

Exploring the Effects of Vitamin D Supplementation on Cognitive Functions and Mental Health Status in Subjects Under Methadone Maintenance Treatment

Objectives: Vitamin D deficiency may be linked to several mental complications including cognitive deficits, depression, and anxiety in patients under methadone maintenance treatment (MMT). This study was designed to explore the effect of vitamin D supplementation on cognitive functions and mental health parameters in subjects under MMT.

Methods: This randomized, double-blinded, placebo-controlled clinical trial was carried out among 64 patients under MMT. Participants were randomly allocated to receive either 50,000 IU vitamin D supplements (n=32) or placebo (n=32) every 2 weeks for 24 weeks. Cognitive functions and mental health parameters were taken at baseline and post-treatment to evaluate relevant variables.

Results: After the 24-week intervention, compared with the placebo, serum 25(OH) vitamin D levels significantly increased in participants who received vitamin D supplements (b 14.50; 95% confidence interval [CI], 13.17–15.83; $P < 0.001$). In addition, compared with the placebo, subjects who received vitamin D had a significant reduction in Iowa Gambling Task (b -6.25; 95% CI, -8.60 to -3.90; $P < 0.001$), and significant increases in Verbal Fluency Test (b 2.82; 95% CI, 0.78–4.86; $P = 0.007$), Immediate Logic Memory (b 1.32; 95% CI, 0.27–2.37; $P = 0.01$), Reverse Digit Span (b 2.06; 95% CI, 1.18–2.94; $P < 0.001$) and visual working memory (b 0.75; 95% CI, 0.33–1.16; $P = 0.001$). Also, vitamin D supplementation significantly improved BDI (b -2.76; 95% CI, -3.97 to -1.55; $P < 0.001$) compared with the placebo. When we applied Bonferroni correction, LM-Immediate ($P = 0.07$) became nonsignificant, and other mental health parameters did not alter.

Conclusions: Overall, taking 50,000 IU vitamin D supplement every 2 weeks for 24 weeks by patients under MMT had beneficial effects on cognitive functions and some mental health parameters. Further studies are needed to confirm our findings.

N-acetylcysteine in addiction management: current knowledge and future perspectives

Drug abuse disorders and addictive behaviors are serious public health problems and major contributors to the global burden of disease. Previous studies show that N-acetylcysteine (NAC) may be involved in neurodevelopment adult brain. The potential neuroprotective effect of NAC is associated with modulate several neurological pathways, including prevention of oxidative stress or inflammation damage to nervous tissue and glutamate dysregulation, NAC is being explored as an adjunctive therapy for drug addiction and addiction management. We here review the role of NAC in the addiction, such as cannabis abuse, methamphetamine abuse, cocaine addiction, nicotine dependency, and gambling. Adequate administration of NAC seems to be crucial in terms of addiction management. NAC is safe and well tolerated when administered orally but has documented risks with intravenous administration. An evidence study supports its use as an adjunctive therapy clinically for drug addiction, administered concomitantly with existing medications. The aim of this review is to assess the current knowledge related to the role of NAC administration on drug addiction and addiction management.

The effects of resveratrol on lipid profiles and liver enzymes in patients with metabolic syndrome and related disorders: a systematic review and meta-analysis of randomized controlled trials

