Dynamics of Culture and Health: Perceived Behavioural Control and Differences in Smoking Behavior between Arab and Jewish Cardiac Patients in Israel

Vilchinsky Noa[1], Soskolne Varda[2], Taha-Fahoum Amal [3] and Shehadeh Jeries[4]

[1]Department of Psychology, Bar-Ilan University Ramat Gan, Israel; Email: Noa.Vilchinsky@biu.ac.il

[2] School of Social Work, Bar-Ilan University, Ramat Gan, Israel; Email: Varda.soskolne@biu.ac.il

[3]Sakhnin College for Teachers' Education, Sakhnin, 20173, Israel; Email: amal_fahoum@yahoo.com

[4]Department of Cardiology, Zevoulon, Haifa, 27053 and Carmel Medical Center, Haifa, 27053, Israel; Email: geryes71@netvision.net.il

*Corresponding author: Varda Soskolne, School of Social Work, Bar-Ilan University, Ramat-Gan 52900, Israel, E-mail: Varda.Soskolne@biu.ac.il

Abstract

Objective: Based on the concept of perceived behavioural control, we explored the extent to which internal perceived behavioural control (self-efficacy) and external perceived behavioural control (fatalism) contribute to explaining differences in smoking cessation between Arab and Jewish cardiac patients in Israel.

Design: In a cross-sectional study of retrospective quota samples 100 Arab and 100 Jewish male patients, diagnosed with a major cardiac event were interviewed. The questionnaire included demographic background, patients' smoking behavior, Bandura's self-efficacy scale, and a fatalism scale.

Results: Of those who smoked before the cardiac event, half (50%, n=39) of the Arab patients continued to smoke compared with only 19.4% (n=12) of the Jewish patients. Arab patients reported significantly lower levels of self-efficacy and higher levels of fatalism. Fatalism, but not self-efficacy was significantly associated with continuation of smoking. In multivariate analysis, population group remained the only variable significantly associated with cessation of smoking.

Conclusion: The persistence of differences between the two cardiac patient groups suggests that culturally sensitive smoking cessation interventions should be designed for each population and that additional putative explanatory variables should be further examined.

Keywords: Culture; Perceived behavioral control; Fatalism; Self-efficacy; Smoking cessation; Cardiac illness

Introduction

Cardiovascular diseases (CVD) are still the leading cause of death in many western countries even though major advances in treatment have contributed to higher rates of surviving cardiac events [1-3]. It is also evident that not all segments of society benefit from the major advances and disparities in CVD rates persist between the majority and ethnic minorities [4,5].

In order to prevent recurrent cardiovascular events, patients are advised to gradually resume their regular life routines while also changing lifestyle habits that are major risk factors for CVD [6,7]. Smoking (tobacco addiction) is the most significant of the modifiable cardiovascular risk factors; thus smoking cessation is considered a high priority in the management of patients with cardiovascular disease [8]. However, most patients find it difficult to adhere to smoking cessation [9]. Again, Non-adherence to recommended cardiac rehabilitative and preventive actions is particularly higher in patients from minority groups [10].

In Israel, ethnic disparities are mainly assessed as those between the Jewish majority and the Arab minority citizens. The Arabs compose 20% of the population, of which 86% are Muslims. Their socio-economic status (education, income and employment) is consistently lower than that of the Jewish population, and the disparities in health status are significant, with lower life expectancy and higher mortality rates in the Arab population [11]. Similar differences are found in cardiac morbidity and mortality rates [12-14]. Smoking rates in the general population are also higher among the Arabs: the rates are 28% and 45% for Jewish and Arab men, respectively, (but 16% and 4% for Jewish and Arab women, respectively) [15]. The higher rates of smoking among Arab men are sustained among cardiac patients, even when smoking is conceptualized as a proximate health risk, i.e., risk of recurrent cardiac events: smoking cessation was almost twice as low for Arab than for Jewish cardiac patients [16]. Additionally, others showed that the rate of Arab patients' participation in cardiac rehabilitation programs is significantly lower than that of Jewish patients [17], minimizing their chances of being exposed to smoking cessation interventions. Therefore, it is a priority to recognize and understand the factors that feed into the ethnic gaps in smoking behavior, in order to address the needs of these populations and to implement culturally sensitive health-promoting interventions [5]. Yet, theory-based assessment of possible factors that may account for the disparities in smoking behavior among cardiac patients, beyond socio-demographic determinants per-se, is extremely limited.

