

Research Article

Prevalence of depigmentation of human skin (Vitiligo) with association to thyroid, gender, age and diet in population of Quetta, Pakistan

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Abstract

Vitiligo is a skin disorder in which white patches are appear on the skin. Vitiligo associated with some autoimmune factor like gender, diet, thyroid and age. Many patients of Vitiligo associated with thyroid disorder, this disease also involve in the Age and gender association as well as diet. This study has the purpose to know the vitiligo prevalence and association with autoimmune factor in the patients of Quetta. Study was conducted from Civil Hospital Quetta, in the guidance of skin specialist. Data consist of 104 patients of vitiligo. Data of vitiligo was conducted by the questionnaire. Questionnaires consist on the patient's history, investigation and treatment. Data of vitiligo patients was analyzed in Statistical Package for Social Sciences version 20 (SPSS-20) by using Chi-square test, to identify the vitiligo association with autoimmune factor like gender, age, diet and thyroid, mean of height and weight, family history and treatment. There is no significant association between vitiligo patients and autoimmune factor. But female was show high prevalence in gender, thyroid and diet. In vitiligo patients high prevalence of disease are in age of before the 30 years. Diet was not significant associated with vitiligo. 15.4% vitiligo patients associated with diet. 24.0% patients associated with thyroid. Mean height in females represented 4.10(ft) \pm 0.105 and in males mean height represented 4.07(ft) \pm 0.154, here Feet (ft) is the unit of height. Mean weight in females represented 42.60(kg) \pm 2.45 and in males mean weight represented 46.68(kg) \pm 3.31, here Kilogram (kg) is unit of weight. 77.9% vitiligo patients receive treatment of vitiligo, 4.80% vitiligo patients are not receiving any affect of vitiligo treatment, while 17.3% vitiligo patients not believe on vitiligo treatment. After a few years this

study will help to know; to understand the changes of vitiligo affect from the past to the future. After a while, we will know through the study that the disease has less or more association with the autoimmune factors, and by the comparison of this study result to the future study result we will know the changes in the prevalence of vitiligo and its association with autoimmune factors.

Keywords: Autoimmune; Factor; Melanin; Melanocytes; Vitiligo

Introduction

Vitiligo is a big skin disorder that affect many people in the world, 2% of world population is affected by vitiligo [1]. In vitiligo white patches are appear on the body. By the electron microscopy study of the tissue describe that vitiligo skin is differ from the normal skin because vitiligo skin has loss of melanocytes from the epidermis. Melanocytes are responsible for the production of skin pigment melanin. Vitiligo occur not only skin, but it also affect the eyes and hair follicles [2,3]. Vitiligo has two very important types: Non segmental vitiligo (NSV), it consist 90% of the cases from total cases of vitiligo. Segmental vitiligo (SV), in this type white patches increase in size and spread more rapidly than other types of vitiligo. For the diagnosis of vitiligo expert can use the woods light lamp and sound room [3]. Rate of vitiligo is very high in India as 3-4 % from their population [4]. Studies about vitiligo show that vitiligo is associated with many autoimmune disorders, like thyroid, age, gender, and diet [5]. Surveys concluded that vitiligo can be more affected to the woman in age of 17.3 years and in man affected age is 28.4 years [6]. Many thyroid patients suffer in vitiligo in adult age, but some studies showed that vitiligo more associated with thyroid in childhood [7]. Vitiligo affect both sexes there is no difference in between male and female prevalence, and not depend on any skin type or race [8, 9]. Diet plays an important role in skin health, loss of healthy diet produce depigmentation disease like vitiligo, acne and hypopigmentation [10]. Vitiligo can be treated by the particular medicine, gels and multi vitamins. However in many cases light therapy is very use full for the vitiligo

patients. Vitiligo partial average age was recorded about 22 to 30 by the examination in Northern East China. Study conducted by questionnaire from Seven Government Hospital in Northern East China from June 2007 to June 2008 [11]. Prevalence of vitiligo from 82 population based study was 0.2% patients, 22 hospital based study 1.8% patients. High rate of prevalence is found in females of South Africa [12].

Materials and methods

Study area

The study was conducted at dermatology department of Civil Hospital Quetta from October 2018 to February 2019.