Background: There are current trials investigating the effect of resveratrol supplementation on lipid profiles and liver enzymes among patients with metabolic syndrome (MetS) and related disorders; however, their findings are controversial. This systematic review and meta-analysis were aimed to determine the effects of resveratrol supplementation on lipid profiles and liver enzymes among patients with MetS and related disorders. **Methods:** We performed a comprehensive search of the following online databases up to November 2018: Cochrane Library, PubMed, Embase, and Web of Science. The relevant articles were assessed for quality of studies using the Cochrane risk of bias tool. **Results:** Out of 2459 citations, 31 articles were appropriate for including to the current meta-analysis. The pooled results indicated that resveratrol use significantly decreased total cholesterol [weighted mean difference (WMD) = - 7.65 mg/dL; 95% CI, - 12.93, - 2.37; P < 0.01; I²: 83.4%] and increased gamma-glutamyl transferase (GGT) concentrations (WMD = 1.76 U/l; 95% CI, 0.58, 2.94; P < 0.01; I²: 20.1%). We found no significant effect of resveratrol supplementation on triglycerides (WMD = - 5.84 mg/dL; 95% CI, - 12.68, 1.00; P = 0.09; I²: 66.8%), LDL- (WMD = -2.90 mg/dL; 95% CI, - 10.88, 5.09; P = 0.47; I²: 96.0%), HDL-cholesterol (WMD = 0.49 mg/dL; 95% CI, - 0.80, 1.78; P = 0.45; I²: 74.0%), alanine aminotransferase (ALT) (WMD = -0.14 U/l; 95% CI, - 3.69, 3.41; P = 0.93; I²: 79.6%), and aspartate aminotransferase (AST) (WMD = -0.34 U/l; 95% CI, - 2.94, 2.27; P = 0.80; I²: 88.0%) concentrations. **Conclusions:** This meta-analysis demonstrated that resveratrol supplementation among patients with MetS and related disorders significantly reduced total cholesterol and increased GGT concentrations, but did not affect triglycerides, LDL-, HDL-cholesterol, ALT, and AST concentrations. This data suggests that resveratrol may have a potential cardio-protective effect in patients with MetS and related disorders.

Clinical and metabolic responses to crocin in patient under methadone maintenance treatment: A randomized clinical trial

Patients under methadone maintenance treatment (MMT) programs are susceptible to several complications including metabolic and clinical disorders. This study was designed to determine the effect of crocin supplementation on mental health parameters and metabolic profiles in subjects under MMT. The current randomized, double-blind, placebo-controlled, clinical trial was conducted among 53 patients under MMT to receive either 15 mg/day of crocin (n = 26) or placebo (n = 27) twice a day for 8 weeks. Crocin administration significantly decreased Beck Depression Inventory score (P = 0.01) and Beck Anxiety Inventory score (P = 0.008) compared with the placebo. In addition, crocin administration resulted in a significant reduction in fasting glucose (P = 0.003), insulin levels (P = 0.01), insulin resistance (P = 0.008), triglycerides (P = 0.001), very low-density lipoprotein (P = 0.001), total cholesterol levels (P = 0.03), and a significant increase in insulin sensitivity (P = 0.003) compared with the placebo. Additionally, crocin intake was associated with a significant reduction in high-sensitivity C-reactive protein (p < .001) and malondialdehyde (P = 0.001) and a significant rise in total antioxidant capacity levels (P = 0.01) compared with the placebo. The findings of this clinical trial indicate that taking crocin for 8 weeks by patients under MMT had beneficial effects on their mental health and improved their metabolic profiles.

The Effects of Curcumin on Weight Loss Among Patients With Metabolic Syndrome and Related Disorders: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

The current systematic review and meta-analysis of randomized controlled trials (RCTs) was carried out to assess the influence of curcumin intake on weight among patients with metabolic syndrome and related disorders. We searched the following databases up until January 2018: MEDLINE, EMBASE, Web of Science, and Cochrane Central Register of Controlled Trials. The relevant data were extracted and evaluated for quality of the studies in accordance with the Cochrane risk of bias tool. Data were pooled using the inverse variance method and expressed as standardized mean difference (SMD) with 95% confidence intervals (95% CI). Eighteen articles (21 studies) that comprised a total of 1,604 individuals were finally included in the meta-analysis. Curcumin intake significantly reduced body mass index (BMI) (SMD -0.37 ; 95% CI, -0.61 , -0.13 ; $P < 0.01$), weight (SMD -0.23 ; 95% CI, -0.39 , -0.06 ; $P < 0.01$), waist-circumference (WC) (SMD -0.25 ; 95% CI, -0.44 , -0.05 ; $P = 0.01$), leptin levels (SMD -0.97 ; 95% CI, -1.18 , -0.75 ; $P < 0.001$) and increased adiponectin levels (SMD 1.05 ; 95% CI, 0.23 , 1.87 ; $P = 0.01$). We found no significant effect of curcumin intake on hip ratio (HR) (SMD -0.17 ; 95% CI, -0.42 , 0.08 ; $P = 0.18$). Overall, we have found that curcumin intake among patients with metabolic syndrome and related disorders was correlated with a significant reduction in BMI, weight, WC, and leptin, and a significant increase in adiponectin levels, but did not affect HR.

