Analysis of non-attendance

The main cohort in the Oslo Immigrant Health Study (conducted in 2002) included persons born in Turkey, Iran, Pakistan, Sri Lanka and Vietnam between 1942 and 1971, whereas those born in 1940/41, 1954/55, 1960, 1969/70 had previously been invited to the Oslo Health Study (HUBRO). HUBRO was conducted in 2000-2001, followed the same protocol and had a similar dropout problem as the immigrant study. A comprehensive analysis of the non-attendance in HUBRO showed that attendance was associated with variables like age, education, income and gender (http://www.equityhealthj.com/content/3/1/3). However their analysis concluded that prevalence estimates were robust even in light of the considerable non-attendance. Further analyses restricted to persons born in the Middle East, the Indian Subcontinent and Southeast Asia (regions were the majority came from the countries included in the Oslo Immigrant Health Study), are presented in appendix A. These analyses showed a similar attendance pattern in these groups compared to the total sample. It is thus reasonable to assume that the conclusions from the published non-attendance study also apply to the immigrant groups.

Analysis of non-responders to the supplementary questionnaire

A supplementary questionnaire was handed out at the clinical screening, and could be filled in at the screening site or sent back in pre-stamped self-addressed envelope. Only 47% of the participants responded to the supplementary questionnaire. However, additional analyses comparing participants who responded with participants who did not respond to the supplementary questionnaire, showed only moderate differences between the two groups (confer appendix B)

Appendix A

By Haakon E. Meyer and Randi M. Selmer

In the Oslo Immigrant Health Study persons from Turkey, Iran, Pakistan, Sri Lanka and Vietnam were invited. The Oslo Health Study (HUBRO) preceded the study, and followed the same protocol and had a similar dropout problem (1).

In HUBRO, a comprehensive study of the effects of non-attendance has been conducted and published (1). In that paper, participants were allocated to Norway, Western countries or Non-western countries based on their country of birth. We have made some additional analysis constricted to persons borne in:

a) Middle-East, where persons from Turkey and Iran constituted around 72% (276+276/763 = 72%)
b) Indian Subcontinent, where persons from Pakistan and Sri Lanka constituted around 85% (884+291/1381= 85%)
c) Southeast Asia, where persons from Vietnam constituted 54% (301/562=54%)

The dataset contained only these geographical regions and not information on country of birth due to data-protective reasons.

We now have re-analysed and to some extent modified table 2, table 5 and table 6 in the original paper (1). As can be seen in table 2e, the association between education and income and attendance is similar in the immigrant subgroup as in the total group of those invited to the Oslo Health Study. On the other hand, in contrast to the total group, those receiving disability benefit attended to the same extent as those not receiving disability benefit in the immigrant subgroup. Concerning the association between education and disability benefit (table 5e) and region and disability benefit (table 6e), the pattern in all invited is comparable to those actually attending.

Conclusion: The results from these additional analyses restricted to persons born in “Middle East”, Indian Subcontinent and Southeast Asia reveals a similar non-attendance pattern as in the total group of those invited to the Oslo Health Study.

References

1. Søgaard AJ, Selmer R, Bjertness E, Thelle D. The Oslo Health Study. The impact of self-selection in a large, poulation-based survey. Int J Equity Health 2004; 3:3

Table 2e. Persons born 1940-70 in "Middle East", Indian Subcontinent and Southeast Asia invited to the Oslo Health Study 2000-2001. OR of attending the study

	Invited (n)	Attendance (%)	Age- and sex adjusted OR	Age, sex and region adj OR	Total attendance (%) previously published*
Education					
Lower secondary	679	**43.0**	1.00	1.00	39.5
Upper secondary	963	**48.7**	1.39	1.43 (1.16-1.76)	46.5
College/University	489	**44.2**	1.10	1.14 (0.89-1.45)	48.7
Unknown	458	**26.0**	0.49	0.49 (0.37-0.63)	24.2
	2589	**42.3**			45.3
Total Income (NOK)					
< 100 000	808	**33.7**	1.00	1.00	34.3
- 199 000	732	**44.0**	1.66	1.70 (1.37-2.11)	42.9
- 399 000	938	**48.2**	1.98	2.06 (1.67-2.54)	49.2
400 000+	117	**36.8**	1.29	1.31 (0.86-1.99)	44.3
	2595	**42.0**			45.1
Disability benefit					
No	2387	**41.7**	1.00	1.00	44.0
Yes	224	**45.1**	1.06	1.04 (0.77-1.40)	38.7
	2611	**42.0**			43.6

* Including 75/76 years old persons, confer reference 1.

