

## Original Research

### Evaluation of Zinc Levels in Patients with Vitiligo- A Clinical Study

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#### ABSTRACT:

**Background:** Vitiligo is one of the most prevalent pigmentation disorders. The present study was conducted to assess zinc levels in patients with Vitiligo. **Materials & Methods:** The present study was conducted on 256 patients of vitiligo of both genders. Equal number of controls was also taken. In all subjects, blood sample was obtained and zinc level was assessed with atomic absorption spectrophotometry. **Results:** Out of 256 patients, males were 156 and females were 100. Common type of vitiligo was focal vitiligo seen in 84, generalized vitiligo in 102 and mucosal vitiligo in 70. The difference was significant ( $P < 0.05$ ). The mean zinc level in vitiligo patients was 81.3mcg/dl and in control was 94.2 mcg/dl. The difference was significant ( $P < 0.05$ ). **Conclusion:** Vitiligo patients showed lower level of zinc as compared to healthy individuals.

**Key words:** Absorption spectrophotometry, Vitiligo, Zinc

Received: 15 November 2018

Revised: 27 December 2018

Accepted: 28 December 2018

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**This article may be cited as:** Singh N, Gera V. Evaluation of Zinc Levels in Patients with Vitiligo- A Clinical Study. J Adv Med Dent Scie Res 2019;7(7): 156-158.

#### INTRODUCTION

Vitiligo is one of the most prevalent pigmentation disorders in the world characterized by the destruction of melanocytes and the development of white macules and patches on the skin or mucosa. With a global frequency of 0.5%–4%, vitiligo occurs in both sexes and all races and ages. Nevertheless, the most common age of onset of the disease is 10–30 years.<sup>1</sup>

Vitiligo is known as a condition in which depigmentation of the part of skin occurs. Loss of the functionality of melanocytes is responsible for vitiligo but the real cause of vitiligo is unknown. However, some conditions including autoimmune, genetic, neural, viral infections and oxidative stress could have an important role in vitiligo.<sup>2</sup>

The most important symptom of vitiligo known is the depigmentation of patches of skin. Initially, the patches are small but they will be enlarged over time. The skin lesions are dominantly observed on the face, hands and wrists. Often patients who are suffering from this disease also suffer from depression.<sup>3</sup>

The biochemical/cytotoxic hypothesis emphasizes that vitiligo occurs when the melanocyte is killed by cytotoxic precursors to melanin synthesis; the neural hypothesis is based on nerve injury development with affected sites that leads to segmental vitiligo with neurons that interact with melanocytes and release melanocytotoxic substrates the autoimmune hypothesis is based on genetic data which are more associated to autoimmune disease.<sup>4</sup> The present study was conducted to assess zinc levels in patients with Vitiligo.

#### MATERIALS & METHODS

The present study was conducted in the department of Dermatology. It comprised of 256 patients of vitiligo of both genders. Equal number of controls was also taken. All were informed regarding the study. Ethical approval was obtained from institute prior to the study.

General information such as name, age, gender etc. was recorded. Patients with vitiligo who had not received zinc supplements over the past 4 weeks and did not have any

other dermatologic or systemic diseases were included. In all subjects, a careful clinical examination was done. Type of vitiligo was evaluated. Blood sample was obtained and zinc level was assessed with atomic absorption

spectrophotometry. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Gender distribution**

Total- 256		
Gender	Males	Females
Number	156	100

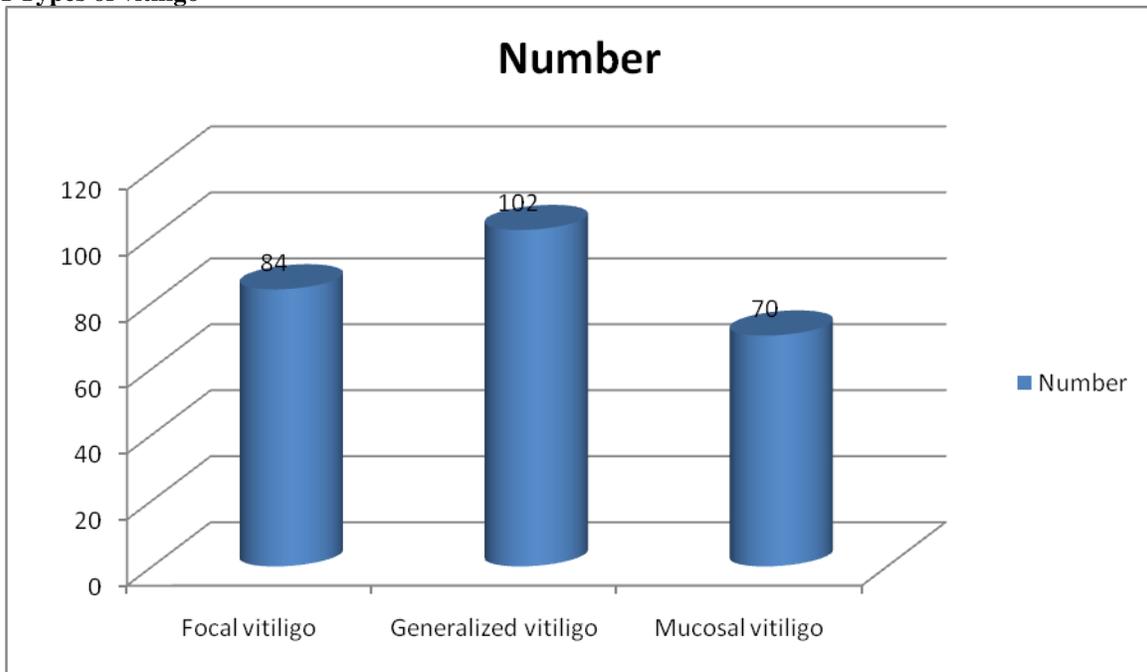
Table I shows that out of 256 patients, males were 156 and females were 100.