The Effect of Transcranial DirectCurrent Stimulation on Relapse, Anxiety, and Depression in Patients With Opioid Dependence Under Methadone Maintenance Treatment: A Pilot Study

Background and Objective: Patients under methadone maintenance therapy (MMT) are susceptible to several complications including mental disturbances and risk of relapse. The present study was designed to evaluate the effects of tDCS on relapse, depression, and anxiety of opioid-dependent patients under methadone maintenance treatment (MMT). **Methods:** It was a randomized-clinical trial that conducted among 27 male patients referred to the outpatient addiction clinic of Ibn-e-Sina psychiatric hospital in Mashhad from July 2018 to May 2019. Participants were allocated to two treatment groups including intervention and sham groups. The intervention group received seven sessions of tDCS, in the F3 (cathode) and F4 (anode) areas of the brain, each one lasts 20 min, in two consecutive weeks. Depression, anxiety, and stress scale-21 (DASS-21) were measured before, during, and after the intervention in patients under MMT. Relapse on the morphine, cannabis, and methamphetamine was screened by urine dipstick tests of morphine, cannabis, and methamphetamine. **Results:** Depression, anxiety, and stress of participants were significantly reduced in the intervention group compared with the control after the seventh session of tDCS ($P < 0.001$, $P = 0.01$, and $P = 0.01$, respectively). In addition, the relapse rate showed no significant changes between the two groups ($P = 0.33$). **Conclusion:** Overall, our study demonstrated that depression, anxiety, and stress of participants were significantly reduced after the seventh session of tDCS, but did not affect on the relapse rate. Therefore, it can be applied as a safe and effective technique to relieve mental disorder among receiving MMT.

Types of Poisoning in a Tertiary Care Hospital in Center of Iran (2014 to 2017).

The global problem of acute poisoning has steadily increased over the past decade. It is an important cause of morbidity and mortality in developing countries. Better preventive and management strategies can be developed if the incidence and pattern of acute poisoning is known. The study aims at analyzing the pattern, cause and mortality rate of poisoning. The study was conducted in an urban and rural area in the center of Iran. This retrospective study was conducted from January 2014–March 2017. The data was analysed using descriptive and analytical statistics. Out of the 1329 cases 754 were males and 575 females. Poisoning was common in the age group of 21–30 years. The poisons consumed were as follows: 63.8% were suicides, 17.8% accidental and 18.4% had a variety of different reasons. Mortality rate was 6.5%. The results of the study showed that the highest rate of poisoning in the young age group was due to suicidal ideation. Accurate training for youth and counseling is of particular importance. Establishment of strict policies against.

A narrative review of thallium toxicity; preventive Measures

Thallium (Tl) toxicity is an important clinical disease and its effects on the human body are devastating. Tl poisoning is an important health issue in many countries in the world. Thallium is a toxic heavy metal that exists in nature. Tl toxicity may occur in food and drinking water, occupational exposure, environment (air, industrial combustion of coal, water, and plants), arable soils and vegetables, aquatic and terrestrial animals, prenatal thallium exposure, illicit drugs, cigarette smokers. Adding lead to the opium is a recently health hazard that has been observed among opioid poisoned patients. The clinical manifestation of Tl poisoning has a wide spectrum but painful ascending peripheral neuropathy, gastrointestinal, and dermatologic manifestations are major characteristics in Tl toxicity. The toxicity of thallium based compounds is mainly caused by the similarity between Tl ions and potassium ions, which results in the disorder of potassium associated metabolic processes due to thallium interference. The aim of this review is to assess identify eliminate, sources or control sources, and environmental exposures and hazards to prevent thallium toxicity.

