

## ORIGINAL RESEARCH

# Dietary lifestyle modifications for vitiligo patients

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## ABSTRACT

**Background and objective:** Changing the patient lifestyle as regarding diet well helped in vitiligo patient cure. Aim: to examine the effect of applying dietary instructions on dietary lifestyle modifications of vitiligo patients.

**Methods:** Research design: Quasi experimental research design with one group (Pre/Post-test) was utilized in this study. Setting: the study was conducted in the ultraviolet unit at the Dermatology Department of Assiut University Hospitals. Study tool: Structured patient interview questionnaire sheet. It included two parts: Part 1: Assessment of patient's sociodemographic variables. Part 2: Dietary pattern assessment: derived from Patient Life Style Pattern Assessment Sheet (PLSPAS) for Vitiligo.

**Results:** The mean age of the studied sample was (mean  $\pm$  SD 34.62  $\pm$  12.35), 51.6% were female, 70% were living in rural areas, a highly statistically significant difference in the total mean knowledge scores between pre and post application of the dietary instructions ( $p$  value = .002).

**Conclusions:** The present study concluded that there was a great improvement in the dietary lifestyle pattern of the studied sample after application of dietary instructions. *Recommendations:* Replication of the study on a larger probability sample from different geographical locations for generalization of the results. Printing copies of the dietary instructions for dissemination among all vitiligo patients attending the dermatology ward for treatment or follow-ups.

**Key Words:** Dietary, Lifestyle Modifications, Vitiligo

## 1. INTRODUCTION

The most common pigmentary disorder is vitiligo that is characterized by progressive loss of melanocytes from the epidermis which manifests as white macules and/or patches on the skin and/or mucosa with or without whitening of hair.<sup>[1]</sup> The clinically characteristic symptoms of the vitiligo are pale or milk-white macules or patches due to the selective destruction of melanocytes.<sup>[2]</sup>

Vitiligo is a worldwide health problem with an estimated prevalence of 0.5%-1%. In about 50% of patients, vitiligo

starts before the age of 20 years, and both sexes are equally affected.<sup>[3]</sup> According to Alkhateeb et al.,<sup>[4]</sup> the disorder affects various ethnic populations with varying prevalence estimates ranging from 0.1% to 2.0% based on the general populations in previous studies.

Changing the patient lifestyle as regarding diet well helped in vitiligo patient cure. One of the crucial nurse's roles is to instruct the patient regarding balanced diet and eating plenty of fruits and vegetables, cutting down on fatty rich foods, drinking plenty of water, is good to general condition not

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just the skin. Such a diet is needed to give a good supply of the nutrients which promote healthy skin and are involved in the pigmentation process.<sup>[5]</sup>

Patients with vitiligo should eat some rich tyrosine, zinc, iron and other substances in foods as lack of dietary tyrosine affects the synthesis of melanin, such as lean meat, eggs, milk, sponge gourd, eggplant, and carrots and other fresh vegetables and soy products.<sup>[6]</sup>

Vitiligo patients may have vitamin deficiencies, especially of the B12 vitamin and folic acid to replenish patient body by eating vitamin-rich foods.<sup>[7]</sup> Vitamin B12 is found in meat, poultry, eggs, soy milk, dairy products, fish, and shellfish. The natural form of folic acid is found in fruits, dried beans and green vegetables.<sup>[8]</sup>

Copper, iron, zinc and calcium all play a role in the pigmentation process. Higher levels of zinc and copper have been shown to reduce premature greying hair. Iron also has a role in the activation of tyrosinase which is an enzyme requiring copper and is essential in the pigmentation process.<sup>[9]</sup> So those patients should eat more foods rich in tyrosinase and mineral substances such as beef, rabbit meat, animal livers, eggs, milk, yogurt, fresh vegetables, radish, eggplant, beans like soy beans, peas, peanuts, black sesame, walnuts, clams, shellfishes and snails.<sup>[10]</sup>

So this study was conducted to examine the effect of applying dietary instructions on dietary lifestyle modifications of vitiligo patients.

### Research hypothesis

An improvement in the dietary life style pattern will be observed post application of the dietary instructions than pre application of the dietary instructions.

## 2. PATIENTS AND METHODS

### 2.1 Research design

Quasi experimental research design with one group (Pre/Post-test) was utilized in this study. One group pre/post-test design involves three steps first; conducting a pre-test measuring of the dependent variable (dietary lifestyle modification), second; implementation of the independent variable which is the dietary instructions; and thirdly conducting the post-test that measure the dependent variable again.

### 2.2 Setting

The study was conducted in the ultraviolet unit at the Dermatology Department of Asyut University Hospitals.

