

Cardiac Patients' Causal Attributions for Coronary Heart Disease

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ABSTRACT

Accurate casual attributions for CHD have been associated with more congruent risk reduction behaviours and improved health outcomes. This article aimed to assess causal attributions for Coronary Heart Disease (CHD) of Middle Eastern women diagnosed with heart disease using different risk targets and compare these attributions with participants' actual. Using a survey methodology, 121 female patients in cardiac units of three public hospitals in Iran and Australia completed a questionnaire concerning causal attributions for CHD, as applied to themselves and women generally. Clinical data were collected from the patients' medical record and the Depression, Anxiety and Stress Scale (the DASS) was used to assess the psychological status of participants. Despite being hospitalized with a diagnosis of CHD and having a high burden of risk factors, study participants had limited awareness of their personal risk factors. Overall, 47, 26 and 9% of participants either inaccurately denied or were uncertain of having hypercholesterolemia, diabetes and hypertension respectively. Only 6% of participants attributed their heart disease to lifestyle factors whilst above half attributed their disease to stress (55%). Participants were more likely to have accurate casual attribution when they applied the risk to women generally than themselves. Middle Eastern women in this study showed inaccurate casual attribution to CHD, particularly when they applied the risk to themselves. A clear specification of risk target is suggested when studying patients' perceptions of risk and risk factors.

Keywords: Coronary Heart Disease (CHD), Casual Attributions, Middle Eastern Women, Cardiac Patients, Risk Target, Depression, Anxiety, Personal Risk Factors

1. INTRODUCTION

Patients' understanding and explanation of the causes of their disease, causal attributions, have been associated to their later decision to change risk behaviours and comply with medical regimes and attribution to modifiable lifestyle risk factors are more likely to lead to lifestyle modifications (Gholizadeh *et al.*, 2009). This is

particularly important in cardiac patients, being frequently discharged from acute hospital settings with a number of modifiable risk factors and the need for lifestyle changes to reduce the risk of recurrent cardiac events (Gassner *et al.*, 2002).

Coronary Heart Disease (CHD) remains the major cause of death and morbidity among both men and women worldwide and trends indicate a considerable rise

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in some CHD risk factors particularly in developing countries explaining the emerging epidemic of the disease in these countries (Yusuf *et al.*, 2004). Likewise, data from Middle Eastern countries demonstrate a high prevalence of CHD risk factors, particularly among women (Khattab *et al.*, 1999; Shahwan, 2001; Hatmi *et al.*, 2007). For example, Iranian women have been reported to present a more adverse risk factor profile with regard to diabetes, high blood pressure, abnormal lipid levels and inactivity compared to men (Azizi *et al.*, 2003; Hatmi *et al.*, 2007; Maddah *et al.*, 2007). A range of lifestyle and socio-cultural factors, such as lower physical activity, spending much of their time preparing food, a lower health literacy and education attainment as well as financial barriers may limit women's capacity to access appropriate health services and explain the gender inequalities (Moghadam, 2004). Despite this trend, there limited data on women's awareness of their risk and their causal attributions to CHD, which are also influenced by gender and socio-cultural factors (Davison *et al.*, 1991; French *et al.*, 2001). People of the Middle East share a vast body of health beliefs, attitudes, customs and practices which can influence their perceptions of risk of the disease and health seeking behaviours (Gholizadeh *et al.*, 2009).

This study is part of a larger project which looked at the perception of CHD risk in Middle Eastern women (Gholizadeh, 2009; Gholizadeh *et al.*, 2009) and this study arm focused on the causal attributions for heart disease of women who had already been diagnosed with CHD and compared these attributions with participants' actual CHD risk factors and when different risk targets were applied.

