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The Effect of Toxic Thyroid Gland on Women Who Suffer from it in Reproductive Age

Faeza A Fakhry*

University of AL-Nahrain, Health Center, Iraq

Abstract

Thyroid disease is a common condition in the reproductive medicine setting due to the complex interplay between the hypothalamo-pituitary axis and the thyroid gland. Abnormalities in thyroid function, including hyperthyroidism and hypothyroidism, can have an adverse effect on reproductive health and result in reduced rates of conception, increased early pregnancy loss, and adverse pregnancy and neonatal outcomes. There is increasing evidence for the role of autoantibody in sub fertility and early pregnancy loss, even in euthyroid women. Evidence suggests that treating thyroid disorders and keeping thyroid-stimulating hormone levels at the lower end of normal in euthyroid women may improve conception rates in sub fertile women and reduce early pregnancy loss.The main objective of this study is to assess the toxic thyroid gland on women's reproductive health, to identify the toxic thyroid gland upon women in reproductive age.

Keywords: Effect; Toxic Thyroid Gland; Women; Reproductive Age

Correspondence to: Faeza A Fakhry. University of AL-Nahrain, Health Center, Baghdad, Iraq; E-mail: faezaadel62@gmail.com

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Introduction

The thyroid is a common pathological condition that affects the reproductive system of women due to complex interactions between the pituitary and thyroid gland. Abnormalities in thyroid function, including hyperthyroidism and hypothyroidism, can have an adverse effect on reproductive health and result in reduced rates of conception, increased early pregnancy loss, and adverse pregnancy and neonatal outcomes, the overactive and insufficient gland activity1during pregnancy causes problems for both mother and child [1]. Thyroid disease is the second most common endocrine disorder after diabetes in pregnancy. Research has shown that thyroid Volume increases by 10% in enough quantities, and approximately 20-40% increases in countries with iodine deficiency. Thyroid hormone production increases by about 50% during pregnancy and with a total increase of daily iodine requirements [2]. Thyroid hormones are essential for the early stages of development, and in addition the play a role in maintaining normal pregnancy and the development of the fetus, particularly its brain [3]. There is potential problems in the case of thyroid dysfunction, which are the responsibility of the child, which include pre-eclampsia, prematurity and congenital abnormality [4]. Age-related physiological changes in the thyroid functions in the elderly. The most common of these changes is hypothyroidism. If the risks and complications are not treated, signs of these changes appear, including hyperthyroidism and hypothyroidism, nodules, and thyroid cancers [5]. Age of older women with hyperthyroidism the symptoms are like two-thirds of those of younger women: tremors, anxiety, palpitations, weight loss and heat intolerance [6]. Symptoms and signs of older women, such as fatigue, weakness, constipation, dry skin and cold intolerance, is like symptoms of hypothyroidism it may be misdiagnosed due to other diseases or side effects of some medicines [7].

Methodology

The subject of the study was to take 100 samples of woman for reproductive age between 15-45 years by designing questionnaire forms dealing with several aspects of toxic thyroid gland. And its impact on women in the consulting clinic of AL- Alwiya Teaching hospital and Medical city hospital to give her an educational program to follow the correct scientific advice. The questionnaire form was consisting of4 main parts: Demographic characteristics, Reproductive health sides, Laboratory side and Disorder sides. The data were collected by using interview method and self-report techniques with study participants. The data were collected by using interview method and self-report techniques with study participants after obtaining permission from each of them according to the inclusion criteria. Descriptive Statistics: frequencies, percentages, association tables, and inferential statistics, such that [Chi-Square test for testing the independency, Binomial test for testing two categories nominal scale, statistical hypothesis based on C.C.) Contingency's Coefficient test.

Statistical Analysis Methods

Statistical data analysis approaches were used in order to analyze and assess results of this study which classified in two parts, descriptive statistics, such that tables observed frequencies, percentages, association tables, and inferential statistics, such that [Chi-Square test for testing the independency, Binomial test for testing two categories nominal scale, statistical hypothesis based on (C.C.) Contingency's Coefficient test.

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Results and Discussion

The study showed that the highest percentage 85% at age group 25–45years (Table 1),8 5% years of marriage are ranging between <5-14 years (Table 1), 84% low educated levels concerning studied women for those who graduated up to intermediate school, (6%) are working concerning of studied morbid women, 83% their socio-economic level were low (Table 1).

