

# Body size preference and body weight perception among two migrant groups of non-Western origin

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## Abstract

**Objectives:** To evaluate body size preference, body weight perception and their relationship with actual weight in two migrant groups of non-Western origin, Turks and Moroccans; additionally, to study the association between body size preference and acculturation.

**Design:** Cross-sectional study.

**Setting:** Amsterdam, The Netherlands.

**Subjects and methods:** Males and females (18–30 years) were randomly selected from the population registry ( $n$  451); participants, or at least one of their parents, were born in Turkey or Morocco. Body size preference was assessed using seven silhouette drawings and body weight perception was assessed by asking participants' opinion of own weight. Acculturation variables were generation status and two scale measures, cultural orientation and social contacts.

**Results:** Participants showed preference for a thin body size. The discrepancy between ideal and current size was significant in women but not men ( $P < 0.001$ ). Perceived current body size was correlated with BMI (Spearman's correlation coefficient 0.60,  $P < 0.001$  (men) and 0.73,  $P < 0.001$  (women)). Among overweight participants (BMI = 25.0–29.9 kg/m<sup>2</sup>), 63–82% of men and 35% of women perceived themselves as 'average'. Paying attention to own body weight was associated with a discrepancy between ideal and current size among women and with perceiving oneself as 'overweight' among men. Body size preference was not significantly associated with the three acculturation variables.

**Conclusion:** We did not observe a preference for large body sizes in these two non-Western migrant groups. Similar to Western populations, most women wished to be thinner than they were. This was not the case among men, the majority of whom were also unaware of being overweight.

**Keywords**  
Migrants  
Turkish  
Moroccan  
Weight perception  
Obesity  
Overweight  
Body mass index

Overweight and obesity are a major public health problem and are associated with increased risk for type 2 diabetes, CVD and several types of cancer<sup>(1)</sup>. Their prevalence is reaching epidemic proportions, with an estimated 1 billion overweight and 300 million obese adults worldwide<sup>(2)</sup>. Among non-Western migrants, which represent an increasing proportion of many Western populations<sup>(3)</sup>, the prevalence of overweight and obesity is often higher than that of host populations<sup>(4–6)</sup>. In The Netherlands more than half of the general adult population is either overweight (51% of males, 42% of females) or obese (10% of males, 12% of females)<sup>(7)</sup>. In two of the main migrant groups of non-Western origin, Turks and Moroccans, it is estimated that 25–32% of

women and 37–44% of men are overweight while 39–40% of women and 13–16% of men are obese<sup>(8,9)</sup>.

Public health promotion efforts aimed at overweight prevention often proceed from the assumption that most individuals prefer to be thin and that the first step in motivating individuals to lose weight is to raise awareness of weight status among those with overweight<sup>(10)</sup>. This approach is justified for Western populations that value thinness in women and lean, muscular physiques in men<sup>(11–13)</sup>, but where awareness of overweight among those with overweight is often low<sup>(14,15)</sup>. However, this assumption might not hold for non-Western migrant groups among whom body size preference may differ. For example, in many traditional non-Western cultures

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large bodies in both males and females are associated with prosperity and health<sup>(16–21)</sup>. Migrants originating from non-Western societies may adhere to the ideals from their traditional cultures. Although this may protect them from experiencing dissatisfaction with their body size, it may also negatively influence the motivation for weight control or weight loss.

On the other hand, living in a Western society is also likely to influence the preferred body size of migrants through the process of acculturation<sup>(22)</sup>. Acculturation is a concept that ‘comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original culture patterns of either or both groups’<sup>(23)</sup>, usually with a greater change taking place in the ‘minority’ group<sup>(24)</sup>. The expectation is that migrants are likely to adopt the body size ideals of their ‘host’ peers. Thus, highly acculturated migrants to Western societies would develop a preference for thinner figures.

