

Assessment of environmental risk factors effects on hypothyroidism in pregnant women

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Background & Aims of the Study: The purpose of this study, was association of environmental factors of hypothyroidism in pregnant women in Abadan during 2016.

Materials and Methods: In this descriptive research, 600 women were chosen according to random – stratified sampling. For this purpose at first an information form had been made then the files of pregnant women were checked to realize whether they have Hypothyroidism or not. After this they were asked to visit health centers to fill up the questionnaire at the appointed day. After filling up the questionnaire by each person, the interviewer give a code to each questionnaire related to the person and the center she visited and the information provided by each questionnaire was entered in SPSS according to the coding.

Results: The results showed that approximately environmental factors are one of the most important affects in accelerating of hypothyroidism in pregnant women. According results of this study, there is a meaningful relation between hypothyroidism and factors, smoking, air pollution, allergy and radiotherapy.

Conclusion: Finding this study showed that many of the environmental factors that are indicated in pregnancy references as risks for hypothyroidism were seen in Abadan pregnant women and some of the factors are more common in healthy women. As result, it's necessary to do examinations before pregnancy to control the situation.

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Background

Pregnancy is one of the most sensitive and also best times a mother would experience in his lifetime (1). A mothers dream and the effort of doctors and people surrounding the mother is to spend the time of pregnancy while the mother is healthy and give birth to a healthy baby (2). Pregnancy era is accompanied with much hormonal change that would affect the pregnancy itself and also mother's behavior (1-

3). The changes in hormonal and metabolic needs are so much that has complex effects on mother's thyroid. Hypothyroidism according to blood hormonal changes are clinical hypothyroidism appears when there is so much serum thyrotropin alongside unnatural and fewer thyroxine (1,3).

The first months of pregnancy especially till week 20 where thyroid of fetus is not functional, in terms of thyroid hormones the brain is so dependent on the mother (2,4,5). As

result the clinical Hypothyroidism would result in abortion, Pre-eclampsia, decrease in weight of fetus, premature labor and decrease in babies' consciousness (4,6). All the complications that effects Hypothyroidism, the quality of pregnancy and giving birth to a healthy baby are important the way that by recognizing and containing them, bad effects on pregnancy and baby would minimize (5,6).

According to the recent studies that are done yet and by citing to the Williams book of pregnancy and childbirth, there are many dangerous factors related to hypothyroidism at time of pregnancy that contains: history of infertility, history of hypothyroidism in family, type 1 diabetes in mother, indoor air quality, outdoor air quality, smoking, consumption of lithium medicine, contraceptive pills, history of allergy, history of neck radiotherapy and history of ovarian cysts (5-7).

Many research had been done on Hypothyroidism in pregnant women and studying danger factors (5,7-10). In addition, they concluded that the Average age of the women that suffered Hypothyroidism in their second third months of pregnancy was more than those in their first third months of pregnancy also the abortion in the second group was less than the first one.

So, by knowing the importance and danger of hypothyroidism in pregnant women this research is done to recognize the abundance of hypothyroidism in pregnant women visiting Abadan health centers.

Aims of the study:

The aim of this study was assessment of environmental risk factors of hypothyroidism in pregnant women referred to health centers in Abadan during 2016.

Materials & Methods

This study has been conducted to assessment of environmental risk factors of hypothyroidism in pregnant women in Abadan city using information visiting Abadan Health Centers Organization (Abadan HCO). In this regard, they divided Abadan city into 5 areas (North, South, East, West, and Central) and indicated health centers in each area. Afterward the choose one by random in each area to do the research. According to previous researches like the one Naderi et al had done, sample size was 600 that in quintuple areas were selected 120 pregnant women for each of the Abadan HCO. They provided an information form and they studied pregnant women files to find out whether they have hypothyroidism or not. Pregnant women were asked to visit Abadan HCO at the appointed time to complete the questionnaire. After finishing off the questionnaire and doing the interview, interviewer give a code of the person and Abadan HCO to each of the questionnaire and the information of the coded questionnaire was processed through EXCEL and SPSS. T test used for data analyzes. Abadan city with about population of 300,000 persons, is one of the metropolitans in Khuzestan province. Abadan Located in the southwest of Iran (Figure 1).