Study size

104 patients were examined this study from the Civil Hospital Quetta. Study was conducted in the guidance of skin specialist on daily basis. Data was also carried out by the surveys of different vitiligo clinics.

Study collection tool

Data about vitiligo patients were recorded by questionnaire. Record consists on the patient history, investigation and given treatment.

Methods

Detail history and examination of vitiligo was carried out for study subject, including the patient's age, diet, gender, thyroid disorder, and investigative questions of vitiligo with patient's opinion on the medical chart that is prepare for investigation of treatment and prevalence of vitiligo.

Statistical analysis

Data of vitiligo patients was analyzed by the Statistical Package for Social Sciences (SPSS) version 20 for find out p-value (Probability value) of diet, age, gender, and thyroid disorder to determine their association with vitiligo. Statistical

comparison was performed by using Chi-square test. Data also present as Mean \pm SEM (Standard error of the mean) and percentage. For the analysis results, graphs drawn by using the excel.

Results

A total 104 patients examined from Civil Hospital Quetta. Study data shows the prevalence of vitiligo with associated factors age, thyroid, gender and diet. From total 104 patients of vitiligo 16(n) patients are associated with diet ("n" symbol of number of population), 25(n) patients were associated with thyroid. In gender 44(n) male and 60(n) female patients have vitiligo. In relation of age with vitiligo high prevalence of patients was before the age of 1-30 years.

To find out the significant p-value of age, diet, gender and thyroid disorder with vitiligo, using Chi-square test by SPSS version 20 (Table 1). Study concludes that there is no significant association of autoimmune factor age, diet, thyroid and gender with vitiligo. But vitiligo occurs in female more than male and mostly thyroid patients suffer in vitiligo disorder. Vitiligo patients have no specific age but mostly patients been 30 years old. Not more but some patients was affected with diet disorder (Table 1).

Baseline characteristics of study parameters

Women represented 57.69% (n=60) of study sample and men represented 42.31% (n=44) of total study samples (Table 2). Patients with in age range of 1-4 years represented 4.80% (n=5), patients with in age range of 5-15 years represented 21.2% (n=22), patients with in age range of 16-26 years represented 29.8% (n=31) patients with in age range of 27-37 years represented 26.9% (n=28), patients with in age range of 38-48 years represented 10.6% (n=11), patients with in age range 49-59 years represented 4.80% (n=5), patients with in age range 60-

70 years and 80-90 years represented 0.96% (n=1). 0.96% (n=1) respectively, patients with in age range above 90 is 0% (n=0) of total size of samples. Mean height (ft) \pm SEM of women equals to 4.10 ± 0.105 (n=60), here ft (Feet is represent the unit of height) and men mean height (ft) \pm SEM equal to 4.07 ± 0.154 (n=44). Mean weight (kg) \pm SEM of women equal to 42.60 ± 2.45 (n=60), here kg (Kilogram represented as unit of weight) and men mean weight (kg) \pm SEM equal to 46.68 ± 3.31 (n=44). Patients having duration period of vitiligo for 1 years represented 24.0% (n=25), patients having duration period of vitiligo for 1-5 years represented 32.7% (n=34), patients duration period for 6-10 years represented 24.0% (n=25), patients having vitiligo duration period 11-20 years represented as 13.5% (n=14), patients duration period for 21-30 years represented 5.77% (n=6) of total sample size. Patients having their opinion about vitiligo like mild, moderate and severe. Patients having mild vitiligo 30.8% (n=32), Patients of moderate vitiligo 35.6% (n=37) and severe vitiligo patients 33.7% (n=35) of total samples size. Patients having their opinion about vitiligo treatment as their improvement and believe. Patients not believe on vitiligo treatment represent 17.4% (n=18). Patients of vitiligo having no any affect of treatment represent as 4.80% (n=5). Patients having slight improvement 65.4% (n=68) and significant improvement represent 10.6% (n=11) (Table 2).

Thyroid disorder in Vitiligo patients

Vitiligo patients affected by autoimmune disease like thyroid disorder. Vitiligo patients were suffer in thyroid disorder were 24.0% (n=25), while non thyroid vitiligo patients were 75.9% (n=79) of total sample size (Fig. 1).

