

Arab–Jewish differences in attending cardiac rehabilitation programs following acute coronary syndrome[☆]

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Intensive efforts to change lifestyle and to manage classical risk factors for coronary heart disease (CHD) via formal programs of cardiac prevention and rehabilitation (CPRP) are strongly recommended as an integral part of proper follow-up care after an acute coronary syndrome (ACS) [1]. Despite these recommendations, low participation rates in CPRP prevail among ethnic minorities worldwide [2–4]. Studies carried out in Israel have shown substantially higher CHD incidence, case fatality and mortality in the Arab versus the Jewish population [5,6]. Our objective was to examine whether an ethnic difference, comparing Arab and Jewish patients, exists in participation in CPRP after ACS within a context that strongly encourages such preventive activity, and under universal national health insurance that includes coverage for cardiac rehabilitation.

Consecutive, eligible and consenting patients (N = 420), who were interviewed between January 2009 and August 2010 during their index hospitalization in the coronary care unit (CCU) of a community hospital serving both Jewish and Arabs patients, and again six months after discharge, reported on their participation in CPRP. We referred only to the long term CPRP programs and not the 7-day recovery programs offered. All patients met the following inclusion criteria: 1) admission for ACS based on typical history, positive electrocardiographic changes, or positive troponin levels, as confirmed by a senior cardiologist; and 2) having no severe physical or mental disability that would prevent participation in a prevention and rehabilitation program for cardiac patients. Of the 649 eligible patients, 501 were interviewed at baseline (77.2%), and 420 of these at follow-up (83.8%).

Informed consent was obtained from each patient and the study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a priori approval by the institutional human research committee.

In order to explore the independent association between ethnicity and participation in CPRP, a forward stepwise logistic regression procedure was undertaken with two blocks of variables. The predictors included in the first block were ethnicity, gender, and age. The second block included additional socio-demographic characteristics (place

of birth, marital status, level of education, employment status, socio-economic position [SEP] [7], economic situation, religiosity, and HMO), discharge diagnosis [acute myocardial infarction (MI) or unstable angina], and history of CHD. An exit significance level of $p > 0.2$ was used.

Compared with the Jewish patients (n = 304), the Arab patients (n = 116) were younger, more religious, more likely to be married, less educated, and with a lower income. No significant differences were found with regard to employment status, HMO, or the clinical characteristics.

Of the 420 patients studied, 206 (49%) participated in CPRP. Unadjusted analyses pointed to significant ethnic differences: 61.1% (95% CI: 55–66%) of the Jewish patients attended CPRP (186/304), compared with only 17.2% (95% CI: 11–24%) of the Arab patients (20/116), yielding a 3.5 fold higher rate in the Jewish cohort. Participation was consistently higher among both Jewish men (60.2%) and Jewish women (65.4%) with no significant gender difference. Among the Arab patients the sample size of women was too small to enable an informative gender comparison.

Multivariable logistic modeling (Table 1) confirmed a strong association between ethnicity and participation in CPRP, independent of SEP (which showed a positive association), history of CHD (a negative association) and diagnosis (patients after acute MI were more likely to attend).

Among ACS patients from the two main population groups in Israel, covered by the same national health insurance and admitted to the same hospital, we found a remarkably lower CPRP participation rate in Arab than Jewish patients. These longitudinal findings extend and clarify an earlier small study undertaken by our group [8]. Notwithstanding an overall high response rate in our study we acknowledge a limitation in the lower response among Arab women, and among patients admitted for unstable angina as opposed to MI.

Promotion of CPRP by the hospital during the acute admission appears to have been successful in Jewish patients who achieved unusually high rates of participation, both women and men, compared with far lower overall participation rates in Israel [9]. Similar success was not evident for Arab patients. We point out that language was not a barrier to learning about the CPRP offered – part of the medical and nursing staff of the hospital are Arab (as is common in Israeli

Table 1

Association of ethnicity, other socio-demographics characteristics and illness characteristics with participation in CPRP.

Variable	B	Wald test (Z-ratio)	Odds ratio ^a	(95% CI)		P value
				Lower	Upper	
Ethnic group	–2.20	49.75	0.11	0.06	0.20	.000
Age (years)	–.02	2.54	0.98	0.96	1.00	.111
SEP (per unit)	.16	7.33	1.17	1.04	1.31	.007
History of CHD	–.55	4.97	0.58	0.35	0.94	.026
Discharge diagnosis	–.98	13.70	0.38	0.22	0.63	.000

Nagelkerke $R^2 = 0.315$

^a Values: participation in CPRP (dependent variable): 0 = no, 1 = yes; ethnic group: 0 = Jews, 1 = Arabs; history of CHD: 0 = no, 1 = yes; diagnosis: 0 = myocardial infarction, 1 = unstable angina; age introduced as continuous variable (years); and SEP introduced as an ordinal variable (10 point scale from 1 = the least well off to 10 = the best off).

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hospitals) – and written and verbal explanations were provided in both Arabic and Hebrew. The reasons are more subtle. Similar results were also noted in a sample of U.S. Medicare populations [3] in which whites were more than twice as likely than non-whites to attend CPRP (19.6% vs. 7.8% respectively). In light of the consistent findings showing that low participation rates in CPRP prevail among ethnic minorities worldwide, further research is required in order to gain a deeper understanding of putative cultural, social or psychological barriers which may underlie these differences in CPRP participation, in order to better promote secondary prevention.

The authors of this manuscript have certified that they comply with the Principles of Ethical Publishing in the International Journal of Cardiology.

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