

Effects of peer-led AIDS education aimed at Turkish and Moroccan male immigrants in The Netherlands

A randomised controlled evaluation study

PAUL KOCKEN, TOON VOORHAM, JEANINE BRANDSMA, WIM SWART *

Background: An evaluation study was conducted in The Netherlands into acquired immune deficiency syndrome (AIDS) education for immigrants given in their native language by peers. Turkish and Moroccan men were trained to educate people from their own ethnic group. The effect of peer education on the perceived threat of AIDS and beliefs about condom use were studied. **Methods:** Places where male immigrants met, i.e. coffee houses, mosques and bars, were matched and randomly assigned to experimental and control groups. The experimental group filled out a short questionnaire at the end of the education session (post-test), whereas the control group was pre-tested and had the opportunity of following the AIDS education after participation in the questionnaire. **Results:** Using multilevel logistic regression analysis, an effect could be established on misunderstandings regarding human immunodeficiency virus (HIV) transmission (OR=5.9 and 95% CI: 2.3–15.3) and risk appraisal for HIV infection (OR=2.9 and 95% CI: 1.3–6.3). The perceived benefits of the protective effect of condom use were affected in men 30 years and older, the perceived barrier of diminished satisfaction if using condoms was changed among unmarried men, condom self-efficacy was affected in men who valued peer education as important and an effect on intention to use condoms was found among Moroccans. **Conclusion:** Continuation of peer-led AIDS education for immigrants and adaption of the message to the needs of specific target groups is recommended.

Keywords: effectiveness, HIV/AIDS, migrants, peer education, programme evaluation

In spite of the progress made in medical surveillance of acquired immune deficiency syndrome (AIDS), considerable effort still has to be paid to education and behavioural change with regard to safer sex.¹ From the start of the AIDS epidemic, difficulties have been encountered in disseminating information about human immunodeficiency virus (HIV) transmission and AIDS prevention among immigrant groups in The Netherlands. The general mass media campaigns did not reach them due to insufficient mastery of the Dutch language and a tendency not to read the available literature about AIDS. In the late 1980s and the beginning of the 1990s, with an ongoing AIDS prevention campaign in The Netherlands, the prevalence of sexually transmitted diseases (STDs) was higher among Turkish and Moroccan men compared to Dutch men and attendance at STD clinics among Turkish men was higher.^{2–4} Among Turks and Moroccans some persistent misunderstandings existed about the transmission of HIV through saliva, mosquito bites and toilet use. Condom use was not common or inconsistent.

Qualitative research among Turkish and Moroccan men showed that unsafe sex occurred among sexually active men. Condom use was viewed as unpleasant and there was resistance to its use because of a negative association with extramarital sex.^{5,6} A change could be observed among young Turkish and Moroccan male students of 11–18 years of age. Reported condom use increased from 1990 to 1995 to the Dutch adolescents' level.⁷ Lack of knowledge and presumed risk behaviour were the reasons for starting a peer education programme in 1989 in order to prevent AIDS among immigrants in The Netherlands.^{8–10} Immigrants from different ethnic origins, among others Turks, Moroccans, Surinamese, Netherlands Antilleans and Cape Verdeans, were trained as peer educators. They were recruited from volunteer ethnic minority organisations. The education of Turks and Moroccans is central in this article. AIDS education in their native language, allowing for cultural habits, was expected to be advantageous when considering the delicate nature of the field dealing with HIV transmission and sexual habits. Use of peer educators is recommended when access to hard-to-reach populations is pursued.^{11,12} Peer educators (sometimes also called paraprofessionals, community health advisors or lay health advisors) act as the link between the public health professional and the target group. The peer educator knows the places where the hard-to-reach gather, what health change message is

* P.L. Kocken¹, A.J.J. Voorham¹, J.M. Brandsma¹, W.A.J.M. Swart¹
¹ Municipal Health Service Rotterdam area, Department of Health Promotion, Rotterdam, The Netherlands

Correspondence: Dr. P.L. Kocken, Municipal Health Service of Rotterdam area, Department of Health Promotion, P.O. Box 70032, 3000 LP Rotterdam, The Netherlands, tel. +31 10 4339211, fax +31 10 4339434, e-mail: kockenp@ggd.rotterdam.nl

acceptable and how the message can be best transferred. AIDS education by peers is thought to be effective because of the perceived trustworthiness of the information source and role modelling.^{13,14} The peer educators act as an example for their fellow citizens. The programme was an outreach programme and peer educators visited cafes, coffee houses and mosques where the target group members met. The aims of the programme were to increase knowledge about AIDS, reduce unnecessary fears and misunderstanding and change the determinants of condoms use.

