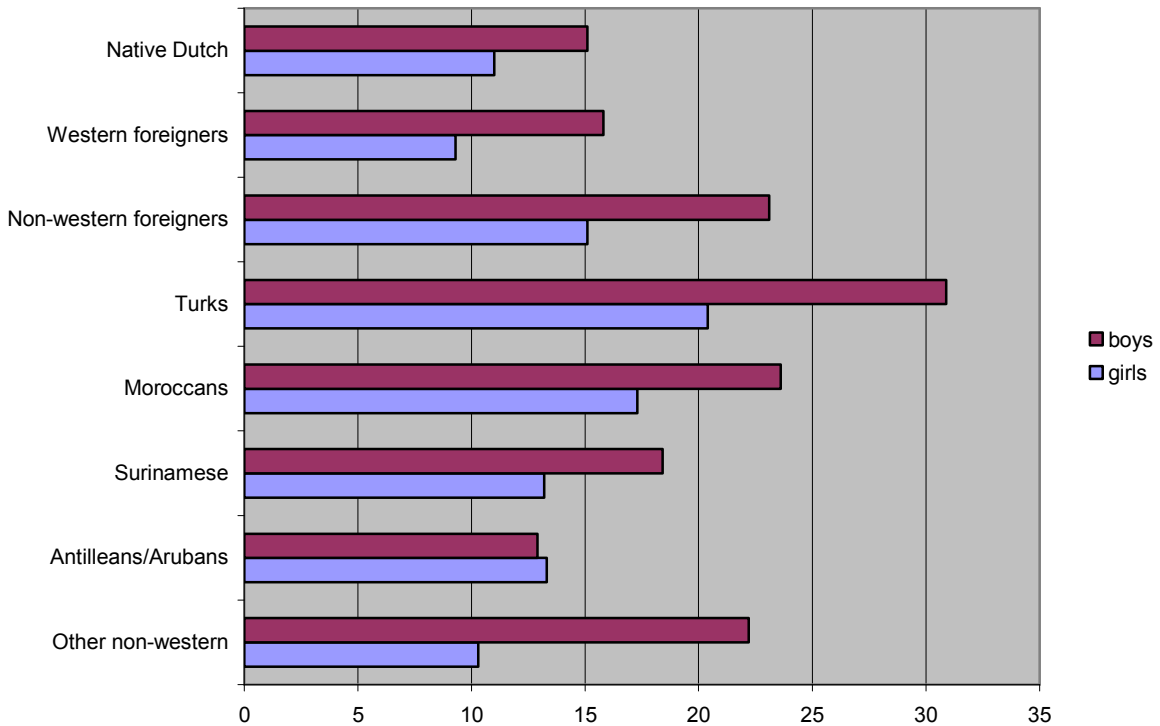
Just as for 0 year-olds, in the age group 1-14 years there are no signs that infectious and parasitic diseases cause significantly more deaths among non-western foreign children than among native Dutch children, in contrast to what Hoogenboezem and Israëls (1990) observed for Turks and

Moroccans. On the basis of older data, Maas et al. (1997) also concluded that one of the reasons for the higher mortality among Turkish and Moroccan children was the higher prevalence of infectious diseases in these groups. They hypothesised that the children caught such infections during holidays outside the Netherlands. Infectious diseases accounted for around 7 percent of deaths among native Dutch children, and around 8 percent among children of non-western parents. There are no significant differences between the various countries of origin. As the proportion of children who died outside the Netherlands is relatively small (see section 6.1), including these deaths (possibly from an infectious disease they had caught there) in the calculation does not lead to significantly higher mortality from infectious diseases.

Cancer seems to occur slightly less often among non-western foreign children aged 1-14 years (14 percent of deaths) than among Dutch children (20 percent) and western foreign children (18 percent). Endocrine, nutritional and metabolic diseases on the other hand are relatively more common among Turkish children (over 9 percent of deaths, i.e. twice as common as for native Dutch and western foreign children). The category 'symptoms, signs and ill-defined conditions' accounts for 16 percent of deaths among non-western foreigners, compared with 7 percent for native Dutch children and 12 percent of western foreign children.

3d. Mortality per 100 thousand 15-19 year-olds, by sex and origin, 1996-2001
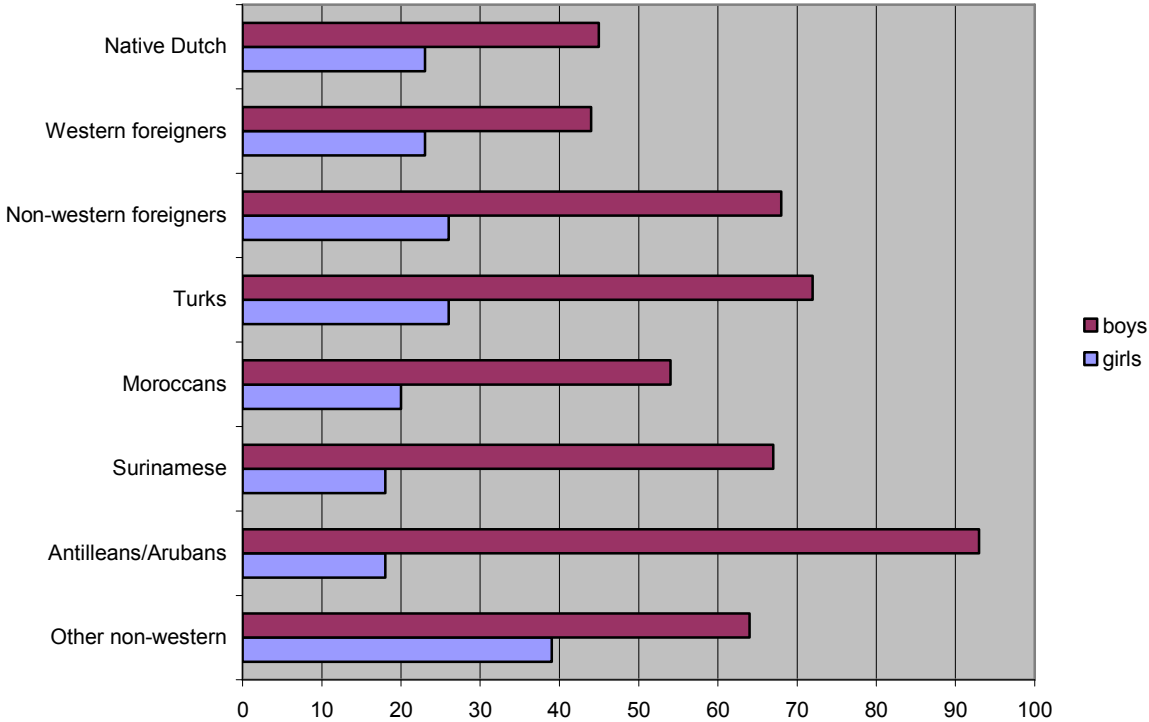
The most noticeable feature in mortality among teenagers aged 15-19 years is the substantial differences between boys and girls (*graph 3d*). These differences are particularly large among non-western teenagers, and more in particular among Antilleans. Antillean boys in this age group are five times more at risk of dying than Antillean girls of the same age.

This higher risk is usually attributed to the considerably higher risk for boys of dying of non-natural causes (especially traffic accidents and murder/manslaughter). However, data for the period 1996-2001 show that mortality from other causes of death (cancer, cardiovascular diseases, diseases of the nervous system and congenital anomalies) for boys in this age group is often considerably higher than for girls. This is particularly true for cancer and 'symptoms, signs and ill-defined conditions' (which includes teenagers who died abroad). For example, per 100 thousand non-western foreign boys aged 15-19 years, 38 died of non-natural causes, 11 from 'symptoms, etc.' and 7 from cancer. Per 100

thousand girls these numbers are respectively 11, 3 and 3. Among native Dutch teenagers, too, there are differences between the sexes, but these are less pronounced: non-natural causes: 28 boys against 11 girls, 'symptoms, etc.' 2 boys against 1 girl, and cancer 5 boys against 4 girls.

6. Mortality among adults

Section 4 and table 3 give a general overview of mortality patterns from all causes together by sex, age and country of origin. In general mortality rates for non-western foreigners of adult ages, up to around 70 years, are higher than those for native Dutch people. For Moroccan men and to a lesser extent Moroccan and Turkish women, the pattern is different: their mortality rates are below those for the Dutch (sometimes substantially so) from the age of 35 years. In this section we shall look into the contribution of the various causes of death to this pattern, and what the estimated effect of deaths occurring abroad is on the prevalence of these causes of death. The causes in the latter cases are usually coded as 'symptoms, signs and ill-defined conditions', and thus result in an underestimation of other causes of death.