2. MATERIALS AND METHODS

Using a survey methodology, information was collected on biological, behavioural and socio-demographic characteristics of 121 female patients hospitalised with a diagnosis of CHD in a large tertiary hospital in Iran and two hospitals in Sydney, Australia. The study received ethics approval from the participating hospitals. After obtaining consent from participants, biochemical data were obtained from hospital medical records. Participants' causal attributions to CHD in women generally, were collected using a questionnaire which included 11 possible CHD risk factors (O'Brien, 2005) and participants were asked to rate each possible cause of CHD on an 11-point Likert type scale ranging from 1 (very unlikely) to 10 (very likely). Content validity of the questionnaire was established by

submitting the proposed instrument to experts in the field and receiving their approval. The questionnaire was then administered to a sample of participants with heart disease which demonstrated a good internal consistency (Chronbach's alpha = 0.78). Data from these participants were excluded from the final analysis. Participants' causal attributions to their personal CHD were obtained using a short-directed interview. Depression, anxiety and stress status of the study participants were assessed using the DASS 42, which was administered in the participants' first language.

This tool has been validated and widely used both in Australia and overseas for the purpose of research studies, clinical assessment and outcome evaluation (Lovibond and Lovibond, 1995).

Women who identified themselves as belonging to the Middle Eastern culture and were age ≥ 20 years and admitted to a cardiology ward with a diagnosis of CHD were recruited for the study. The diagnosis of heart disease was obtained from participants' medical record. Women were excluded from the study if they had been hospitalised only for valvular disease or had a cognitive impairment. Overall, 129 patients met the inclusion criteria for the study, of whom 8 patients refused or did not complete the study, mainly because of poor health, therefore, analysis was conducted using SPSS version 15 on data from 121 participants. Data on causal attributions were analysed using non parametric statistics, as the distribution of the data was not normal.

3. RESULTS

The socio-demographic characteristics of participants are summarised in **Table 1**. Participants were an average of 54 ± 14.29 years old, ranging in age from 20-86 years. Most of the participants 92 (79%) identified themselves as Iranian, followed by Turkish 10 (9%) and Arabic 14 (12%). Thirty three (27%) participants were recruited from Australia and 88 (73%) from Iran. Participants recruited from Australia were all permanent residents, with residency average of 30 ± 12.10 years ranging from 3 and 57 years. They were more likely to be educated ($\chi^2 = 8.600$, $p < 0.001$) and report a better income status than participants from Iran ($\chi^2 = 9.996$, $p = 0.019$).

CHD risk factor profile of the study participants are summarized in **Fig. 1**. Many participants had adverse lipid profiles: LDL-C ≥ 2.5 mmol L⁻¹ (67%), TG ≥ 1.5 mmol L⁻¹ (52%) and HDL-C < 1.0 (35%), using cut offs recommended by the NHFACSAZ (2005).