Efforts to explain health behavior change, including smoking cessation, may benefit from the well-established theoretical models of health behavior. These frameworks attest to the fact that besides socio-demographic characteristics and knowledge, the way people perceive the situation and particularly their ability to control it is an important determinant of health promoting behavior [18-20]. Indeed, perceived behavioral control is a central component of a handful of theories which predict overall behaviors, and health behaviors in specific, such as: the Social Cognitive Model [21], Theory of Planned Behavior [22], and Health Belief Model [23].

Perceived behavioral control (PBC) is defined as the extent to which a person feels able to enact behaviors [24]. PBC is shaped by life experiences as well as by one's cultural background [22]. PBC has two aspects: the first aspect consists of how confident a person feels about being able to perform or not perform the behavior, whereas the second aspect taps beliefs about the power of both situational and internal or external factors to inhibit or facilitate the performing of the behavior [25]. In the current study, in our attempt to pinpoint putative psychological variables which may explain the differences in smoking cessation between Arab and Jewish cardiac patients in Israel, the first aspect was conceptualized by Bandura's concept of self-efficacy [26], and the second aspect, external perceived behavioral was conceptualized by the concept of fatalism.

Self-efficacy

According to Bandura's social learning theory [21,27] self-efficacy (SE) stands for one's confidence in his/her ability to perform different life tasks. With regard to disease prevention and health promotion, sense of efficacy was found to be a crucial regulator of one's motivations and behaviors [28]. SE was found to be a strong common determinant of behavioral change, especially in smoking behaviors [29,30], although the mechanisms linking SE to success in adherence to smoking cessation have not been well documented [9]. Yet, it is proposed that low SE undermines smokers' ability to initiate or maintain efforts to cope with high-risk situations that may lead to smoking (e.g., negative affect states, exposure to smoking cues) or to reduce smokers' likelihood of recovering from lapses once they do occur [31]. A qualitative review of 21 studies examining predictors of long-term [six month] cessation outcomes found that self-efficacy also predicted relapse among smokers [32].

The studies which explored self-efficacy among ethnic minorities validated its predictive value with regard to various health behaviors. Low self-efficacy was an important determinant of low rates of mammography screening among South Asian women living in Canada [33] as well as of smoking cessation among Afro-American women of low socio-economic status [34]. SE was the strongest predictor of nonsmoking among both Caucasians and African Americans [24]. Data on self-efficacy as a determinant of health behavior among Arabs and Jews in Israel is scarce, suffers from inconsistency in its measurements, and is contradictory. For example, in one study no association was found between self-efficacy and mammography screening among Arab women [35], whereas in another study, self-efficacy predicted physical activity among both Arab and Jewish college students in Israel [36].

Fatalism

Fatalism is defined as a person's faith or position regarding his destiny [37]. Fatalism refers to a general certainty that destiny cannot be altered and that one has very little control over his/her life [38].

A fatalistic person believes that each incident of his/her life is determined by God or fate or some other metaphysical entity; therefore any struggle against this power is futile [37]. This perception may lead to a tendency toward learned helplessness and prevent patients from acting in favor of their health [38]. Such fatalistic views of cancer were among the main barriers to mammography screening among Hispanic minority women [39]. Fatalism is an integral part of the Arab culture [40,41]. For most Arabs, fatalism consists of the belief that God possesses an ultimate power over one's life. If something goes wrong, people can release themselves from blame or do nothing to improve the situation by assigning the cause to God's will. Too much self-assurance about controlling events can even be considered a sign of arrogance to the point of blasphemy [42]. Indeed, Arab women in Israel who believed that God or fate was the cause of cancer refrained from having a mammogram [43].

In light of the overall goal of the current study to explore putative psychological variables of the differences in smoking cessation, the aim of the study was to assess the contribution of internal (self-efficacy) and external (fatalism) perceived behavioral control to smoking behavior among Arab and Jewish cardiac patients in Israel.

- Our hypothesis was as follows: Arab patients will be less likely than Jewish patients to cease smoking.
- Higher levels of SE and lower levels of fatalism will be detected among the Jewish patients compared with Arab patients.
- Higher scores of SE will be associated with higher rates of smoking cessation
- Higher scores of fatalism will be associated with lower rates of smoking cessation
- SE and fatalism will explain the differences: they will mediate the association between ethnicity and smoking behavior.

Methods

Participants and procedure

The study population was defined as all patients hospitalized in the Carmel Hospital Cardiology Department between January 1, 2006 and April 30, 2008 for first or recurrent cardiac event. Eligible patients were Arab and Jewish Israelis, aged 40-69 years, who had

Been diagnosed with a major cardiac event and/or undergone a relevant medical procedure i.e., Myocardial infarction (MI); Percutaneous Trans luminal coronary angioplasty (PTCA); coronary artery bypass graft (CABG), and who suffered from no other severe chronic illness. The current study was a part of a larger study examining couples' relationships, therefore all eligible patients were married. Data were collected in 2007-2008 and a total of 630 patients were found eligible for inclusion in the study. The study was approved by the Carmel Hospital Review Board.