6.1 Deaths outside the Netherlands

Naturally, the proportion of people dying outside the Netherlands varies with country of origin (*graph 4a*). For the native Dutch population just over half of one percent - around 4.6 thousand people in the six year period- died outside the Netherlands. For non-western foreign population groups this proportion is much larger. The highest share is for the Turkish group in the Netherlands: 22 percent of deaths in this group occurred abroad, most of them (more than 90 percent) in Turkey. Among Moroccans, too, the proportion of deaths occurring abroad is high: 17 percent, of which 85 percent in Morocco.

4a. Proportion of all deaths that occurred outside the Netherlands or in the country of origin, by country of origin, 1996-2001
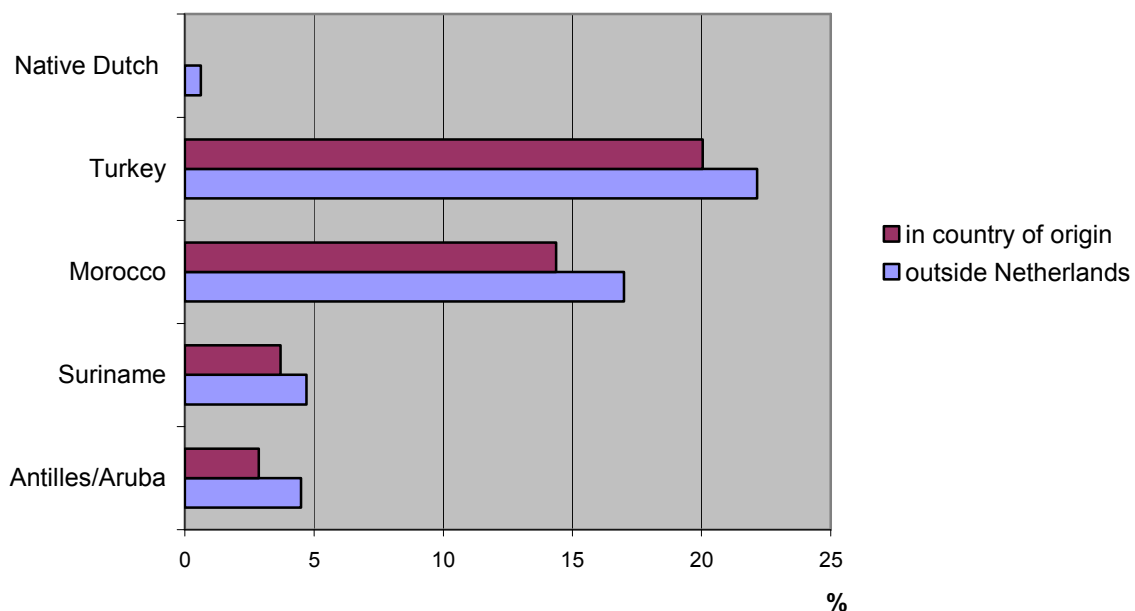

The proportion of young non-western children dying abroad is relatively small (*graph 4b*). It is highest among middle-aged Turks, followed by Moroccans. In the latter group, the oldest Moroccans are most likely to die abroad.

The cause of death is known for only one percent of those who die outside the Netherlands. These are usually non-natural causes of death (mostly traffic accidents). All other deaths are coded as 'symptoms, signs and ill-defined conditions'.

4b. Proporption of all deaths that occurred outside the Netherlands, by origin and age, 1996-2001
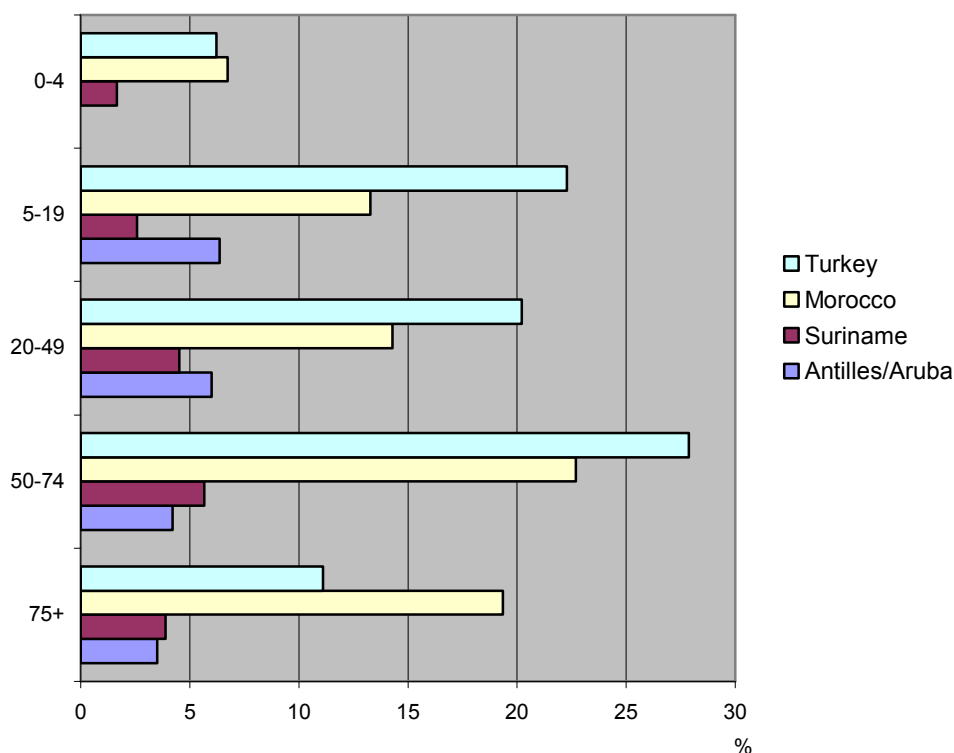
6.2 Causes of death

To compare the frequency of mortality by cause between the various groups of origin, the figures for the period 1996-2001 were standardised indirectly, using the mortality risk of the native Dutch population as standard. These risks are multiplied with the numbers of foreign men and women in the age category concerned. The numbers thus obtained are then summed up over the age categories. Lastly, the ratio between these values and the observed values for the foreign population is multiplied by the mortality rates for the native Dutch population. *Tables 4a and 4b* show the results of these calculations for the 17 main classes of the International Classification of Diseases and Related Health Problems, WHO 10th Revision. The numbers in bold type are significantly deviant from the values for the native Dutch population (i.e. the values for the Dutch population are outside the 95 percent confidence interval of the corresponding value for foreigners). Both significantly lower and significantly higher values were found.

Table 4a. Indirectly standardised number of deaths per 100 thousand of the population group concerned, by country of origin and cause of death, men, 1996-2001

		native Dutch	Turks		Moroc-cans		Surina-mese		Antilleans/ Arubans	other non-western	
1	Infectious and parasitic diseases	10	14		14		**35**		40	**38**	
2	Neoplasms	299	**224**	-	**147**	-	**207**	-	269	**194**	-
3	Diseases of blood (-forming) organs	2	3		1		5		6	3	
4	Endocrine, nutr. and metabolic diseases	22	45		38		**79**	+	46	27	
5	Mental and behavioural disorders	19	9		7		27		24	16	
6	Diseases of the nervous system	18	15		15		16		24	12	
7	Cardiovascular diseases	338	373		**178**	-	**450**	+	365	284	
8	Diseases of the respiratory system	105	87		76		97		107	92	
9	Diseases of the digestive system	31	22		16		55		32	36	
10	Diseases of the skin and subcut. tissue	2	1		0		3		3	3	
11	Diseases of the musculoskeletal system and connective tissue	4	4		6		6		4	1	
12	Diseases of the genito-urinary system	15	29		20		32		37	26	
14	Certain cond. orig. in perinatal period	270	238		314		**455**	+	393	323	
15	Congenital anomalies	4	5		5		3		4	4	
16	Symptoms, signs and ill-def. conditions	39	**254**	+	**141**	+	**105**	+	85	**97**	+
17	Non-natural causes	39	46		45		63		71	52	

Table 4b. Indirectly standardised number of deaths per 100 thousand of the population group concerned, by country of origin and cause of death, women, 1996-2001

		native Dutch	Turks		Morocc-ans		Surina-mese		Antilleans/ Arubans		other non-western	
1	Infectious and parasitic diseases	10	19		19		20		37		36	
2	Neoplasms	236	**113**	-	**102**	-	**156**	-	185		**163**	-
3	Diseases of the blood(-forming) organs	3	8		12		10		0		4	
4	Endocrine, nutr. and metabolic diseases	36	68		65		**118**	+	100		49	
5	Mental and behavioural disorders	47	28		**16**	-	46		34		29	
6	Diseases of the nervous system	23	26		26		**17**	-	36		17	
7	Cardiovascular diseases	346	337		297		441		424		347	
8	Diseases of the respiratory system	87	46		66		82		64		82	
9	Diseases of the digestive system	40	32		33		44		28		31	
10	Diseases of the skin and subcut. tissue	5	3		0		5		4		1	
11	Diseases of the musculoskeletal system and connective tissue	8	7		16		21		18		13	
12	Diseases of the genito-urinary system	22	41		25		39		26		42	
13	Complications of pregnancy and childbirth and the puerperium	0	1		1		0		1		1	
14	Certain cond. orig. in perinatal period	209	177		217		**374**	+	**476**	+	**297**	+
15	Congenital anomalies	4	5		5		3		5		3	
16	Symptoms, signs and ill-def. conditions	47	**240**	+	**226**	+	89		99		113	
17	Non-natural causes	28	25		29		35		31		36	

[1] The mortality risk for this cause of death is calculated for the population of 0 year-olds.

