

Prevalence of hypothyroidism among Libyan pregnant women in Benghazi

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Abstract

Hypothyroidism is a common endocrine disorder resulting from deficiency of thyroid hormone or its effects on peripheral tissues. Previous hospital based study have revealed high prevalence of hypothyroidism in pregnant women. Also, studies with small sample size indicated a rising trend of prevalence of hypothyroidism during pregnancy. Moreover, pregnancy is seen as a risk factor in the occurrence of thyroid dysfunctions. Thus, the aim of was to assess and analyze prevalence of hypothyroidism among Libyan pregnant women in Benghazi city in to study its relation and risk in pregnancy. The study was conducted on a sample size of 177 Libyan pregnant women in Benghazi city in Libya during 2018. A cross-sectional observational study was conducted in clinics located in Benghazi city. Responses to the question was coded and analyzed. The prevalence of hypothyroidism among the pregnant women was found to be 10.2% (n = 18) and no significant relation between age and hypothyroidism among women. Only nine percent of the pregnant women had medical conditions (as diabetes mellitus and high blood pressure). 28% of the hypothyroidism pregnant women are of the first gestation and 72% are of the second or more. 83% of the hypothyroidism pregnant women had no thyroidectomy. Thus, this study concludes that there is a high prevalence of hypothyroidism during pregnancy period in Benghazi and a national screening is necessary for hypothyroidism in Libya.

Keywords: Hypothyroidism, Libya, pregnancy, prevalence, thyroid function.

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Introduction

Pregnancy is a stage that induces high physiological stress on mother and fetus. However, if pregnancy occurs with endocrine disorders such as hypothyroidism, the possible for adverse outcomes in mother and fetal can be substantial [1]. Hypothyroidism has widely been prevalent in pregnant women and the rate of detection in developing countries, has not kept pace with the degree of the problem [2]. Hypothyroidism is a common endocrine disease coming from deficiency of thyroid hormone or its effects on peripheral tissues [1]. It could be primary, secondary or tertiary. In case of an inadequate production of thyroid hormone it is called (primary hypothyroidism) but in case of insufficient secretion of either thyrotropin (thyroid-stimulating hormone, TSH) from the pituitary

gland known as (secondary hypothyroidism) or thyrotropin-releasing hormone (TRH) from the hypothalamus referred to (tertiary hypothyroidism) [3]. People who develop an autoimmune disease such as Hashimoto's thyroiditis, undergo thyroidectomy operation, radiation therapy or take specific medications like lithium, suffer from hypothyroidism. Some neonates are born with a defect in thyroid gland or no thyroid gland. A relatively rare cause of hypothyroidism is the failure of the pituitary gland to produce enough TSH, usually because of a benign tumor of the pituitary gland [4]. Some women develop hypothyroidism during or after pregnancy (postpartum hypothyroidism) often because they produce antibodies to their own thyroid gland. Left untreated, hypothyroidism increases the risk of miscarriage, premature delivery and preeclampsia [5]. As

mentioned above, pregnancy is seen as a risk factor in the occurrence of thyroid dysfunctions and recently, a six-fold increase of the frequency of association between pregnancy and thyroid pathologies has been noted on women according to some statistical data [6]. Thus, hypothyroidism is the most common pregnancy-related thyroid disorder, affecting great number of pregnant women and therefore, need evaluation with serum TSH in case of Goiter, history of hyperthyroid and hypothyroid diseases, postpartum thyroiditis, or thyroid surgery. In addition to the previous therapeutic head or neck irradiation, type 1 diabetes mellitus or other autoimmune disorder, family history of thyroid disease, infertility, history of miscarriage, unexplained anemia or hyponatremia and increased cholesterol levels [7]. It is wise to treat all pregnant women who have hypothyroidism as adverse obstetrical and neonatal outcomes are high in untreated patients, levo-thyroxine is a medication of choice [8]. It is recommended in order to identify cognitive deficiencies as early as possible and provide appropriate management [9]. Thus, the objective of this study was to assess prevalence of hypothyroidism in pregnant women from Benghazi city, Libya.