That culture influences body size preference has been the rationale of many studies researching this topic among different ethnic groups. However, many of the studies of this topic have either focused on non-Western populations in their country of origin<sup>(19,20,25–28)</sup> or have been conducted among US ethnic minority groups<sup>(29–32)</sup>. Few studies have considered this issue among non-Western migrants to European countries<sup>(33–36)</sup>. Likewise, the association between body size preference and acculturation among ethnic minorities has seldom been studied in Europe. We found two UK studies, one that reported similar attitudes to body size among second-generation Asian women and white British women<sup>(34)</sup> and another where Kenyan Asians residing in the UK were more similar to white British women in their body size preferences than to women still living in Kenya<sup>(36)</sup>. Considering that body size preference may be an important factor in motivating individuals to lose weight, information about this determinant among European migrants is necessary.

Two of the largest non-Western migrant groups in Western Europe originate from Turkey (The Netherlands, Germany, Denmark, Sweden) and Morocco (The Netherlands, Belgium, France, Spain). Migration from Turkey and Morocco was encouraged in the 1970s in order to fill labour shortages, particularly for lower manual positions. The initial migrants came from particularly deprived areas of their home country. Since that time further migration has occurred due to family reunification and formation, with many young Turkish and Moroccan adults choosing partners from their country of origin<sup>(37)</sup>. In The Netherlands many reside in the larger cities; in Amsterdam, persons of Turkish or Moroccan origin form respectively 5% and 9% of the total population<sup>(38)</sup>.

Literature from Morocco indicates that overweight and obesity prevalence, particularly among women, is on the increase and that this may be partly due to a tradition that

values plumpness<sup>(16,17,39)</sup>. Although we found literature that indicates high overweight and obesity prevalence in Turkey<sup>(40,41)</sup>, we found no studies of body size preference among Turkish adults. Anecdotal evidence indicates that, also in Turkey, there is a tradition of preference for large figures.

As already mentioned, the prevalence of overweight and obesity among Turkish and Moroccan migrants to The Netherlands is high. However, there is little information about body size preference (the body size considered to be ‘ideal’) or the perception of overweight (whether individuals classify their body weight correctly) among these two migrant populations. It may be that a preference for larger figures and/or the misperception of overweight is highly prevalent in these groups, which would have important implications for intervention development. Therefore the present study aimed to:

1. Evaluate body size preference and body weight perception among young men and women of Turkish and Moroccan origin.
2. Investigate whether preference and perception are related to actual body weight and to whether individuals pay attention to their body weight.
3. Examine the association between body size preference and acculturation level.

## Methods

### Study population

Participants for the present study were 18–30-year-olds who took part in LASER, a study of health behaviour among Turks and Moroccans aged 10 to 30 years living in Amsterdam, The Netherlands. In the LASER study a random sample of people born in Turkey or Morocco or with at least one parent born in Turkey or Morocco was drawn from the Amsterdam municipal population register. Participants born in Turkey or Morocco were classified as first-generation migrants. Second-generation migrants were those born in The Netherlands and who had at least one parent born in either Turkey or Morocco. As mentioned earlier, migration to the Netherlands from Turkey and Morocco began in the 1970s. Therefore, the majority of adult Turks and Moroccans are of the first generation, as has been observed in studies that have included adults<sup>(42)</sup>. The LASER study focused on younger participants in order to ensure more equal representation of the second generation.

The total Turkish sample consisted of 1556 persons. Approximately 13% of the sample could not be traced because of incorrect address information. Of the 1354 respondents who could be traced, 768 participated in the study (57%). Most cases of ‘non-response’ were due to refusals to participate (32%) or not being able to contact potential participants after three attempts (12%). The

Moroccan sample consisted of 995 individuals of whom 12% had incorrect address information. Of the 872 persons who could be traced, 476 participated in the study (55%). Within the non-response group, 26% refused to participate and approximately 19% could not be reached after three attempts. The study population is similar to the Turkish and Moroccan population aged 10–30 years living in Amsterdam, according to sex, generational status (country of birth) and city district; except for the Moroccan male population, among whom the age category 20–30 years is under-represented, and participants from one city district being slightly over-represented.