Names of all eligible patients were transferred to Arab or Jewish interviewers who had been specifically trained for the study. The interviewers first contacted the patients by telephone and after receiving an oral consent, a face-to-face interview at the patient's home was scheduled. After signing an informed consent form, the patients

were interviewed in Arabic or Hebrew. Of the eligible 630 patients, 463 were approached (every second name and then repeating the list) until reaching the required quota of 200 patients (100 Arabs and 100 Jews). Of the 463, 163 (97(60%) Jews; 66 (40%) Arabs) were not located (due to incorrect telephone numbers, no answer at the correct telephone numbers, etc.), and 100 (71 Jews and 29 Arabs) refused to take part in the study, reaching a 66% response rate.

Measures

All questionnaires were prepared in Hebrew and in Arabic by the research team which consisted of both Arab and Jewish researchers, and assessed for clarity. Minor revisions were conducted following a pre-test of 20 patients.

Smoking cessation: Participants described their smoking behavior prior to the index cardiac event and their current smoking: smoked before and continue to smoke; smoked and ceased; never smoked; ceased before the index event. In order to tap smoking cessation, two Categories of smoking behavior were defined: (0) smoked and continues to smoke, and [1] smoked and ceased smoking after the index event. Naturally, only patients who had smoked prior to their index event were included in the analysis.

Self-efficacy (Internal PBC): Self-efficacy was measured by Bandura's self-efficacy scale [26]. It was specifically adapted to meet the particular challenges facing cardiac patients. The scale taps 10 items such as: 'I believe in my ability to function at work despite my cardiac illness'; 'I believe in my ability to do whatever the rehabilitation program demands.' Patients were asked to rate each item on a 7-point Likert scale (1=not at all, 7=very much). The final score, a mean of all the items, represents the overall feeling of self-efficacy, in which higher scores represented greater self-efficacy. Cronbach's alpha in the current study was 0.93.

Fatalism (External PBC): This questionnaire was specifically designed for the current study. It is based on writings of both Arab and Jewish scholars in the field of Judaism and Islamic thought [37,44-47] and on consultations we had conducted with scholars in the field of Judaism and Islamic thought. The scale consists of seven items addressing beliefs in an outer force which governs one's life. Participants were asked to rate each item on a 5-point Likert scale (1=completely disagree, 5=completely agree). Higher scores represented higher levels of fatalistic beliefs. After applying principal component exploratory factor analysis with Oblimin rotation, two factors emerged, explaining 62% of the total variance. However, three items had very high loadings on both factors and an additional three items had low loadings on both factors; therefore, they were omitted. The final instrument therefore consisted of four items integrated into one factor which now explained 62.5% of the total variance. The items were: 'God controls one's life;' 'no matter what you do for your own health, eventually it is God's verdict;' 'praying to God may be helpful in times of illness;' and 'whatever happens to a person is in God's hands.' Cronbach's alpha was 0.86.

Health related variables: Three measures were used to assess patients' health status: a) Illness severity was measured by the patient's self-report of any additional Major Acute Coronary Event (MACE) since the time of their index event. The responses were divided into high severity (1- recurrent MI/ recurrent CABG/ recurrent PTCA) versus low severity (0- no additional events, or elective diagnostic angioplasty only). b) Self-rated general health was assessed by a single question, using a 5-point scale (1=very bad, 5=very good). c) Length of time since the first cardiac event was assessed by a single self-report question (in years).

Socio-demographic background: This questionnaire included items on population group (1=Arab, 0=Jewish); age (in years); education level, measured on a 5-point scale (1=less than eight years of formal schooling, 5=university degree); Perceived economic status, self-assessed economic state, measured on a 5-point scale (1=very bad, 5=very good); and level of religiosity measured on a 5-point scale (1=not practicing any religious commandments, 5=practicing religious commandments to a great extent).

Statistical analysis

Multiple imputation analysis was applied in order to deal with the issue of missing data. According to Enders [48], the multiple imputation technique uses a regression- based procedure to generate multiple copies of the data set, each of which contains different estimates of the missing values. In the current analysis, we applied the SPSS 0.20 MI procedure, and 10 copies of the data set were generated. Briefly, for the imputation of each scale's missing items we used the other scales relevant for the analysis as temporary auxiliary variables. Therefore, an iterative imputation process repeatedly filled in the item scores from one subset while using the scale scores from the remaining subsets as auxiliary variables. After completing the imputation process for each item subset, we computed a new set of composite scores from the filled-in item responses.