Values in bold type: significantly higher (+) / lower (-) than the corresponding value for the native Dutch (95 percent confidence interval)

Table 5a. Indirectly standardised number of deaths per 100 thousand of the population group concerned, after redistribution of 'symptoms etc.', by country of origin and cause of death, men, 1996-2001

		native Dutch	Turks		Moroc-cans		Surina-mese		Antilleans/Arubans		other non-western	
1	Infectious and parasitic diseases	10	19		18		**38**	+	44		**43**	+
2	Neoplasms	311	315		**190**	-	**228**	-	289		**221**	-
3	Diseases of the blood(-forming) organs	2	4		2		6		7		3	
4	Endocrine, nutr. and metabolic diseases	23	**61**	+	49		**86**	+	49		31	
5	Mental and behavioural disorders	20	11		8		30		26		19	
6	Diseases of the nervous system	19	18		18		17		26		13	
7	Cardiovascular diseases	352	**522**	+	**234**	-	**495**	+	396		327	
8	Diseases of the respiratory system	109	116		102		107		117		106	
9	Diseases of the digestive system	32	29		21		61		34		41	
10	Diseases of the skin and subcut. tissue	2	2		0		4		4		3	
11	Diseases of the musculoskeletal system and connective tissue	4	6		7		6		4		2	
12	Diseases of the genito-urinary system	16	38		26		35		40		30	
14	Certain cond. orig. in perinatal period	270	238		314		**455**	+	393		323	
15	Congenital anomalies	4	6		6		3		4		4	
17	Non-natural causes	41	58		55		**70**	+	**78**	+	**59**	+

Table 5b. Indirectly standardised number of deaths per 100 thousand of the population group concerned, after redistribution of 'symptoms etc.', by country of origin and cause of death, women, 1996-2001

		native Dutch	Turks		Moroc-cans		Surina-mese		Antilleans/Arubans		other non-western	
1	Infectious and parasitic diseases	11	**23**	+	**25**	+	21		40		40	
2	Neoplasms	246	**151**	-	**134**	-	**169**	-	200		183	
3	Diseases of the blood(-forming) organs	3	12		16		11		0		4	
4	Endocrine, nutr.and metabolic diseases	38	91		88		**129**	+	107		54	
5	Mental and behavioural disorders	50	36		21		50		40		31	
6	Diseases of the nervous system	25	34		32		19		39		19	
7	Cardiovascular diseases	364	447		408		**480**	+	465		384	
8	Diseases of the respiratory system	93	61		88		89		69		89	
9	Diseases of the digestive system	42	40		42		48		32		34	
10	Diseases of the skin and subcut. tissue	5	3		0		6		4		2	
11	Diseases of the musculoskeletal system and connective tissue	9	10		21		22		22		15	
12	Diseases of the genito-urinary system	23	56		34		43		31		47	
13	Complications of pregnancy and childbirth and the puerperium	0	0		0		0		0		0	
14	Certain cond. orig. in perinatal period	209	177		217		**374**	+	**476**	+	**297**	+
15	Congenital anomalies	4	6		5		3		5		4	
17	Non-natural causes	30	33		35		37		34		40	

[1] The mortality risk for this cause of death is calculated for the population of 0 year-olds; in view of the small number of deaths in this age group that occur abroad, this group is not included in the redistribution

Values in bold type: significantly higher (+) / lower (-) than the corresponding value for the native Dutch (95 percent confidence interval)

6.2.1 Cancer

What is most noticeable in these tables is the substantial differences in the prevalence of cancer as cause of death, both between men and women and between the native Dutch and the foreign population. With respect to the difference between the Dutch and the foreign population groups, the values for all groups of foreign origin, with the exception of the relatively small group of Antilleans and Arubans, are statistically significantly lower than those for the Dutch population. Because the higher number of deaths from unknown causes ('symptoms etc.') among foreigners may have a relative downward effect on the figures for deaths from cancer, in *tables 5a and 5b* these unknown causes are distributed proportionally to the other specific causes. Hoogenboezem and Israëls (1990) also did this, and it resulted in a significantly lower mortality from cancer among Turks and Moroccans. A similar pattern emerges in tables 5a and 5b for both sexes and all non-western foreign population groups, but this time with the exception of Turkish men: after the distribution of unknown causes, the risk for Turkish men of dying from cancer is similar to that for native Dutch men. These figures seem to indicate a negative development in mortality from cancer for Turkish men. The reservation should be made in this respect that mortality from cancer among Turkish men in the period reviewed by Hoogenboezem and Israëls was very low in an absolute sense (13 deaths per year, compared with 70 deaths per year in the period 1996-2001).

From the age of 40 years onwards, cancer mortality rates are lowest by far for Moroccan men and women (*graphs 5a and 5b*). Even after the reallocation of unknown causes, the values for Turkish women, Moroccans, Surinamese and other non-western men are significantly lower than those for the native Dutch population. The mortality risk from cancer for Moroccans in particular is considerably lower than that for the Dutch. For Moroccan men the annual mortality risk from cancer is an estimated 190 per 100 thousand, compared with 311 per 100 thousand for native Dutch men.

To find out whether there are any clear differences between deaths from certain types of cancer, *graphs 6a and 6b* show deaths by type of cancer for men and women. The graphs present the distribution between types of cancer, not the frequency. As explained above, with the exception of Turkish men, cancer is less prevalent among non-western population groups than among the native Dutch population.

5a. Annual number of deaths among men from cancer per 100 thousand men in the age and origin group concerned, 1996-2001
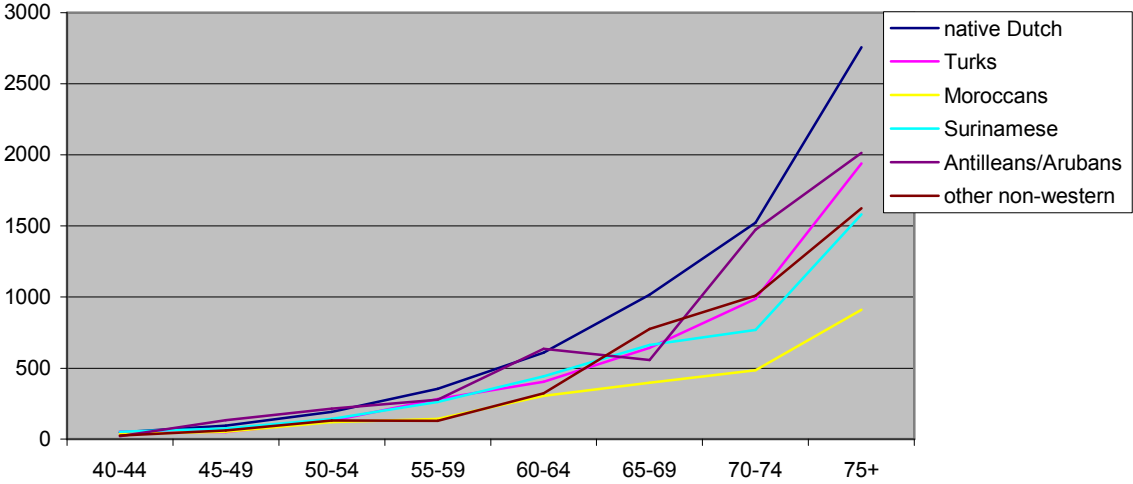
5b. Annual number of deaths among women from cancer per 100 thousand women in the age and origin group concerned, 1996-2001
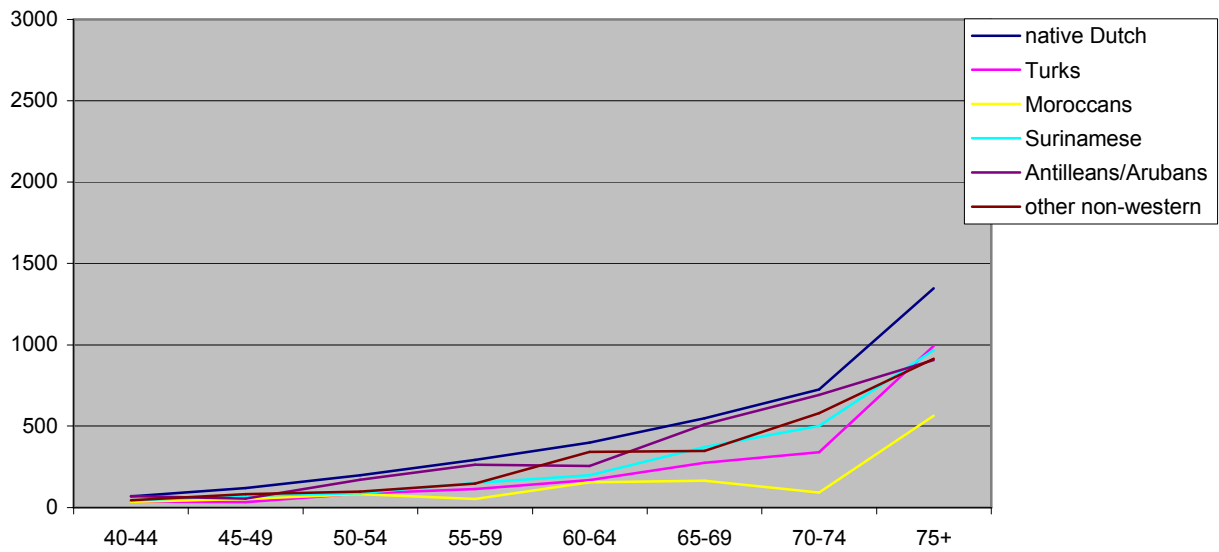

