



# A STUDY OF PERCEIVED STRESS AMONG CARDIAC PATIENTS

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## ABSTRACT

Psychological features are increasingly regarded as prospective predictors of cardiovascular disease (CVD) apart from traditional risk variables. When debating the relationship between psychological variables and CVD, the concept of stress is important. "Perceived stress" introduces a global and inclusive stress construct among stress categories and definitions, but it has not been much highlighted yet. Thus, perceived stress was studied and evaluated in the present research with regards to cardiovascular health. *Objective:* In the current study, an effort was made to study the role of perceived stress among cardiac patients compared to a healthy control group. *Method:* A sample of 26 adults were selected wherein 13 cardiac patients and 13 healthy adults were present in each group. Purposive sampling technique was used to collect the sample. Perceived Stress Scale (PSS-14) by Sheldon Cohen (1983) was used as a research tool to collect the data. Administration, scoring, and interpretation was done as per the test manual. Student's t-test was used to statistically analyze the data. *Result & Conclusion:* There was a significant difference found in the level of perceived stress between the two groups, that is, cardiac patients and the healthy control group. The result showed higher perceived stress among healthy adults as compared to cardiac patients. This result will further be discussed in light of previous studies in detail in the research paper.

*Keywords:* cardiovascular health, cardiac patients, coronary angiography, healthy adults, perceived stress

## INTRODUCTION

Cardiovascular disease (CVD) is one of the leading causes of death in developing nations and turns out to be the key physiological cause of productivity loss. Significant attention has been paid to psycho-social factors and their contribution to pathogenesis and occurrence of CVDs. An evolving body of literature supports the finding that a relationship exists between stress and the incidence of cardiovascular disease (CVD; Belkic et al. 2004; Rosengren et al. 2004). While the stress–CVD link has been promoted and taught for decades, a number of challenges in this field have decelerated a promising line of investigation in this domain. The hindrances include how to define and quantify stress (Cohen et al. 1983; Kocalevent et al. 2007), how to evaluate stress levels over time in a replicable way (Kocalevent et al. 2009), ambiguity regarding causation between stress and CVD (Tindle et al. 2010), and the financial cost of undertaking a study to track significant numbers of participants over a prolonged period of time (Kadojic et al. 1999; Hamer et al. 2008). In addition, the link between stress and CVD tends to contradict in some researches (Greenlund et al. 1995; Riese et al. 2000; Heslop et al. 2002a,b; Belkic et al. 2004). However, the predominance of researches to present supports the conclusion that stress, outlined differently in a variety of approaches, correlates with heightened risk of coronary heart disease (Melamed et al. 1992; Belkic et al. 2004; Rosengren et al. 2004; Brborovic´ et al. 2009; Holden et al. 2010; Puustinen et al. 2010).

This is common belief among health researchers that the effect of stressful events "objectively" is, to a certain level, decided by one's perceptions of their stressfulness (Lazarus, 1966, 1977). Interestingly, this theoretical viewpoint has not been accompanied by the development of psychometrically validated tools of perceived stress. Objective assessments of stressful events have certain significant benefits. First, these assessments provide an estimation of the heightened disease risk linked with the occurrence of easily recognizable incidents. Second, the measurement process is indeed simple, for example, has this event occurred in the past six months?, and in many instances it is possible to recognize individuals witnessing a specific incident without the need to question them about the occurrence of the incident, for example, individuals residing in communities affected by noise. Third, these measuring methods decrease the probability of specific subjective prejudices in the interpretation and recording of events. At the other hand, using objective stress measurement tools means that events are the triggering cause of disease and illness behaviour patterns, in and of themselves. This inference is contrary to the idea that individuals engage consistently with their surroundings, evaluating potentially dangerous or difficult situations in the light of resources at hand for coping (Lazarus, 1966, 1977). By this latter viewpoint, it is believed that stressor effects only appear when both (a) the event is evaluated as threatening and/or demanding and (b) the available resources to deal with the situation are inadequate. The contention is that the causal "event" is the emotional reaction to the objective incident that is cognitively processed, and not the objective occurrence itself (Lazarus, 1977; Mason, 1971). An essential aspect of this viewpoint is that this response does not only rely on the severity or some other intrinsic quality of the event, but also depend on individual and contextual variables.

