

## The Relationship between Vitamin D and Vitamin B12 Concentrations in Cataract Patients (Senile vs Diabetic)

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**Abstract :** Introduction: Cataract is the loss of transparency of the lens inside the eye. It is the most common cause of visual loss and blindness worldwide. This study provides a systemic review of the recent findings on the association of vitamin D, and vitamin B12, and their possible role in preventing cataracts in senile (S) and diabetic mellitus (DM) patient groups. Objective: This study was intended to establish and investigate if there is any role between vitamin D and vitamin B12? Secondly, the connection between serum level of vitamin D and vitamin B12 in cataract incidence senile (s) vs. diabetic mellitus (DM) cataract patient groups. Furthermore, to evaluate and analyze cataract occurrence regarding vitamin D and vitamin B12 levels with other risk factors. Finally, to evaluate lens opacities pre and post treatment with vitamin D and vitamin B12 linked to age and visual acuity loss in both senile(S) and diabetic mellitus (DM) cataract patients' groups. Methods: This study conducted at the ophthalmology clinic at Muhyail General Hospital. Select a prospective case-control to study the effect of vitamin D and Vit B12 on senile(S) cataracts that caused by age and diabetic mellitus (DM) cataract patients; then we compare these two groups. This study prospectively enrolled a total of 50 samples, 25 with senile cataract and 25 with diabetic cataract, from ophthalmology clinic at Muhyail General Hospital. Measuring 25-hydroxy vitamin D and vitamin B12 level concentrations in the assigned samples. Analyses were performed using SAS (statistical analysis software) program. Results: The most important finding in this study was that the senile(s) cataract patients' group greatly benefited by the combination therapy of vitamin D, and Vitamin B12 reached  $(28.5 \pm 1.50$  and  $521.1 \pm 21.10$ ) respectively; on the contrary, the diabetic cataract patient group hardly shows any significant improvement  $(21.5 \pm 1.00$  and  $197.2 \pm 7.20$ ) respectively. This is because of the Metformin, the first line drug for treating diabetes, has been reported to potentially decrease vitamin B-12 status. This epigenetic modification was correlated with the diabetic mellitus (DM) cataract patients' group not responding. Vitamin B12 deficiency also leads to an impairment of the conversion of methylmalonyl-CoA to succinyl-CoA, which has been associated with insulin resistance. There was no significant difference between the age, body mass index (BMI), the mean of Vit-D pre-treatments, and the mean values of Hemoglobin A1C of both senile (S) and diabetic mellitus (DM) cataract patient groups. On other hand, there was a highly significant difference between the mean values of glucose levels in both senile (S) and diabetic mellitus (DM) cataract patient groups. Conclusion: Here we conclude that diabetic mellitus (DM) cataract patient group hardly benefited from this combination therapy vitamin D and vitamin B12; on the other hand senile patient group (s) benefited a lot from the therapy.

**Keywords :** cataract patients, senile, diabetes mellitus, vitamin B12, vitamin D, Muhyail General Hospital, Saudi Arabia

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