Materials and methods

A cross-sectional observational study was conducted in seven outpatient clinics located in Benghazi city during 2018. Ethically, this study was approved by Research Ethics Committees of the University of Benghazi, Benghazi. The clinics in-charge were also given a letter explaining the purpose of the study and assuring the confidentiality of information and data.

Patients were interviewed face to face by investigators with explaining the study and written informed consent was obtained from all the participants in the study at enrolment.

The target sample of the study was 177 pregnant women with different ages who follow their pregnancy in one of these clinics in Benghazi (Medical Benghazi Center, Altarik hospital, Alam Alhanom, Ibn-Sina, Sidi Hussein, Benina and Almassaken). The average time consumed to answer all the questions was 10 minutes. Upon the verbal communication between participants and the researchers, notes were taken by the researcher during the research work.

Responses to each questionnaire was coded and analyzed by using the Statistical Package for Social Sciences (SPSS) version 18 for windows (SPSS® Inc., Chicago, Illinois). The analysis included frequencies of discrete variables, Chi Square test (χ^2) and cross Tab were used to test the significance differences between categorical variables. A p-value were two-side and considered significantly if < 0.05 .

Results

Table 1 displays age distribution and percentage of each group of the participants. Thus, the age groups (20 – 29 years) and (30 – 29 years) have the highest percentage (37.9%, $n = 67$ for both groups) where the lowest percentage (6.8%, $n = 12$) was found in the group of less than 20 years old. On the other hand, this finding was directly related to the fertile years of the age groups of 20 - 29 years and 30 - 39 years.

Table 1: Age distribution of the Libyan pregnant women

Variables				
Age (Years)	Frequency	%	Valid %	Cumulative %
< 20	12	6.8	6.8	6.8
20 – 29	67	37.9	37.9	44.6
30 – 39	67	37.9	37.9	82.5
> 40	31	17.5	17.5	100.0
Total cases	177	100.0	100.0	

In **Figure 1**, the percentage of hypothyroidism cases in pregnant women is illustrated. Thus, in majority of the cases, the pregnant women whom participated in this survey did not have hypothyroidism (90%). The number of Libyan pregnant women with hypothyroidism represented 10.2% from ($n = 18$) pregnant women.

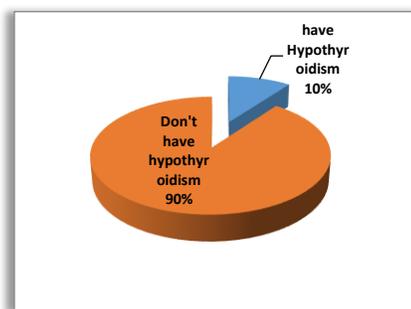


Figure 1: Hypothyroidism state in Libyan pregnant women

Table 2 demonstrates the common medical conditions in Libyan pregnant women. The majority of the cases are free of any medical condition (91%, $n = 161$) with only 13 cases with hypothyroidism. However, 14 cases with diabetes mellitus ($n = 9$), anemia ($n = 2$), hypercholesterolemia ($n = 2$) and hypertension ($n = 3$).

Figure 2 gives that the percentage of the pregnant women who had thyroidectomy is 1.7% from all the pregnant women, constituting only three out of the 18 pregnant

women suffering from hypothyroidism. The frequency of pregnancy in Libyan women with hypothyroidism is shown.

Five women had their first pregnancy while the rest of women had two previous or more pregnancies. It can be seen that most pregnant women in their previous pregnancy had hypothyroidism while the other three pregnant women did not had hypothyroidism in their previous pregnancy.

Table 3 shows the probability value greater than 0.05. It can be concluded that there is a strong correlation between hypothyroidism and thyroidectomy where thyroidectomy was one among other common causes of this disease.

Table 4 illustrates pregnant had or had not thyroidectomy against pregnant had or had not hypothyroidism cross tabulation for Libyan women. Women who had not thyroidectomy are fivefold than women who had not with hypothyroidism.