Remarkably, perceived stress has also appeared as a potential psycho-social risk predictor for CVD. In a latest meta-analysis, including researches that prospectively examined the impact of perceived stress in the incidence of CVD, high perceived stress was linked with a 27% increase in risk of CHD, a percentage documented as coequal

of a 50 mg/dl elevation in low-density lipoprotein, a 2.7/1.4 mmHg rise in systolic/diastolic blood pressure, and 5 more cigarettes per day. The correlation found between perceived stress and CVD occurrence appears as causal in most researches, and therefore perceived stress explicitly acts as an independent risk factor for CVD. Nevertheless, more work is required to further understand the essence of the role perceived stress plays in CVD development and incidence.

## OBJECTIVES OF THE STUDY

The aim of the present research was to study and analyse whether perceived stress has any role to play with regards to ideal cardiovascular health. The purpose of the study was also to contribute an understanding of perceived stress as a psychological factor among health of angiographically determined cardiac patients as well as healthy group without CVD and Multi-morbidities, in India, as there are not many studies of this kind elucidated in our country.

## HYPOTHESES

The main hypotheses for the present research are as follows:

### *Null Hypothesis:*

There is no significant difference between the cardiac patients and healthy people with regards to their level of perceived stress.

### *Alternate Hypothesis:*

The cardiac patients' group will have higher level of perceived stress as compared to the healthy control group.

## METHODOLOGY

### Selection of the sample

The total sample consisted 26 persons (13 people in each respective group) and were in the age range of 35 – 74 years comprising of both the genders. Purposive sampling technique was used to collect the sample from a hospital of Ahmedabad city. Here in this research study, the participants belonging to the group of cardiac patients were angiographically discerned, which means that some percentage of blockage was identified in the patients' arteries but they had not yet undergone angioplasty as a treatment option, and those of healthy control group were selected keeping in mind that they have no CVH issues and without any multi-morbidities, i.e., hypertension, hypercholesterolaemia and diabetes mellitus.

### Variables

#### **Independent Variable:**

- Health status (cardiac patients and healthy people)

#### **Dependent Variable:**

- Scores of Perceived Stress

## Research Measures

### Inclusion Criteria:

- People in the age range of 35 – 74 years were only selected as sample for the present study.
- Equal number of cardiac patients as well as healthy people were screened out and selected for respective groups.
- People of both the genders were included to be a part of the study.

### Exclusion Criteria:

- Persons not knowing basic English to understand and respond to the questionnaire were excluded from the study.
- For the cardiac patients' group, those patients whose coronary angiography report were normal were not selected to be a part of the sample.
- People with any sort of physical ailment, chronic disease or cardiovascular health issue were excluded from being part of the healthy control group.

## Research Tool

In the present research study, following tool was used for the purpose of data collection:

### Perceived Stress Scale (PSS-14)

**Author: Sheldon Cohen (1983)**

Perceived stress was measured using the Perceived Stress Scale, a self-reported 14-item questionnaire that measures the intensity to which individuals evaluate their lives as uncertain, uncontrollable or overwhelmed, asking participants to remember how stressful they felt over the last month in different circumstances. The 14 items were rated from 0 to 4 as per the frequency of the participant's reported feelings (i.e. never, almost never, sometimes, often or almost always). The PSS scores are obtained by reversing the answers (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the positively specified items (items 4, 5, 6, 7, 9, 10 and 13) and then adding them up with scores of all items of the scale. The overall possible score range is from 0 to 56. PSS-14 higher score values reflect higher perceived stress. Co-efficient alpha reliability for the test was 0.84 among the college student population with a test-retest correlation of 0.85 and the validity of the tool correlates in an expected direction with another stress measures, i.e., Job Responsibilities Scale, life events scales. Completion of this scale takes no longer than 10-15 minutes.

## Data collection and procedure

To obtain the sample group, official permission was taken from the authorities in charge from a hospital of Ahmedabad city. Followed by a brief rapport, informed consent was obtained from each subject promising confidentiality and anonymity. The tool was then administered after giving relevant instructions and ensuring that the subject has understood them well. Privacy and comfortable atmosphere were ensured throughout the data collection. All the subjects were thanked for giving their valuable time and consent to participate in the study and



also for providing their personal information for the analysis. After completion of data collection, responses of each respondent on the tool was scored with the help of respective scoring key.

### Statistical Analysis

Student's t-test was used to find out mean difference between the two independent groups, i.e., cardiac patients and healthy control group, on their score of perceived stress.

