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RESEARCH ARTICLE
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A STUDY OF CORRELATION BETWEEN THYROID DYSFUNCTION AND DYSLIPIDEMIA IN POSTMENOPAUSAL WOMAN AND EVALUATION OF DERMATOLOGICAL MANIFESTATION IN THESE PATIENTS

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ABSTRACT:
The thyroid is largest, superficial, most vascular and the earliest glands to develop. Hypothyroidism results from failure to maintain adequate level of thyroid hormone by thyroid gland because of some primary or secondary reasons, that is consistent with health. despite of the common occurrence of hypothyroidism and search of numerous thyroid function tests, hypothyroidism frequently remains undiagnosed. Hypothyroidism is difficult to diagnose in early stage. In such early cases it can be easily missed, thyroid function tests do help. The most important point is to keep high degree of suspicion for early diagnosis of thyroid disorders. The incidence of thyroid disorders, especially hypothyroidism is greater in women, and it has very bad effect on lipid profile, adding to the risk factor of atherosclerosis in post- menopausal women. This study is to demonstrate correlation between thyroid disorders and dyslipidemia and we also studied dermatological manifestations in postmenopausal women with dyslipidemia and thyroid disorder.

Key factor: Pro-atherosclerotic state, dyslipidemia, xanthelasma palpebraum, urticaria

INTRODUCTION:

The thyroid is the largest, most superficial and most vascular gland and one of the earliest glands to develop(1). Hypothyroidism results from failure to maintain adequate level of thyroid hormone that is consistent with health(2). In spite of common occurrence of hypothyroidism and search of numerous thyroid function tests, hypothyroidism frequently remains undiagnosed. Hypothyroidism is difficult to diagnose in early stage because of wide variety of clinical presentations many of which are nonspecific. In such early cases it can be easily missed, thyroid function tests do help. The most

important point is to keep high degree of suspicion for early diagnosis of hypothyroidism. The incidence of thyroid disorders, especially hypothyroidism is greater in women, keeping this in mind and the detrimental effect it has on the lipid profile, adding to the risk factor of atherosclerosis in post menopausal women, we have selected this subject of study of dyslipidemia in postmenopausal women suffering from hypothyroidism In our study we have taken 50 cases. we also studied dermatological manifestation in post-menopausal woman with dislipidemia and thyroid disorder. Thyroid function test and lipid profile was done in each case. All patients were treated with appropriate drug regimen.

Aims and Objectives:

1. To find the common clinical presentations and common clinical findings in post menopausal women suffering from thyroid dysfunction.
2. To study lipid profile in these postmenopausal female patients
3. To find correlation between thyroid dysfunction and dyslipidemia in these patients.
4. To find dermatological menifestations in these postmenopausal female patients.

Materials and method:

This study was done in b.j. medical collegeand CHA, Ahmedabad, Gujarat. Investigation done for evaluation are Thyroid profile, FBS and lipid profile.

Selection criteria and target population: Postmenopausal women.

Investigations: Weight and height for BMI, FBS to rule out diabetes, serum TSH, free T3, free T4, to identify and confirm thyroid disorder and serum lipid profile to diagnose and confirm dyslipidemia.

Sampling method:

50 patients selected by simple random sampling methods.

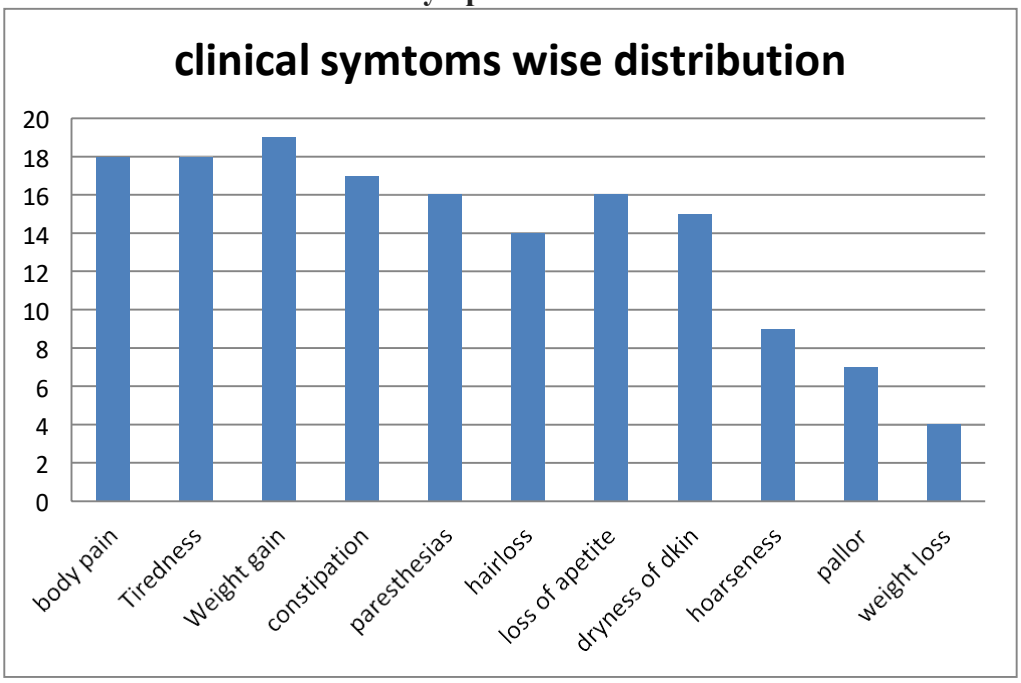
Result:

Table -1-BMI wise distribution[(3)]:

BMI	CASE (n=50)	Control(n=50)
<18	01(2%)	01(2%)
19-24	31(64%)	36(74%)
>24	18(34%)	13(24%)
Total	50(100%)	50(100%)
Mean BMI	24.11 $\pm$ 2.19	24.13$\pm$ 2.38
P Value	0.8399	

From the above table, due to BMI wise distribution it was found that mostly patients from Normal BMI (64% vs. 74%) while overweight (34% vs. 24%) in both thyroid dysfunction and normo thyroidism group respectively However, The mean BMI of both group 24.11 $\pm$ 2.19 kg/m2 while 24.13 $\pm$ 2.38 kg/m2 which was statistically non-significant (P=0.8399).Our study similarly by A Rastgooye et alwere BMI in thyroid dysfunction patients 23.77 $\pm$ 5.47 and normothyrodism patients have 24.4 $\pm$ 3.56 which was statistically non-significant ($p>0.05$)[(3)]. it was found that mostly patients Body pain followed by tiredness (41% vs. 37%) while Constipation and paresthesias in (36%) each of subclinical hypothyroidism respectively.

Chart:1 Clinical symptom's wise distribution [4]:



remaining symptoms of subclinical hypothyroidism of Hair loss (35%), Loss of Appetite (32%), Menstrual disturbance (32%), Dryness of skin (28%), Hoarseness (19%), pallor(12%) and weight loss(8%), respectively while similarly studied by

Shetty M et al where body pain was most common effective symptoms (29%) and weight gain 26.71%[4].But in contrast Majority of the study subjects did not have symptoms of thyroid enlargement.

Table-2 FBS wise distribution [5]:

FBS	CASE (n=50)	Control (n=50)
<120	43(88%)	45(92%)
>120	7(12%)	5(8%)
Total	50(100%)	50(100%)
Mean FBS	104.68±14.45	102.04±16.00
P value	0.2382	

In the present study, mean Fasting Blood Sugar was 104.68 ± 14.45 mg/dl in thyroid dysfunction patients and in normothyroidism group the mean was 102.04 ±16.00 mg/dl which was not statistically significant (p=0.0.2382).
Our study strongly correlates to other study such as N. Karthick et al, have FBS was 92.4±10.5mg/dl in subclinical hypothyroidism patients which was statistically non-significant with 90.4±9.2 mg/dl nomothyrodism patients. (p>0.05)

Table-3 Total cholesterol wise distribution [6]

Total cholesterol	Case (n=50)	Control(n=50)
<200 mg/dl	20(42%)	40(78%)
>200mg/dl	30(58%)	10(22%)
total	50(100%)	50(100%)
Mean tc	212.89±48.90	178.90±50.40
P value	<0.0001	

In the present study, mean Total Cholesterol was very high 212.89 ± 48.90 mg/dl in thyroid dysfunction patients than in normothyroidism group 179.90 ± 50.40 mg/dl which was statistically significant (p<0.0001).
Our study strongly correlates to other study such as SM Varghese et al have Total Cholesterol was 194.37 ± 49.49mg/dL in postmenopausal thyroid dysfunction which was highly statistically with 145.3 ± 22.1 mg/dl normothyrodism patients.(p<0.0001)