For men, *cancer of the trachea, bronchi and lungs* is the largest individual category for all population groups, although there are differences in the proportion of deaths it accounts for per group, even more so if the differences in frequency are taken into account. The proportions of deaths from this category of cancer are lowest for Surinamese men and men from 'other non-western countries'. In view of their

6a. Distribution of deaths from cancer by type of cancer and origin, standardised for age, men, 1996-2001
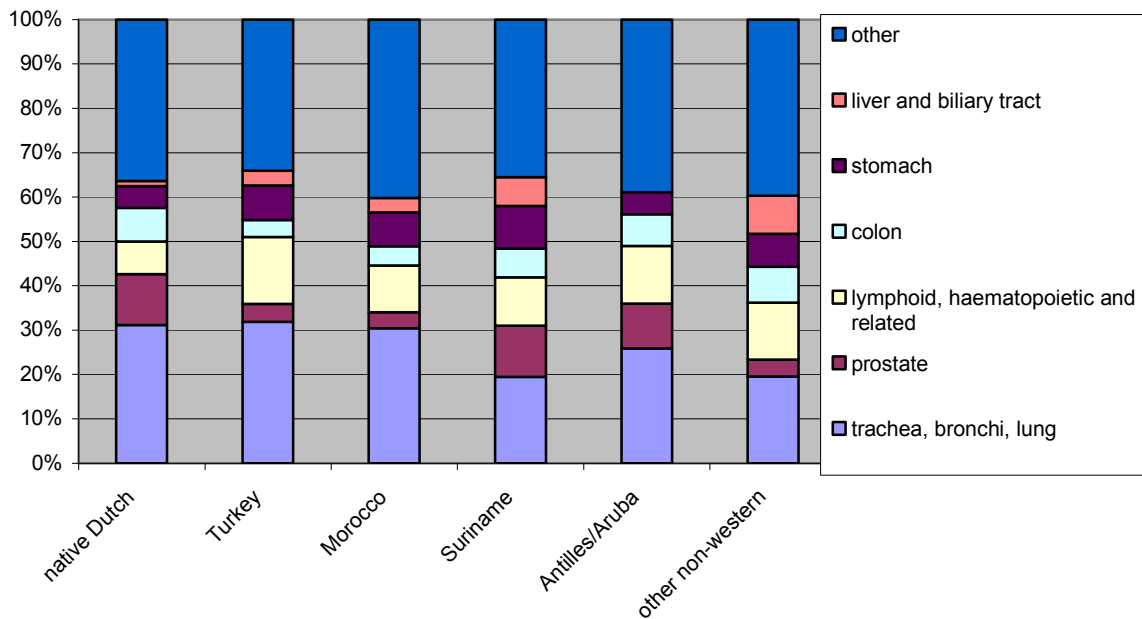
6b. Distribution of deaths from cancer by type of cancer and origin, standardised for age, women, 1996-2001
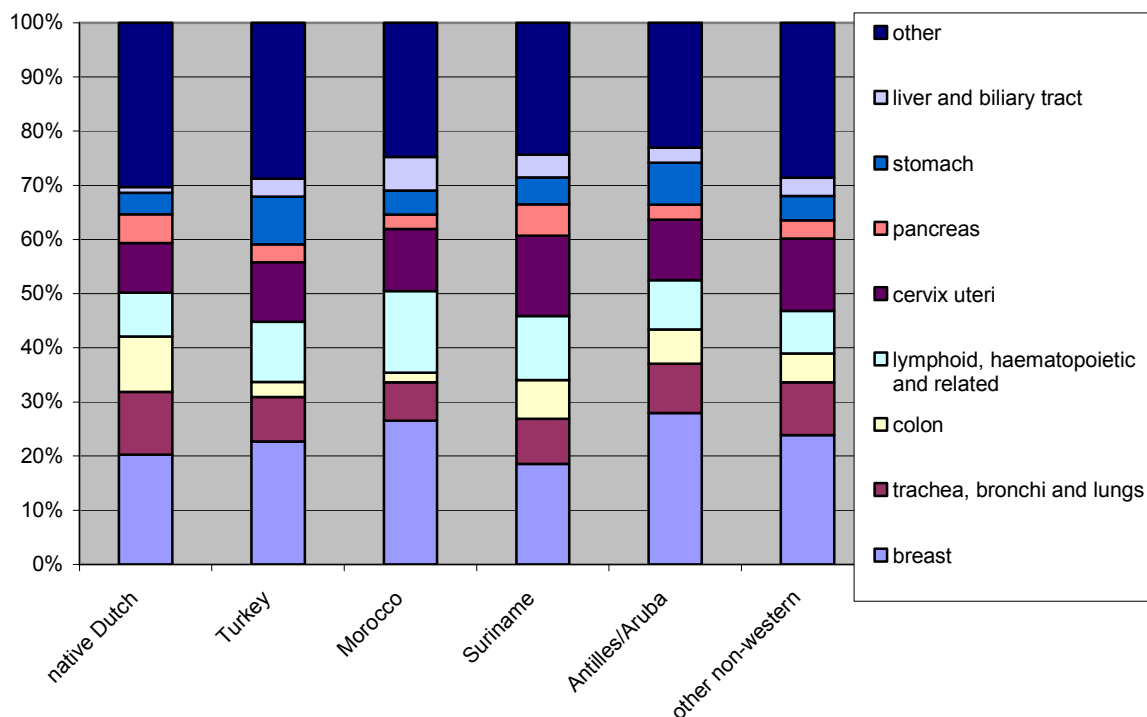
much lower mortality, the risk for Moroccan men of dying from lung cancer is also substantially lower than that for Dutch men. For Turks, however, both the proportion and the frequency of deaths from lung cancer is similar to that for Dutch men. All non-western women show a smaller proportion and a lower frequency of deaths from lung cancer than native women, even after reallocation of the unknown causes of death.

One of the reasons for the - compared with other non-western groups - relatively high risk for Turkish men of dying from cancer is almost certainly their smoking behaviour. No fewer than 70 percent of Turkish men aged 24-44 years smoke, compared with 40 percent of native Dutch men and 30 percent of Moroccan men in this age group (Van Leest et al., 2002; figures for native men estimated on the basis of Statistics Netherlands, 2003). Moreover, Turkish men smoke more cigarettes a day (Brussaard et al., 2001). The figures for smoking among Surinamese and Antilleans are less reliable. The proportion of men in this age group who smoke is probably around 30 percent (Van Leest et al., 2002). Among adolescents, however, fewer Turks and Moroccans than Dutch smoke. Smoking does not seem to be a 'cool' thing to do in Muslim circles, and young Muslims are unlikely to smoke in front of their parents (*Het Parool*, 12 April 2002).

The proportion of lung cancer deaths is much lower among women in all non-western population groups together than among native Dutch women. After standardisation, the proportion is twice as high for Dutch women as for foreign women. The slightly lower risk for Turkish women and substantially lower risk for Moroccan women of dying from lung cancer is again closely related to their smoking behaviour: Turkish women smoke less than Dutch women and hardly any Moroccan women at all smoke (Van Leest et al., 2002).

Breast cancer is the most common form of cancer in women. The proportion of deaths from this type of cancer is similar for all population groups, except for Surinamese women, for whom it is slightly lower.
Stomach cancer is a relatively more common cause of death for men from Morocco, Turkey and Suriname than for Dutch men. This is also the case for Turkish and Antillean women.
Prostate cancer is a more common cause of death for Surinamese and Antillean men than for other non-western population groups.
Cancer of the liver and intrahepatic biliary tract is a slightly more common cause of death than average among Surinamese men and other non-westerners.
Cancer of the colon is considerably less common among Turkish an Moroccan men and women than average.