### 2.3 Study variables

The independent variable was the dietary instructions while the dependent variable was the vitiligo patients undergoing ultraviolet therapy.

### 2.4 Patients

Sample of 60 adult patients clinically diagnosed with vitiligo were included in this study.

### 2.5 Study tool

Structured patient interview questionnaire sheet.

It included two parts:

**Part 1:** Assessment of patient's sociodemographic variables (Age, gender, education, marital status, occupation, residence and income).

**Part 2:** Dietary pattern assessment: derived from Patient Life Style Pattern Assessment Sheet (PLSPAS) for Vitiligo.<sup>[11]</sup> It include 17 items covering the following: regular eating of three meals & regular protein, zinc diet, consuming foods containing vitamin D, B12, fibers, folic acid, vegetables, avoiding excess salt, drinking 6 cups of water daily, avoiding fast foods, taking antioxidant drinks, consuming healthy foods, and weight measuring.

**Scoring system:** The total number of questions was 17. Each item was categorized and scored into either: Always = 2, Sometimes = 1, Never = 0. The total score for all items was 34 marks.

Those who obtained less than 50% were considered as having unhealthy lifestyle pattern. From 50% to 70% were considered having satisfactory healthy lifestyle pattern. And those who obtained more than 70% were considered having good healthy lifestyle pattern.

**Tool validity and reliability:** Tool validity was established by a panel of 5 experts (3 medical- surgical nursing professors and 2 dermatology professors) from Asyut University. They reviewed the tool for clarity, relevance, comprehensiveness, understanding, and applicability. Tool reliability refers to the degree of consistency with which the questionnaire measures the thing it is supposed to be measured. Reliability of the used tool was confirmed by Alpha Cronbach test at 0.95.

**The vitiligo patient's dietary instructions:** These included the Arabic simple photo illustrated instructions on the healthy dietary lifestyle that must be followed by vitiligo patients, avoidance of salty and spicy foods, diets that limit the spread of the disease; proteins (e.g. red meats, chicken, fish, etc.), foods high in zinc (e.g. shell fish, chicken, red meat, cashews, etc.), vitamin B12 sources (e.g. shell fish, whole grains, dairy

products, etc.), folic acid food rich sources (broccoli, spinach, peas, etc.), vitamin D sources (fish liver oil, butter, egg yolk, etc.). It also included instructions on the importance of washing fresh fruits and vegetables and putting them in water with lemon for at least 15 minutes to get rid of any chemicals, consuming at least 3 liters of water daily, avoiding fried and canned foods, eating dark vegetables such as (watercress, balls, parsley, green beans and spinach), consuming juices that contain vitamin C (such as oranges, lemons, guava, pineapple, tangerines and green apples) taking into account the addition of a spoon of natural bees honey to the daily routine, and drinking green tea and green coffee because they contain (polyphenols) antioxidant plant as it helps the skin in the protection from the effects of the sun.

### 2.6 Pilot study

A pilot study carried out in October 2018 to test clarity, completeness, feasibility and practicability of the study tools on 10% of the sample. Those patients were included in the main study as there were no modifications required.

### 2.7 Data collection

Data were collected over a period of eight months from October 2018 till May 2019. The study tool was filled through direct patient interviewing. The purpose of the study was explained to the patients at the beginning of the interview.

At the beginning of the interview the researcher introduced herself to the patient to initiate line of communication, the nature & purpose of the study were explained, and the study tool was filled out before application of the dietary instructions.

Then the dietary instructions were explained to each patient in two consecutive sessions each of about 45 minutes and patients were reinforced to follow these instructions in each Ultraviolet unit visit (4-5 times during a period of 3 months) and were given a printed copy of the dietary instructions that was in simple Arabic language and illustrated by photos.

Patients were met once again for evaluation of the effectiveness of the dietary instructions three months after the first interview (evaluation was done using tool 1 part 2).

### 2.8 Administrative design

An official agreement from the head of dermatology department and Ultraviolet rays' unit at Asyut University Hospital was obtained after the aim and nature of the study were explained.

### 2.9 Ethical considerations

Informed consent was obtained from each patient participated in this study after the aim and nature of the study were

explained to them, ensuring their right to withdraw from the study at any time without rationale and with no effect on the treatment they are receiving.

### 2.10 Statistical design

Data obtained from the study was reviewed, prepared for computer entry, coded, analysed and tabulated. Descriptive statistics (frequencies and percentages, means and standard deviation) were done using computer program (SPSS) version 22. Independent sample *t* test, Chi-square and One-way-ANOVA were used. Improbability level of .05 was adopted as level of significance.