For the current study we analysed participants aged 18–30 years ( $n$  567). We excluded respondents with missing information on body weight perception ( $n$  50) and BMI ( $n$  66) to end with a total sample size of 451.

### **Data collection**

Face-to-face interviews were held from April 2003 until December 2004, by trained interviewers of the same ethnic background and sex. A structured questionnaire was used; this was available in Dutch, Turkish or Moroccan Arabic so that the interview could be held in the participants' language of preference. Included were questions about demographics, socio-economic status and migration status. Acculturation was evaluated using a proxy measure, place of birth (generation), as well as scale measures of the level of social contact with ethnic Dutch (three questions on social contacts in leisure time) and orientation towards Dutch society (ten items measuring language and media use, shopping preference and emancipation as examples of Western norms and values). The data collection strategy, the questionnaire design and the acculturation measures have been fully described elsewhere<sup>(42)</sup>.

### **Body size preference and body weight perception**

Body size preference was evaluated using seven silhouette drawings developed by Collins<sup>(43)</sup>. Respondents were asked to select the silhouette that most corresponded to the way they currently look and also to select the ideal silhouette for themselves. A discrepancy score was calculated by subtracting the ideal from the current silhouette as was done by Fallon and Rozin<sup>(44)</sup>. Participants were also asked to select ideals for members of the same sex and opposite sex.

Body weight perception was evaluated by how participants described their body weight; answer categories included 'thin', 'average' or 'overweight'. Participants received no specific instructions relating to this question, therefore the answers obtained are not standardised but reflect individuals' personal evaluations. Finally, we asked 'Do you pay attention to your weight?' Possible answers were either 'yes' or 'no'. We formulated this question in a neutral way to avoid the association with dieting to lose weight.

### **Measurement of body weight**

Participants were weighed and measured during the home visit. Weight was measured using an electronic scale to the nearest 0.1 kg after removal of shoes, jackets, heavier clothing and pocket contents. Height was measured twice without shoes in an upright position with a measuring tape and ruler to the nearest 0.1 cm. We calculated BMI as weight divided by the square of height ( $\text{kg/m}^2$ ). Underweight was classified as having a BMI lower than  $18.5 \text{ kg/m}^2$ . There were six participants who fell into this category (two Moroccan women, two Turkish women, one Moroccan man and one Turkish man). We chose to include them together with the normal-weight group for the analyses. Due to logistic problems not all participants could be weighed during the interview. In these cases (40% of all participants) weight and height were based on self-report. We performed additional analyses to explore the impact on our results. We found no difference in the prevalence of overweight between self-reporters and the weighed group. We also tested mean BMI between the two groups using the Mann–Whitney test and found no differences in BMI between them, with the exception of Moroccan women where median BMI was  $22.3 \text{ kg/m}^2$  in the self-reporters *v.*  $24.1 \text{ kg/m}^2$  in the measured group ( $P = 0.05$ ). Finally, we stratified according to self-report and compared on the basis of demographics, socio-economic status, acculturation variables and perception variables, but found no significant differences between them. We therefore decided to include the self-reporters in the analyses in order to maximise our sample size.

### **Statistical analyses**

We analysed data using the Statistical Package for the Social Sciences statistical software package version 12 (SPSS Inc., Chicago, IL, USA). The sample was stratified according to sex and ethnicity for all analyses. For categorical variables we applied the  $\chi^2$  test. Differences in body size preference and weight awareness between groups of respondents were tested using the Mann–Whitney test. Differences within groups were tested using the Wilcoxon signed-rank test. Spearman's rank correlations were calculated for the relationships of current and ideal silhouettes (body size preference) and BMI. In order to explore the association with acculturation we performed the analyses with the 'ideal' silhouette as dependent variable.