## RESULT

The result of this research study has been interpreted and presented in form of table below:

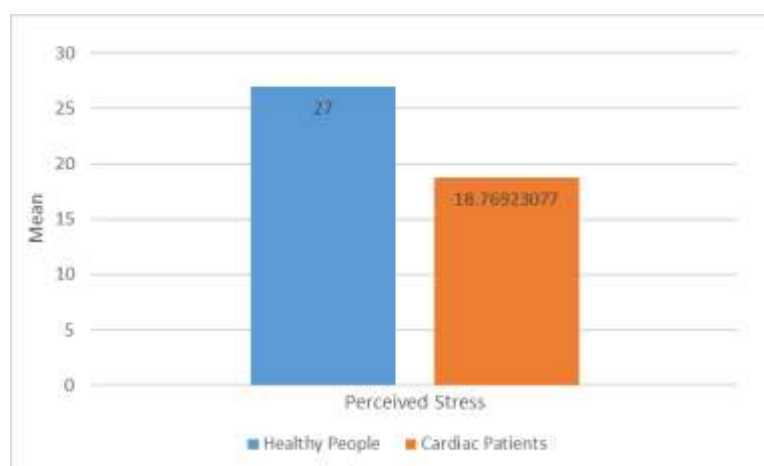
**Table no.1: Showing the Mean, Variance, SD and T - value of cardiac patients and healthy people with regards to perceived stress.**

Health Status	N	Mean	Variance	SD	T-value	Level of Significance
Cardiac patients	13	18.769	134.359	11.591	2.203	Significant at 0.05
Healthy people	13	27	41.167	6.416		

\*NS (Non-significant)/S (Significant)

The table above shows the mean score, variance, standard deviance, t-value and the level of significance between cardiac patients and healthy people with regards to perceived stress. Since the calculated t-value is 2.203, which is more than the table value 2.06 at 0.05 level of significance, the result reveals that there is a significant difference between the two groups.

**Figure no.1: Mean score of Perceived stress for Status of health.**



This can also be observed through the mean values of both the groups, i.e., 18.769 of cardiac patients' group and 27 for healthy people's group respectively. Above is the graphical representation for the same. These values show that the healthy people have higher mean value which suggests that this group has higher level of perceived stress than the cardiac patients' group. Most of the studies done on the same topic contradict this finding. It has been usually found in such studies that those with poor cardiovascular health (CVH) have higher levels of perceived stress. The contradictory finding of the present study will be discussed further in the light of related literature available.

## DISCUSSION

The findings of this study showed that there is a significant difference between the level of perceived stress among angiographically diagnosed heart patients and healthy people who have no history of CVH problems, as well as any other chronic co-morbidities. The result obtained is contradictory to expectations, but some explanations can help to understand the dispute.

Defining stress and what is actually being evaluated with the PSS as pertaining to the current investigation is significant. Since the PSS questions are common and free from the specificity of content, the tool tests subjectively perceived stress irrespective of an objective external stimulus or circumstance (Cohen et al. 1983). Aspects of personality and the subjects' available resources contribute to the overall score of perceived stress. Because the questions are addressed subjectively rather from an objective viewpoint of the stressful event, due to perceived lack of resources, there are chances that such people may have seen their problems past the actual danger present and as an uncontrollable situation. Due to the above-mentioned reason it is possible that in this study the participants belonging to the healthy control group, on an average, possibly amplified their stressful situations in a way that exceeds the actual seriousness as compared to the cardiac patients' group.

Another potential reason is that only health related factors of CVH i.e., diabetes, total cholesterol, and blood pressure were taken into account of both the groups for the analysis and not the behavioural variables of CVH which are smoking, physical activity, diet, and body mass index. A research by Poirat, L. et al. demonstrated that only the behavioural CVH score, and not the health CVH score, was linked with perceived stress. The conclusions from that study showed a clear relation between higher perceived stress and lower CVH, particularly with behavioural CVH alone but no relation with health CVH was found. Therefore, the predicted outcome that perceived stress would be high among people with low CVH will typically be observed with respect to complications of behavioural CVH and not specifically with respect to health CVH. Consequently, this disparity between the two groups has indeed been found.