Figure 1) Location of the study area in the Khuzestan Province (Abadan city), in the South-West of Iran

Results

This part of study represents results obtained from assessment of environmental risk factors of hypothyroidism in pregnant women referred to Abadan HCO during 2016. Table 1 shows that the mean age of the patients was 29.07 ± 15.2 years. The nationality, living region and job are presented in Table 1.

Table 1) Demographic and epidemiologic characteristics of pregnant women referred to Abadan HCO during 2016

| | Characteristics | Number |
|-------------|--------------------------------------|-------------|
| Age group | 12-19 | 50 (8.33%) |
| | 20-29 | 365 |
| | 30-39 | 150 (25%) |
| | 40-49 | 30 (5%) |
| | More than 50 | 5 (0.84%) |
| Job | Housewife | 485(80.83%) |
| | Employ | 115(19.17%) |
| Region | Urban | 600(100%) |
| | Rural | 0(0%) |
| Nationality | Iran | 588(98%) |
| | Neighboring Countries (Iraq, Kuwait) | 12(2%) |

Figure 2 shows the distribution of environmental risk factors among patients referred to Abadan HCO. As the figure shows, only about one fifth of the participant had more time exposure to outdoors environmental factors.

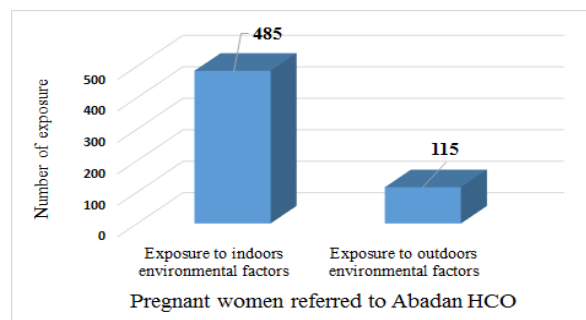


Figure 2) Distribution of exposure to environmental factors among patients referred to Abadan HCO during 2016

Discussion

According to the results of this study, a significant relationship was found between job and hypothyroidism. Among people who got hypothyroidism, 114 of them were housewife

and 7 were employee. The result showed that 107 and 7 of the employ women and housewife were healthy, respectively. The most reason of this significant relationship can be due to exposure to environmental factors such as air pollution, road traffic and heat. Based on results, 98.4 percent of pregnant women who suffers from hypothyroidism do not smoke. Also, result showed that 99.1 percent of healthy women do smoke. According to chi square test there is a significant relationship between smoking and hypothyroidism. Dehghani et al in 2010 studied related risk factors of thyroid disorder in 601 an Iranian pregnant population with questioned about history of Thyroid disorders. Their reported that Thyroid disorder in person had signification relationship with many factors including environmental factor, smoking and families thyroid disorders (5). Yassaee et al researched on 3158 pregnant women in Tehran. They reported that 147 women are suffering from Hypothyroidism that 57.1 are nulliparous And 42.9 are multiparous (8).

In 2012 Tudela et al had worked on subclinical thyroid disease to the incidence of gestational diabetes. They found out there is a relation between Hypothyroidism and gestational diabetes and exposure to indoor pollutants (9). Naderi et al in Kerman, Iran conducted on pregnant women that their pregnancy age was less than 20 weeks in Shahid Dobin clinic. Based on their reported, Abundance of Hypothyroidism was 10-15 percent and is no signification relationship between the danger factors and Hypothyroidism in pregnant women except having allergy (6). Young and his team had done the same research on pregnant women of china and the concluded that there is no relation between hypothyroidism and factors like: number of previous pregnancy, smoking, history of curing infertility and pollutants (7). Based on study Ohashi et al in Japan that accrued on 4381 women with history of family disease and environmental risk factors. They concluded that Hypothyroidism is found in

women with smoking, history of blood pressure and diabetes (10). In another study, Feki et al reported that there is no meaningful relation between hereditary disease and environmental factors history of with Hypothyroidism (11). In similar study in England, Vaidia et al realized that there is a relation between Hypothyroidism and environmental risk factors (12).