Diet Association with Vitiligo patients

Vitiligo patients were associated with diet factor 15.3% (n=16), while non associated vitiligo patients were 84.6% (n=88) of total

sample size (Fig. 2).

Vitiligo treatment

Vitiligo patients receiving treatment for white patches represented 77.9% (n= 81), patients that receive treatment for vitiligo

but having no any affect represented 4.80% (n=5), vitiligo patients not believe on any type of treatments for vitiligo were represented 17.4% (n= 18) from all sample size (Fig. 3).

Table 1. P-value of vitiligo relation with Gender, Diet, Thyroid and Age

Relation	p-value
Vitiligo Associated with Gender	0.454
Vitiligo Associated with Diet	0.448
Vitiligo Associated with Thyroid	0.442
Vitiligo Associated with Age	0.326

Table 2. Baseline characteristics of study parameters

	Women			Men			Total
	Mean ± SEM	n	%	Mean± SEM	n	%	n (%)
Gender	women	60	57.69	man	44	42.31	104 (100)
Age (years)							
1-4	.....	2	1.92	.....	3	2.89	5 (4.80)
5-15	.....	14	13.46	.....	8	7.7	22 (21.2)
16-26	.....	23	22.2	.....	8	7.7	31 (29.8)
27-37	.....	13	12.5	.....	15	14.5	28 (26.9)
38-48	.....	6	5.76	.....	5	4.80	11 (10.6)
49-59	.....	2	1.92	.....	3	2.89	5 (4.80)
60-70	.....	.....	.....	.....	1	0.97	1 (0.97)
70-80	.....	.....	.....	.....	1	0.97	1 (0.97)
Height (ft)	4.10 ±0.105	60	.....	4.07 ±0.154	44	.....	104
Weight(kg)	42.60 ±2.45	60	.....	46.68 ±3.31	44	.....	104
Duration of vitiligo (years)							
< 1	.....	11	10.5	.....	14	13.5	25 (24.0)
1-5	.....	19	18.3	.....	15	14.5	34 (32.7)
6-10	.....	19	18.3	.....	6	5.77	25 (24.0)
11-20	.....	8	7.7	.....	6	5.77	14 (13.5)
21-30	.....	3	2.89	.....	3	2.89	6 (5.77)
Patients Affected body							
Mild	.....	19	18.3	.....	13	12.5	32 (30.8)
Moderate	.....	25	24.03	.....	12	11.6	37 (35.6)
Severe	.....	16	15.4	.....	19	18.3	35 (33.7)