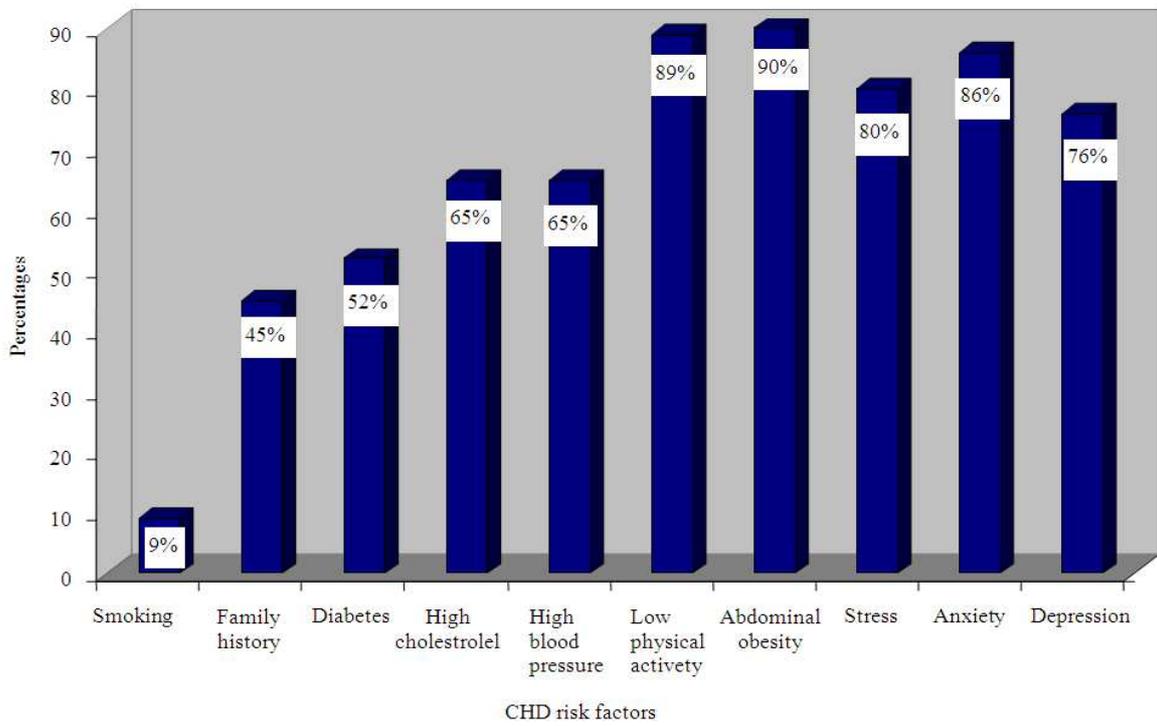


Fig. 1. Prevalence of CHD risk factors in the study participants

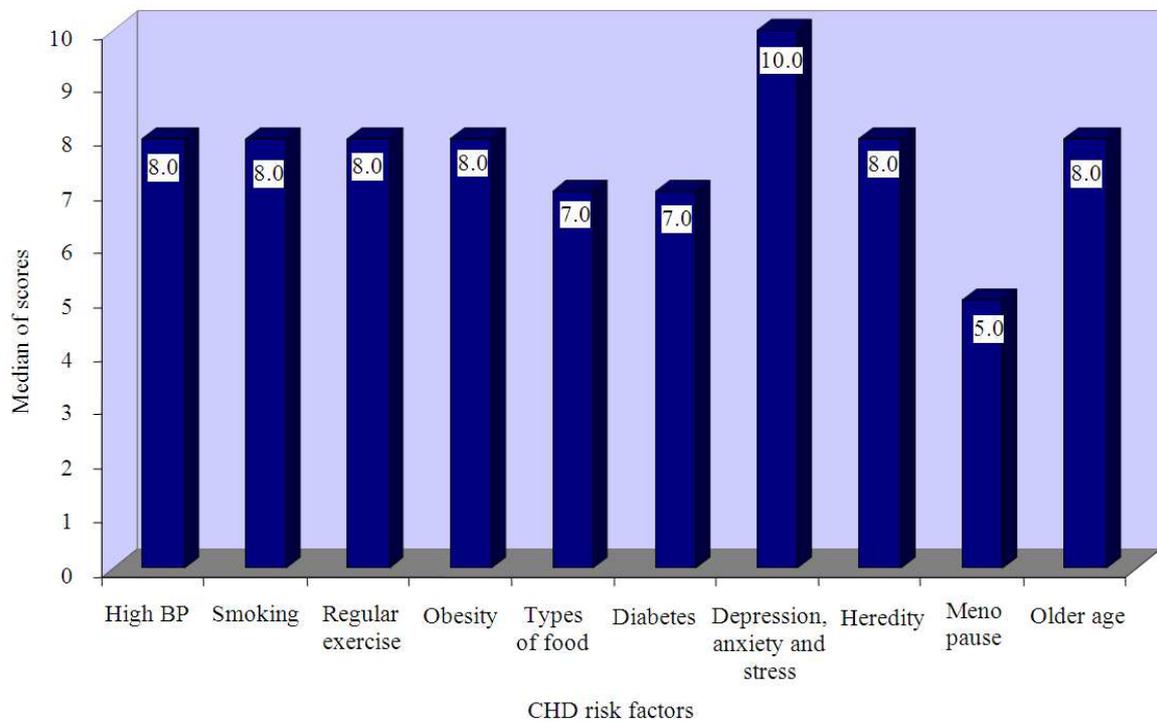


Fig. 2. Causal attributions of the study participants for CHD in general

Table 1. Socio-demographic characteristics and CHD risk factors of participants (n = 121)