### **Results**

Table 1 summarises the participants' characteristics. There were some statistically significant differences between the groups. Fewer Moroccan men were married or had children compared with the other groups. Within the ethnic groups, more women were married, had children and

**Table 1** Participant characteristics: male and female migrants of non-Western origin residing in Amsterdam, 2003–2004

	Men				Women			
	Turkish (n 169)		Moroccan (n 56)		Turkish (n 122)		Moroccan (n 104)	
<b>Demographics</b>								
Mean (sd) age (years)	23.0	4.3	21.6	3.4	24.6	4.3	23.4	4.2
Married (%) <sup>*</sup>	39.1		16.1		55.2		49.0	
Has children (%) <sup>*</sup>	31.4		5.4		55.2		40.4	
<b>Socio-economic status</b>								
Education level (%)								
1 (low)	12.9		7.3		18.3		16.8	
2	28.2		14.5		32.5		21.8	
3	45.4		58.2		37.5		37.6	
4 (high)	13.5		20.0		11.7		23.8	
Work status (%)								
Student	37.6		54.7		29.5		35.3	
Paid employment	52.2		37.7		24.6		29.4	
Unemployed/home maker	10.2		7.5		45.9		35.3	
<b>Acculturation</b>								
First generation (%) <sup>*</sup>	42.6		37.5		60.8		51.0	
Social contacts with Dutch								
High (%)	26.2		33.9		28.0		22.1	
Cultural orientation to Dutch society <sup>†</sup>								
High (%)	35.5		48.2		25.6		42.0	
<b>Body weight</b>								
Mean (sd) BMI (kg/m <sup>2</sup> )	24.5	3.2	23.4	2.8	24.6	4.3	24.1	4.1
Overweight (%)	35.5		19.6		24.8		23.1	
Obesity (%)	4.7		3.6		12.8		11.5	

Education level: 1 = never been to school or primary school only; 2 = lower vocational and lower secondary education; 3 = intermediate vocational and intermediate/higher secondary education; 4 = higher vocational education and university.

<sup>\*</sup>Within ethnic groups, women more likely to be from first generation, be married and have children,  $P < 0.01$ .

<sup>†</sup>Turkish participants had lower cultural orientation than Moroccan participants,  $P < 0.001$ .

No other significant differences between Turkish and Moroccan participants ( $P > 0.05$ ).

were not in paid employment. Moroccan men and women had a slightly higher education level than the Turkish participants although this was not statistically significant ( $P = 0.08$  in men and  $P = 0.07$  in women). BMI values ranged from 15.6 to 36.7 kg/m<sup>2</sup>. Women were more often first-generation migrants. The majority of participants had a low level of social contact with ethnic Dutch (22.1–33.9% had high a level of contact) with no significant differences between the groups. More Moroccans than Turks were highly culturally oriented towards Dutch society (42.0% *v.* 25.6% of women and 48.2% *v.* 35.5% of men,  $P < 0.001$ ), but this was still less than half of the Moroccan group. More Turkish men were overweight (35.5%) and the prevalence of overweight and obesity was 37.6% among Turkish women and 34.6% among Moroccan women.

Table 2 shows the results of body size preference, body weight perception and the percentage of participants who pay attention to their weight. Men's preferred size was similar to their current size whereas women selected an ideal that was significantly smaller than their current size. Based on the calculated discrepancy between current and ideal silhouette, the majority of women (60.3% Turkish and 57.7% Moroccan) preferred a smaller size for themselves whereas this was less the case among the men, 21.8% and 29.0% for the Moroccan and Turkish men respectively.

All groups chose a thinner ideal size for themselves than for others of their own sex. Further, Turkish men and women had a significantly thinner ideal for members of the opposite sex than did Moroccans. Most of the men (67.7–70.9%) and almost half the women (47.1–51.6%) perceived their body weight to be 'average'. The majority of women (60.2–69.0%) and Turkish men (56.8%) reported that they pay attention to their weight, whereas less than half (45.5%) of Moroccan men did so.

Table 3 shows mean BMI according to silhouette selected to represent current body size. The correlation coefficient for BMI and current silhouette was low but statistically significant in all groups. We tested ethnic differences and found that per silhouette Moroccan women had lower BMI than Turkish women ( $P < 0.05$ ), while there were no differences between the men.

