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Impact of improved sleep quality and mood on acute and sustained phases of insulin release among pre-diabetes: An observation from Yoga and Walking based RCT

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Abolished phases of insulin release, the acute phase of Insulin Release (APIR) and sustained phase of Insulin Release (SPIR), are projected as the prime cause for impaired fasting glucose and/or impaired glucose tolerance, resulting in spiking the blood glucose close to type 2 diabetes threshold, resulting in the diagnosis of pre-diabetes. In addition, disturbed sleep for longer than 6 months is itself identified as a reason for impaired fat and glucose metabolism hiking the incidence of pre-diabetes and T2DM among young adults. Studies explored physical activity of any form as effective in improving APIR, SPIR, sleep quality and low mood, thereby preventing or managing Type 2 Diabetes Mellitus (T2DM). Hence this study compared the effect of yoga or walking on APIR, SPIR, sleep and depression among pre-diabetes. Adults with pre-diabetes (N=42) were randomized into yoga (n=20) or walking group (n=22). Yoga group underwent yoga therapy, and active control group were involved in walking for 45 minutes a day for 5 days a week for 12 weeks. Fasting blood glucose, serum insulin at 0th, 10th (APIR) and 90th minute (SPIR), sleep and depression and resultant habit changes like mood, diet, activity, and energy were assessed at baseline and after 12 weeks. Study result showed a significant reduction in FBS and mood ($p<0.01^*$) and improved APIR and SPIR ($p<0.05^*$), as influenced by improved sleep dynamics ($p<0.05$) among subjects of the yoga group as compared to the latter. Although, Univariate linear regression depicted no influence of mood [R2: 0.107; (F(1,21)= 2.13, $p=0.07$)] but a great influence of improved sleep dynamics among the study population [R2: 0.797; (F(1,21)= 15.83, $p<0.01^*$)]. Current study result manifests yoga as a much effective physical activity than walking in improving phases of insulin release, which is stipulated as being complemented by sleep quality index, thereby preventing the onset of T2DM.

Recent Publications

1. Kurian J, Bhat R. Impact of State Anxiety, Mindfulness on Cardiac Autonomic Variables in Healthy Adults: A Correlational Study. *Sci Forschen*. 2019.
2. Kurian J, Vijayakumar V, Mooventhan A, Mavathur R. Effect of yoga on plasma glucose, lipid profile, blood pressure and insulin requirement in a patient with type 1 diabetes mellitus. *Journal of Complementary and Integrative Medicine*. 2021 Sep 1;18(3):649-51.
3. NAGARATHNAR, Kurian J, Vijayakumar V, NAGENDRA HR, MAVATHUR RN. 1160-P: Does Yoga Reduce the Risk of Conversion from Prediabetes to Diabetes by Improving Acute Phase Insulin Release? An Observation from an RCT. *Diabetes*. 2021.

Biography

Jintu Kurian is working as a Research officer in Molecular Bioscience Lab of Anvesana Research Laboratories under S-VYASA University, a Deemed-to-be-University located in Bangalore, Southern part of India. Her area of research is on expediting the application of Yoga and exploring the mechanisms by which yoga works in preventing, managing or reversing Pre-diabetes and Type 2 Diabetes. Research work of her also focuses on comparing Yoga as a physical activity with other forms of physical activities like walking and aerobics.

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