The programme of AIDS education in the subjects' native language is evaluated in this article. Studies on the effectiveness of AIDS education aimed at immigrants in Europe are lacking. Information on beliefs about condom use among non-adolescent European migrant groups is scarce. The following research question is addressed in this article. What is the effect of peer-led AIDS education aimed at male Turkish and Moroccan immigrants on the perceived threat of AIDS and beliefs about condom use?

THE AIDS EDUCATION SESSION

The AIDS education session took approximately 75 min including 30 min discussion. The peer educator gave an introduction using slides or posters. He gave information about the incidence of AIDS, spread over the world, viral infection, transmission routes including intravenous drug use and blood transfusion, heterosexual and homosexual contact, pregnancy and misunderstandings concerning transmission. With respect to prevention strategies use of condoms was emphasised. Several types of condoms were shown, the availability of condoms was mentioned and use of condoms was demonstrated. The peer educator did not address the sexual habits of the immigrants in an explicit way. Condom use in sexual contacts outside marriage was promoted without suggesting that the audience was having extramarital relationships. During the talk and at the end, the audience had the opportunity of asking questions and discussing themes such as how the virus works and symptoms of AIDS. An average of 23 men attended the sessions. The AIDS education in coffee houses, cafes and mosques was rather unstructured. People who happened to be present were invited to attend the session and were not always prepared for the AIDS education. In practice people walked in and out and part of the audience attended the entire session.

The targets of the peer AIDS education programme were discussed with programme coordinators and peer educators in a qualitative procedure using the nominal group technique.^{15,16} The following targets were determined: i) increased knowledge of AIDS, ii) clearance of misunderstandings and unnecessary fears of HIV transmission, iii) a realistic appraisal of the risk of attracting AIDS including erasing the prejudice regarding AIDS being a disease of homosexuals and a disease related to nationality or culture and iv) positive beliefs, self-efficacy and intentions regarding condom use. These targets are equal to the determinants of behaviour in the Health Belief Model.^{17,18} The Health Belief Model is suitable

when the behaviour change pursued is not too complex such as drawing people's attention to the danger of AIDS and the necessity of prevention.¹⁹ Two groups of factors in this model determine people's behaviour, i.e. the perceived threat of the illness under consideration and expectations with regard to the barriers and benefits when performing actions which prevent or relieve the illness. The perceived threat of AIDS was distinguished in this study into risk appraisal for AIDS infection and beliefs and misunderstandings about HIV transmission. Moreover, effects on the following expectancies with regard to condom use were studied: i) the barrier of diminished satisfaction with sex using condoms, ii) the barrier of buying condoms, iii) the benefit of the protective effect of condoms and iv) perceived self-efficacy of using condoms. Perceived self-efficacy of performing the behaviour has been added to the Health Belief Model in order to increase its explanatory power.¹⁷ A person's self-efficacy or belief that he can successfully execute the behaviour is a strong predictor for performing the desired behaviour.^{14,20}

The information transfer about AIDS by the peer educator will have an impact on the individual's appraisal of the risk of AIDS. Viewing others in the process of adopting new behaviours such as talking about condoms may influence the audience's expectations towards that behaviour. The peer educator as a role model demonstrating condoms may affect a person's confidence to perform the desired behaviour.¹⁴

METHOD

The setting of cafes and mosques raised some limitations to the design of the evaluation study. Randomisation of visitors was not possible. Instead, the localities in which the AIDS education took place were randomly assigned to the experimental and control groups. A stratified matching procedure was used, taking into account the following characteristics of the audience: nationality, type of locality, i.e. coffee house, mosque or other locality, estimated mean age and degree of conservatism. These characteristics were assessed beforehand by the peer educators. A pre- and post-test in a place where people walk in and out during the short time limit of 1 h was not possible. The measurement was therefore confined to one pre- or post-test. The visitors to the localities that were assigned randomly to the experimental group received the post-test and the visitors of localities in the control group received the pre-test. The control group was given the opportunity of being educated after participation in the questionnaire. An additional difficulty was that many visitors were not used to filling out forms; in particular, some among the Moroccans were illiterate. The audience was asked to complete a short questionnaire. The questionnaire was called a 'quiz' in order to lower the threshold of participation in the study. In order to meet the expected reading problems, the peer educators went to the localities in pairs. One educator was responsible for the educational part. The other assisted people technically in completing the short questionnaire. Questions