During the data collection process and interviewing cardiac patients it was also found that, after being diagnosed with the illness, they perceived more social support was given to them by family members and friends. The findings of a research conducted by Brummett, B. H. et al. showed that greater perceived stress was observed among patients of moderate-income, congestive heart failure, high social conflict, low social support and negative coping styles. The results of the aforementioned study indicate that there is more stress faced by people experiencing poor

social support. Therefore, the outcome of the present analysis showing low perceived stress among cardiac patients can be justified by stating the observation that these individuals received more social support in the form of assisted hospital visits, routine care for compliance with prescribed medicines, nutritional and lifestyle changes, and so on, which may have aided them to lessen their stress levels.

In many other observational studies, greater psychological stress has predicted coronary heart disease. Quite often, exposure to stress and heart disease outcomes is focused on self-reporting, so a general inclination toward negative stereotypical viewpoint may have created a spurious relationship between higher perceived stress and symptoms of heart disease. A research by Macleod and colleagues found that perceived stress was significantly related to subjective heart disease symptoms. Stress, however, displayed a weakly inverse association to all objective measures of heart disease. It means it may be early to consider psychological stress alone as one significant determinant for heart disease. There are several covariates whose impacts have not been taken into account while evaluating the perceived stress level between these two groups in the present analysis, which may be plausible explanation behind the result obtained.

The work of Macleod et al. discussed above also provides a compelling empirical example of how biased reporting can establish relationships between self-reported exposures and outcomes. This does not automatically mean that all such correlations are manipulated, but it does highlight the potential for reporting bias when participants offer good answers, rather than true answers, likely to maintain an ideal self-image, which may alter the expected result.

The retrospective nature of this research does not permit the identification of causality; however, the obtained finding challenges the well-established relation between the hypothesis of stress-cardiovascular problems. It also promotes further research to explain the role of perceived stress with respect to CVH.

## **CONCLUSION**

On the basis of this study it can be concluded that there is a significant difference with respect to the level of perceived stress between cardiac patients and healthy people. People with ideal cardiovascular health (healthy people's group) are observed to have higher level of perceived stress as compared to the cardiac patients who have poor cardiovascular health relatively.

## **LIMITATIONS and SUGGESTIONS**

The present research was carried out on a small sample; hence the results cannot be generalized on the complete population. The sample for the research comprised cardiac patients from the hospital of Ahmedabad city only. But this limitation can still be ruled out to some extent as the patients came from different cities of Gujarat, Rajasthan as well as Madhya Pradesh. Also, other demographic details like age, gender, socio – economic status, occupation, as well as behavioural CVH factors like smoking, physical inactivity, dietary habits and so on were not considered for this study which could have possible impacts on the result. Moreover, the duration and severity of the illness of cardiac patients were not considered in the present study.

The present research can also be done taking into consideration the behavioural CVH factors like level of physical activity, BMI index, substance use, and so on for both the groups. Age and gender differences can also be analysed to find out its effect on level of perceived stress for cardiac patients as well as otherwise healthy people. The perceived stress scale used in the current study measures the stress level considering the events that took place only in the past one month. Another such standardized measure that reports the level of subjective experience of stress for a longer time duration can be also used and then even follow-up data can be gathered and analysis can be carried out to note if there appears to be any discrepancy in the obtained result.

## PRACTICAL IMPLICATIONS

The research findings can be useful to psychologists, specifically health psychologists, and other mental health professionals along with the medical practitioners to understand the influence of perceived stress among the cardiac patients. Less is known about the influence of perceived stress among Indian population, so this study can further contribute to that knowledge. Most of the studies done analysing the stress-cardiovascular problems association has examined stress objectively. Current research studies the effect of subjective reports of stress and its effect on ideal CVH. This research also shows that cardiac patients who took counselling session with the psychologist at the hospital on their visit to the hospital benefited from it and showed lesser stress as compared to the other group who received no such counselling sessions. This aids the importance of providing counselling to help the patients deal with stress better and not just treat the illness at physical level but also help them to manage it psychologically and facilitate the restorative process.