Characteristics	Yes/No
Living with spouse* (%)	72/28
Never attended school* (%)	63/37
Muslim* (%)	90/10
Paid employment* (%)	5/95
Living in own home* (%)	72/28
Private health insurance* (%)	17/83
Adequate income and more* (%)	21/79
Current smoker or quitter in the last 12 months* (%)	9/91
Alcohol drinks* (%)	2/98
Adequate physical activity status* (%)	11/89
BMI ≥ 25 * kg m ⁻² (%)	73/27
Waist circumference ≥ 80 cm* (%)	90/10
Waist to hip ratio $\geq .80$ cm* (%)	93/7

Figure 2 displays the median ratings of causal attributions made to CHD in women generally. As shown, the most highly attributed risk factor was psychological distress including depression, anxiety and stress, followed by lifestyle risk factors including hypertension, smoking, exercise, older age and obesity. The least lowly attributed risk factor was menopause. When specifically asked about their personal CHD, similarly the most frequently attributed risk factor was stress (attributed to by 55% of participants), only 6 (6%) participants attributed their disease to a modifiable lifestyle risk factor, such as obesity and high blood pressure and 17 (18%) participants attributed to factors such as cold weather and hard work. Further, 20 (21%) participants could not think of any reason. Participants from Iran were more likely to attribute their heart disease to stress than participants from Australia ($\chi^2 = 16.53, p < 0.001$).

There was found a discrepancy between perceived and actual risk factors for CHD. Sixty nine (65%) participants met the study criteria for a diagnosis of hypertension, while 60 (54%) participants reported having high blood pressure. In other words, a gap between perceived and actual risk factors of high blood pressure was observed in 9% of the participants. Further, 44 (72%) participants had the risk factor of high blood cholesterol (TC ≥ 4.0 /mmol L⁻¹, taking cholesterol lowering medication, or hypercholesterolemia been documented in their medical records), but only 28 (25%) participants reported having high blood cholesterol. This means that 47% of participants inaccurately either denied or were uncertain about having this risk factor. In addition, forty eight (52%) participants had been diagnosed with diabetes, yet, only 30 (26%) of participants reported being diabetic.

In other words, 26% of participants inaccurately either denied or were unsure of having this risk factor.

4. DISCUSSION

Women in this study were inpatients recruited from both Australia and Iran and the majority were from a lower socioeconomic status. We focussed broadly on the diagnosis of heart disease, rather than addressing discrete clinical entities. Although the results of this study cannot be generalised due to the exploratory nature of the study, a relatively younger age of participants in this study (54 \pm 14.29 years) may reflect the burden of CHD in this population and support findings of the INTERHEART study on the emerging burden and onset of CHD at an earlier ages in some developing countries (Reddy and Yusuf, 1998). The INTERHEART study reported the youngest patients with MI from the Middle East (51 years) and the oldest patients from western Europe, China and Hong Kong (63 years) (Yusuf *et al.*, 2004). Women in this study demonstrated an adverse risk factor profile with many participants having high blood pressure, abnormal lipid level profiles, diabetes, low levels of physical activity, BMI ≥ 25 kg m⁻², waist circumference ≥ 80 cm and psychological distress, indicating a higher risk of recurrent cardiac events and have an implication for Cardiac Rehabilitation Programs (CR) (Anderson, 2004). Participants, both from Australia and Iran, attributed highly to psychological distress as the cause of CHD when making both general and personal attributions. This finding implicates a well-grounded belief in stress as cause of CHD among these women. While participants also rated highly lifestyle factors such as obesity, physical activity and high blood pressure as cause of CHD in women in general, they failed to give weight on lifestyle factors when making attributions to their personal disease. This finding is consistent with French *et al.* (2001) study which found that attributions made by participants about their own disease was different from attributions made to the disease in general (French *et al.*, 2001). Subsequent studies by the same researchers conformed the hypothesis that individuals tended to give more weight to epidemiological evidence and lifestyle factors when they made attributions to disease in general (French *et al.*, 2004).