were read out loud and the position of answer categories in the form were pinpointed when necessary. Sometimes the assistant educators helped individuals on request. The evaluation study took place in the four biggest cities of The Netherlands. Four peer educators per city (two Turks and two Moroccans) organised the AIDS education in turn or assisted with completing the questionnaire. Participation in the questionnaire was anonymous. Eight localities were matched (four experimental and four control settings) in every city per language group. One city failed to organise AIDS education for Moroccan inhabitants, which added up to 28 sessions for the experimental group and 28 sessions for the control group.

Measures

The format and phrases of the questionnaire were simple. The items had to be limited and a maximum of three answer categories was used. Complex formulations such as conditional statements were experienced as too difficult, e.g. 'if you are in a situation where you have planned to raise the topic of condom use with your partner, would you ...?'. Moreover, the questions had to be neutral. Explicit, suggestive references to sexual habits had to be avoided. The questionnaire was developed in collaboration with the peer educators. A certified agency translated the questionnaire into Turkish and Arabic. Native speakers translated the questionnaire back into Dutch.

The following background characteristics were raised: ethnic origin, age, marital status, duration of stay in The Netherlands, educational level, previous participation in AIDS education and the respondents' opinion on the importance of peer AIDS education in their native language. Factor analysis led to the following scales measuring perceived threat and beliefs about condom use. The scale 'misunderstandings regarding HIV transmission' consisted of three items, for example 'can the AIDS virus be transmitted by kissing?' ($\alpha = 0.66$). Risk appraisal for AIDS infection was asked using a six-item scale, for example 'can AIDS only be found in homosexual men?' ($\alpha = 0.61$). The scale 'benefit of the protective effects of condom use' included four items such as 'does a condom protect against the AIDS virus?' ($\alpha = 0.56$). Two items were used to measure the perceived barrier of diminished satisfaction with sex using a condom: 'making love using a condom is less satisfying' and 'making love using a condom is not genuine' ($\alpha = 0.62$). The barrier of buying condoms was measured using the item 'I find it difficult to buy condoms'. Self-efficacy was measured using one item: 'I know exactly how to use a condom'. Intention to use condoms was measured using one item: 'I think I will use a condom in future if I have a new partner'.

Analysis

First, the result of the matching procedure was examined. Differences in background characteristics between the experimental and control groups were tested using the χ^2 test ($p < 0.05$). Response rates were established. The outcome measures were dichotomised. The scores on the

questionnaire items were analysed at the level of individuals using the χ^2 test ($p < 0.05$). A multivariate analysis was conducted using multilevel logistic regression analysis because the observations were not independent. People visited the same locality, received education in the same group and shared the same peer educator. In short, they were more alike than members of other groups, which means that the measurements were correlated. Standard logistic regression does not account for this. The estimates of odds ratios (ORs) of multilevel logistic regression analysis are much like those of standard analysis; however, the standard errors were mostly somewhat higher, leading to rejection of the null hypothesis less often.^{21,22} All first-level background characteristics were included in the multilevel model as independent variables. Being a member of the experimental or control group was the key independent variable. Two-way interactions of this variable and the background characteristics were tested ($p < 0.10$) and added to the model if significant. Extra-binomial variation was also tested. Next to this model, a more extensive model was tested including the matching variables as second-level group characteristics in order to explain the second-level variation. ORs were tested using 95% confidence intervals (95% CIs). The statistical packages SPSS for Windows and MLN were used. The most accurate method available in MLN was used (PQL, second order).²³

RESULTS

Response

In total, 24 pairs of localities could be matched with respect to nationality, type of locality, estimated mean age and assessment of degree of conservatism. The number of visitors was assessed by the peer educators which made estimates of response rates to the questionnaire possible. The estimated response among the Turks in the experimental group was 54% and in the control group 40%. The response among the Moroccans was 49% in the experimental group and 67% in the control group. The experimental and control groups did not differ significantly with respect to their background characteristics (table 1). Analysis per nationality showed a younger control group among Moroccans than the experimental group. The response group was fairly comparable to national census data with respect to age and marital status of male Turkish and Moroccan immigrants; however, the educational level of the response group was higher compared to data from national surveys among the immigrant groups.