The highest percentage 55% for the ratio of the number of pregnancies to the group (Table 2), 40% for number of living children, 52% for number of stillbirths who had applicable are focused at only one, 61% for menstrual irregularity (Table 2), 75% who had high and moderate menstrual amount (Table 2),15% who assigned having abnormal fetal weight, 10%who are assigned given birth to a child with fetal birth defect, 32% who are assigned of having high blood pressure & preeclampsia during pregnancy, 18% who are assigned problems with placenta and caused bleeding during pregnancy, 22% who are assigned of having postpartum uterine bleeding, 18% who are assigned of given birth to a handicapped child in neural and cognitive development (Table 2).

86% "Have you performed the T3, T4, and TSH" (Table 3), 53% of studied subjects were registered high level of analysis preceding tests,

Table 1: Descriptive Statistics of Socio-Demographical Characteristics variables for studied women.

SDCv.	Groups	No.	Cum. Percent
Women's age	15	3	3
	20	12	15
	25	18	33
	30	12	45
	35	23	68
	40-45	32	100
	Mean ± SD	34.01 ± 7.77	
Marriage years	< 5	28	23.3
	5-9	43	59.2
	10-14	34	87.5
	15 >	15	100
	Mean ± SD	14.06 ± 7.86	
Educational level for Husband	Illiterate	7	7
	Read write	21	28
	Primary	29	57
	Intermediate	20	77
	Secondary	11	88
	Diploma or Bachelor's	11	99
	Master or Ph.D	1	100
Educational level for wife	Illiterate	11	11
	Read write	18	29
	Primary	38	67
	Intermediate	17	84
	Secondary	9	93
	Diploma or Bachelor's	7	100
Occupation for Husband	Working	96	96
	Non work	4	100
Occupation for wife	Working	6	6
	Housekeeper	94	100
Residency	Urban	69	69
	Rural	31	100
Socio-Economic Status	Low	83	83
	Moderate	17	100
	High	0	100

Table 2: Distribution of reproductive health sides with comparisons significant.

Reproductive Health Sides	Groups	No.	Cum. Percent	C.S. (*) P-value
Number of pregnancies	**Non-Applicable**	8	8.0	$\chi^2 = 3.563$ P=0.312 (NS)
	1-2	19	27.0	
	3-4	27	54. 0	
	5-6	28	82. 0	
	≥ 7	18	100. 0	
Number of abortions	**Non**	51	51	$\chi^2 = 52.204$ P=0.000 (HS)
	1-2	40	91	
	3-4	7	98	
	≥ 5	2	100	
Number of living children	**Non-Applicable**	13	13	$\chi^2 = 19.989$ P=0.000 (HS)
	1-2	29	42	
	3-4	33	75	
	5-6	19	94	
	≥ 7	6	100	
Number of stillbirths	**Non-Applicable**	13	13	$\chi^2 = 113.54$ P=0.000 (HS)
	0	70	83	
	1	15	98	
	2	2	100	
Menstrual regularity	**Regular**	39	39	$\chi^2 = 22.733$ P=0.000 (HS)
	Irregular	61	100	
Menstrual amount	**Large**	41	41	$\chi^2 = 35.280$ P=0.000 (HS)
	Moderate	34	75	
	Little	25	100	
Normal or abnormal fetal weight?	**Non-Applicable**	13	13	$\chi^2 = 22.733$ P=0.000 (HS)
	Normal	72	85	
	Abnormal	15	100	
Have you given birth to a child with fetal birth defect?	**Non-Applicable**	13	13	P=0.000 (HS)
	Yes	10	23	
	No	77	100	
Have you experienced high blood pressure during pregnancy?	**Non-Applicable**	13	13	P=0.008 (HS)
	Yes	32	45	
	No	55	100	
Have you experienced preeclampsia?	**Non-Applicable**	13	13	P=0.000 (HS)
	Yes	4	17	
	No	83	100	
Have you had problems with the placenta and caused you bleeding during pregnancy?	**Non-Applicable**	13	13	P=0.000 (HS)
	Yes	18	31	
	No	69	100	
Have you experienced postpartum uterine bleeding?	**Non-Applicable**	13	13	P=0.000 (HS)
	Yes	22	35	
	No	65	100	
Have you given birth to a handicapped child in neural and cognitive development?	**Non-Applicable**	13	13	P=0.000 (HS)
	Yes	18	31	
	No	69	100	

Where: (*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non-Sig. at P>0.05; Testing based on One-Sample Chi-Square test, and Binomial test.