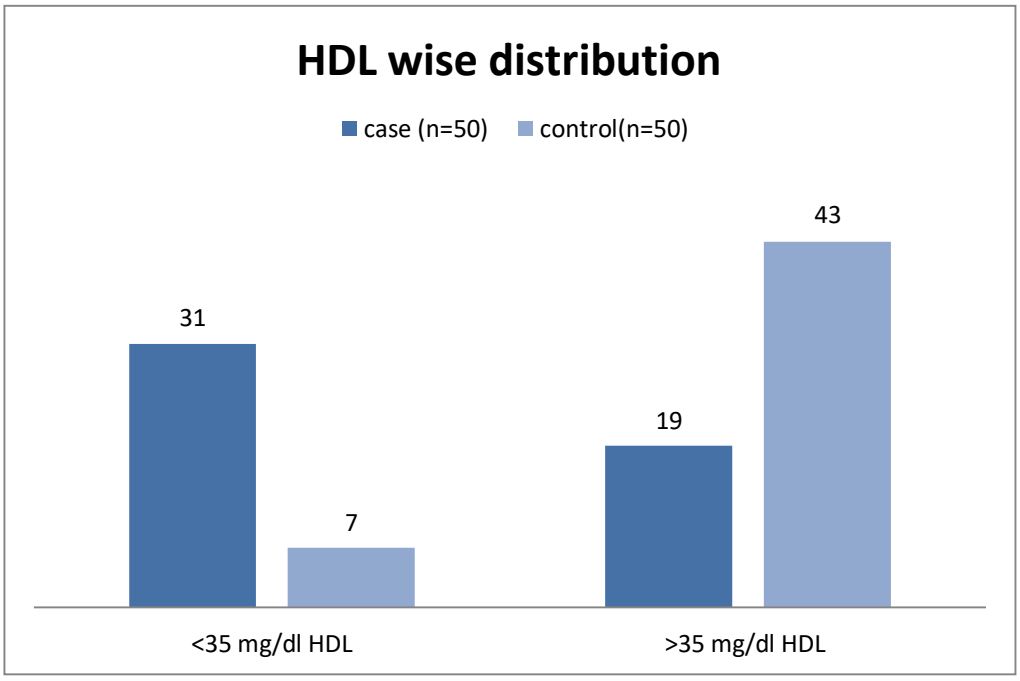
Table-4 Triglyceride wise distribution [7]:

Triglyceride	Case (n=50)	Control(n=50)
<150 mg/dl	22(46%)	39(80%)
>150 mg/dl	28(52%)	11(20%)
Total	50(100%)	50(100%)
Mean TG	190.86±94.32	126.8±51.50
P value	<0.0001	

In the present study, mean Triglyceride was 190.86 ± 94.32 mg/dl in thyroid dysfunction patients than normothyroidism group 126.8 ± 51.50 mg/dl which was statistically significant (p<0.0001)

Our study strongly correlates to other study such as SM Varghese et al have Triglyceride was 178.22 ± 439.22mg/dL in postmenopausal thyroid dysfunction which was highly statistically with 124.32 ± 36.22mg/dl normothyrodism patients. (p<0.0001)

Chart -2 HDL wise distribution [7]
The rise in HDL in hypothyroidism is because of reduction in the activity of cholesterol ester transfer protein and lipase of liver. This results in reduced transport of cholesterol esters from HDL-2 to very low-density lipoproteins (VLDL) and intermediate density lipoprotein (IDL).



in our study 31 cases had less than 35 mg/dl HDL and 19 cases with greater than 35 mg/dl HDL. Our study strongly correlates to other study such as SM Varghese et al have HDL as 39.13 ±1 1.25mg/dl in postmenopausal thyroid dysfunction which was highly statistically with 30.2 ± 6.2 g/dl normothyrodism patients.(p<0.0001)

Table-5: Thyroid dysfunction and dyslipidemia[5]

	T. Cholesterol (>200mg/dl)	Triglyceride (>150mg/dl)	HDL (<35mg/dl)	LDL (>100mg/dl)
Case(n=50)	30(58%)	28(52%)	31(64%)	29(58%)
Control(n=50)	10(22%)	11(20%)	7(12%)	12(24%)