We also found a lack of congruence between participants' actual CHD risk factors and their perceptions of their risk factors. Some of the participants might have thought that they no longer had the risk

factors as they had been controlled with medication. There is also possibility that participants' risk factors were just diagnosed during their hospitalization and they were not yet communicated with patients. Hadaegh *et al.* (2008) reported that some one-third of total cases with diabetes remain undiagnosed in Iran. The lack of awareness of personal risk factors among participants in our study is inconsistent with the emerging literature which increasingly reports more cardiac patients being able to correctly identify their personal CHD risk factors (Karthik *et al.*, 2006). Patient and system factors such as low health literacy, low education level, inaccessibility of information, cultural barriers (Hafizi, 2005) as well as the absence of national guidelines to address and guide patient-physician communications are some possible contributory factor to the limited awareness of personal risk factors among this population. Health professionals' limited skills in risk factor modification, understanding patients' perspectives on CHD risk and the challenge of engaging patients in risk reducing behaviours have been related to adverse CHD risk factor profile of patients (Barnhart *et al.*, 2006).

Nevertheless, there is compelling evidence for health providers to communicate risks to patients and assist them to gain a clear understanding of their individual risk factor burden (Davison *et al.*, 1991; Wilcox and Stefanick, 1999; Brooks *et al.*, 2000). In a prospective study, Cooper *et al.* (1999) found that cardiac patients who correctly identified their personal risk factors such as high blood cholesterol were more likely to attend a CR program (Cooper *et al.*, 1999). Understating cultural variations in illness behaviours is also important. For example, a belief that patients should take rest and be supported by their families (Hafizi, 2005) may impede patients from Middle Eastern culture to participate in CR, which is an exercise-based program (Leon *et al.*, 2005).

Consistent with the literature which suggests that some 18-24% of cardiac patients have no idea about the cause of their heart disease (Gassner *et al.*, 2002; Martin *et al.*, 2005; Murphy *et al.*, 2005), in our study 21% of the participants could not attribute their CHD to any reason, probably because they did not perceive themselves as having stress. Murphy *et al.* (2005) study (2005) non-English speaking women were more likely than others to report having "no idea" about the causes of heart disease. This may implicate the inaccessibility of the CHD health information to people from diverse culture and linguistic groups (Murphy *et al.*, 2005). This finding has implication for CR, as there evidence that

patients who cannot attribute their disease to particular risk factors show a poorer recovery (DuCette and Keane, 1984).

Inaccurate causal attributions in individuals with a history of cardiovascular event should be considered seriously, as they may interfere with effective risk reducing behaviours (Dracup *et al.*, 1995; Day *et al.*, 2005; Martin *et al.*, 2005). There is evidence that participants who do not attribute to lifestyle factors, are less likely to be engaged in persistent subsequent action such as attending CR (Roesch and Weiner, 2001; Murphy *et al.*, 2005). Cooper *et al.* (1999) also found that participants who attributed their disease to lifestyle factors were more likely to attend CR than those attributed to stress. It is also well documented that causal attributions can be predictive of function and outcomes of CR (Finnegan *et al.*, 2000; Clark *et al.*, 2005). In view of these findings, many best practice guidelines highlight the importance of addressing and correcting misconceptions in cardiac rehabilitation (Goble and Worcester, 1999; NHFA, 2004).

5. CONCLUSION

Inaccurate causal attributions to CHD highlight the importance of establishing risk from patients' perspectives. The results of this study also suggests designing and testing culturally and linguistically competent risk communication interventions in bridging the gap between patients' perceived and actual risk factors and the effects of these interventions on the CHD outcomes.