Result different studies were similar to our study that showed indoor air quality, especially smoking is one of the most important factor effects in incidence cases of hypothyroidism in pregnant women referred to Abadan HCO during 2016.

Conclusion

Based on result this study, there is signification relationship between hypothyroidism and exposure to environmental factors. This result shows, many of the factors that is indicated as risk factors in pregnancy reference, some of them are seen in pregnant women suffering from hypothyroidism referred to Abadan HCO and some of them were seen in Abadan healthy women.

The finding of our study showed that for more understand agent effects on hypothyroidism in pregnant women and another patents should be performing more studies.

Footnotes

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Conflict of Interest:

The authors declared no conflict of interest.

References

1. Azizi F, Delshad H. Thyroid Derangements in Pregnancy. *Iranian J Endocrinol Metab* 2014;15(6):491-508.
2. Cunningham F, Leveno K, Bloom S, Spong CY, Dashe J. *Williams Obstetrics*. 24 ed. New York: McGraw-Hill; 2014.
3. Klein RZ, Haddow JE, Faix JD, Brown RS, Hermos RJ, Pulkkinen A, et al. Prevalence of thyroid deficiency in pregnant women. *Clin Endocrinol* 1991;35(1):41-6.
4. Spitzer RL, Williams JB, Kroenke K, Hornyak R, McMurray J. Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: the PRIME-MD Patient Health Questionnaire Obstetrics-Gynecology Study. *Am J Obstet Gynecol* 2000;183(3):759-69.
5. Dehghani Zahedani M, Azinfar A, Mahouri K, Mehrdad S. The identification of related risk factors of thyroid disorder in an iranian pregnant population. *Iranian J Endocrinol Metabol* 2010;12(4):352-8. (Full Text in Persian)
6. Naderi T, Honarvar Z, Bahrampor A, Yosefzadeh G. The Prevalence of Hypothyroidism Based on Risk Factors in Pregnant Women Referred to Shahid Dadbin Clinic, Kerman, Iran. *J Kerman Univ Med Sci* 2012;19(3):225-32. (Full Text in Persian)
7. Yang H, Shao M, Chen L, Chen Q, Yu L, Cai L, et al. Screening strategies for thyroid disorders in the first and second trimester of pregnancy in China. *PLoS one* 2014;9(6):e99611.
8. Yassae F, Farahani M, Abadi AR. Prevalence of subclinical hypothyroidism in pregnant women in Tehran-Iran. *Int J Fertil Steril* 2014;8(2):163-6.
9. Tudela CM, Casey BM, McIntire DD, Cunningham FG. Relationship of subclinical thyroid disease to the incidence of gestational diabetes. *Obstet Gynecol* 2012;119(5):983-8.
10. Ohashi M, Furukawa S, Michikata K, Kai K, Sameshima H, Ikenoue T. Risk-based screening for thyroid dysfunction during pregnancy. *J Pregnancy* 2013;2013:1-5.
11. Feki M, Omar S, Menif O, Tanfous NB, Slimane H, Zouari F, et al. Thyroid disorders in pregnancy: frequency and association with selected diseases and obstetrical complications in Tunisian women. *Clin Biochem* 2008;41(12):927-31.
12. Vaidya B, Anthony S, Bilous M, Shields B, Drury J, Hutchison S, et al. Detection of thyroid dysfunction in early pregnancy: universal screening or targeted high-risk case finding? *J Clin Endocrinol Metab* 2007;92(1):203-7.