6.2.2 Cardiovascular diseases

Cardiovascular diseases claim significantly fewer lives among Moroccan men than among the native Dutch, and significantly more among Surinamese men and women (tables 5a and 5b). The pattern of the mortality risk from these diseases is illustrated in *graphs 7a and 7b*. It is clear that the risk for women at all ages, with the exception of Moroccan women in the oldest age group, is consistently lower than for men. Most noticeable is the substantially lower mortality from these diseases at all ages for Moroccan men. For Moroccan men in their forties, fifties and sixties the risk of dying from cardiovascular diseases is only half that of Dutch men. Turkish men on the other hand have a 10 to 20 percent higher risk of dying from these diseases at relatively young ages, and the picture for Surinamese men, for whom a significantly higher mortality from these causes was observed, is also unfavourable: with the exception of the oldest age group their chance of dying from cardiovascular diseases is considerably higher at all ages. Surinamese men in their forties and fifties are twice as likely as Dutch men to die from these causes. In their sixties this rises to a 60 percent higher risk.
For Dutch and foreign women the risk of dying from cardiovascular conditions is relatively low up to 60 years of age. After this age the risk for Surinamese women is again higher than average, and for Moroccan women lower than average. The irregular pattern of the risk for Antillean/Aruban women at older ages shown in graph 7b is probably caused by incidental fluctuations connected with the small absolute number: in the period 1996-2001 a total of 36 Antillean/Aruban women aged between 65 and 75 died in the Netherlands.

Graphs 8a and 8b show the distribution of the main cardiovascular diseases within this category of causes of death. Just as was the case for cancer, for Moroccans the frequency of cardiovascular disease is considerably lower than for the native Dutch population. If this is taken into account, the lower frequency of cardiovascular disease among Moroccan men is mainly caused by the significantly lower prevalence of ischaemic heart disease (heart attacks). For Moroccan women the frequencies of both ischaemic heart disease and cerebrovascular disease are lower than average. Turkish men die more often than average from ischaemic heart disease. Surinamese men and women, who die significantly more often from cardiovascular disease, mainly die more from cerebrovascular disease.
Just as was the case for cancer, the higher mortality from cardiovascular disease among Turkish men is partly related to their unfavourable smoking behaviour. Available information on nutrition, another possible factor in the explanation of this pattern, is not very clear cut, partly because there has been a lot less interest in the eating habits of adult men than in those of mothers and children. Moreover, the results of the studies are often contradictory, possibly because of how food consumption is measured.

7a. Annual number of deaths among men from cardiovascular disease per 100 thousand men in the age and origin group concerned, 1996-2001
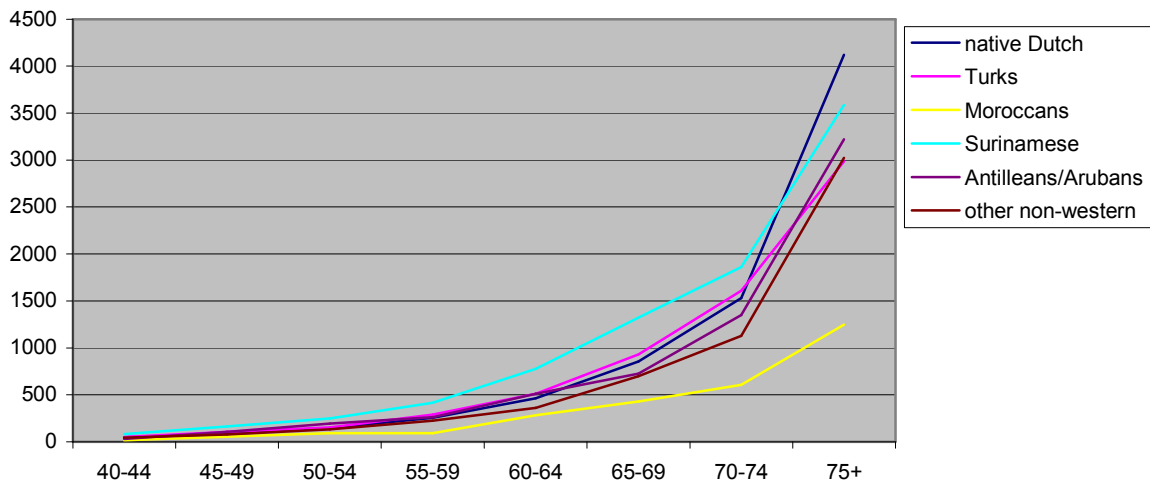

7b. Annual number of deaths among women from cardiovascular disease per 100 thousand women in the age and origin group concerned, 1996-2001
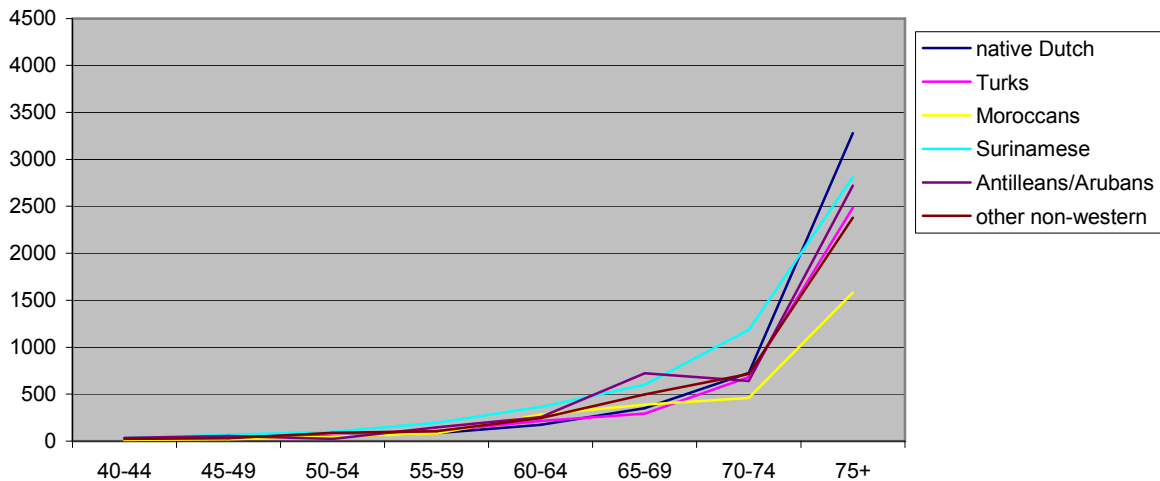

A TNO survey among Turkish, Moroccan and Dutch native 8 year-olds and their mothers stated that both foreign groups ate more fruit and vegetables than their Dutch peers (Brussaard, 1999). Hulshof and Van Staveren (1995) reported that Turkish women eat more fruit but not more vegetables. And lastly Dijkshoorn (2002), based on a survey by the municipal health authorities in Amsterdam, reported that fewer Turks and Moroccans than Dutch people eat fruit and vegetables on a daily basis. There is also some contradiction in reports of saturated fat intake. According to the TNO survey Turkish and Moroccan women eat less food containing saturated fats, but this is contradicted by another survey (Köycü et al., 1997).