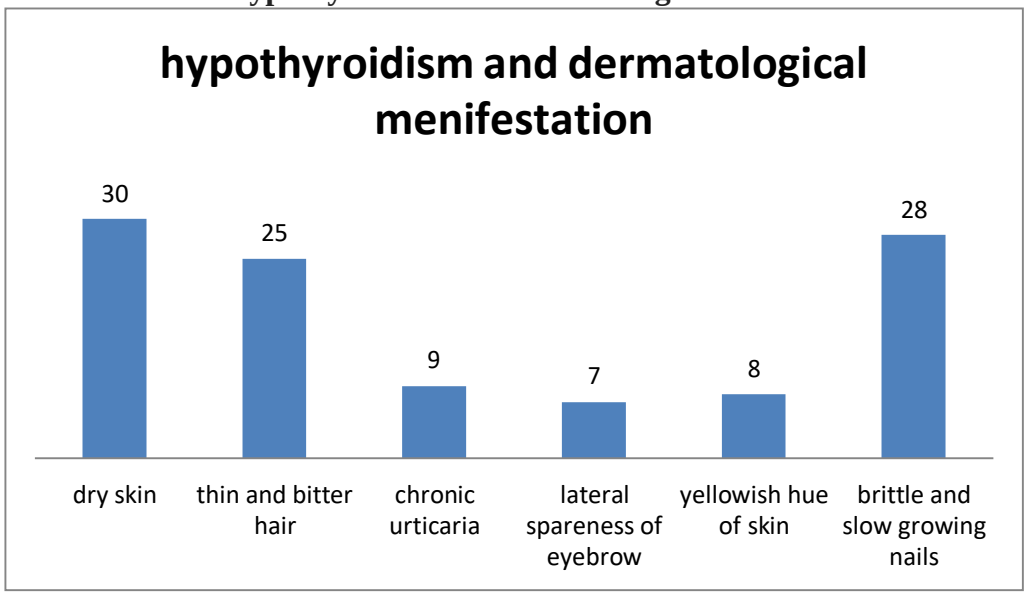
In the present study all the components of the lipid profile are altered in patients with thyroid dysfunction, as compared with euthyroid persons. This is consistent with all the previous studies.Our study strongly correlates to other study such as SM Varghese et al that showed that all the components of lipid profile were altered in postmenopausal women with thyroid dysfunction.

Table -6: comparison of hypothyroidism and hyperthyroidism with dyslipidemia[5].

Condition	No. of cases	Patients with dyslipidemia	Patients with normal lipid profile
Hypothyroidism	45	27(60%)	18(40%)
hyperthyroidism	5	2(40%)	3(60%)
Total	50	29(58%)	21(42%)

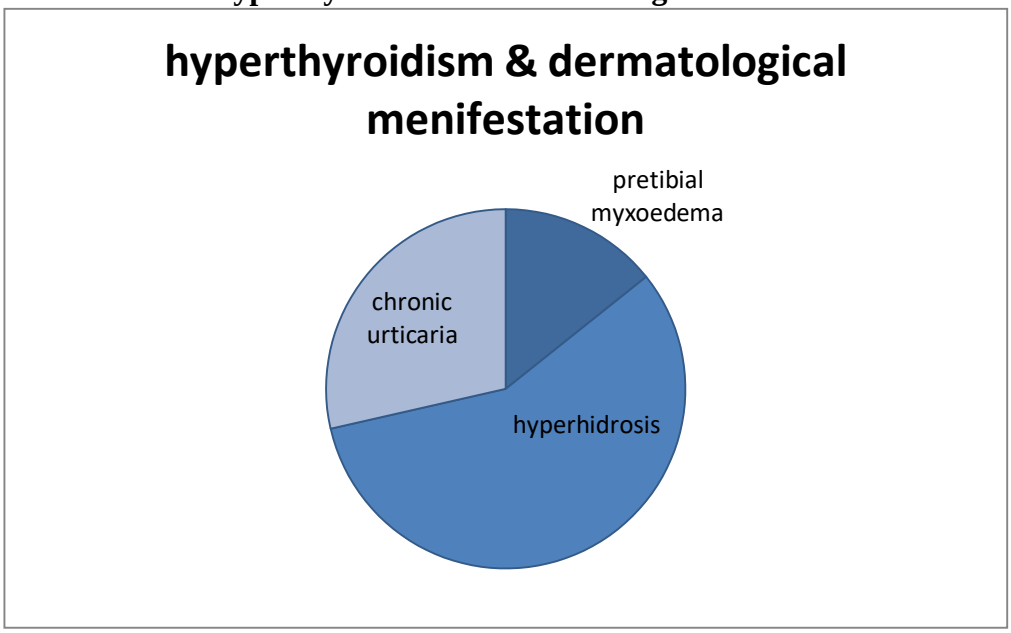
The above table states that 60 % (27) patients with postmenopausal hypothyroidism have dyslipidemia and 40% (2) patients with postmenopausal hyperthyroidism have dyslipidemia. So 2 out of 5 patients of hyperthyroidism are suffering from dyslipidemia. Although total no. of hyperthyroidism pateints are less but we can have an idea.
Therefore, postmenopausal women with hypothyroidism are at a greater risk of dyslipidemia and consequent proatherosclerosis, as compared to patients with hyperthyroidism of the same age group. The prevalence of dyslipidemia is more in postmenopausal women with hypothyroidism in comparison with postmenopausal females having hyperthyroidism.