## REFERENCES

- Andrikopoulos, G., Richter, D., Sakellariou, D., Tzeis, S., Goumas, G., Kribas, P., ... Toutouzas, P. (2012). High Prevalence and Diminished Awareness of Overweight and Obesity in a Mediterranean Population. An Alarming Call for Action. *The Open Cardiovascular Medicine Journal*, 6(1), 141–146. <https://doi.org/10.2174/1874192401206010141>
- Belkic, K. L., Landsbergis, P. A., Schnall, P. L., & Baker, D. (2004). Is job strain a major source of cardiovascular disease risk? *Scandinavian Journal of Work, Environment and Health*, Vol. 30, pp. 85–128. <https://doi.org/10.5271/sjweh.769>
- Brborović, O., Rukavina, T. V., Pavleković, G., Džakula, A., Šogorić, S., & Vuletić, S. (2009). Psychological distress within cardiovascular risks behaviors, conditions and diseases conceptual framework. *Collegium Antropologicum*, 33(1 SUPPL. 1), 93–98. Retrieved from [https://hrcak.srce.hr/index.php?show=clanak&id\\_clanak\\_jezik=62341](https://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=62341)
- Brummett, B. H., Babyak, M. A., Mark, D. B., Clapp-Channing, N. E., Siegler, I. C., & Barefoot, J. C. (2004). Prospective Study of Perceived Stress in Cardiac Patients. *Annals of Behavioral Medicine*, 27(1), 22–30. [https://doi.org/10.1207/s15324796abm2701\\_4](https://doi.org/10.1207/s15324796abm2701_4)
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385–396. <https://doi.org/10.2307/2136404>
- Greenlund, K. J., Liu, K., Knox, S., McCreath, H., Dyer, A. R., & Gardin, J. (1995). Psychosocial work characteristics and cardiovascular disease risk factors in young adults: The CARDIA study. *Social Science and Medicine*, 41(5), 717–723. [https://doi.org/10.1016/0277-9536\(94\)00385-7](https://doi.org/10.1016/0277-9536(94)00385-7)



- Hamer, M., Molloy, G. J., & Stamatakis, E. (2008). Psychological Distress as a Risk Factor for Cardiovascular Events. Pathophysiological and Behavioral Mechanisms. *Journal of the American College of Cardiology*, 52(25), 2156–2162. <https://doi.org/10.1016/j.jacc.2008.08.057>
- Heslop, P., Davey Smith, G., Metcalfe, C., Macleod, J., & Hart, C. (2002). Change in job satisfaction, and its association with self-reported stress, cardiovascular risk factors and mortality. *Social Science and Medicine*, 54(10), 1589–1599. [https://doi.org/10.1016/S0277-9536\(01\)00138-1](https://doi.org/10.1016/S0277-9536(01)00138-1)
- Heslop, P., Smith, G. D., Metcalfe, C., Macleod, J., & Hart, C. (2002). Sleep duration and mortality: The effect of short or long sleep duration on cardiovascular and all-cause mortality in working men and women. *Sleep Medicine*, 3(4), 305–314. [https://doi.org/10.1016/S1389-9457\(02\)00016-3](https://doi.org/10.1016/S1389-9457(02)00016-3)
- Holden, L., Scuffham, P., Hilton, M., Vecchio, N., & Whiteford, H. (2010). Psychological distress is associated with a range of high-priority health conditions affecting working Australians. *Australian and New Zealand Journal of Public Health*, 34(3), 304–310. <https://doi.org/10.1111/j.1753-6405.2010.00531.x>
- Kadojić, D., Demarin, V., Kadojić, M., Mihaljević, I., & Barac, B. (1999). Influence of prolonged stress on risk factors for cerebrovascular disease. *Collegium Antropologicum*, 23(1), 213–219. Retrieved from <https://www.researchgate.net/publication/12896052>
- Kashani, M., Eliasson, A., & Vernalis, M. (2012, January). Perceived stress correlates with disturbed sleep: A link connecting stress and cardiovascular disease. *Stress*, Vol. 15, pp. 45–51. <https://doi.org/10.3109/10253890.2011.578266>
- Katsarou, A. L., Triposkiadis, F., & Panagiotakos, D. (2013). Perceived stress and vascular disease: Where are we now? *Angiology*, Vol. 64, pp. 529–534. <https://doi.org/10.1177/0003319712458963>
- Katsarou, A., Triposkiadis, F., Skoularigis, J., Griva, E., Neroutsos, G., Karayannis, G., ... Panagiotakos, D. (2014). Evaluating the Role of Perceived Stress on the Likelihood of Having a Non - Fatal Acute Coronary Syndrome: A Case-Control Study. *The Open Cardiovascular Medicine Journal*, 8(1), 68–75. <https://doi.org/10.2174/1874192401408010068>
- Kocalevent, R. D., Levenstein, S., Fliege, H., Schmid, G., Hinz, A., Brähler, E., & Klapp, B. F. (2007). Contribution to the construct validity of the Perceived Stress Questionnaire from a population-based survey. *Journal of Psychosomatic Research*, 63(1), 71–81. <https://doi.org/10.1016/j.jpsychores.2007.02.010>
- Kocalevent, R. D., Rose, M., Becker, J., Walter, O. B., Fliege, H., Bjorner, J. B., ... Klapp, B. F. (2009). An evaluation of patient-reported outcomes found computerized adaptive testing was efficient in assessing stress perception. *Journal of Clinical Epidemiology*, 62(3). <https://doi.org/10.1016/j.jclinepi.2008.03.003>
- Lazarus, R., S. (1966). *Psychological Stress and the Coping Process*. New York: McGraw-Hill.
- Lazarus, R. S. (1974). Psychological stress and coping in adaptation and illness. *Psychiatry in Medicine*, Vol. 5, pp. 321–333. <https://doi.org/10.2190/t43t-84p3-qdur-7rtp>
- Macleod, J., Hart, C., Smith, G. D., Heslop, P., Metcalfe, C., Carroll, D., & Lynch, J. (2002). Psychological stress and cardiovascular disease: Empirical demonstration of bias in a prospective observational study of Scottish men. *BMJ*, 324(7348), 1247–1251. <https://doi.org/10.1136/bmj.324.7348.1247>
- Mason, J. W. (1971). A re-evaluation of the concept of “non-specificity” in stress theory. *Journal of Psychiatric Research*, 8(3–4), 323–333. [https://doi.org/10.1016/0022-3956\(71\)90028-8](https://doi.org/10.1016/0022-3956(71)90028-8)
- Melamed, S., Kushnir, T., Shirom, A., & Melamed, S. (1992). Burnout and risk factors for cardiovascular diseases. *Behavioral Medicine*, 18(2), 53–60. <https://doi.org/10.1080/08964289.1992.9935172>
- Perk, J., De Backer, G., Gohlke, H., Graham, I., Reiner, Ž., Verschuren, M., ... Wolpert, C. (2012). European