8a. Distribution of deaths from cardiovascular diseases by type of disease and origin, standardised for age, men, 1996-2001
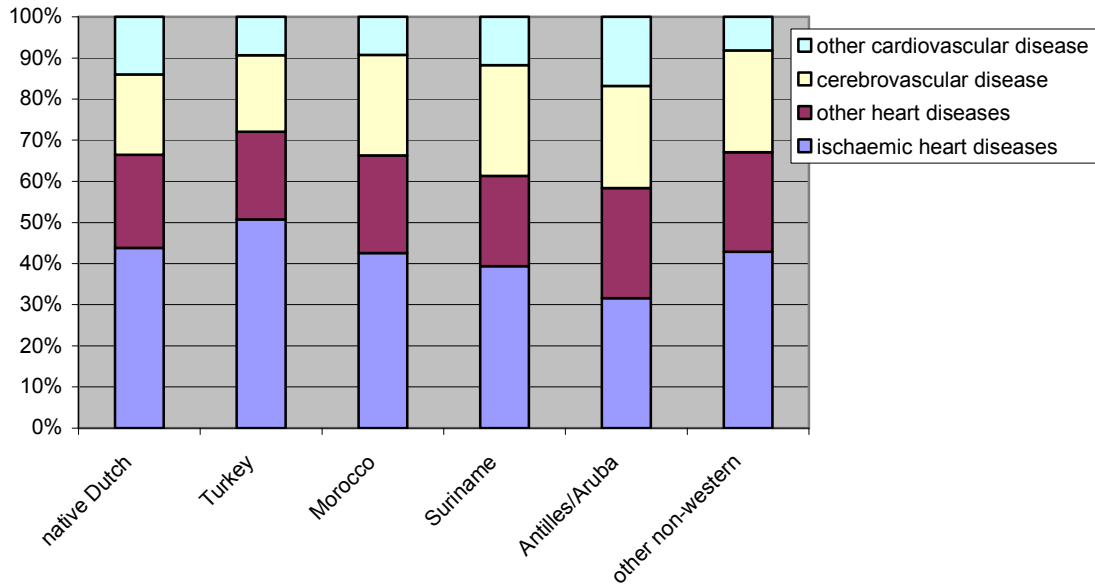
8b. Distribution of deaths from cardiovascular disease by type of disease and origin, standardised for age, women, 1996-2001
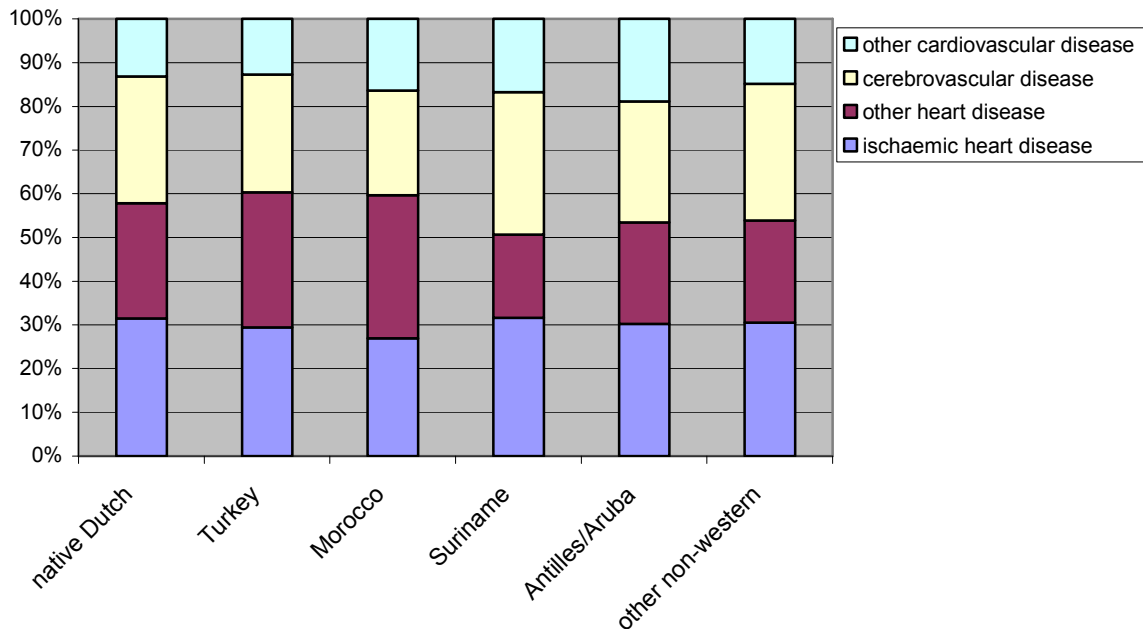
The scanty information on other factors known to contribute to heart disease also gives little to go on. Obesity, lack of exercise and high blood pressure are more common among both Turks and Moroccans than among the Dutch, which might explain the higher frequency of cardiovascular diseases among Turks, but seems to be in conflict with the much lower frequency among Moroccans. The little information available on hypercholesterolemia among foreigners seems to indicate a lower prevalence on average than among the native Dutch (Van Leest et al., 2002). The available information does not

give a conclusive explanation for the noticeably lower mortality for Moroccans from age 35 onwards. Although they smoke less than their Dutch peers, and certainly less than Turks, a difference in the proportion of smokers of around 10 percent points (between Moroccans and Dutch) does not seem to be enough to explain the large difference in mortality risks. There might be a protective effect from some micro or macro-nutrients that is as yet undocumented. According to Merens et al. (1999), they have healthier Mediterranean eating habits, with a high carbohydrate and unsaturated fat intake. Brussaard et al. (1997) report that adult Moroccan women have more pulses, fish and rice/pasta and fewer dairy products, meat and soft drinks in their diet. Huiskamp (undated) reports healthier eating habits among Moroccans (as well as among Turks) in Rotterdam. However, hardly any factual information is available on the diet of adult Moroccan men.

For Surinamese men, a group with a considerably higher than average mortality from cardiovascular diseases, there is also insufficient available information on what they eat to explain their deviant mortality rates. As stated above, only scanty information has been published on smoking behaviour, which does not seem worse than that of the Dutch. As far as diet is concerned, only the study by Van Erp-Baart et al. (1998, 2001) gives some information, but because of the number of respondents (45) and their average age (31) this is very general. This study reports that Surinamese like 'good food', especially hot meals. Snacks in between meals are also popular in this group. Compared with Moroccan women they eat significantly more cereal products, meat and chicken, but less fruit and vegetables. Their intake of macro-nutrients is assumed to be more in keeping than the conventional Dutch diet with what is currently considered to be a healthy diet, but - as is the case for Turks and Moroccans – to be deficient in micro-nutrients (vitamins, minerals and trace elements.)

6.2.3 Diabetes

Tables 5a and 5b show that for men and women from Suriname there is a significantly higher mortality from endocrine, nutritional and metabolic diseases. This category also causes more deaths than average among Turkish men.
Graphs 9a and 9b show the frequency of this cause of death by age. Remarkably, among foreigners, regardless of where they come from, endocrine, nutritional and metabolic diseases are more common causes of death to around 70 years of age than among the Dutch. About 80 percent of mortality from this category is caused by diabetes.
It has long been known that there is a higher frequency of diabetes mellitus, type 2, among Hindu Surinamese people. Middelkoop (1996) even speaks of worryingly high morbidity and mortality figures. However, the prevalence rates mentioned in the literature are usually estimated on the basis of diagnoses by family doctors, which means that there is a real chance of double counting.
Diabetes is a relatively common illness and, as shown in graphs 9a and 9b, a relatively common cause of death from young ages. Brussaard et al. (2001) point out a possible genetic component, which advances the onset of the condition to a younger age and may lead to more serious complications. Merens et al. (1999) report that the condition is the result of the Surinamese diet (too much sugar and saturated fats), but the evidence for this is not convincing: according to Van Leest et al. (2002) Surinamese men have a lower saturated fat intake than Dutch men.
Maas et al. (1997) report a three times higher risk of mortality from diabetes than for the native Dutch population, which is in line with findings as presented in tables 5a and 5b.

9a. Annual number of deaths among men from endocrine, nutritional and metabolic diseases per 100 thousand men in the age and origin group concerned, 1996-2001

Legend:
- native Dutch
- Turks
- Moroccans
- Surinamese
- Antilleans/Arubans
- other non-western
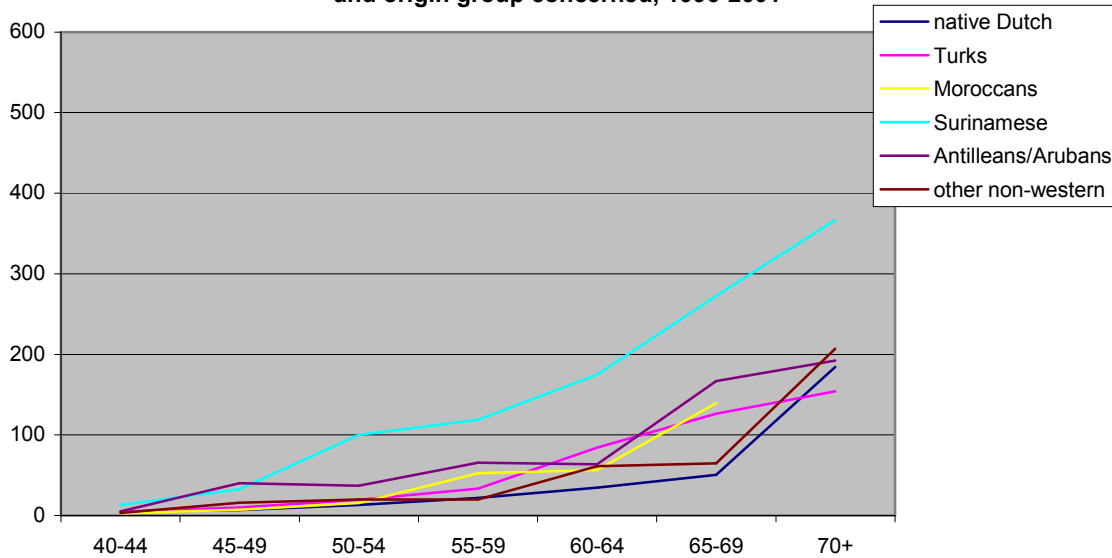
9b. Annual number deaths among women from endocrine, nutritional and metabolic diseases per 100 thousand women in the age and origin group concerned, 1996-2001