63% of studied subjects are doing sonar examination for the thyroid gland, among them were only 6 and 9.5% had a positive result, 44% of suited subjects were overweight, 42% of them were under weight, 96% of studied patients were recorded high rapid heartbeat (Table 3).

Relative to subject "Women's Age", studied sample are focused

Table 3: Distribution of studied laboratory sides with comparisons significant.

Laboratory Sides	Groups	No.	Cum. Percent	C.S. (*) P-value
Have you performed the T3, T4, and TSH?	Yes	86	86	P=0.000 (HS)
	No	14	100	
If yes, was the result of the analysis low, high, or normal?	Non-Applicable	14	14	χ^2 = 38.673 P=0.000 (HS)
	Low	27	41	
	High	53	94	
	Normal	6	100	
Have you done a sonar examination for the thyroid gland?	Yes	63	63	P=0.012 (S)
	No	37	100	
If yes, was the test positive or negative?	Non-Applicable	37	37	χ^2 = 16.880 P=0.000 (HS)
	Pos.	6	43	
	Neg.	57	100	
Are you overweight or underweight?	Overweight	44	44	χ^2 = 22.733 P=0.000 (HS)
	Under weight	42	86	
	Normal weight	14	100	
Do you have a slow or rapid heartbeat?	Low	1	1	χ^2 = 176.78 P=0.000 (HS)
	High	96	97	
	Normal	3	100	

Where: (*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non-Sig. at P>0.05; Testing based on One-Sample Chi-Square test, and Binomial test.

Table 4: Summary Statistics and distribution of disease's impact on the studied patents with comparisons significant.

Impact of the disease	Resp.	No.	%	MS	SD	RS	C.S. (*)
Do you feel very tired in the body?	Yes	97	97	1.03	0.17	0.97 H	P=0.000 HS
	No	3	3				
Do you feel cold, dry skin or puffiness in the face?	Yes	86	86	1.14	0.35	0.86 H	P=0.000 HS
	No	14	14				
Do you feel sweating and intolerance of heat?	Yes	96	96	1.04	0.20	0.96 H	P=0.000 HS
	No	4	4				
Do you feel palpitation and heart tremors?	Yes	94	94	1.06	0.24	0.94 H	P=0.000 HS
	No	6	6				
Do you suffer from insomnia?	Yes	92	92	1.08	0.27	0.92 H	P=0.000 HS
	No	8	8				
Do you suffer from constipation?	Yes	68	68	1.32	0.47	0.68 H	P=0.000 HS
	No	32	32				
Do you suffer from eye disorder?	Yes	84	84	1.16	0.37	0.84 H	P=0.000 HS
	No	16	16				
Do you suffer from depression?	Yes	90	90	1.10	0.30	0.90 H	P=0.003 HS
	No	10	10				
Do you suffer from a failure in perception and lack of focus?	Yes	86	86	1.14	0.35	0.86 H	P=0.000 HS
	No	14	14				
Have you been fainted?	Yes	49	49	1.51	0.50	0.49 M	P=0.920 NS
	No	51	51				
Do you have osteoporosis?	Yes	76	76	1.24	0.43	0.76 H	P=0.000 HS
	No	24	24				
Do you suffer from heart disease?	Yes	43	43	1.57	0.50	0.43 M	P=0.194 NS
	No	57	57				
Do you have immune system disorders?	Yes	72	72	1.28	0.45	0.72 H	P=0.000 HS
	No	28	28				

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non-Sig. at P>0.05; Evaluation Grades [High: H; Moderate: M; Low: L]; Testing based on Binomial test.

at the elderly age groups, bounded (25-45) years, and they are accounted 85(85%) with mean and standard deviation 34.01, and 7.77 yrs. respectively, then followed by subject of "Marriage years", which shows that studied sample are focused at the first three groups, bounded (<5-14) yrs., and they are accounted 85(85%) with mean and standard deviation 14.06, and 7.86 yrs. respectively. Levels of education

Table 5: Distribution of an overall disorder sides with Comparisons Significant.

Main Domain	No.	GMS	PSD	Evaluation Grade (*)
Disorder Sides	100	1.29	0.16	0.71 H

(*) Evaluation Grades [High: H; Moderate: M; Low: L].

Table 6: Relationships between an overall evaluation of disorder sides, and SDCv. of studied subjects.