- Guidelines on cardiovascular disease prevention in clinical practice (version 2012). *European Heart Journal*, Vol. 33, pp. 1635–1701. <https://doi.org/10.1093/eurheartj/ehs092>
- Poirat, L., Gaye, B., Perier, M. C., Thomas, F., Guibout, C., Climie, R. E., ... Empana, J. P. (2018). Perceived stress is inversely related to ideal cardiovascular health: The Paris Prospective Study III. *International Journal of Cardiology*, 270, 312–318. <https://doi.org/10.1016/j.ijcard.2018.06.040>
- Puustinen, P. J., Koponen, H., Kautiainen, H., Mäntyselkä, P., & Vanhala, M. (2010). Gender-specific association of psychological distress with cardiovascular risk scores. *Scandinavian Journal of Primary Health Care*, 28(1), 36–40. <https://doi.org/10.3109/02813431003648131>
- Richardson, S., Shaffer, J. A., Falzon, L., Krupka, D., Davidson, K. W., & Edmondson, D. (2012). Meta-analysis of perceived stress and its association with incident coronary heart disease. *American Journal of Cardiology*, 110(12), 1711–1716. <https://doi.org/10.1016/j.amjcard.2012.08.004>
- Riese, H., Van Doornen, L. J. P., Houtman, I. L. D., & De Geus, E. J. C. (2000). Job strain and risk indicators for cardiovascular disease in young female nurses. *Health Psychology*, 19(5), 429–440. <https://doi.org/10.1037/0278-6133.19.5.4290>
- Rosengren A, Hawken S, Ounpuu S, Sliwa K, Zubaid M, Almahmeed WA, Blackett KN, Sitthiamorn C, Sato H, & Yusuf S. (2004). INTERHEART investigators, Association of psychosocial risk factors with risk of acute myocardial infarction in 11, 119 cases and 13,648 controls from 52 countries (the INTERHEART study); case-control study. *Lancet* 364:953–962.
- Tindle, H., Davis, E., & Kuller, L. (2010). Attitudes and cardiovascular disease. *Maturitas*, Vol. 67, pp. 108–113. <https://doi.org/10.1016/j.maturitas.2010.04.020>