After creating the complete data sets, we ran the statistical analyses on each filled-in data set and subsequently used [49] formulas to combine the parameter estimates and standard errors into a single set of results. Since interactive effects were hypothesized, we followed Ender's advice to preserve interaction effects in the imputation model. Because the variables of perceived health, perceived socio-economic status and education level consisted of five levels, and their distribution was very close to normal distribution, these variables were treated as continuous independent variables throughout all analyses.

To examine the contribution of ethnicity, socio-demographics, health status and psychological variables to the variance in smoking behaviors, we initially applied Spearman correlations analyses, due to the dependent variable being dichotomous. Then, the data were analyzed using a four-step hierarchical logistic regression. In this regression, the predicted variable was smoking behavior (ceased/continues). The first step of the regression included the patient population group (Arab/Jew). Step 2 included the relevant demographic variables (only those which were found to significantly differentiate between Arabs and Jews or to be associated with smoking behavior). Step 3 included self-efficacy and fatalism. The two-way interactions of fatalism, self-efficacy, and each of the demographic variables with population group were entered in Step 4, which consisted of the product of the centered scores of these measures (Population group x Fatalism; Population group x self-efficacy; Population group x age; etc).

Results

Sample characteristics

Of the 200 participants, 78 Arabs (78% of the Arab sample) and 62 Jews (62% of the Jewish sample) were smoking before the index event, and therefore comprise the sample for our analyses. Half (50%, n=39) of the Arab patients continued to smoke after the event, compared

with less than a fifth (19.4%, n=12) of the Jewish patients, χ^2=14.01, df=1; p <0.000.

Table 1 presents the means and standard deviations of the sample background and study variables, for each of the population groups. It can be seen that the Arab patients were significantly younger, less educated, more religious, and perceived themselves to be of a lower socio-economic status than the Jewish patients. Significant differences were also found with regard to the two psychological variables. Arab

patients were found to hold higher levels of fatalism and lower levels of self-efficacy than their Jewish counterparts. In addition (data not shown), though no differences were found between the population groups regarding perceived health status, the objective measure of illness severity shows that the majority of Arab patients (79.5%, n=62) were classified as having a severe illness compared with only half (54.8%, n=34) of the Jewish patients, χ^2 (1)=9.74, p<0.01.

Characteristics	Arabs (n=78)	Jews (n=62)	
	M (SD)	M (SD)	t (138)
Age (years)	55.43 (7.87)	59.21 (7.15)	2.9**
Years since first cardiac event	4.30 (3.99)	4.53 (4.76)	0.31
Perceived economic status (SES)	2.80 (1.02)	3.27 (0.81)	2.88**
Education	2.97 (1.20)	3.68 (1.20)	3.44**
Religiosity level	3.61 (1.21]	2.44 (1.14)	5.78***
Perceived health status	3.31 (1.01)	3.42 (0.86)	0.69
Self- efficacy (SE)	4.82 (1.50)	5.35 (1.23)	2.28*
Fatalism	3.93 (1.05)	3.04 (1.33)	4.28***
*p<0.05; **p<0.01; ***p<0.001			

Table 1: Frequencies, means and standard deviations of the study variables by group [N=140].

Associations with smoking cessation

Table 2 presents the Spearman correlations among the study variables. As can be seen, in addition to the lower education and SES level of the Arab patients compared to the Jewish patients, they also reported higher levels of religiosity, severity of illness and, as hypothesized, lower levels of SE and higher fatalism. Smoking cessation was significantly

Lower among the Arabs and was correlated with level of education, level of religiosity and fatalism but not with self-efficacy. The less educated, more religious and more fatalistic one was, the more one continued to smoke.

	Variable	1	2	3	4	5	6	7	8	9	10
1.	Population Group	-									
2.	Age	-0.24**	-								
3.	Time	-0.01	0.17*	-							
4.	SES	-0.22**	0.13	-0.09	-						
5.	Education	-0.28**	0.01	-0.08	0.33***	-					
6.	Religiosity	0.44***	-0.05	-0.02	-0.21*	-0.32***	-				
7.	Health	-0.05	-0.09	-0.10	0.30***	0.28**	-0.11	-			
8.	Illness	0.26**	0.06	0.28**	-0.14	-0.24**	0.09	-0.33***	-		
9.	SE	-0.17*	-0.02	-0.12	0.43***	0.23**	-0.13	0.56***	0.27**	-	
10.	Fatalism	0.33***	-0.01	-0.02	-0.20*	-0.48***	0.52***	-0.27**	0.24**	-0.18*	-
11.	Smoking	-0.32***	0.10	-0.10	0.15	0.23**	-0.28**	-0.03	-0.07	0.09	-0.25**

Note: Population group (1=Arabs, 0=Jews); Time=time since first cardiac event; SES=perceived socio-economic status; Health=perceived health status; Illness=illness severity; SE=self-efficacy; Smoking [0=continues; 1=ceased].*p<0.05; **p<0.01; ***p<0.001

Table 2: Pearson's correlations of the study's variables [N=140].