Table 5e. Persons born 1940-70 in "Middle East", Indian Subcontinent and Southeast Asia invited to the Oslo Health Study 2000-2001. OR of receiving disability benefit

	Crude OR	OR adj. for age and sex	OR adj. for age, sex, region
		All invited	
Education			
Lower secondary	1.00	1.00	1.00
Upper secondary	0.35	0.57	0.61 (0.42-0.89)
College/University	0.22	0.26	0.27 (0.16-0.47)
Unknown	0.53	0.71	0.65 (0.44-0.99)
		Attendees	
Education			
Lower secondary	1.00	1.00	1.00
Upper secondary	0.32	0.53	0.54 (0.31-0.93)
College/University	0.24	0.26	0.26 (0.12-0.55)
Unknown	0.66	0.90	0.86 (0.42-1.76)

Interaction term between attendance (yes/no) and education on receiving disability benefit was not significant (p=0.63)

Table 6e. Persons born 1940-70 in "Middle East", Indian Subcontinent and Southeast Asia invited to the Oslo Health Study 2000-2001. OR of receiving disability benefit

	Crude OR	OR adj. for age and sex	
		All invited	
Region			
Middle East	1.00	1.00	
Indian Subcontinent	0.86	0.82	(0.59-1.14)
Southeast Asia	0.30	0.27	(0.15-0.46)
		Attendees	
Region			
Middle East	1.00	1.00	
Indian Subcontinent	0.72	0.67	(0.41-1.09)
Southeast Asia	0.43	0.31	(0.15-0.65)

Interaction term between attendance (yes/no) and region on receiving disability benefit was not significant (p=0.25)

Appendix B

Oslo Immigrant Health Study: Response to the supplementary questionnaire.
By Kathleen Glenday and Haakon E. Meyer

There were 3019 participants in the main cohort (born 1941-71) of the Oslo Immigrant Health Study. However, only 47% of these responded to any of the questions in the supplementary questionnaire, which was handed out at the screening. The terms 'responders' and 'non-responders' will be used to describe whether or not participants responded to questions in the supplementary questionnaire. There were 47% male responders and 47% female responders overall. Response rates to the supplementary questionnaire varied between ethnic groups (table 1).

Table 1. Proportion of participants who responded to the supplementary questionnaire by ethnicity.

	Total N	Responded N (%)
Turkey	426	222 (52)
Sri Lanka	1006	398 (40)
Iran	602	331 (55)
Pakistan	448	209 (47)
Vietnam	537	263 (49)
Total	3019	1423 (47)

Age differed significantly between responders (mean = 42.4 years) and non-responders (mean = 41.0 years) among women (p=0.00), but not among men (means 42.5 and 41.9 years, p=0.07). We adjusted for age and ethnicity in the following analyses comparing the means and prevalence for difference cardiovascular risk factors.

Table 2. Means and prevalence adjusted for age and ethnicity for those who responded and didn't respond to the supplementary questionnaire.

	Men			Women		
	Responded			Responded		
	Yes	No	*P*	Yes	No	*P*
Education (yrs)	12.8	12.3	0.01	11.2	10.1	0.00
BMI (kg/m^2)	26.2	26.4	0.32	26.8	27.2	0.12
WHR	0.906	0.913	0.01	0.825	0.829	0.29
Total cholesterol (mmol/l)	5.39	5.43	0.40	5.07	5.04	0.54
HDL (mmol/l)	1.12	1.10	0.31	1.35	1.29	0.00
Triglycerides (mmol/l)*	2.09	2.22	0.03	1.41	1.45	0.39
SBP (mmHg)	126.4	125.2	0.07	118.5	117.7	0.32
DBP (mmHg)	76.3	76.2	0.84	69.4	69.0	0.51
%obese	12	14	0.11	21	27	0.02
%low HDL	20	24	0.03	15	19	0.06
% current smokers	33	35	0.37	10	10	0.91
%hypertension	22	19	0.14	16	16	0.81
% Good/excellent self reported health	61	57	0.09	50	43	0.02
% visited GP ≥ 1 time in past year	23	24	0.57	18	20	0.50

*Geometric mean.

Male responders to the supplementary questionnaire were similar in mean age, BMI, total serum cholesterol, HDL, and diastolic blood pressure. The prevalence of obesity, smoking, hypertension and habits in visiting their local doctor in the past year were also similar. However, they had 0.5 years more education, 0.007 less waist hip ratio, and 0.13mmol/l less triglycerides on average compared to non-responder, as well as a lower prevalence of low HDL.

Female responders to the supplementary questionnaire were similar in mean BMI, WHR, total serum cholesterol, triglycerides, systolic and diastolic blood pressure. The prevalence of smoking, hypertension and habits in visiting their local doctor in the past year were also similar. However, female responders were on average 1 year older with 1.1 years additional education, and had higher HDL levels than non-responders. They also had a lower prevalence of obesity and low HDL and a higher prevalence of good/excellent health than non-responders.