Figure 1 shows body weight perception according to BMI category. Here we see that a relatively large proportion of men who are overweight (BMI = 25.0–29.9 kg/m<sup>2</sup>) described themselves as 'average', 63.0% of Turkish men and 82.0% of Moroccan men. One-third of overweight Turkish and Moroccan women respectively described themselves as 'average'.

Table 4 shows that body size preference did not differ according to generation status, level of cultural orientation to Dutch society or level of social contacts with ethnic Dutch. Among Turkish women who have more

**Table 2** Body size preference, body weight perception and percentage paying attention to own weight: male and female migrants of non-Western origin residing in Amsterdam, 2003–2004

	Men				Women			
	Turkish (n 169)		Moroccan (n 56)		Turkish (n 122)		Moroccan (n 104)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Body size preference (based on silhouette)								
Current body shape	4.1	1.0	4.1	0.8	4.3	1.3	4.6	1.0
Ideal size for self*	4.0	0.7	4.2	0.5	3.4	0.8	3.9	0.7
Ideal for others of own sex†	4.1	0.7	4.4	0.7	3.9	0.9	4.1	0.6
Ideal opposite sex‡	3.8	0.6	4.2	1.1	3.9	0.9	4.2	0.6
	%		%		%		%	
Would like to be thinner§	29.0		21.8		60.3		57.7	
Body weight perception (describes weight as)								
Thin	11.4		12.7		12.7		7.7	
Average	67.7		70.9		51.6		47.1	
Overweight	21.0		16.4		35.7		45.2	
Pays attention to weight	56.8		45.5		69.0		60.2	

\*Difference between ideal body size and current size significant for women,  $P < 0.001$ .

†Ideal for others larger than ideal for self: men  $P < 0.05$ , women  $P < 0.001$ .

‡Turkish men and women had smaller ideal for the opposite sex than Moroccan participants,  $P < 0.05$ .

§Based on discrepancy in silhouettes chosen to represent ideal and current size.

contacts with ethnic Dutch the ideal silhouette was slightly thinner ( $P = 0.06$ ). Among second-generation men the ideal was slightly larger ( $P = 0.06$  in Turkish men and  $P = 0.09$  in Moroccan men).

Table 5 shows self-reported weight behaviour offset against the main outcome variables. There were no statistically significant differences between participants who reported watching their weight *v.* those who did not on the basis of preferred body size (mean silhouette), body size discrepancy (difference between current and ideal size) or overweight perception.

As the findings followed a similar trend for both ethnic groups we combined them and stratified according to sex in order to increase the power of our calculations. We found that more women reported paying attention to their weight if their preferred body size was smaller than their current body size ( $\chi^2 = 6.7$ ,  $P = 0.01$ ). Among men, this was the case if they perceived themselves to be overweight ( $\chi^2 = 8.8$ ,  $P = 0.01$ ).

## Discussion

The present population-based study is the first to offer insight into the issue of body size preference and body weight perception among these two important European non-Western migrant groups. In our study we did not observe a preference for a large body size; in contrast, this group of Turkish and Moroccan participants selected relatively thin silhouettes to represent their ideal. The silhouette selected to represent current body size was correlated with BMI, indicating that individuals' perception of their body size is realistic. As is generally found in Western populations, the preferred body size among

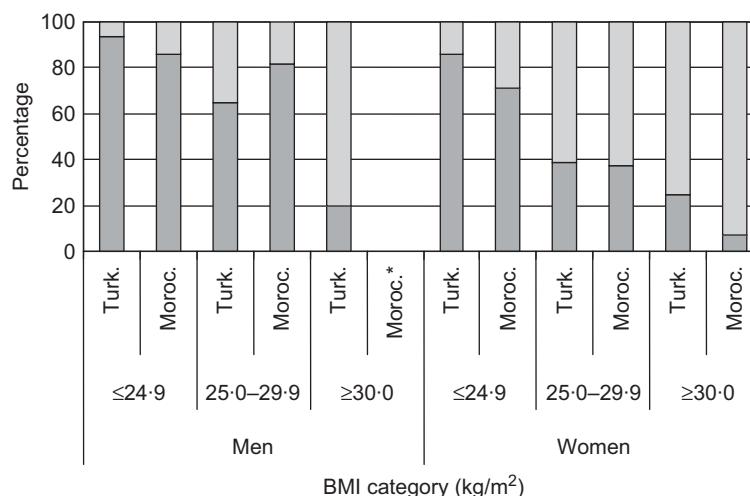
women was significantly thinner than their current size whereas this was not the case among men. Furthermore, a large proportion of overweight and obese men perceived their weight to be 'average', which may indicate greater acceptance of overweight. A discrepancy between ideal and current size was associated with paying attention to body weight in women. Among men, paying attention to body weight was associated with the perception of overweight. Finally, we did not observe an association between body size preference and acculturation variables such as generation status, social contacts with Dutch or orientation with Dutch society.