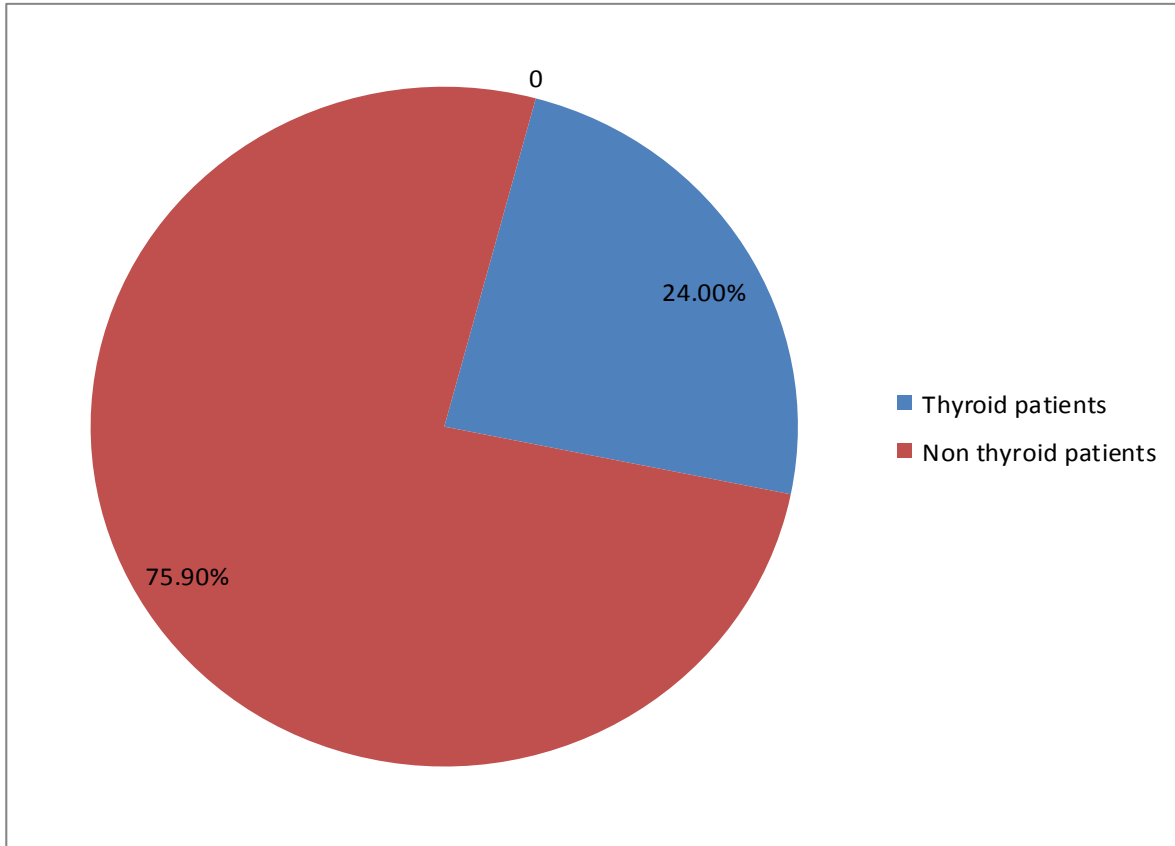


Figure 1. Thyroid disorder in vitiligo patients

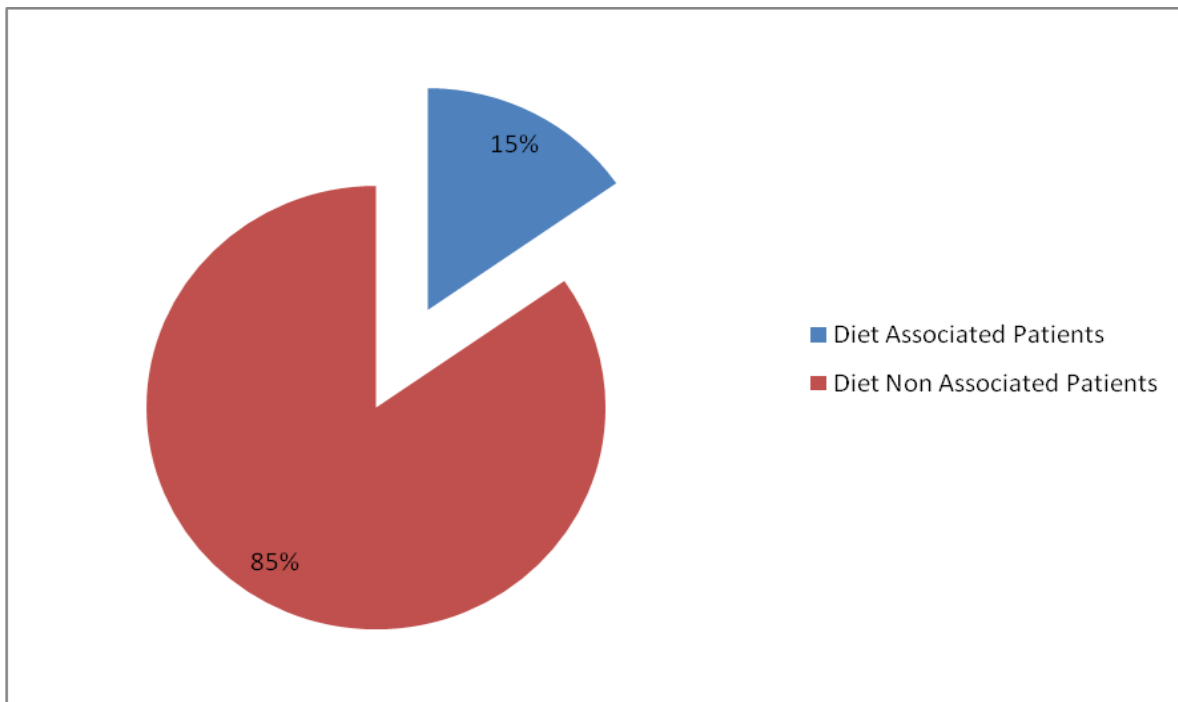


Figure 2. Diet interference with Vitiligo patients

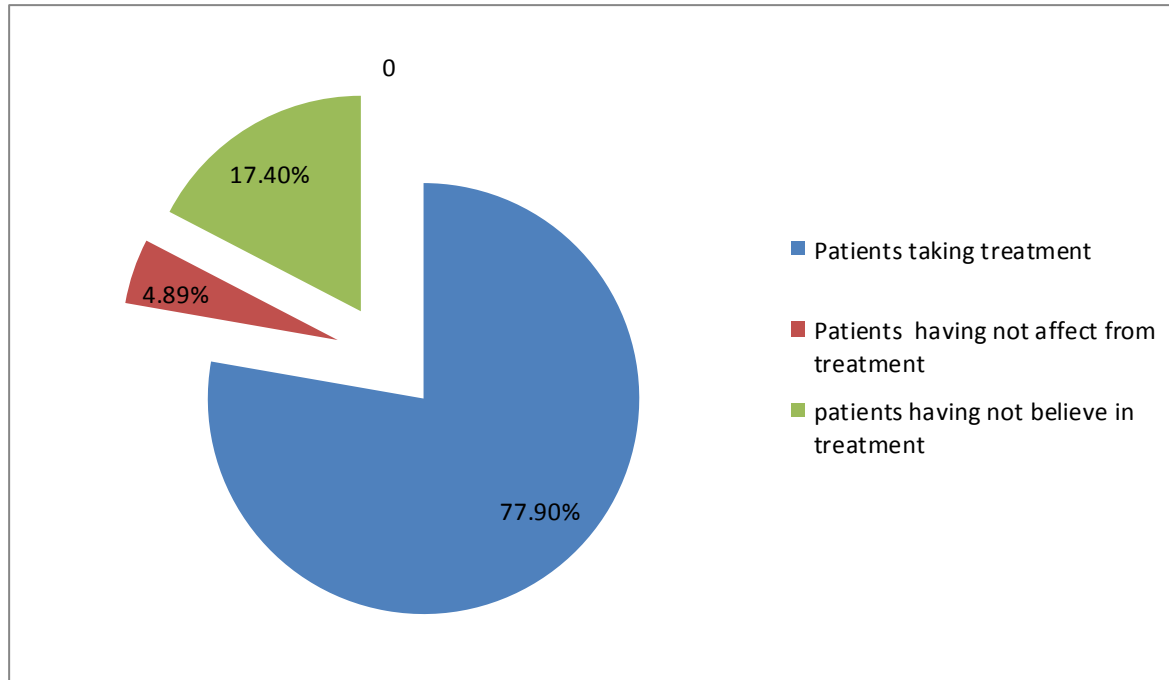


Figure 3. The prevalence of Vitiligo patients using treatment

Discussion

Vitiligo is a skin disorder [1] and from total population of Quetta 1.5% population affected by vitiligo. Vitiligo affected the world population about 2% [1]. Many previous studies show the association of vitiligo and autoimmune factors like thyroid, gender, age and diet. In this recent study total 104 patients of vitiligo were analyzed, Total (n=60) 57.69% patients were female and (n=44) 42.31% patients were male, same result obtained in this recent study like previous study [13]. Females show the high prevalence of vitiligo then male in Quetta city. Vitiligo disorder also associated with age, study show that vitiligo can occur mostly in age of 20 years. It mostly occurs at birth and highly appears in age of 20 [14]. The present study obtained the same result of research, Vitiligo prevalence is show high in the age from 1-30 years.

Vitiligo associated with thyroid by the study of previous research it found that in India vitiligo patients mostly suffer in thyroid as compare to non-vitiligo patients [5]. In this

study, result shows that recent study was some different from previous study [5]. In this present study 25 patients of vitiligo suffer in thyroid disorder from 104 patients of vitiligo. In this study few patients of vitiligo interfered by diet factors. Vitiligo has treatment like medicine, gel and powder etc. Vitiligo patients were treated by surgeries and medicines [15]. In this study same result is obtained, many patients of vitiligo take the treatment of vitiligo like vitamin, medicine and few of them use the gel and sun block to avoid the sun shine on affected skin area.