SDCv.	Disorder Sides	
	C.C.	P-value
Women Age	0.201	0.519 (NS)
Marriage years	0.387	0.093 (NS)
Educational level of wife	0.158	0.769 (NS)
Occupation for wife	0.029	0.769 (NS)
Residency	0.128	0.197 (NS)
Socio-Economic Status	0.089	0.374 (NS)

(*) S:Sig. at P<0.05; NS:No Sig. at P>0.05; Statistical hypothesis based on (C.C.) Contingency's Coefficient test.

concerning husband shows that most of them has low educated levels, since cumulative percent are accounted 77(77%) for those who graduated intermediate school, as well as result shows low educated levels concerning studied women, since the cumulative percent are accounted 84(84%) for those who graduated up to intermediate school. Most of studied husband are reported working status, and they are accounted 96(96%), while only 6(6%) are working concerning of studied morbid women. In addition to that, studied cases which were selected from urban residents recorded 69 (69%). Finally, result shows that "Socio-Economic Status" accounted through applying of WHO instrument, which consists of several components such that, occupation, education levels, crowding index, and a particular property (House ownership, possession car, available of specific requisite materials). Three social and economic levels represented by the preceding contents (Low, Moderate, and High). Vast majority of studied sample had low evaluated, and they accounted 83(83%), and the leftover had moderate, and accounted 17 (17%).

The shows observed frequencies, cumulative percentages of studied "Reproductive Health Side", such that "Number of pregnancies, Number of abortions, Number of living children, Number of stillbirths, Menstrual regularity, Menstrual amount, as well as asking about: Normal or abnormal fetal weight ?, Have you given birth to a child with fetal birth defect ?, Have you experienced high blood pressure during pregnancy ?, Have you experienced preeclampsia ?, Have you had problems with the placenta and caused you bleeding during pregnancy ?, Have you experienced postpartum uterine bleeding ?, and Have you given birth to a handicapped child in neural and cognitive development ?", with comparisons significant, to explore behavior of studied reproductive health sides either they are randomly or none randomly distributed comparing with their an expected outcomes, which showed significant differences at P<0.01, except the number of pregnancies, since no significant different at P>0.05 are accounted between the observed frequencies distribution in light of their expected distribution.

Relative to subject of "Number of pregnancies", studied sample are focused mostly at the second, and third groups, and they are accounted 55(55%). Results shows that "Number of Abortions", recorded vast majority with who had one or two times, and they accounted 40(40%). Number of living children are focused mainly at the second, and third groups, and they are accounted 52(52%), then followed by the number of stillbirths for who had applicable are focused at only one and are

accounted 15(15%). menstrual irregularity from a total sample formed 61(61%). Among studied sample, 75(75%) who had high and moderate menstrual amount, and who assigned having abnormal fetal weight are 15(15%). 10(10%) percent who are assigned given birth to a child with fetal birth defect. 32(32%) percent who are assigned of having high blood pressure during pregnancy. 32(32%) percent who are assigned of having preeclampsia. 18(18%) percent who are assigned problems with placenta and caused bleeding during pregnancy. 22(22%) percent who are assigned of having postpartum uterine bleeding. 18(18%) percent who are assigned of given birth to a handicapped child in neural and cognitive development.

Table 3 shows observed frequencies, cumulative percentages of studied " Laboratory Sides", through asking several equations, such that " Have you performed the T3, T4, and TSH ?, If yes, was the result of the analysis low, high, or normal ?, Have you done a sonar examination for the thyroid gland ?, If yes, was the test positive or negative ?, Are you overweight or underweight ?, and Do you have a slow or rapid heartbeat ?" with comparisons significant, to explore behavior of studied reproductive health sides either they are randomly or none randomly distributed comparing with their an expected outcomes, which showed significant differences at P<0.01, except of asking about doing a sonar examination for the thyroid gland, since significant different at P<0.05 are accounted between the observed frequencies distribution in light of their an expected distribution.

Relative to subject of asking "Have you performed the T3, T4, and TSH", 86(86%) their answers came in the affirmative. 53(53%) of studied subjects were registered high level of analysis preceding tests. 63(63%) of studied subjects are doing sonar examination for the thyroid gland, and among them were only 6(9.5%) had a positive result. 44(44%) of suited subjects were overweight, and 42(42%) of them were under weight. 96(96%) of studied patients were recorded high rapid heartbeat.

Table 4 shows the descriptive statistics regarding impact of diseased on the studied of pregnant women which consist 15 items, such that "Frequencies, and percentages, Mean of score, Standard deviation, Relative sufficiency", as well as comparisons significant.