6. REFERENCES

- Anderson, N.B., 2004. Encyclopedia of Health and Behavior. 1st Edn., SAGE Publications, Thousand Oaks, CA., ISBN-10: 0761923608, pp: 1016.
- Azizi, F., P. Salehi, A. Etemadi and S. Zahedi-Asl, 2003. Prevalence of metabolic syndrome in an urban population: Tehran lipid and glucose study. Diabetes Res. Clin. Pract., 61: 29-37. PMID: 12849921
- Barnhart, J.M., O. Cohen, N. Wright and J. Wylie-Rosett, 2006. Can non-medical factors contribute to disparities in coronary heart disease treatments? J. Health Care Poor Underserved, 17: 559-574. PMID: 16960322
- Brooks, N., P. Magee, G.C.B. Bhatti, S. Buckley and S. Guthrie *et al.*, 2000. Asian patients' perspective on the communication facilities provided in a large inner city hospital. J. Clin. Nurs., 9: 706-712. DOI: 10.1046/j.1365-2702.2000.00397.x

- Clark, M.A., L. Hartling, B. Vandermeer and A.F. Mcalister, 2005. Meta-analysis: Secondary prevention programs for patients with coronary artery disease. *Annals Int. Med.*, 143: 659-672.
- Cooper, A., G. Lioyd, J. Weinman and G. Jackson, 1999. Why patients do not attend cardiac rehabilitation: Role of intentions and illness beliefs. *Heart*, 82: 234-236.
- Davison, C., G.D. Smith and S. Frankel, 1991. Lay epidemiology and the prevention paradox: The implications of coronary candidacy for health education. *Sociol. Health Illness*, 13: 1-19. DOI: 10.1111/j.1467-9566.1991.tb00085.x
- Day, R.C., K.E. Freadland and R.M. Carney, 2005. Effects of anxiety and depression on heart disease attributions. *Int. J. Behav. Med.*, 12: 24-29. PMID: 15743733
- Dracup, K., D.K. Moser, M. Eisenberg, H. Meischke and A.A. Alonzo *et al.*, 1995. Causes of delay in seeking treatment for heart attack symptoms. *Soc. Sci. Med.*, 40: 379-392. PMID: 7899950
- Ducette, J. and A. Keane, 1984. "Why me?" An attributional analysis of a major illness. *Res. Nur. Health*, 7: 257-264. DOI: 10.1002/nur.4770070404
- Finnegan, J.R., H. Meischke, J.G. Zapka, L. Leviton and A. Meshack *et al.*, 2000. Patient delay in seeking care for heart attack symptoms: Findings from focus groups conducted in five U.S. Regions. *Prev. Med.*, 31: 205-213. PMID: 10964634
- French, D.P., T.M. Marteau, J. Weinman and V. Senior, 2004. Explaining differences in causal attributions of patient and non-patient samples. *Psychol. health medic.*, 9: 259-272. DOI: 10.1080/13548500410001721837
- French, D.P., V. Senior, J. Weinman and T.M. Marteau, 2001. Causal attributions for heart disease: A systematic review. *Psychol. Health*, 16: 77-98. DOI: 10.1080/08870440108405491
- Gassner, L.A., S. Dunn and N. Piller, 2002. Patients' interpretation of the symptoms of myocardial infarction: Implications for cardiac rehabilitation. *Intensive Crit Care Nurs.*, 18: 342-354. PMID: 12526872
- Gholizadeh, L., 2009. The discrepancy between perceived and estimated absolute risks of coronary heart disease in middle Eastern Women: Implications for cardiac rehabilitation. Ph.D. Thesis, University of Western Sydney.
- Gholizadeh, L., Y. Salamonson, M. Digiacomio and P.M. Davidson, 2009. Awareness and causal attributions of risk factors for heart disease among immigrant women living in Australia. *J. Women's Health*, 18: 1385-1393. PMID: 19708806
- Goble, A.J. and M.U. Worcester, 1999. Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention. 1st Edn., Department of Human Services, Melbourne, ISBN-10: 0731152581, pp: 238.
- Hadaegh, F., M.R. Bozorgmanesh, A. Ghasemi, H. Harati and N. Saadat *et al.*, 2008. High prevalence of undiagnosed diabetes and abnormal glucose tolerance in the Iranian urban population: Tehran lipid and glucose study. *BMC Public Health*, 8: 176-176. PMID: 18501007
- Hafizi, H., 2005. Iranians. In: Culture and Clinical Care, Lipson, J.G. and S.L. Dibble, (Eds.), UCSF Nursing Press, San Francisco, ISBN: 0943671221.
- Hatmi, Z.N., S. Tahvildari, A.G. Motlag and A.S. Kashani, 2007. Prevalence of coronary artery disease risk factors in Iran: A population based survey. *BMC Cardiovascular Disorders*, 7: 32-32. DOI: 10.1186/1471-2261-7-32
- Karthik, S., N. Tahir, B. Thakur and U. Nair, 2006. Risk factor awareness and secondary prevention of coronary artery disease: Are we doing enough? *Interac. Cardiovasc. Thorac. Surg.*, 5: 268-271. PMID: 17670565
- Khattab, M.S., M.A. Abolfotouh, W. Alakija, M.A. Al-Humaidi and S. Al-Wahat, 1999. Risk factors of coronary heart disease: Attitude and behavior in family practice in Saudi Arabia. *Eas. Mediterr. Health J.*, 5: 35-45. PMID: 10793779
- Leon, A.S., B.A. Franklin, F. Costa, G.J. Balady and K.A. Berra *et al.*, 2005. Cardiac rehabilitation and secondary prevention of coronary heart disease. *Circulation*, 111: 369-376. DOI: 10.1161/01.CIR.0000151788.08740.5C
- Lovibond, P.F. and S.H. Lovibond, 1995. The structure of negative emotional states: Comparison of the depression anxiety stress scales (dass) with the beck depression and anxiety inventories. *Behav. Res. Ther.*, 33: 335-343. PMID: 7726811
- Maddah, M., M. Chinikar and S. Hoda, 2007. Iranian women with coronary artery disease: Not behind of the men. *Int. J. Cardiol.*, 115: 103-104. PMID: 16757039