Legend:
- native Dutch
- Turks
- Moroccans
- Surinamese
- Antilleans/Arubans
- other non-western
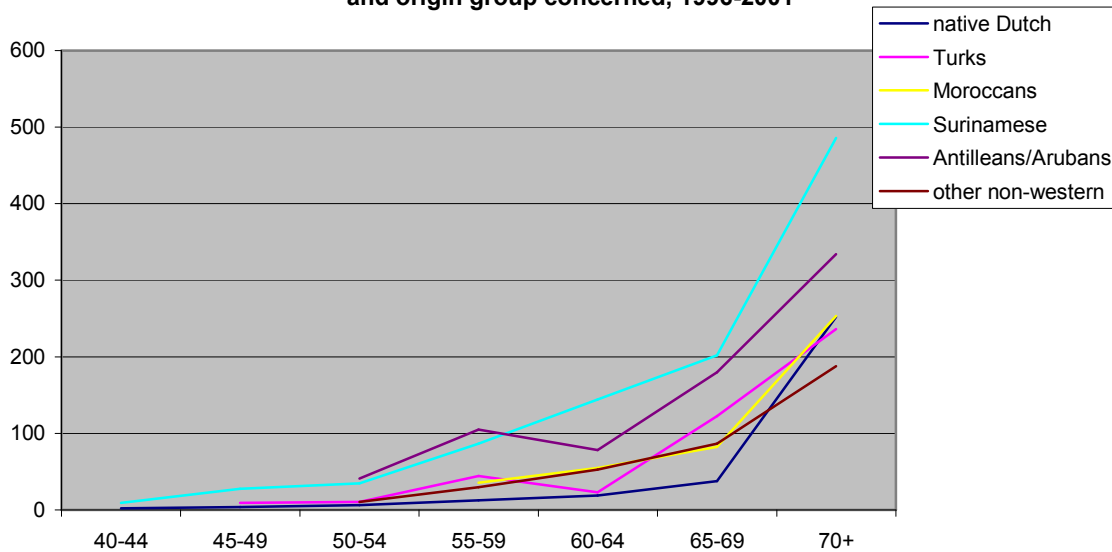
6.2.4 Non-natural causes of death

About 3.5 percent of all deaths in the Netherlands are from non-natural (or external) causes. Within this category, suicide is the largest specific cause, accounting for 30 percent of these deaths, traffic accidents come second with 22 percent and accidental falls third with 15 percent. Murder and manslaughter account for fewer than 4 percent of non-natural causes of death.
There are large differences in the distribution of the causes between the age groups. Generally speaking, traffic accidents and murder/manslaughter are more common among the younger age groups, and domestic accidents such as accidental falls among older age groups. Because of the much higher frequency of natural causes of death, non-natural causes are relatively insignificant among older age groups.

For young people this is the other way round. *Table 6* shows that a considerable proportion of mortality among 15-29 year-olds – among foreign men even more than half – are from non-natural causes. The higher mortality among foreign youngsters shown in table 3 is indeed mainly the consequence of a higher frequency of non-natural causes. It should also be noted in this respect that other non-natural causes also occur more often among young foreigners than among their Dutch peers. On the basis of their survey of the period 1979-1988, Hoogenboezem and Israëls (1990) reported that relatively many non-natural deaths occur among Turks and Moroccans: more traffic accidents and murder/manslaughter and fewer suicides. The data for 1996-2001 still show a higher mortality risk for young men, but young Turkish men are no longer more likely than young Dutch men to be killed in a traffic accidents, although they do commit suicide more often (*graph 10a*). A similar pattern is observed for young Turkish women, although at a much lower level (*graph 10b*). Traffic accidents are slightly more common among Moroccan men than among Dutch men, but the former are less likely than the latter to commit suicide.

Suicide is relatively common among young Surinamese men and women. The higher mortality of Antillean men in this age group from non-natural causes is mainly caused by the above average frequency of murder and manslaughter. This means that their risk of dying from a non-natural cause is about twice as high as that for native Dutch 15-29 year-olds.

Table 6. Percentage of deaths among 15-29 year-olds from non-natural causes, by sex and origin, 1996-2001

	men	women
native Dutch	29,8	39,1
western foreign	59,3	49,8
non-western foreign	58,4	37,4
of whom:		
Turks	56,9	35,6
Moroccans	61,1	34,7
Surinamese	58,9	47,7
Antilleans/Arubans	59,6	30,0
other non-western	57,0	35,6

10a. Annual number of deaths among 15-29 year-old men from non-natural causes per 100 thousand men in the age and origin group concerned, 1996-2001
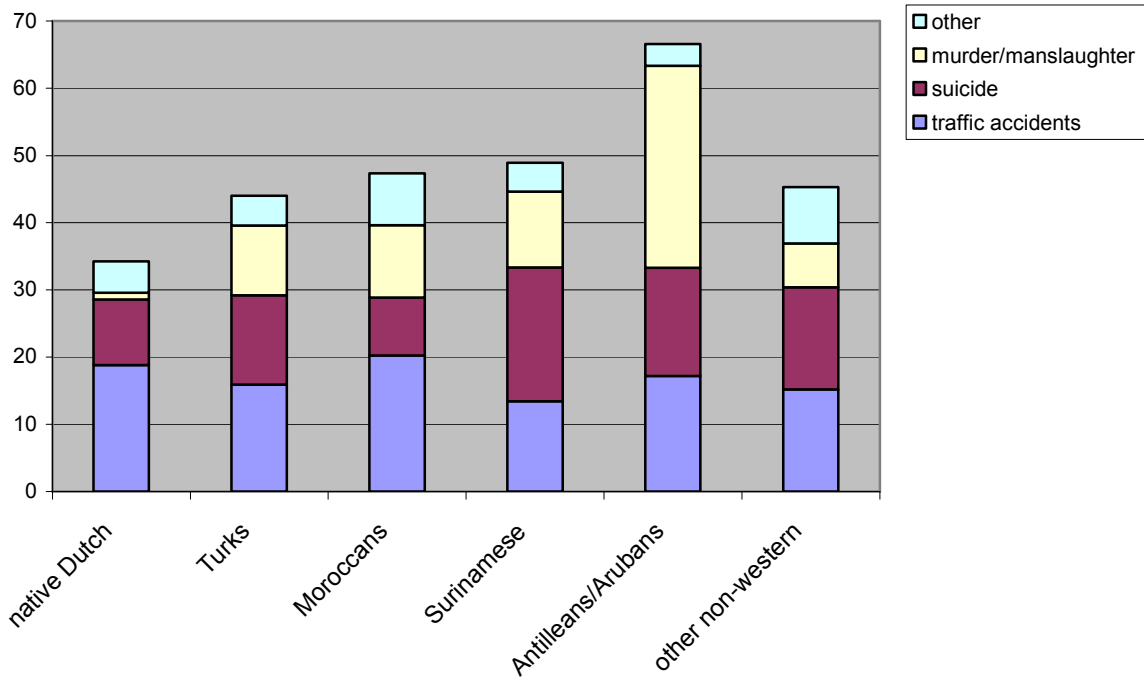
10b. Annual number of deaths among 15-29 year-old women from non-natural causes per 100 thousand women in the age and origin group concerned, 1996-2001
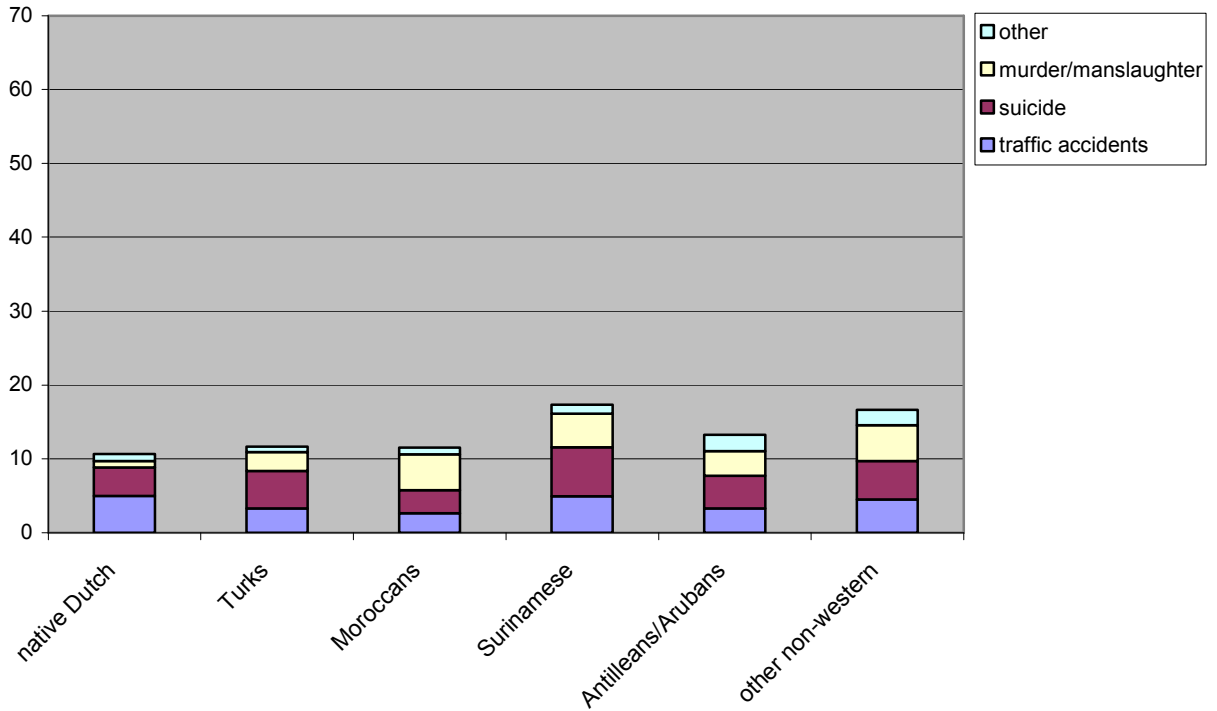
7. Conclusion and discussion

In the period covered by this study, 1996-2001, 830 thousand people died in the Netherlands, of whom 2 percent were non-western foreigners. The proportion of non-western foreigners in total deaths is still small because of their youthful population composition. This also explains why 16.4 thousand non-western foreigners died, compared with 86.1 thousand western foreigners, although both groups are about the same size.