## 3. RESULTS

Table 1 illustrates the sociodemographic characteristics of the studied sample; the Mean age was (mean  $\pm$  SD 34.62  $\pm$  12.35), 51.6% were female, 70% were living in rural areas, regarding marital status 48.4% were married, 46.6% were secondarily educated, 61.6% were free workers and regarding the level of income 51.6% of the sample were seeing their income as enough for them.

**Table 1.** Distribution of the studied patients regarding their socio demographic characteristics (N = 60)

Items	Frequency	%
<b>Age</b>		
Mean $\pm$ SD	34.62 $\pm$ 12.35	
<b>Gender</b>		
Female	31	51.6
Male	29	48.4
<b>Residence</b>		
Rural	42	70.0
Urban	18	30.0
<b>Marital status</b>		
Single	26	43.4
Married	29	48.4
Divorced	5	8.2
<b>Level of education</b>		
Illiterate	24	40.0
Secondary	28	46.6
University	8	13.4
<b>Occupation</b>		
Office work	9	15.0
Manual work	10	16.6
Hard work	4	6.6
Free work	37	61.6
<b>Income</b>		
Less than enough	24	40.0
Enough	31	51.6
More than enough	5	8.4

Table 2 reveals the comparison between dietary life style patterns for vitiligo patients' pre/post application of the dietary instructions which illustrates a statistically significant difference in all dietary life style pattern items except for drinking alcohol, milk consumption, Knowing vitamin D sources and knowing Zinc sources.

Table 3 illustrates the comparison between mean scores of dietary life style patterns for vitiligo patients' pre/post application of the dietary instructions; it demonstrates a highly statistically significant difference in the total mean knowledge scores between pre and post application of the dietary instructions ( $p$  value = .002).

**Table 2.** Comparison between dietary life style patterns for vitiligo patients' pre/post application of the dietary instructions (N = 60)

	Pre						Post						p value
	Always		Sometimes		Absolutely		Always		Sometimes		Absolutely		
	N	%	N	%	N	%	N	%	N	%	N	%	
<b>Dietary pattern</b>													
Consume three meals daily	36	60.0	24	40.0	0	0	51	85.0	9	15.0	0	0.0	.003**
Consume rich protein meal	24	40	36	60.0	0	0.0	53	88.3	7	11.7	0	0.0	.001**
Consume meals rich in Zinc	18	30.0	39	65.0	3	5.0	51	85.0	9	15.0	0	0.0	.001**
<b>Know Zinc sources</b>													
Chicken and beef	27	45.0	-	-	-	-	18	30.0	-	-	-	-	.451 <sup>Ns</sup>
Sea foods	3	5.0	-	-	-	-	3	5.0	-	-	-	-	
Baked beans	8	13.3	-	-	-	-	5	8.3	-	-	-	-	
All of the above	22	36.7	-	-	-	-	34	56.7	-	-	-	-	
Consume foods rich in vitamin D	13	21.7	37	61.7	10	16.4	45	75.0	13	21.6	2	3.4	.001**
<b>Known vitamin D sources</b>													
Fish	21	35.0	-	-	-	-	25	41.7	-	-	-	-	.048 <sup>Ns</sup>
Yolk	18	30.0	-	-	-	-	22	36.7	-	-	-	-	
Liver	21	35.0	-	-	-	-	7	11.6	-	-	-	-	
Cream	0	0.00	-	-	-	-	6	10.0	-	-	-	-	
Consume foods rich in vitamin B12	16	26.7	40	66.7	4	6.6	54	90.0	4	6.6	2	3.4	.001**
<b>Know vitamin B12 sources</b>													
Milk	24	40.0	-	-	-	-	28	46.6					.160 <sup>Ns</sup>
Eggs	10	16.7	-	-	-	-	10	16.7					
Liver	10	16.7	-	-	-	-	10	16.7					
Meat	16	26.6	-	-	-	-	12	20.0					
Consume canned foods	12	20.0	24	40.0	24	40.0	6	10.0	15	25.0	39	65.0	.047*
Consume vegetables	30	50.0	30	50.0	0	0	60	100.0	0	0	0	0	.001**
Consume foods rich in folic acid	7	11.6	50	83.4	3	5.0	54	90.0	3	5.0	3	5.0	.001**
<b>Sources of foods containing Folic acid</b>													
Lentil	10	16.6					5	8.4					.001**
Green vegetables	18	30.0					5	8.4					
Liver	5	8.4					0	0					
Seeds	12	20.0					12	20.0					
All of the above	15	25.0					38	63.4					
Drink 6 glasses and more of water	39	65.0	19	31.6	2	3.4	54	90.0	3	5.0	3	5.0	.007**
Drink Antioxidant (coffee-green tea)	7	11.6	23	38.4	30	50.0	12	20.0	39	65.0	9	15.0	.004**
Drink Alcohol	0	0	0	0	60	100.0	0	0	0	0.0	60	100.0	.247 <sup>ns</sup>
Extra Salt in food	24	40.0	29	48.4	7	11.6	3	5.0	30	50	27	45.0	.001**
Think his/her food is healthy	25	41.6	27	45.0	8	13.4	50	83.2	5	8.4	5	8.4	.001**