Conclusion

Study concluded that there is no significant association of autoimmune factors such as age, diet, thyroid and gender with vitiligo. But female shows high association with vitiligo in gender then male. Vitiligo Female also shows the high interference and association of diet, thyroid with strong family history. In age association many vitiligo patients belong to the age of 1-30 years. 30.8% of vitiligo patients suffer in

mild vitiligo, 35.6% of vitiligo patients suffer in moderate and 33.7% were suffer in severe vitiligo.

Authors' contributions

Conceived and designed the experiments: B Rasheed, N Rafiq & MK Taj, Performed the experiments: B Rasheed & S Noor, Analyzed the data: B Rasheed, N Tariq & H Rasheed, Contributed materials/ analysis/ tools: B Rasheed, H Rasheed & A Kakar, Wrote the paper: B Rasheed, A Ijaz, D Khatoon & MK Taj.

References

1. Vachiramom V, Onprasert W, Harnchoowong S & Chanprapaph K (2017). Prevalence and clinical characteristics of itch in vitiligo and its clinical significance. *BioMed Res Inter* 1-8.
2. Prčić S, Djuran V, Katanić D, Vlaški J & Gajinov Z (2011). Vitiligo and thyroid dysfunction in children and adolescents. *Acta Dermatovenerol Croat* 19(4): 248-54.
3. Lakhani DM & Deshpande AS (2014). Various treatments for vitiligo: Problems associated and solutions. *J of Appl Pharma Sci* 4(11); (2231-3354) 101-105.
4. Patil S, Gautam M, Nadkarni N, Saboo N, Godse K & Setia MS (2014). Gender differences in clinicoepidemiological features of vitiligo: a cross-sectional analysis. *ISRN Dermatol* 1-6.
5. Gopal KVT, Rao GR & Kumar YH (2014). Increased prevalence of thyroid dysfunction and diabetes mellitus in Indian vitiligo patients: A case-control study. *Indian Dermatol Online J* 5(4): 456.
6. Tsuboi H, Yonemoto K & Katsuoka K (2006). Vitiligo with inflammatory raised borders with hepatitis C virus infection. *The J of Dermatol* 33(8): 577-578.
7. Prčić S, Đuran V & Katanić D (2010). Vitiligo in Children and Adolescents: a Literature Review/Vitiligo kod dece i omladine-pregled literature. *Serbian J of Dermatol and Venerol* 2(3): 95-104.
8. Krüger C & Schallreuter KU (2012). A review of the worldwide prevalence of vitiligo in children/adolescents and adults. *Inter J of Dermatol* 51(10): 1206-1212.
9. Allam M & Riad H (2013). Concise review of recent studies in vitiligo. *Qatar Med J* 2:10.
10. Hanumanthappa H (2001). Diet in dermatology. *Indian J of Dermatol, Venereol and Leprol* 76(2): 103.
11. Mchepange UO, Gao XH, Liu YY, Liu YB, Ma L, Zhang L & Chen HD (2010). Vitiligo in North-Eastern China: an association between mucosal and acrofacial lesions. *Acta Dermato-Venerol* 90(2): 136-140.
12. Zhang Y, Cai Y, Shi M, Jiang S, Cui S, Wu Y & Chen HD (2016). The prevalence of vitiligo: a meta-analysis. *PloS One* 11(9):131-138.
13. Makpula A, & Aisa AT (2014). Depigmentation therapy for vitiligo. 6(7): 1-46.
14. Gawkrödger DJ (2008). Therapy Guidelines and Audit Subcommittee, British Association of Dermatologists; Clinical Standards Department, Royal College of Physicians of London; Cochrane Skin Group; Vitiligo Society. Guideline for the diagnosis and management of vitiligo. *Br J Dermatol* 159: 1051-1076.
15. Yaghoobi R, Omidian M & Bagherani N (2011). Vitiligo: a review of the published work. *The J of Dermatol* 38(5): 419-431.