The Effects of Vitamin D Supplementation on Withdrawal Symptoms and the Expression of Inflammatory Cytokines and Insulin in Patients Under Methadone Maintenance Treatment: A Randomized, Double-Blind, Placebo-Controlled Trial

Hypovitaminosis D may be related to some metabolic vulnerable, including metabolic disorders associated with inflammatory cytokines and insulin resistance in subjects undergoing methadone maintenance treatment (MMT). Objectives: This study aimed to determine the impact of vitamin D intake on withdrawal symptoms and genetic response related to inflammatory cytokines and insulin in patients treated with MMT. Methods: This investigation was performed on 40 subjects under MMT to consume either 50,000 IU vitamin D supplements (n = 20) or placebo (n = 20) every 2 weeks for 12 weeks, between April and June 2017 in Kashan, Iran. The clinical opiate withdrawal symptoms (COWS) were evaluated to examine withdrawal scale and gene expression at baseline and

after the a 3-month intervention. Statistical analysis of the data was performed using SPSS 18 with Fisher's exact test, t-test, chi-square, and ANCOVA. Also, P values < 0.05 were considered statistically significant. Results: The results of our study showed that compared with the placebo, taking vitamin D downregulated interleukin-1 (IL-1) expression (P = 0.01) in peripheral blood mononuclear cells (PBMCs) of patients under MMT. In addition, consuming vitamin D increased peroxisome proliferator-activated receptor gamma (PPAR-) expression (P = 0.01). Administration of vitamin D did not change COWS and IL-8 and tumor necrosis factor-alpha (TNF- α) expression. Conclusions: According to the results of the present study, vitamin D can be recommended as an adjunct to MMT which may elevate the quality of life and decrease methadone side effects.

The effect of cognitive reappraisal strategy on cognitive functions in disgust induction situation among under medication obsessive-compulsive patients.

The aim of this study is to investigate the effect of cognitive reappraisal strategy on cognitive functions in disgust induction situations among obsessive-compulsive patients. This study was a pre-post test research design with a control group in experimental environment. Participants consisted of 44 individuals with obsessive-compulsive disorder who were selected from mental health clinics of Kashan, Iran. Participants were randomly assigned to one of two conditions. All participants provided background questionnaires including Yale-Brown Obsessive-Compulsive Scale (YBOCS), Padua Inventory (PI), Emotion Regulation Scale (ERQ), the Beck Depression Inventory-II (BDII) and disgust propensity and sensitivity scale and the cognitive function tasks including Iowa Gambling Task (IGT), Wisconsin Card Sorting Test (WCST) and Stroop Task (ST). The induction only condition (IOC) as control group had not received training beside the disgust emotion induction. In post-test phase after watching disgust induction films, subjects were asked to answer the cognitive tests again immediately after they watched to a minute's disgust films in three steps. Covariance analysis tests was used to analyze data and results showed that the cognitive reappraisal training (CRT) group outperformed in post-test step in IGT, reaction time in ST and the correct answers in WCST. Accordingly, we could suggest that cognitive reappraisal as an emotion regulation strategy could improve the decision-making, inhibition and set shifting in disgust induction situation.

Determination of thallium in urine, blood, and hair in illicit opioid users in Iran.

Objective: This study aimed to determine urine, blood, and hair thallium (Tl) concentrations in illicit opioid users along with the relevant clinical signs and symptoms consistent with thallotoxicosis and to compare them with the corresponding variables in the control non-opioid user group. Materials and Methods: This case-control study was conducted on 50 illicit opioid users who had abused opioids continuously for more than a year, referred to Amir Drug Abuse Treatment Clinic in Kashan, Iran. The control group included 50 non-opioid users. Thallium concentrations in urine, blood, and hair were assessed in both groups (n = 100) using electrothermal (graphite furnace) atomic absorption spectrometry (ET AAS, GF AAS). Results: In the studied group, the median (interquartile range) concentrations of thallium in urine, blood, and hair were 54.8 + 79.9 mg/L, 14.5 + 11.1 mg/L, and 5.4 + 3.7 mg/g, respectively; these values were 4.8 + 5.2 mg/L, 2.5 + 2.4 mg/L, and 1.4 + 1.1 mg/g,

respectively, in the control group. There were significant differences in urine, blood, and hair thallium concentrations between the study group and the control group ($p < 0.001$). There were significant correlations between duration of illicit opioid use and urine thallium concentrations ($r = 0.394$, $p = 0.005$) and hair thallium concentrations ($r = 0.293$, $p = 0.039$), but not with blood thallium concentrations ($r = 0.246$, $p = 0.085$). Urine and blood thallium concentrations of illicit opioid users with clinical signs and symptoms consistent with thallotoxicosis of weakness ($p = 0.01$), depression ($p = 0.03$), and headache ($p = 0.03$) were higher than users without these problems. Discussion and conclusion: The results of the study showed that thallium concentrations in urine, blood, and hair in illicit opioid users were significantly higher than the comparable concentrations in the control group. This can be due to the use of illicit opioids adulterated with thallium. Also, this study showed long-term illicit opioid use may lead to thallium exposure. In addition, cigarette smoking was associated with increased thallium exposure.