Chart-3: hypothyroidism and dermatological manifestation:



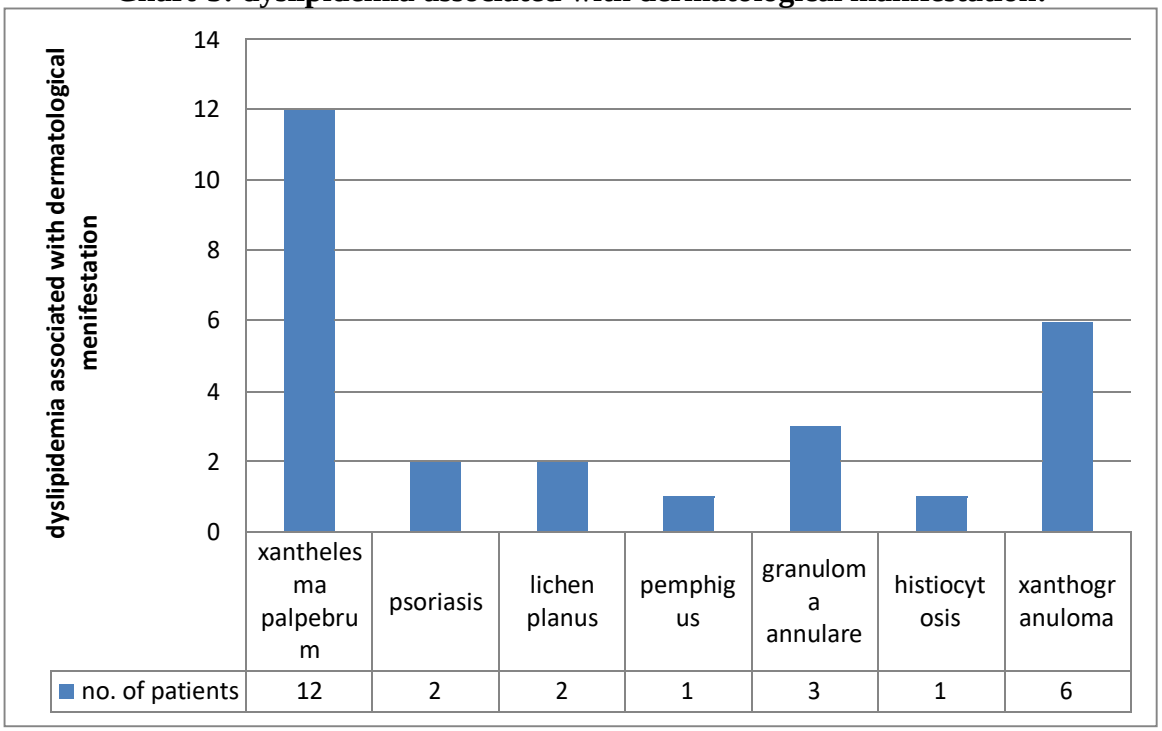
In our study, in majority of patients we found that 66% patient of hypothyroidism were having symtoms of dry skin 55% were having complains of thin & bitter hair and 62% were having complains of brittle and slow growing nails. So, these three symtoms are most common in patents of hypothyroidism. We also found that around 20% patients were having symtoms of urticaria , 15.5 % were having lateral sparseness of eyebrow and 17.7 % patients were having signs of yellowish hue of the skin.

Chart-4: hyperthyroidism and dermatological manifestation:



so according to our study incidence of hypothyroidism is more compared to hyperthyroidism. And among our 5 patients of hyperthyroidism 1 patient was having pre tibialmyxoedema, 4 patients were having hyperhidrosis and 2 patients were having chronic urticaria.