Table 2: Medical conditions of the Libyan pregnant women

Data for pregnant women				
Medical conditions	Frequency	Percentage	Valid percentage	Cumulative percentage
No medical problems	161	91.0	91.0	91.0
Diabetes mellitus	9	05.1	05.1	96.0
High cholesterol level	2	01.1	01.1	97.2
Anemia	2	01.1	01.1	98.3
High blood pressure	3	01.7	01.7	100.0
Total cases	177	100	100	

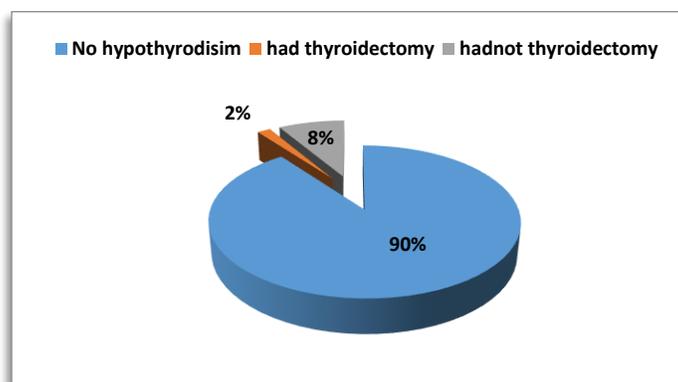


Figure 2: The percent of pregnant women with thyroidectomy state

Table 3: Chi-square test investigating relation between the age and hypothyroidism.

Chi-Square Test						
	Value	d.f.	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	3.331 ^a	3	0.343	0.357		
Likelihood ratio	4.422	3	0.219	0.266		
Fisher's exact test	2.825			0.399		
Linear by linear association	0.833 ^b	1	0.361	0.381	0.222	0.077
No of Valid Cases	177					

Table 4: Cross tabulation for comparing between hypothyroidism and thyroidectomy

Pregnant had or had not thyroidectomy against pregnant had or not hypothyroidism cross tabulation				
Counts				
		P.H.		Total
		had hypothyroidism	had not hypothyroidism	
type	No hypothyroidism	0	159	159
	had thyroidectomy	3	0	3
	Had not thyroidectomy	15	0	15
Total		18	159	177

Discussion

Worldwide, hypothyroidism is a common pregnancy-related thyroid disorder, affecting about 5% of the pregnant women [8]. The current study conducted to screen the prevalence of hypothyroidism among Libyan pregnant women attending the antenatal care at different clinics in Benghazi city. The major finding of our study reveals that prevalence of hypothyroidism among the Libyan pregnant women is almost 10%. This finding is high but it is consistent with other published studies in some countries which reported a similar prevalence of hypothyroidism in pregnant women (11%) [10, 11]. However, the present finding is lower than other published studies conducted in Srinagar in India by Dhanwal and others (39%) [12]. The discrepancy may be attributable to the differences in the study design. In the current study, the common medical conditions of the pregnant women were with pregnant women with hypothyroidism are high levels of cholesterol and anemia whereas the diabetes mellitus representing the highest, in addition to suffering women who are suffering from high blood pressure. However, in general, the percentage of medical conditions in pregnant women is not profound. This study also tests the relationship between age of the pregnant women and hypothyroidism which revealed a negative relation. Pregnant women with thyroidectomy is low in comparison with others, all of them had hypothyroidism. In addition, a strong correlation between hypothyroidism and thyroidectomy which is in line with the previous published study [13]. Thus, a national screening of all pregnant women for subclinical hypothyroidism or hypothyroidism in Libya is recommended during gestation.

Conclusion

According to the present study, it concludes that there is a considerable prevalence of hypothyroidism during the

pregnancy stage. Further studies in different regions of Libya and a larger size is required to ascertain accurate pattern and risk factors of hypothyroidism in Libyan pregnant women.

Author's contribution

Nazik M.A. Hamad put the main plan and design of the study. He contributed data analysis tools, performed interpretation and compared results with other studies. Ahlam G. Ibrahim, Marwa M. Salem, Salma M. Iesa and Amira A. Ahmida collected the data. All authors drafted, revised and approved the final manuscript.

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Conflict of Interest

The authors declare that they have no competing interests.

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