The study has some limitations that merit mention. First the response rate was quite low, 57% among Turks and 55% among Moroccans, which means that our study population may not be representative of Turkish and Moroccan residents of The Netherlands. However, the response is comparable to that obtained by other studies of the same groups<sup>(9,45)</sup>, and our participants are comparable to the Turkish and Moroccan population living in Amsterdam. Second, we used a combination of both measured and self-reported data of weight and height. We tested the effect of this methodological issue but found no differences in the main outcomes between the self-reporters and the weighed group, indicating limited impact on our main conclusions. Third, we cannot rule out the possibility that participants gave socially desirable answers. As culture is likely to influence body size preference, our use of interviewers matched for sex and ethnicity may have minimised this possibility. Fourth, we cannot place the results from the study within the context of their host environment as we did not include ethnic Dutch participants. It may be that ethnic Dutch men and women prefer even thinner bodies. A study of

**Table 3** Mean BMI of participants according silhouette they selected to represent current body size: male and female migrants of non-Western origin residing in Amsterdam, 2003–2004

		Silhouette													
		1		2		3		4		5		6		7	
		<i>n</i> or Mean	% or SD	<i>n</i> or Mean	% or SD	<i>n</i> or Mean	% or SD	<i>n</i> or Mean	% or SD	<i>n</i> or Mean	% or SD	<i>n</i> or Mean	% or SD	<i>n</i> or Mean	% or SD
Men															
Turkish															
<i>n</i> (%)		2	1.2	6	3.6	41	24.3	63	37.3	48	28.4	9	5.3	1	0.6
Mean (SD) BMI (kg/m <sup>2</sup> )		21.7	3.3	22.5	0.9	22.4	2.0	23.7	2.3	26.7	2.6	30.9	3.1	40.8	–
Spearman's $\rho = 0.66$ , $P < 0.001$															
Moroccan															
<i>n</i> (%)		–	–	1	1.8	10	17.9	28	50.0	15	26.8	2	3.6	–	–
Mean (SD) BMI (kg/m <sup>2</sup> )		–	–	21.2	–	21.6	2.1	23.3	1.8	24.3	3.0	30.3	1.0	–	–
Spearman's $\rho = 0.43$ , $P < 0.001$															
Women*															
Turkish															
<i>n</i> (%)		–	–	4	3.3	30	24.6	39	32.0	33	27.0	13	10.7	3	2.5
Mean (SD) BMI (kg/m <sup>2</sup> )		–	–	20.5	1.4	21.5	2.0	23.0	1.9	26.9	2.7	32.7	4.4	34.0	5.4
Spearman's $\rho = 0.78$ , $P < 0.001$															
Moroccan															
<i>n</i> (%)		–	–	1	1.0	11	10.6	42	40.4	33	31.7	13	12.5	4	3.8
Mean (SD) BMI (kg/m <sup>2</sup> )		–	–	20.7	–	20.7	1.4	22.3	2.4	25.3	2.9	30.0	4.6	33.7	4.1
Spearman's $\rho = 0.71$ , $P < 0.001$															

Ethnic groups combined: in men Spearman's  $\rho = 0.60$ ,  $P < 0.001$ ; in women Spearman's  $\rho = 0.73$ ,  $P < 0.001$ .\*Significant difference between women in actual BMI according to selected silhouette,  $P < 0.05$ .