- Martin, R., E.L. Johnsen, J. Bunde, S.B. Bellman and N.E. Rothrock *et al.*, 2005. Gender differences in patients' attributions for myocardial infarction: Implications for adaptive health behaviors. *Int. J. Behav. Med.*, 12: 39-45. PMID: 15743735
- Moghadam, V.M., 2004. Towards Gender Equality in the arab/middle East Region: Islam, Culture and Feminist Activism. Human Development Report Office, New York.
- Murphy, B., M. Worcester, R. Higgins, M.L. Grande and P. Larritt *et al.*, 2005. Causal attributions for coronary heart disease among female cardiac patients. *J. Cardiopulm. Rehab.*, 25: 135-143. PMID: 15931015
- NHFA, 2004. Recommended framework for cardiac rehabilitation. National Heart Foundation of Australia and Australian Cardiac Rehabilitation Association.
- NHFACSANZ, 2005. Position statement on lipid management. *Heart Lung Circulation*, 14: 275-291. DOI: 10.1016/j.hlc.2005.10.010
- O'Brien, K., 2005. Living Dangerously: Australians with Multiple Risk Factors for Cardiovascular Disease. 1st Edn., Australian Institute of Health and Welfare, Canberra, ISBN-10: 174024446X, pp: 23.
- Reddy, K.S. and S. Yusuf, 1998. Emerging epidemic of cardiovascular disease in developing countries. *Circulation*, 97: 596-601. PMID: 9494031
- Roesch, S.C. and B. Weiner, 2001. A meta-analytic review of coping with illness: Do causal attributions matter? *J. Psychosom. Res.*, 50: 205-219. PMID: 11369026
- Shahwan, A.L., 2001. Prevalence of cardiovascular risk factors among Australian-lebanese in Melbourne. PhD Thesis, Victoria University of Technology.
- Wilcox, S. and M.L. Stefanick, 1999. Knowledge and perceived risk of major diseases in middle-aged and older women. *Health Psychol.*, 18: 346-353. PMID: 10431935
- Yusuf, S., S. Hawken, S. Ounpuu, T. Dans and A. Avezum *et al.*, 2004. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the interheart study): Case-control study. *Lancet*, 364: 937-952. PMID: 15364185