**Table II Types of Vitiligo**

Types	Number	P value
Focal vitiligo	84	0.01
Generalized vitiligo	102	
Mucosal vitiligo	70	

Table II, graph I shows that common type of vitiligo was focal vitiligo seen in 84, generalized vitiligo in 102 and mucosal vitiligo in 70. The difference was significant (P< 0.05).

**Graph I Types of vitiligo**



**Table III Zinc level in subjects**

Group	Mean zinc level (mcg/dl)	P value
Vitiligo	81.3	0.01
Control	94.2	

Table III shows that mean zinc level in vitiligo patients was 81.3mcg/dl and in control was 94.2 mcg/dl. The difference was significant (P< 0.05).

## DISCUSSION

Vitiligo is an acquired skin disorder characterized by white and depigmented patches enlarging and becoming more numerous with time. It is due to a disappearance of functioning melanocytes and loss of melanin in the epidermis. The condition can be cosmetically disfiguring and the lesional skin is thus more sensitive to sunburns. It affects 0.1-2% of the world's population, irrespective of gender and race. Etiology is unknown and the several pathogenetic hypotheses do not account for the entire spectrum of the disease. A positive family history for vitiligo is reported. Actually, family clustering of cases is not uncommon, since about 20% of patients have at least one affected first-degree relative, with a non-Mendelian pattern suggestive of multifactorial, polygenic inheritance.<sup>5</sup> The present study was conducted to assess zinc level in patients with vitiligo.

In this study, out of 256 patients, males were 156 and females were 100. Common type of vitiligo was focal vitiligo seen in 84, generalized vitiligo in 102 and mucosal vitiligo in 70. Mirnezami et al<sup>6</sup> studied 103 patients with vitiligo and 103 healthy sex and age matched controls. Serum zinc levels were measured in these two groups using atomic absorption spectrophotometry and compared with each other. The mean serum zinc level was 92.1 mcg/dl in the focal vitiligo, 81.3 mcg/dl in the generalized vitiligo, and 91.8 mcg/dl in the control group. A significant difference in serum zinc levels was observed between the patients with generalized vitiligo and the controls. Lower serum zinc levels were also correlated with longer duration of the disease. Furthermore, a negative relationship was found between serum zinc level and age of patients with vitiligo.

We observed that mean zinc level in vitiligo patients was 81.3mcg/dl and in control was 94.2 mcg/dl. Shameer et al<sup>7</sup> found that low zinc levels were more frequent in patients with disease duration of 2–5 years.

The clinical picture consists of one or more well-demarcated and white maculae, progressing in size and number. They are asymptomatic generally. The lesions usually appear on sun-exposed or constitutionally hyperpigmented areas or on sites of stretch and pressure (face, dorsum of hands and fingers, external genitalia, knees and elbows).<sup>8</sup> The margins of the patches are often hyperpigmented; hypopigmented areas sometimes occur together with the depigmented lesions and the normally pigmented skin (trichrome vitiligo). Rarely an inflammatory border may be found around the vitiligo patch resulting in a raised and erythematous edge (inflammatory vitiligo). Poliosis circumscripta, as well as canities and premature graying, can be observed; mucosae are rarely involved. Treatment of vitiligo includes cosmetic camouflage for the lesions on sun-exposed skin and mandatory prescription of sunscreens in sunny climates.<sup>9</sup>

## CONCLUSION

Zinc plays a major role in the process of melanogenesis. Vitiligo patients showed lower level of zinc as compared to healthy individuals.

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