**Fig. 1** Body weight perception (■, perceives self as thin; □, perceives self as overweight) according to actual BMI in Turkish (Turk.) and Moroccan (Moroc.) male and female migrants residing in Amsterdam, 2003–2004. \*Numbers insufficient (*n* 2) to present results

**Table 4** Acculturation and body size preference (mean silhouette chosen to represent ideal): male and female migrants of non-Western origin residing in Amsterdam, 2003–2004

	Men		Women	
	Turkish ( <i>n</i> 169)	Moroccan ( <i>n</i> 56)	Turkish ( <i>n</i> 122)	Moroccan ( <i>n</i> 104)
Generation*				
First	3.83	4.00	3.37	3.94
Second	4.05	4.26	3.49	3.84
Social contacts with Dutch†				
Low	4.01	4.24	3.49	3.89
High	3.80	4.00	3.21	3.91
Cultural orientation to Dutch society				
Low	3.95	4.14	3.46	3.86
High	3.95	4.19	3.28	3.88

None of the differences by acculturation variables were statistically significant ( $P > 0.05$ ), although there were some borderline significant results as follows.

\* $P = 0.06$  in Turkish men,  $P = 0.09$  in Moroccan men.

†Turkish women,  $P = 0.06$ .

**Table 5** Pays attention to body weight *v.* body size preference and body weight perception: male and female migrants of non-Western origin residing in Amsterdam, 2003–2004

	Men				Women			
	Turkish		Moroccan		Turkish		Moroccan	
	No ( <i>n</i> 73)	Yes ( <i>n</i> 94)	No ( <i>n</i> 30)	Yes ( <i>n</i> 25)	No ( <i>n</i> 39)	Yes ( <i>n</i> 87)	No ( <i>n</i> 41)	Yes ( <i>n</i> 62)
Body size preference								
Preferred silhouette, mean	4.0	3.9	4.1	4.2	3.4	3.3	4.0	3.9
Would like to be thinner (%)*	27.4	30.2	16.7	28.0	48.7	65.5	46.3	64.5
Body weight perception								
Perceives self as overweight (%)	17.8	23.4	13.3	20.0	41.0	33.3	34.1	51.6

No = does not pay attention to body weight; Yes = pays attention to body weight.

\*Based on discrepancy in silhouettes chosen to represent ideal and current size.

US residents aged 18–30 years that used similar figural stimuli showed that men tended to prefer figure 4 and women figure 3<sup>(46)</sup>. This preference is not dissimilar to the silhouettes chosen by participants in our study.

However it is not certain whether this population can be used as a reference considering that overweight and obesity prevalence is higher in the USA than in The Netherlands<sup>(7,47)</sup>. It may be that the overweight/obesity

prevalence in the general population may influence body size preference as speculated by Cash *et al.* in their study of changes of body image among US college students<sup>(48)</sup> and by Bennett *et al.* in a study of attitudes towards overweight in African Americans<sup>(49)</sup>. Finally, although the figural stimuli used in our study have not been validated for the Turkish and Moroccan populations, similar instruments have been widely used in various study populations which lends support to our choice of instrument<sup>(19,20,25,50)</sup>.

Much of the research conducted in this area originates in the USA and compares white American, African American, Hispanic and Asian groups. The results and conclusions have been mixed but two recent meta-analyses have shown that ethnic differences seem to be diminishing: Roberts *et al.* found that differences in body dissatisfaction between African American and white women were converging<sup>(51)</sup>; Grabe and Hyde found that ethnic differences in the perception of body weight between women were small<sup>(30)</sup>. Our finding that these groups of Turkish and Moroccan origin have a preference for thinner body size is consistent with the idea that a preference for thinness is common, particularly among women.