The binary logistic regression model predicting the probability of continuation versus cessation of smoking is presented in Table 3. In the current analysis, only the variables found to significantly differentiate between Arabs and Jews or to be associated with smoking behavior were entered into the regression model in addition to population group: age, perceived socioeconomic status, level of education, religiosity level, illness severity, self-efficacy and fatalism. The first step of the regression showed a significant fit of the model (χ^2=14.58, p<0.001). Arab patients were about four times less likely than Jews to stop smoking. The demographic and illness variables entered in the second step did not add significantly to the explained variance beyond ethnicity ($\Delta\chi^2$=5.93, p=0.31, df=5), nor did self-efficacy and fatalism entered in step 3 ($\Delta\chi^2$=1.41, p=0.49, df=2), and none of the variables was significantly associated with smoking cessation. Finally, the inclusion of the interactions in step 4 did not add significantly to the explained variance ($\Delta\chi^2$=6.94, p=0.44, df=7) and none of the interactions reached statistical significance (data not shown in Table 3.

Variables		B	SE (B)	Wald	OR	95% C.I. for EXP (B)	
						Lower	Upper
Step 1:	Population group	-1.43	0.39	13.17	0.24***	0.11	0.52
Step 2:	Population group	-1.01	0.46	4.72	0.37*	0.15	1.0
	Age	0.01	0.03	0.14	1.01	0.56	1.09
	SES	0.06	0.21	0.09	1.06	0.70	1.61
	Education	0.24	0.17	2.08	1.28	0.92	1.78
	Religiosity	-0.25	0.46	2.19	0.78	0.56	1.09
	Illness severity	0.16	0.41	0.13	1.17	0.49	2.79
Step 3:	Population group	-0.1.00	0.46	4.65	0.37*	0.15	0.91
	Age	0.007	0.03	0.07	1.00	0.96	1.06
	SES	0.04	0.23	0.04	1.04	0.67	1.63
	Education	0.18	0.18	1.05	1.20	0.85	1.70
	Religiosity	-0.17	0.17	0.88	0.84	0.58	1.21
	Illness severity	0.27	0.46	0.34	1.31	0.53	3.26
	SE	0.04	0.15	0.07	1.04	0.77	1.40
	Fatalism	0.21	0.21	1.03	0.81	0.54	1.22

Note: Smoking [0=continues; 1=ceased]; Population group [1=Arabs, 0=Jews]; SES=perceived socio-economic status; SE=self-efficacy. *p<0.05; **p<0.01; ***p<0.001.

Table 3: The contribution of population group, socio-demographics, illness severity, fatalism, and self-efficacy to smoking behavior (N=140).

Discussion

The most alarming finding of the current study is the high rate of continuation of smoking among cardiac patients in Israel, particularly among Arab patients. It highlights two distinct problems which should be addressed by healthcare providers.

First, there is an urgent Need to channel more resources to the development of intervention programs aimed at smoking cessation among all cardiac patients in Israel, regardless of ethnicity. This issue is vital, considering the fact that the burden of smoking-induced morbidity in Israel was expressed in 2008 as the loss of 96,000 life years (QALYs-Quality Adjusted Life Years), including 9000 deaths. In economic terms the direct cost to the Israeli health services as a consequence of smoking was calculated as 1.75 billion NIS, which is equal to 0.25% of Israel's Growth National Product [50]. Second, it is crucial to disentangle the specific barriers which may underlie the difficulties Arab patients have in quitting smoking, given the alarming rate (50%) who continue smoking even after experiencing a life-threatening event such as a heart attack.

In the current study we aimed not only at assessing the smoking cessation gap between the population groups in Israel but also to decipher it by inclusion of variables which were speculated to be most relevant to the cultural values of each population group. Self-efficacy is more highly valued among the more westernized Jewish majority

whereas fatalistic views are more common in the Arab culture. Thus, the significant differences between the two groups both in fatalism and in SE confirmed our assumptions in this regard. Similar low levels of SE among Arab male cardiac patients were found in Jordan [51]. However, our reliance on internal and external perceived behavioral control as explanatory variables of the difference in smoking behavior was not supported. Of the two variables, SE was not considered a potential mediator as its univariate association with smoking cessation was non-significant, and fatalism became non-significant in the multivariate analysis. Thus, both variables were not sufficient to substantially reduce the ethnic difference.