The effects of resveratrol on lipid profiles and liver enzymes in patients with metabolic syndrome and related disorders: a systematic review and meta-analysis of randomized controlled trials.

Background: There are current trials investigating the effect of resveratrol supplementation on lipid profiles and liver enzymes among patients with metabolic syndrome (MetS) and related disorders; however, their findings are controversial. This systematic review and meta-analysis were aimed to determine the effects of resveratrol supplementation on lipid profiles and liver enzymes among patients with MetS and related disorders. Methods: We performed a comprehensive search of the following online databases up to November 2018: Cochrane Library, PubMed, Embase, and Web of Science. The relevant articles were assessed for quality of studies using the Cochrane risk of bias tool. Results: Out of 2459 citations, 31 articles were appropriate for including to the current meta-analysis. The pooled results indicated that resveratrol use significantly decreased total cholesterol [weighted mean difference (WMD) = -7.65 mg/dL; 95% CI, -12.93 , -2.37 ; $P < 0.01$; I²: 83.4%] and increased gamma-glutamyl transferase (GGT) concentrations (WMD = 1.76 U/l; 95% CI, 0.58 , 2.94 ; $P < 0.01$; I²: 20.1%). We found no significant effect of resveratrol supplementation on triglycerides (WMD = -5.84 mg/dL; 95% CI, -12.68 , 1.00 ; $P = 0.09$; I²: 66.8%), LDL- (WMD = -2.90 mg/dL; 95% CI, -10.88 , 5.09 ; $P = 0.47$; I²: 96.0%), HDL-cholesterol (WMD = 0.49 mg/dL; 95% CI, -0.80 , 1.78 ; $P = 0.45$; I²: 74.0%), alanine aminotransferase (ALT) (WMD = -0.14 U/l; 95% CI, -3.69 , 3.41 ; $P = 0.93$; I²: 79.6%), and aspartate aminotransferase (AST) (WMD = -0.34 U/l; 95% CI, -2.94 , 2.27 ; $P = 0.80$; I²: 88.0%) concentrations. Conclusions: This meta-analysis demonstrated that resveratrol supplementation among patients with MetS and related disorders significantly reduced total cholesterol and increased GGT concentrations, but did not affect triglycerides, LDL-, HDL-cholesterol, ALT, and AST concentrations. This data suggests that resveratrol may have a potential cardio-protective effect in patients with MetS and related disorders.

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Effects of Dialectical Behavior Therapy on Executive Functions, Emotion Regulation, and Mindfulness in Bipolar Disorder

Bipolar disorder (BD) is a debilitating psychiatric disorder characterized by recurrent depression, manic, and hypomanic episodes. Patients with BD are also likely to experience difficulties with executive functions and emotion regulation. The literature review states that little research has been done on dialectical behavior therapy (DBT) for BD, and there has not been an examination of this therapy on BD patients' executive functions and emotion regulation. The present study addresses this absence of research with a pilot study on 60 BD patients. Participants in the intervention group received twelve 90-minute sessions adapted from a standard DBT protocol for BD and the control group was on a wait-list for treatment. Participants completed measures of mental wellbeing and executive functioning at baseline, immediately after the intervention, and 3 months later as a follow-up. Results showed that the intervention group improved over time, having lower scores in mania, depression, and emotion dysregulation than the control group post-treatment. Further, the intervention group had higher scores in mindfulness, planning, problem-solving, and cognitive flexibility than the control group. The findings highlight that DBT, alongside prescription medication, can be an effective therapy for BD as well as leading to reduced manic and depression symptoms and improved executive functions, emotion regulation, and mindfulness.