Effects

The scores at the level of individuals per questionnaire item are given in table 2. The experimental group differed significantly from the control group on the items concerning misunderstandings regarding HIV transmission. In the control group only half of the respondents gave the right answers to the questions as opposed to 70–80% of the respondents in the experimental group. In general, the experimental group gave the correct answers to the

items about risk of AIDS more often than the control group. The scores on the items about the incubation time of HIV (feeling healthy when infected) and testing of prostitutes were still relatively low after attendance at the education session (experimental group). Most respondents already had positive beliefs about the protective effect of condom use; however, the education showed an effect on the belief of the possibility of infection of a life partner when someone has extramarital sexual contacts not using a condom. A difference between the experimental and control group in answers on the items concerning the barrier of diminished satisfaction if using condoms, the barrier of buying condoms and self-efficacy and intention with respect to condom use could not be proven.

When taking into account the background characteristics of the respondents and the level of groups in the multilevel logistic regression analysis an effect could again be established on misunderstandings regarding HIV transmission (OR=5.9 and 95% CI: 2.3–15.3) and risk appraisal for AIDS infection (OR=2.9 and 95% CI: 1.3–6.3) (table 3). An interaction effect was found between group membership and former attendance at AIDS education. The effect on misunderstandings and risk appraisal was highest among men who had not participated in AIDS education earlier (ORs 8.7 and 3.5); however, among men who had participated before, a significant effect could still be proven on misunderstandings regarding HIV trans-

mission (OR=3.5 and 95% CI: 1.2–9.9). An effect on targets related to expectancies with respect to condom use was absent in the multilevel analyses without interaction terms, except for the effect on self-efficacy which was almost significant (OR=1.8 and 95% CI: 1.0–3.4). When interaction terms were added to the regression models, the AIDS education was shown to be significantly effective in several subcategories. In the older men, i.e. 30 years and above, beliefs about the protective effect of condom use were more positive in the experimental group as compared to the control group. Moreover, an effect was found on the barrier of diminished satisfaction of condom use among unmarried men and on the self-efficacy of those who valued peer AIDS education in their native language as important. An interaction effect was found between nationality and group membership on the intention to use condoms in future with new partners. Moroccans who attended the AIDS education planned to use condoms more often than fellow Moroccans who had not yet followed the education session (OR=3.7). Among Turks, participants of the AIDS education were less likely to use condoms than Turks who had not yet had the opportunity to participate (OR=0.6). The education session failed to change the perceived barrier of buying condoms.

Extra-binomial variation was absent in all multilevel logistic regression analyses. Therefore, this variation was restricted to unity in all models. The variation at group level, when only first-level variables were entered in the models, was, in most cases, significant, except for the barriers of diminished satisfaction and the buying of condoms (table 3). These latter outcome measures seemed to be explained by the characteristics of the individuals. When the second-level variables, that is type of locality, estimated mean age and level of conservatism, were added to the multilevel logistic regression models, only an effect on the perceived benefit of the protective effect of condoms could be established. The variation between groups decreased from 0.46 to 0.08 and was no longer significant. The group characteristics type of locality and level of conservatism explained the variation in beliefs about condom prevention to a great extent. Beliefs were more positive in mosques and moderately conservative audiences and less positive among conservative audiences. The nationality of the respondents was treated as a first-level variable in the logistic regression models, though it could be viewed as a group characteristic. Turks and Moroccans differed significantly with respect to beliefs about the protective effect of condom use and self-efficacy towards condom use. More Moroccans than Turks had beliefs in the desired direction.