Note. Pearson chi-square (cross tabs test); \*\* = highly significance; Ns = Non significant difference ( $p$  value < .05)

#### 4. DISCUSSION

Vitiligo is considered a chronic disorder with variable response to treatment so nurses should encourage the patients for medical compliance and the need for dietary supplementation by vitamins D and B12, minerals, amino acids and enzymes.<sup>[12]</sup>

The present study found that regarding age; the mean  $\pm$  standard deviation of age was  $34.62 \pm 12.35$ ; this study result comes to some degree with the results by Daneshpazhooh et al.<sup>[13]</sup> who found that the mean age of vitiligo patients in their study was from 25 to 30 years old. While in a study that was conducted by Zhang et al.<sup>[14]</sup> entitled "The Prevalence

of Vitiligo: A Meta-Analysis" and included 82 population- or community-based studies and 22 hospital-based studies, they found that the disease was in the highest percent among patients less than 19 years old.

**Table 3.** Comparison between mean scores of dietary life style patterns for vitiligo patients' pre/post application of the dietary instructions (N = 60)

Dietary life style assessment	Pre	Post	p value
	Means ± SD	Means ± SD	
Dietary pattern	39.42 ± 2.65	42.98 ± 3.99	.002**

Note. Pearson chi-square (cross tabs test); \*\* = highly significance; Ns = Non significant difference (p value < .05)

Regarding gender; the present study does not have predominance for the disease in any of the males or the females' participants. This comes in agreement with the hospital based studies included in the Zhang et al.'s<sup>[14]</sup> study (4 to 4 prevalence rate in males and female) while it contradicts the Population or community-based studies included in the same study by Zhang et al.<sup>[14]</sup> as there was a predominance of the disease in the males than female population (30 in males and 18 in females).

The highest percentage of the studied patients was married and living in rural areas. This result is in accordance with Almomani et al.<sup>[15]</sup> who found that most of the affected patients with vitiligo were residing in rural regions. Also in the same line with Dolatshahi et al.<sup>[16]</sup> who found that most affected vitiligo patient were married.

Looking at level of education and income; the highest percentage of the studied was secondarily educated and having enough income. In my opinion this agrees with our country population as the majority of educated personnel are secondarily educated and most of our people live with the concept that whatever God gives is enough for them. This study result disagrees with the result by Boza et al.<sup>[17]</sup> who mentioned that the majority were low income.

The results of the present study revealed that; there was a statistically significant deference between pre and post application of the dietary instructions regarding dietary lifestyle pattern. This comes in agreement with Jalel et al.<sup>[18]</sup> who concluded that microelements such as selenium, copper, and zinc are essential in the diet or as supplements for vitiligo patients. It is preferable to take vitamin B12 along with folic

acid due to the considerable synergistic effects of the pairing. It was recommended that patients obtain these nutrients from vegetables and fruits.

Also in accordance with this result, Amala et al.<sup>[19]</sup> enforced the important role that diet plays an in the causation of the disease. Also they recommended the conduction of intensive comparative studies to establish the role of the diet as an exciting factor in the etiology of vitiligo.

In the same line with the present study results; Al-Shobaili<sup>[20]</sup> declared that dietary supplementation was believed to play an important role in therapy of vitiligo. But this disagreed with Ravish<sup>[21]</sup> who mentioned that; Diet is not considered very important in the treatment of vitiligo. However a healthy, balanced diet with nutrients from a variety of sources can be helpful in vitiligo treatment.

## 5. CONCLUSION

The present study concluded that, the dietary lifestyle modification was implemented for vitiligo patients over a period of eight months on 60 patients attending the Ultraviolet Unit of the dermatology department and the study revealed that patients with vitiligo lack in knowledge related to the diet that must be consumed in this condition, also there was a great improvement in the dietary lifestyle pattern of the studied sample after application of dietary instructions.

### 5.1 Recommendations

Replication of the study on a larger probability sample from different geographical locations for generalization of the results. Printing copies of the dietary instructions for dissemination among all vitiligo patients attending the dermatology ward for treatment or follow-ups. Nursing staff working with vitiligo patients must be trained to be highly knowledgeable in management of such patients and teaching patients all aspects of the lifestyle modifications (physical activity, dietary modifications, health improvement, psychological adaptation and stress management, social support, and self-concept improvement).

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### CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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