In spite of this, up to the age of 70 the mortality risks for all non-western foreigners together are significantly higher than those for western foreigners and the native Dutch. Roughly speaking this is also true for the component groups, though with the exception of the Moroccans. From around 35 years of age the mortality rate of Moroccan men is considerably lower than that of Dutch men. Among Moroccans aged over 75 years the mortality risk is even half. Up to the age of 35, however, Moroccan men have a much higher mortality than Dutch men. Just as for Turkish boys, in the age group 1-4 years the mortality risk for Moroccan boys is twice as high as for Dutch boys.

Babies of non-western origin have a 35 percent higher chance of dying before their first birthday than Dutch babies. Aruban and Antillean babies in particular, and to a lesser extent Surinamese babies, have unfavourable mortality rates. Babies born to teenage mothers, who have a 60 percent higher mortality risk, are relatively common in this group. In addition there is an above average prevalence of sexually transmitted disease in this group. For Surinamese boys and Surinamese and Antillean/Aruban and other non-western girls the frequency of 'conditions originating in the perinatal period' as a cause of death is statistically significantly higher than among Dutch babies. For Turkish babies congenital anomalies account for the largest number of deaths (40 percent of the total). Certain genetic conditions may play a role in this group, where it is relatively common to marry within the family. Schulpen et al. (2001) estimate that about a quarter of all marriages within the Turkish and Moroccan communities are contracted between cousins.

Mortality at ages 1-4 and 5-14 years is relatively rare, but is more common among non-western foreigners than among the native Dutch and western foreigners. Mortality in these age groups is particularly unfavourable among Turks and Moroccans.

Infectious and parasitic diseases are relatively rare as a cause of death among babies to one year. This is also true for non-western groups, where earlier studies (Hoogenboezem and Israëls, 1990) reported that they caused relatively more deaths. For neither 0 year-olds nor 1-14 year-olds are there any indications that infectious and parasitic diseases are significantly more common causes of death among non-western population groups.

The most remarkable characteristic of the mortality rates for teenagers aged 15-19 years are the very large differences between boys and girls (graph 3d). These differences are particularly large among non-western foreign teenagers, and among Antilleans in particular. Five times as many Antillean boys as girls in this age group die. This difference is usually explained by the far higher risk of dying from non-natural causes of death for boys (especially traffic accidents and murder/manslaughter). However, data for the period 1996-2001 show that other causes of death also claim considerably more boys than girls in this ages group (cancer, cardiovascular diseases and diseases of the nervous system, and congenital anomalies). This is particularly the case for cancer and 'symptoms, signs and ill-defined conditions' (which includes teenagers who died abroad).

A sizeable proportion of the deaths among 15-29 year-olds are from non-natural or external causes. More than half of deaths among young foreign men are from non-natural causes. However, traffic accidents are not more common as causes of death in this group than for the Dutch. The higher frequencies are caused by an above average prevalence of murder/manslaughter and suicide in these groups. This is particularly the case for Antillean young men. The risk of their dying from a non-natural cause was about twice as high as for Dutch 15-29 year-olds.

From about 40 years of age the risk of dying from cancer is lowest by far for Moroccan men and women. In most other groups, too, cancer as a cause of death is relatively less common than among the native Dutch population. The mortality rates concerned are statistically significantly lower for Turkish women, Moroccans, Surinamese and other non-western men than for the Dutch population. Broken down by type of cancer, the risk of dying from lung cancer is considerably lower among Moroccans than among the Dutch, while Turks have a proportion and frequency of lung cancer that is similar to that for the Dutch population. All non-western women have a smaller proportion and a lower frequency for mortality from lung cancer than Dutch women. The unfavourable smoking habits of Turkish men are without doubt a factor in the relatively high risk for these men, compared with other non-western men, of dying from lung cancer.

Cardiovascular diseases are a significantly less common cause of death among Moroccan men than among Dutch men and women, while among Surinamese men and women it is significantly more common. For Moroccan men in their forties, fifties and sixties, the risk of dying from heart disease is half that for the native Dutch population. They suffer less ischaemic heart disease in particular. Turkish men on the other hand have a 10 to 20 percent higher risk of dying from cardiovascular diseases at these relatively young ages. The most unfavourable risk is that for Surinamese men, for whom a significantly higher mortality from cardiovascular diseases was observed: with the exception of the oldest age group the chance of their dying from cardiovascular diseases is considerably higher at all ages. For Surinamese men in their forties and fifties the risk is nearly double that of the Dutch men of the same age. In their sixties they have a 60 percent greater chance of dying from heart disease.

The frequency of endocrine, nutritional and metabolic diseases as a cause of death is significantly higher among both Surinamese men and women than among the Dutch. This category of diseases, of which diabetes is by far the most common, already has a high prevalence among Surinamese at young ages. This cause of death is also above average for Turkish men.

In summary, it is safe to say that Turks and Moroccans have the same differences in mortality risks compared with the Dutch native population as some fifteen years ago. The mortality risks of middle-aged and older Turkish men, however, seem to have deteriorated. Hoogenboezem and Israëls found a significantly lower mortality from lung cancer for middle-aged Turkish men. They now seem to have lost this headstart on Dutch men: both groups have a similar level of mortality from cancer. In all probability the unfavourable smoking behaviour – compared with native men as well – of Turkish men contributed to the hefty increase in the risk of their dying from cancer or cardiovascular diseases. Turkish men now also have an above average incidence of cardiovascular diseases at relatively young ages.
The much lower risks of mortality for Moroccan men from age around 35 are still noticeable. In the literature the reserve is usually made that these figures may at least partly be the consequence of selective immigration and selective remigration. The analysis presented here, however, shows that neither form of migration could have had a sufficiently large effect. As far as selective immigration is concerned, it is not plausible that young healthy Moroccans who immigrated to the Netherlands as guest workers would show lower mortality for cancer and cardiovascular diseases tens of years later, more so as this was apparently not the case for the young and healthy Turks who immigrated at the same time. As far as selective remigration is concerned the present analysis shows that the considerable differences in mortality cannot be attributed to this reason either. The (modest) remigration of Moroccan men from age 35, for example, is slightly smaller that the remigration of Turkish men of the same age, while in the light of their mortality risks the opposite situation would be expected. For some other groups relatively high mortality is accompanied by relatively substantial remigration. There is no case in the present study for supposing there is an overestimation of the size of the survey population because of remigration – one of the possible causes of the lower mortality mentioned.

Indeed, from the age of 35 years, Moroccan men have lower mortality risk than native Dutch men, in spite of the fact that they (too) more often report their state of health as 'bad' or 'moderate' than Dutch men. From a public health perspective, it is important to further investigate the factors contributing to

their mortality risks. On the one hand we must try to prevent an increase in the mortality risks for Moroccans as they adopt less healthy eating habits. This would have a relatively large negative impact, both on the group concerned and on public health in general, in view of the expected increase in this population group. On the other hand insight into the apparent 'protective' nutritional factors which play a part for the Moroccan population group may be relevant for health improvement across all population groups in the Netherlands. Such studies are extremely scarce among adult Moroccan men and the few results that are available are sometimes contradictory. The – also scarce – information on nutritional habits of adult Surinamese men, a group in which mortality from cardiovascular diseases is considerably higher than average, neither gives us any tangible clues for their deviant mortality risks. In their recent report on the links between differences in health, socio-economic status and ethnicity, Kunst et al. (2003) formulate a hypothesis which might serve as a basis for further investigation. They conclude that the differences in health by socio-economic status are large among Antilleans, but not present among Moroccans. The absence of these differences among Moroccans might be related to their lower mortality rates. According to the study, factors which protect Moroccan men from cancer and cardiovascular diseases are connected with their traditionally healthy lifestyle (healthy food, less smoking and drinking), a lifestyle that is perhaps most adhered to by Moroccan men who live in the poorest districts. The large differences in health between Antilleans and Arubans, on the other hand, may be related to the large differences in socio-economic status which exist between earlier and later migrant flows.

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