CONCLUSION AND DISCUSSION

AIDS education for immigrants in The Netherlands given in their native language by peers was evaluated. Turkish and Moroccan men were trained to educate people from their own ethnic group. The aim of this peer AIDS education was to increase knowledge about transmission and prevention of AIDS, reduce unnecessary

Table 1 Distribution of background characteristics in the experimental and control group

	Experimental N=293		Control N=296	
	n	%	n	%
Age (years)				
<20	26	10	48	17
20–29	115	43	103	37
30–39	86	32	83	30
≥40	41	15	43	16
Marital status				
Married	174	62	178	62
Unmarried	106	38	109	38
Education				
None	27	10	17	6
Primary	81	29	86	30
Secondary	139	50	138	49
Polytechnic/university	31	11	42	15
Duration of stay in The Netherlands (years)				
≤3	30	11	40	14
>3	250	89	244	86
Former AIDS education				
Yes	118	42	100	36
No	162	58	180	64
Importance attached to peer education in native language				
Important	201	71	177	64
Neutral/unimportant	84	29	101	36

fears and misunderstandings and change people's behaviour towards condom use. The effect of peer education on the perceived threat of AIDS and beliefs about condom use was studied. Beliefs and not actual behaviour were central in this study because questions about personal sexual behaviour had to be avoided. For instance, intention to use condoms was asked about as this is a predictor for undertaking the behaviour.²⁴ The study design proved to be useful in the difficult setting of coffee houses, mosques and bars that are visited by men who are seldom asked to cooperate in a research project. The response to the questionnaire was satisfactory; however, poorly educated immigrants were under-represented.

The AIDS education primarily had an effect on the perceived threat of AIDS. Misunderstandings with respect to the transmission of HIV were cleared up and the risk appraisal for AIDS infection improved. The effect was highest in men who had not received AIDS education before. The belief that condom use is beneficial in AIDS prevention was already widespread among the Turkish and Moroccan men. An educational effect was only achieved in the older age group. Positive feelings towards using condoms among the unmarried, who probably run

a higher risk of HIV infection because of multiple sexual partners, is a hopeful outcome of AIDS education. The effect on self-efficacy shows that a positive attitude towards peer education is a requirement for a productive result. Approximately 65–70% of the audience thought it important to have education on AIDS in their native language by a peer. The presence of an effect on intention to use condoms among Moroccans and its absence among Turks was remarkable. A closer examination of the activities of the education sessions using registration forms showed that less attention was paid to the demonstration of condom use during the Turkish sessions than the Moroccan sessions, which may indicate that talking about condoms is less accepted among Turks. This could be an explanation for the lack of effect on intention to use condoms among Turks.

The variation between groups in the multilevel logistic regression analyses was, in most cases, significant and high, which means that differences in the experimental and control groups could be explained by group characteristics. These characteristics are unclear in most models. An effect of nationality, the type of locality, that is coffee house, mosque or otherwise and the degree of

Table 2 Scores on the questionnaire items for the experimental and control groups

	Experimental % right	Control % right
Misunderstandings regarding HIV transmission		
Can the AIDS virus be transmitted by kissing? (No)	81.2 ^a	56.8
Can mosquitoes transmit the AIDS virus from one person to the other? (No)	66.9 ^a	42.2
Is it possible to get AIDS when using a dirty toilet? (No)	76.1 ^a	53.4
Scale (all items right)	58.0 ^a	24.3
Risk appraisal for HIV infection		
Can one feel healthy being infected by the AIDS virus? (Yes)	36.2 ^a	28.4
Is washing oneself thoroughly after the sexual intercourse protective against the AIDS virus? (No)	81.2 ^a	68.9
Are all prostitutes in The Netherlands HIV tested? (No)	49.5	41.6
Are Turks/Moroccans with different sexual contacts less liable to be infected with AIDS than the Dutch with different sexual contacts? (No)	73.0 ^a	64.9
Can AIDS only be found in homosexual men? (No)	84.3 ^a	75.0
Is it possible to prevent AIDS when one is critical regarding the decent appearance of a partner? (No)	61.4 ^a	47.3
Scale (four or more items right)	68.3 ^a	45.9
Benefit of the protective effect of using condoms		
Does a condom protect against the AIDS virus? (Yes)	86.7	80.7
Is the use of condoms when visiting a prostitute a necessity? (Yes)	91.5	91.2
Is everyone having different sexual partners at risk of AIDS? (Yes)	86.7	83.4
Does the life partner run a risk of AIDS when someone commits adultery not using a condom? (Yes)	84.3 ^a	76.0
Scale (all items right)	67.9 ^a	57.4
Barrier of diminished satisfaction of condom use		
Making love using a condom is less satisfying (Disagree)	19.3	17.0
Making love using a condom is not genuine (Disagree)	39.1	33.9
Scale (score 4–6 (2–6))	57.2	53.2
Barrier of buying condoms		
I find it difficult to buy condoms (Disagree)	44.5	49.6
Self-efficacy condom use		
I know exactly how to use a condom (Agree)	63.2	56.7
Intention of condom use		
I think I will use a condom in future if I have a new partner (Agree)	67.8	60.7

