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The relationship between health literacy and general health in patients with type 2 diabetes

Seyedshohadaee M^{1,2} and Barasteh S^{1,2}¹Baqiyatallah University of Medical Sciences, Iran²University of Tehran, Iran

Background & Aim: Type 2 diabetes mellitus is a major general health problem that causes widespread effects on the individual and social functions. The purpose of this study was to investigate the relationship between health literacy and general health in type 2 diabetic patients.

Methods & Materials: This cross-sectional study was done on 200 patients referred to the Diabetes Research Center, Tehran University of Medical Sciences in 1392. Data were collected using three questionnaires: Demographic characteristics, health literacy (TOHFLA), general health (GHQ28). Data analyses were done by using descriptive statistical tests, frequency distribution tables and tests (test t and ANOVA) using SPSS (Version 16).

Results: More than half of participants (58%) didn't have adequate health literacy and their general health was average (average: 53/7±58/48). There was a significant correlation between health literacy and public health (p: 0.007 and r: -0.191). Health Literacy was statistically significant with three aspect of general health, anxiety and sleep disorders (p: 0/0029 and -0/154), social functioning (p: 0/013 and r: -0/176) and depression (p: 0/002 and r: -0/218).

Conclusion: In general, chronic diseases including diabetes type 2, has clinical, social and psychological problems, which leads to mental and physical limitations in these people. This study showed that inadequate health literacy and public health are common problems, which indicate that diabetic patients need more education to improve their level of health literacy and general health.

seyedshohadaee.m@iums.ac.ir

Impaired mitochondrial copper transport in diabetic cardiomyopathy: Mechanism and treatment with Cu(II) chelation by triethylenetetramine (TETA)

Shaoping Zhang, Hong Liu, Greeshma V Amarsingh, Carlos C H Cheung, Umayal Narayanan, Lin Zhang and Garth J S Cooper

University of Auckland, New Zealand

Sustained hyperglycemia in diabetic patients develops cardiomyopathy and heart failure for which cardiac mitochondrial dysfunction is the key feature. This study aimed to investigate how defective copper regulation may affect cardiac mitochondrial function and to evaluate the effects of Cu(II)-chelation by triethylenetetramine (TETA), on reversibility of mitochondrial activity in diabetic cardiomyopathy (DCM). Cardiac-dysfunction was assessed in STZ-diabetic and TETA-treated STZ-diabetic rat using ex-vivo perfusion of isolated heart. DCM with copper deficiency was associated with reduction in myocardial expression of mitochondrial copper chaperones COX17, COX11, SCO1 and CCS which could result in defective copper delivery/utilization and assembly of mitochondrial resided cytochrome c oxidase (CCO) and Cu/Zn superoxide dismutase (SOD1), and subsequently decreased activities of these enzymes. The improvement in cardiac function by TETA treatment was accompanied by amelioration of expression of these copper chaperones: Leading to increased copper supply to mitochondria, and activation of CCO and SOD1 activities. TETA treatment also ameliorates decreased expression of the key mitochondrial metabolic regulator peroxisome proliferator-activated receptor gamma co-activator-1 (PGC-1) in diabetic heart, whereas by contrast, it has no effects on increased mitochondrial biogenesis which is consistent with the compensatory responses for decreased mitochondrial activity in diabetes. In this study, we have identified a dysregulation of mitochondrial copper transport pathway which impairs cardiac mitochondrial respiration and antioxidant activity in diabetic heart. We also demonstrated a novel beneficial effect of TETA on DCM that involved chelator-mediated restoration of mitochondrial copper homeostasis and anti-oxidant defenses, as well as improvement of mitochondrial metabolism, which may represent a promising therapy for DCM.

s.zhang@auckland.ac.nz