Our results do not support previous evidence of the significant role of SE as a very potent personal resource in explaining smoking cessation in cardiac patients in general [52,53]. Whether the lack of association of SE with smoking cessation characterized these specific samples of two culturally different male cardiac patients, thus not being a potential explanatory variable of the differences in smoking cessation, or whether methodological differences (i.e., measures, selection of outpatient rather than inpatients sample, duration since cardiac event) account for the contradiction with previous evidence warrants further exploration. Additionally, SE may exert its effect in combination with other putative variables. In a recent study, [53] showed that only the interaction between SE and received partners' support explained the likelihood of smoking abstinence, naming it a 'synergistic' effect.

Also intriguing is the question why the potential mediation by fatalism was not further confirmed in the multivariate analysis. It may be that controlling for other variables strongly associated with fatalism (i.e., education, religiosity) in the regression model contributed to the non-significant association of fatalism with smoking behavior. It seems that fatalism is not a sufficiently sensitive cultural factor in explaining the differences in smoking cessation between the two groups. Scarcity of evidence as to its role in explaining smoking cessation or other health behaviors, and use of our new scale of fatalism calls for further research and in larger sample size in order to decipher the ways by which fatalism may explain ethnic differences in in smoking behavior.

Interestingly, our null findings seem to corroborate those of Reges, et al. [16]. Unlike our cross-sectional study, they used a longitudinal prospective study design and a larger sample (n=420); yet, they also were unable to detect an explanatory variable for the gap between Arabs and Jews cardiac patients in smoking behavior. Thus, further efforts are still needed in identifying specific cultural factors that may explain the gap in smoking cessation even after life endangering event, such as a cardiac event. Several limitations of the current study should be mentioned. The retrospective design regarding smoking cessation is a source of potential recollection bias; patients were asked to report details about their smoking habits prior to their first cardiac event a few months or years afterwards. The cross-sectional design of the analysis precludes conclusions about causation. In addition the participants were recruited from one hospital and may not be representative of all cardiac patients in Israel. Finally, as the current study focused on male patients only, future studies should also try to unfold the mechanisms related to smoking behavior among women living with CHD.

Nevertheless, based on the univariate associations, one may cautiously suggest that interventions designed specifically for Arab patients may benefit from focusing on fatalism as a possible barrier for smoking cessation. Intervention messages might refer to other values without challenging fatalism, by stressing, for example, the fact that

despite the belief in God's control over one's life, Arab society still expects its members to take responsibility for their lives and health [43]. Thus, highly fatalistic Arab patients could still be advised to take care of their bodies and adhere to their medical regimens.

The strength of our attempt at explaining ethnic differences in smoking cessation among cardiac patients in Israel lie in its effort to discover cultural values that may shape subtle psycho-cultural dynamics of these differences. The finding that population group remained the sole variable contributing to smoking behavior suggests that these variables were not sufficient and the theoretical base should be expanded to include other psycho-socio-cultural variables as potential explanatory variables of the ethnic difference in smoking behavior. Ethnicity is a marker for many cultural values and to psychosocial processes, and is one of the macro-level factors shaping the individual's behavior in the process of adjustment to chronic illness [54]. For example, the contribution of social and family support for smoking cessation and additional cognitive variables, such as perceived benefits or barriers to smoking cessation and/or health- specific worries which were found to distinguish between the two populations with regard to other health-promoting behaviors [55]. Others [56] highlight social control as a possible predictor of smoking behavior. Though the former study focused on social control in the context of a dyadic relationship, the question as to whether minorities might perceive the health system's efforts to reduce their smoking as a manifestation of social control – and therefore resent it – is worth examining. Over all, it is crucial that more efforts are channeled into this field of research in order to achieve more conclusive explanations to the observed differences in cardiac patient smoking cessation.

References

1. Allan R, Fisher J (2012) Heart and mind: The practice of cardiac psychology, APA, Washington, USA.

2. http://www.cbs.gov.il/engindex.htmhttp://www.cbs.gov.il/reader/newhodaot/hodaa%20template.html?hodaa=201311255.%20

3. http://www.who.int/mediacentre/factsheets/fs317/en/index.html

4. Moe GW, Tu J (2010) Heart failure in the ethnic minorities. Current Opinion in Cardiology 25: 124-130.

5. Ski CF, King-Shier KM, Thompson DR (2014) Gender, socioeconomic and ethnic/racial disparities in cardiovascular disease: A time for change. International Journal of Cardiology 170: 255-257.