Chart-5: dyslipidemia associated with dermatological manifestation:



In this study around 30(58%) patients were diagnosed to have dislipidemia and among them xanthelesma is the most common dermatological manifestation found in 12(40%) patients. other dermatological manifestation like psoriasis, lichen planus , pemphigus , granuloma annulare, histiocytosis and xanthogranuloma were also present among these patients but their number are less in compared to xanthelesma. Xanthomas are firm and nontender cutaneous deposits of cholesterol esters enriched form cells and are most commonly observed in patients who has high level of LDL[8]

DISCUSSION:

- The BMI wise distribution it was found that mostly patients from Normal BMI (64% vs. 74%) while overweight (34% vs 24%) in both thyroid dysfunction and normothyroidism group respectively However, The mean BMI of both group 24.11 ± 2.19 kg/m2 while 24.13 ± 2.38 kg/m2 which was statistically non-significant (p=0.8399).
- Mostly patients Body pain followed by tiredness (41% vs. 37%) while Constipation and Paresthesias in (36%) each of subclinical hypothyroidism respectively. Remaining symptoms of subclinical hypothyroidism of Hair loss (35%), Loss of Appetite (32%), Menstrual disturbance (32%), Dryness of skin (28%), and Hoarseness (19%) respectively.
- Fasting Blood Sugar was very 104.68 ± 14.45 mg/dl to thyroid dysfunction patients then normothyroidism patients 102.04 ± 16.00 mg/dl which was not statistically significant (p=0.2382)
- Total Cholesterol was very highly 212.89 ± 48.90 to thyroid dysfunction patients then normothyroidism patients 178.90 ± 50.40 mg/dI which was statistically significant (p<0.0001)
- Triglyceride was very 190.86 ± 95.32 mg/dl to thyroid dysfunction patients then normothyroidism patients 126.8 ± 51.50 mg/dl which was statistically significant p<0.0001).
- HDL was very low 36.96 ± 6.46 mg/dl to thyroid dysfunction patients then Euthyroid patients 45.44 ± 6.44 mg/dl which was statistically significant (p<0.0001).
- LDL was very high 114.38 ± 29.05 mg/dl to thyroid dysfunction patients then normothyroidism patients 90.96 ± 23.58 mg/dl which was statistically significant (p<0.0001).
- 60% patients of hypothyroidism are suffering from dyslipidemia and 2 out of 5 hyperthyroid patients are suffering from dyslipidemia.
- So postmenapausal women with hypothyroidism are more prone to develop dyslipidemia and its consequent atherosclerosis as compared to hyperthyroid patient.
- 66% patient of hypothyroidism were having symtoms of dry skin, 62% were having complains of brittle and slow growing nails and 55% were having complains of thin & bitter hair. So these three symtoms are most common in patents of hypothyroidism and among them dry skin was the commonest syntom.
- Pretibial myxoedema is less common and we found in 1 patient of hyperthyroidism and chronic urticaria is more common in hyperthyroid patient in our study. And hyperhydrosis is the commonest symptom in hyperthyroid patient as 80% of our patents were having hyperhydrosis.
- Patients with dislipidemia were having different dermatological findings but among them xenthelesma palpabrum was the commonest (40%) followed by xenthogranuloma(20%) and granuloma annulare(16.66%). And pemphigus(3.33%) and histiocytosis (3.33%)are the least common among these patients.

CONCLUSION:

- The widespread presence of iodine deficiency may contribute to an increasein the prevalence of thyroid dysfunctions. Quality of life is affected in these patients due to the significant influence of thyroid hormones on metabolic, cardiovascular and neurological function.
- Patients with hyroid dysfunction cannot be identified based on clinical symptoms alone. Clinical sysmptom and laboratory assessment of thyroid iunction must be performed concurrently to determine the presence of thyroid dysfunction.
- Early diagnosis of thyroid dysfunction and associated dyslipidemia is essential for timely medical intervention, reversal of dyslipidemia and associated proatherosclerotic state.
- Thyroid disorders and dyslipidemia are rensposible for skin disorders and compromise quality of life in these post menopausal womens.
- On Time diagnosis of thyroid disorders and dyslipidemia and treatment of these diseases can improve quality of life and can prevent development of dermatological manifestation and thus it can prevent unnecessary expenses in lower socioeconomical class population.
- This is a small scale study, a larger study is required for

confirmation of results obtained in the study.

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