a: χ^2 -test: $p < 0.05$

conservative or modern ideas among the audience could only be demonstrated with respect to beliefs about the protective effect of condom use. Moreover, the variation in self-efficacy across groups could be explained by nationality. More Moroccans than Turks rated condom self-efficacy high. This result is consistent with the modifying effect of nationality on the relationship between participation in AIDS education and intention to use condoms, as mentioned above. This means that the AIDS education programme has to take into account group characteristics such as nationality when condom-related targets are pursued.

The AIDS education programme was started in order to bridge the gap between the general mass media campaigns and the language problems of immigrant groups in The Netherlands. When considering the clearance of misunderstandings and the change of the appraisal of susceptibility to AIDS, peer education is seen as an appropriate alternative. In spite of these effects, some instruction is still necessary on the incubation time of HIV and the policy of testing of prostitutes. The behaviour change of getting all subgroups to use condoms remains a difficult task. The AIDS education of customers of coffee houses and visitors of mosques of 1 h duration may have been too general and too brief to affect the complex mechanism of behaviour change. A discussion of sexual contacts with different partners, extramarital contacts and condom use turned out to be difficult in the Muslim culture of Turks and Moroccans. Research into the stages of change is recommended in order to realise behaviour change in all target groups. The message of the peer educator has to be adapted to people's needs. From the transtheoretical model of change it becomes clear that stressing the benefits of condom use is relevant in the pre-contemplation and contemplation stage when the subjective perception of cons related to condom use outweigh the pros. When people are ready to adopt and maintain a behaviour, the action is strongly related to self-efficacy. Promoting people's confidence in skills at that moment is very relevant.²⁵ For example, young immigrants who experiment with sexual contacts or unmarried immigrants who have different sexual partners may be open to the message of condom

use. Strategies should be developed in order to change their beliefs and self-efficacy. For the audience which is not yet ready to consider condom use, successful communication attracting attention and improving comprehension of HIV transmission and preventive methods is recommended.^{26,27}

This evaluation study makes clear that continuation of peer education in native language is to be recommended. Continuous and careful discussion within migrant groups on condom use in order to break the taboo in their cultures is relevant. An effect on misunderstandings could still be proven in people who had previously attended AIDS education sessions, which proves the necessity of repeating the message of AIDS prevention in immigrant groups.

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Table 3 Effects of AIDS education on knowledge and determinants of condom use: multilevel logistic regression analysis (ORs and 95% CIs)

	OR	95% CI	σ^2 group ^a
Scale misunderstandings regarding HIV transmission	5.9 ^b	2.3-15.3	1.89 ^b
AIDS education before	3.5 ^b	1.2-9.9	1.79 ^b
No AIDS education before	8.7 ^b	3.1-23.9	
Scale risk appraisal for HIV infection	2.9 ^b	1.3-6.3	1.18 ^b
AIDS education before	1.8	0.7-4.6	1.13 ^b
No AIDS education before	3.8 ^b	1.7-8.7	
Scale benefit of the protective effect of condom use	1.6	0.9-2.9	0.47 ^b
<30 years	1.1	0.6-2.2	0.46 ^b
≥30 years	2.6 ^b	1.2-5.7	
Scale barrier of diminished satisfaction if using condoms	1.0	0.7-1.6	0.08
Married	0.7	0.4-1.1	0.06
Unmarried	2.0 ^b	1.1-3.7	
Barrier of buying condoms	0.8	0.5-1.3	0.31
Self-efficacy condom use	1.8	1.0-3.4	0.58 ^b
Education in native language important	2.4 ^b	1.2-4.8	0.56 ^b
Education in native language unimportant	0.9	0.4-2.3	
Intention condom use	1.2	0.6-2.6	1.09 ^b
Turks	0.6	0.2-1.5	0.90 ^b
Moroccans	3.7 ^b	1.2-11.6	

a: σ^2 group = group specific variation (standard errors).

b: Significant ($p < 0.05$), confidence interval does not comprise value 1.

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