6. Drory Y, Kravetz S, Florian V, Weingarten M (1998) Sexual activity after first acute myocardial infraction in middle- aged men: Demographic, psychological and medical predictors. Cardiology 90: 207-211.

7. Graves KD, Miller PM (2003) Behavioral medicine in the prevention and treatment of cardiovascular disease. Behavior Modification 27: 3-25.

8. Pipe AL, Papadakis S, Reid R.D (2010) The role of smoking cessation in the prevention of coronary artery disease. Current Atherosclerosis Reports 12: 145-150.

9. Gwaltney CJ, Metrik J, Kahler CW, Shiffman S (2009) Self-efficacy and smoking cessation: A meta-analysis. Psychology of Addictive Behaviors 23: 56-66.

10. Chauhan U, Baker D, Lester H, Edwards R (2010) Exploring uptake of cardiac rehabilitation in a minority ethnic population in England: A qualitative study. European Journal of Cardiovascular Nursing 9: 68-74.

11. Israel Central Bureau of Statistics. Statistical Abstract of Israel 2014 (65thedn), Jerusalem.

12. http://www.knesset.gov.il/mmm/data/pdf/m01986.pdf.

13. Kark JD, Fink R, Adler B, Goldberger N, Goldman S, et al.(2006) The incidence of coronary heart disease among Palestinians and Israelis in Jerusalem. International Journal of Epidemiology 35: 448-457.

14. Kark JD, Gordon ES, Haklai Z (2000) Coronary heart disease mortality among Arab and Jewish residents of Jerusalem. Lancet 356: 1410-1411.

15. Israel Center for Disease Control, Israel Ministry of Health (2004, 2005) The State of Health of the Arab Population 2005: 226.

16. Reges O, Vilchinsky N, Kark J, Leibowitz M, Khaskia A, Mosseri, et al. (2014) Change in health behaviors following acute coronary syndrome: Arab-Jewish differences. European Journal of Preventive Cardiology 1-10.

17. Reges O, Vilchinsky N, Leibowitz M, Khaskia A, Mosseri M, Kark JD, et al. (2015) Identifying barriers to participation in cardiac prevention and rehabilitation programmes via decision tree analysis: establishing targets for remedial interventions. Open Heart 1-6: 97.

18. Naidoo J, Wills J (2000) Health promotion, foundations for practice (2nd edn), Bailliere Tindale, London, UK.

19. Skinner EA, Zimmer-Gembeck MJ (2011) Perceived control and the development of coping. In: S Folkman (1stedn), The Oxford handbook of health, stress and coping, New York: Oxford University Press, USA 35-62

20. Taylor SE, (2002) Health psychology (5thedn), McGraw-Hill, New York, USA.

21. Bandura A (1977) Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review 84: 191-215.

22. Ajzen I (1991) The theory of planned behavior. Organizational Behavior and Human Decision 50: 179-211.

23. Rosenstock IM, Strecher, VJ, Becker MH (1988) Social learning theory and the Health Belief Model. Health Education Quarterly 15: 175-183.

24. Nehl EJ, Blanchard CM, Peng CY, Rhodes RE, Kupperman J, et al. (2009) Understanding non-smoking in African American and Caucasian college students: an application of the theory of planned behavior.

25. Francis J, EcclesMP, Johnston M, Walker AE, Grimshaw JM, et al. (2004) Constructing questionnaires based on the theory of planned behavior: a manual for health services researchers. Newcastle upon Tyne, UK: Centre for Health Services Research, University of Newcastle upon Tyne.

26. Bandura A (1986) The explanatory and predictive scope of self-efficacy theory. Journal of Social and Clinical Psychology, 5: 359-373.

27. Bandura A (1982) Self-mechanism in human agency. American Psychologist 37: 122-147.

28. Bandura A (1998) Health promotion from the perspective of social cognitive theory. Psychology and Health 13: 623-649.

29. DiClemente CC (2005) Self-efficacy and smoking cessation maintenance: a preliminary report. Cognitive Therapy and Research 5: 175-187.

30. Scholz U, Nagy G, Göhner W, Luszczynska A, Kliegel M (2009) Changes in self-regulatory cognitions as predictors of changes in smoking and nutrition behavior 24: 545-561.

31. Marlatt GA, Donovan DM (2005) Relapse prevention: maintenance strategies in the treatment of addictive behaviors, (2ndedn), Guilford, New York, USA.