In addition, our study indicates that this preference is not related to acculturation, as might have been expected based on the findings of others<sup>(22,34,36,52)</sup>. However the comparison of these findings with ours is problematic due to differences in the measurement of acculturation. Furthermore, we measured a limited number of indicators of acculturation; it may be that other dimensions of acculturation (e.g. ethnic identity) and migration-related issues (e.g. acculturative stress) are more relevant for body size preference and the associated consequences thereof<sup>(53,54)</sup>. The issue of methodology has been highlighted by others and remains a barrier to understanding the relationships between acculturation, body size preference and body dissatisfaction<sup>(55,56)</sup>.

Our finding that a large proportion of women of non-Western origin experience a discrepancy between desired and actual body size is similar to those among Western populations<sup>(14,15)</sup>. Interestingly, although the majority of women chose a thinner ideal body size for themselves (57.7–60.3%), fewer women perceived themselves as 'overweight' (35.7–45.2%), which implies that wanting to be thinner is not always related to the belief that one is overweight. Fitzgibbon *et al.*<sup>(32)</sup> argue that these are two distinct issues, the discrepancy between the ideal and current body size is more likely to reflect body dissatisfaction and may be a factor that stimulates attention to weight-loss activities. Our observation that a larger majority of women pay attention to their weight if their perceived size is larger than their desired size supports this idea. Body dissatisfaction, whether appropriate or not, may be a stimulus for weight-watching behaviour among women and may contribute to reduced quality of life<sup>(57)</sup> as well as to eating pathology<sup>(15,31)</sup>. The latter does not appear to differ for women of non-Western origin<sup>(32)</sup>.

Further research of this issue among these population groups is warranted. But in the meantime, interventions should be sensitive for potentially negative effects on women's dieting practices.

Two studies in Europe have shown a lower awareness of overweight among migrant-origin groups<sup>(33)</sup>, including South Asian groups<sup>(35)</sup>. Within our populations we observed that a high proportion of overweight men (63–82%) and overweight women (35%) perceived themselves as average. Although we cannot compare our group to the general population, the finding that more men than women are unaware of their overweight is consistent with that of others<sup>(14,58)</sup>. As mentioned previously, in a setting where overweight and obesity are common, overweight individuals may be more likely to experience themselves as being 'average'. This effect may be stronger among men whereas among women the socio-cultural stigma associated with overweight may dominate. Considering that paying attention to body weight is more prevalent among men who perceive themselves as overweight, it appears that raising awareness of weight status may be an important stimulus for weight-watching behaviour among men, including those of non-Western origin.

Although we did not aim to compare Turks and Moroccans with each other, we did observe some differences between these groups. Per silhouette selected to represent current body size Moroccan women had lower BMI levels. In other words, they viewed themselves as 'larger' than did Turkish women. In addition, Turkish women preferred a smaller ideal silhouette than did Moroccan women and both Turkish men and women preferred smaller sizes in members of the opposite sex. This apparently stronger preference for thinner body sizes among Turkish participants could be reflected in their more 'optimistic' choice of silhouette to represent themselves. Our finding of a thin body size ideal among this group is in line with a study in Turkey which showed that the desire to be thinner in Turkish adolescents is similar to that among adolescents in developed countries<sup>(59)</sup>. Among Moroccans there may be a greater acceptance for larger body sizes. As literature from Morocco indicates that adiposity in women is associated with higher social status<sup>(16,17)</sup>, it may be that Moroccans may be less concerned with thinness as an ideal. However, this is not entirely consistent with our finding that 45% of Moroccan women perceived themselves as 'overweight' even though the prevalence of overweight and obesity in this group was 36.6% and that the majority of women, 57.7%, preferred a smaller body size. Comparable data from Turkey and Morocco would help in understanding these results.

## Conclusions

In this first exploration of body size preference and body weight perception in young adults of Turkish and



Moroccan origin, we did not observe a preference for large body sizes. Similar to Western populations, most women wished to be thinner than they were whereas this was less the case among men, the majority of whom were also unaware of being overweight.

Among the majority of men raising awareness of overweight appears to be an important intervention goal. However, caution is advisable when targeting women. Although a third do not perceive themselves to be overweight, the majority exhibit dissatisfaction with their body size which may make them susceptible to inappropriate dieting practices.

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