Results indicated highly significant differences are accounted at P<0.01 among observed frequencies in contrasts of the Iran expected outcomes under assumption of randomly distribution except of items of asking about having fainted, and suffering from heart disease, since no significant different are accounted at P>0.05.

Table 5 shows the descriptive statistics regarding an overall evaluation of disorder sides, and personal style side, according to studied items in admixed form, such that "grand mean of score (GMS), pooled standard deviation (PSD), and evaluated grade".

Results indicated that highly evaluation are accounted for disorder sides, and according to that it could be conclude that studied subjects are suffered resulted due to their thyroid gland morbidity.

To find out relationships for an overall evaluation of disorder side, and SDCv. concerning studied women, table (6) consists of a contingency coefficient and their significant levels.

Results shows that relationships between overall evaluations of medical information, and SDCv. are reported no significant at P>0.05, and accordance with preceding results, it could be concluding that studied questionnaire concerning disorder sides of woman could be generalize on the studied population even though differences with studied subjects of socio-demographical characteristics variables. Mohlin E, et al. (2013), found that there is no age or gender relationship in diagnosing toxic thyroid disease[8]. Krassas GE et al. (2005), stated that the overactive thyroid gland leads to menstrual disturbances, hormones, and nutritional, and therefore cause disorder in the menstrual cycle[9]. Benhadi N, et al. (2009), found that if the TSH exceeds the normal level for a pregnant woman, the risk of miscarriages, fetal and neonatal distress and preterm delivery [10]. Klein I, et al.(2001), found that hypothyroidism has direct impact on cardiovascular muscle function, for example in case of atherosclerosis, hypothyroidism is associated with a relationship in the level of serum blood lipids [11]. Lin L, et al. (2014), reported that there are antibodies to the thyroid gland that affect the association between reproductive deficiency and the results of abnormal immunological tests [12]. These tests include nuclear antibodies and the autoimmune body parts. Maitra A, et al. (2010), Costanzo LS (2010), Hampton J (2013), those are found that the less common causes in case of hyper functional (or toxic) adenoma, toxic multinodular goiter, thyroid malignancy, increased TSH from pituitary adenoma (secondary hyperparathyroidism), increased TRH (tertiary hyperparathyroidism), exogenous thyroid hormone ingestion, or thyroid damage from amiodarone toxicity, radiation, or trauma, these cause are very low [13-15]. The most common signs and symptoms in the case of hyperthyroidism include weight loss, irritability, nervousness, heat intolerance, sweating, skin flushing, tremor, and hyperreflexia. John H (2011), stated that some women who have an increase in TSH hormone lead to hypothyroidism by 5% and gives negative results to the fetus and childbirth in mothers during pregnancy, and studies indicate the prevalence of hypothyroidism clinically in women who give birth 32 weeks ago, and there is an autoimmune relationship for the thyroid gland and the harmful consequences of childbirth so that it is independent of thyroid function [16].

Conclusion

Various recent studies have shown an impairment of thyroid function during pregnancy due to hormonal changes and metabolic processes. Proper diagnosis, care and treatment of hypothyroidism for pre-pregnancy reduces the risk of complications that affect the mother and fetus for long periods, more than three fourth of the study samples their age group (25-45) years, more than three fourth years of marriage are ranging between (<5-14) years, more than three fourth are low educated levels concerning studied women for those who graduated up to intermediate school, more than three fourth their socio-economic level were low, more than half of study sample for the ratio of the number of pregnancies to the group, more than third of study sample for number of living children, more than half of study sample for number of stillbirths who had applicable is focused at only one, more than two third of study sample for menstrual irregularity, three fourth of study sample who had high and moderate menstrual amount, less than quarter who assigned having abnormal fetal weight, less than quarters who are assigned given birth to a child with fetal birth defect, more than third who are assigned of having high blood pressure &preeclampsia during pregnancy, less than quarter who is assigned problems with placenta and caused bleeding during pregnancy, less than quarter who is assigned of having postpartum uterine bleeding, less than quarter who are assigned of given birth to a handicapped child in neural and cognitive development, more than three fourth of study sample that performed the T3, T4, and TSH, more than half of study sample were registered high level of analysis preceding tests, more than two third of study samples are doing sonar examination for the thyroid gland, less than half of suited subjects were overweight, less than half

of study sample were under weight, more than three fourth of study sample were recorded high rapid heartbeat.

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