32. Ockene J, Kristeller JL, Goldberg R, Ockene I, Merriam P, et al. (1992) Smoking cessation and severity of disease: the coronary artery smoking intervention study. Health Psychology 11: 119-126.

33. Bottorff JL, Johnson JL, Bhagat R, Grewal S, Balneaves LG, et al. (1998) Beliefs related to breast health practices: the perceptions of South Asian women living in Canada. Social Science & Medicine 47: 2075-2085.

34. Manfredi C, ChoYI, Crittenden KS, Dolecek TA (2007) A path model of smoking cessation in women smokers of low socio-economic status. Health Education Research 22: 747-756.

35. Soskolne V, Marie S, Manor O (2007) Beliefs, recommendations and intentions are important explanatory factors of mammography screening behavior among Muslim Arab women in Israel. Health Education Research 22: 665-676.

36. Shuval K, Weissblueth E, Brezis M, Araida A, Dipietro L, et al. (2009) Individual and socio-ecological correlates of physical activity among Arab and Jewish college students in Israel. Journal of Physical Activity and Health 6: 306-314.

37. Dubovsky S (1983) Psychiatry in Saudi Arabia. American Journal of Psychiatry 140: 1455-1459.

38. Abraido Lanza AF, Viladrich A, Florez KR, Cespedes A, Aguirre AN, et al. (2007) Commentary: Fatalismo reconsidered: A cautionary note for health-related research and practice with Latino populations. Ethnicity and Disease 17: 153-158.

39. Austin LT, Ahmad F, McNally MJ, Stewart DE (2002) Breast and cervical cancer screening in Hispanic women: A literature review using the health belief model. Women's Health Issues 12: 122-128.

40. HajYahia M (1985) Traditional and modern Arab society - oriented with respect to the mentally ill: the tendency to employ mentally ill (Unpublished master's thesis). Hebrew University, Jerusalem.

41. Kanaaneh H (1982) Change and continuity. Association for Arabic Studies, Jerusalem.

42. Nydell MK (2006) Understanding Arabs: A guide for modern times. Intercultural Press, Boston, USA.

43. Baron-Epel O, Haviv-Messika A, Tamir D, Nitzan-Kaluski D, Green M, et al. (2004) multiethnic differences in smoking in Israel: pooled analysis from three national surveys. European Journal of Public Health 14: 384-389.

44. Al Awa P (1987) Al-Mo'atazelha' and liberal thinking. Damascus: Al-Ahali. Arabic.

45. Al Bayhaqi A (1990) Paths of faith Beirut: Dar al-Alcotob Al'alamia. Arabic.

46. Al Qilani A, Said H, Hindi S (1998) Studies in Arabic Islamic thought. Amman: Dar al-ficker. Arabic.

47. Milhem A (2005) Islamic studies and cultural thought and behavior. Amman: Jam'iyyat Omal El- Mtabia' El – Taa'oniya. Arabic.

48. Enders CK (2010) Applied missing data analysis. Guilford, New York, USA.

49. Rubin DB (1987) Multiple imputation for non-response in surveys. Wiley, Hoboken, New Jersey, USA.

50. Ginsberg G, Rosen B, Rosenberg E (2010) Cost-utility analyses of interventions to reduce the smoking-related burden of disease in Israel. Report No. 540. Myers-JDC-Brookdale Institute and Smokler Center for Health Policy Research, Hebrew, Jerusalem.

51. Elshatarat RA, Stotts NA, Engler M, Froelicher ES (2013) Knowledge and beliefs about smoking and goals for smoking cessation in hospitalized men with cardiovascular disease. Heart & Lung 42: 126-132.

52. Li WW, Froelicher ES (2008) Predictors of smoking relapse in women with cardiovascular disease in a 30-month study: Extended analysis. Heart & Lung 37: 455-465.

53. Ochsner S, Luszczynska A, Stadler G, Knoll N, Hornung R, Scholz U, et al. (2014) The interplay of received social support and self-regulatory factors in smoking cessation. Psychology and Health 29: 16-31.

54. Stanton AL, Revenson TA, Tennen H (2007) Health Psychology: Psychological adjustment to chronic disease. Annual Review of Psychology 58: 565-592.

55. Azaiza F, Cohen M (2008) Colorectal cancer screening, intentions, and predictors in Jewish and Arab Israelis: A population-based study. Health Education and Behavior 35: 478-493.

56. Scholz U, Berli C, Goldammer P, Lüscher J, Hornung R, et al. (2013-online first). Social control and smoking: Examining the moderating effects of different dimensions of relationship quality. Families, Systems, and Health.