# Effect of Health Educational Program on Mothers' Perception and Practices Regarding Care of their Children with Congenital Hypothyroidism

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## Abstract

Thyroid hormone deficiency at birth is most commonly caused by a problem with thyroid gland development**. The aim of the study** was to evaluate the effect of health educational program on mothers' perception and practices regarding Care of their Children with congenital Hypothyroidism. **Materials and method:** Quasi experimental design was utilized**. Setting**s: The study was conducted at central health laboratories, where the cases were diagnosed and followed -up at El-Neial Hospital which affiliated to ministry of health to complete the treatment. **Study Sample** Random sample was used as 25% of total cases admitted to central laboratories to follow-up in a period of six months. **Tools of the study:** An interviewing questionnaire was used and includes four parts, first; is socio-demographic characteristics. Second; mothers' knowledge related to congenital hypothyroidism. Third; mothers' practices toward their children. And fourth; is the mothers' perception questionnaire. **Results:** mothers' knowledge were improved immediately after the program regarding meaning, causes, and investigation were 90.0%, 100.0 %, 90.0% respectively, and their perception and practices were improved, with statistically significant differences between pre, post and follow-up implementation the program. **Conclusion**: The mothers' knowledge and perception were improved after the program and the practices were slightly improved after the program. There are statistically correlation between mothers' knowledge regarding perception and practices. **Recommendation:** the study recommended that raising awareness of mothers through health education regarding care for hypothyroidism child can contribute to well-being of children.

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**Key words:** Congenital Hypothyroidism, Mothers Perception

## Introduction

Perception is the single most important determinant of human behavior, it is basically a process of gaining mental understanding, and perception guides the perceiver in harnessing, processing and channeling relevant information towards fulfilling the perceiver's requirements. In perception sometimes difficult to separate the information from the action [(1)].

Thyroid hormones play a major role in the maturation process of the brain. Deficiencies in the interactions between the brain and thyroid hormones in humans, especially during the maturational stages causing irreversible damage to the brain cells and result in a clinical picture known as cretinism [(2)].

Thyroid dysfunction is frequently observed among the comorbidities associated with prematurity. An immature hypothalamic-pituitary-thyroid axis, postnatal depletion of thyroid stores, non-thyroidal illness, and administration of drugs (such as dopamine and steroids) can all lead to derangement in thyroid function in preterm newborns. Insufficient or excessive iodine intake can also influence thyroid function. Despite a program of iodine prophylaxis, mild iodine deficiency is still prevalent in the Lombardy region of Italy. Congenital hypothyroidism is an important congenital endocrine disorder and one of the most preventable causes of intellectual disability. An increased incidence of referrals with blood-thyroid stimulating hormone (b-TSH) elevation on newborn screening has been observed in the past few decades [(3)]

Congenital hypothyroidism occurs at higher rates in areas of iodine deficiency as well as in infants whose mothers are exposed to large amounts of iodine during pregnancy, at the time of delivery or during lactation. Prior studies of preterm infants have shown that prolonged treatment with topical iodine (multiple doses, usually over multiple days) can transiently suppress thyroid function [(4)]. It considered the most frequent endocrine disease in newborns with an incidence of

about 1 in 3000–4000 live births in iodine-sufficient regions. With the exception of rare cases of central hypothyroidism due to hypothalamic or pituitary defects, CH is characterized by elevated levels of Thyroid Stimulating Hormone (TSH) in response to reduced thyroid hormone levels. children with CH can be divided into two groups: those with inborn errors of thyroid hormone biosynthesis (dyshormonogenesis) which are usually associated with enlargement of the gland (goiter) and account for 15% of cases and those with thyroid developmental defects (dysembryogenesis or dysgenesis) which account for 85% of the cases [(5)] **.**

Congenital hypothyroidism (CH) is detected by newborn screening (NBS). The estimated incidence has progressively increased in the past two decades. Infants with CH are rarely symptomatic at birth. Delayed or inadequate treatment results in poor cognitive outcomes. The implementation of newborn screening for hypothyroidism has led to the early identification of infants with CH, prompt institution of treatment, and the consequent prevention of irreversible central nervous system damage[(6)]**.**

Newborn screening for congenital hypothyroidism (CH) is one of the major achievements because early diagnosis and treatment has resulted in normal development in the vast majority of cases [(7)]**.** It is recommended at 4-7 days when the majority of infants are receiving milk. If done earlier, the sample should be repeated for phenylalanine estimation once milk feeding is established. In infants at especial risk hypothyroidism (e.g. from maternal thyroid disease or anti-thyroid drugs) cord blood should be sent for full thyroid function tests. In very low birth weight or sick infants screening at 3 and 10 days, will detect transient neonatal hypothyroidism [(8)].

The family aspects of managing the care of a child with thyroid disease are related to the health perception and health management of the child and family. The parents need to be supported during the difficult time of adjusting dosage or

evaluating other treatment modalities. Nurses should be actively involved in the patient and family by teaching things related to thyroid disease [9]

**Significance of the study**

In Egypt, the overall incidence of CH was 1:2,020 live births in 2005. The Egyptian Ministry of Health and Population started to implement the screening program for CH in 2000 in 5 governorates, and by the end of 2003; all 27 Governorates were covered [10]. During the period from January 2003 to December 2011, 731743 neonates were screened.568 newborns were detected to have high TSH levels in the first and second dry samples [11].

**Aim of the study**

This study aimed to evaluate the effect of health educational program on mothers' perception and practices regarding care of their children with congenital hypothyroidism through:

1- Evaluate mothers' knowledge and practices regarding hypothyroidism child.

2-Identify mothers' perception regarding their children with hypothyroidism

3- Develop guidelines to upgrade knowledge and correct their perception, and practices regarding hypothyroidism.

**Research hypothesis:**

The mothers' awareness will be raised, practices will be improved and their perception will be corrected after the program implementation.

**Subjects and Methods:**

**Research design:**

Quasi experimental design was utilized.

**Setting**s:

The study was conducted at Central Health Laboratories, where the cases were diagnosed and followed-up at El-Neial Hospital which affiliated to Ministry of Health to complete the treatment.

**Study Sample**

Random sample was used as 25% of total cases admitted to central laboratories to follow-up in a period of six months from the beginning of November 2013 to April 2014; it was (50 diagnosed cases were selected); the sample should fulfillment those criteria for the child:

1- At first month of life till three years of age.

2- Children free from any medical problems

**Tool of the study**

**Interviewing questionnaire** which include four parts, **first**; is demographic characteristics includes (child age, sex, child rank, mothers' age, education, occupation, family history of the disease). **Second**; mothers' knowledge related to congenital hypothyroidism as (meaning, causes, signs and symptoms, complications and treatment). **Third** mothers' practices questionnaire which includes 11 questions related to nutrition, follow-up, and physical activity. **Fourth**: mothers' perception questionnaire which include three items including 9 questions, the first include nutrition which includes three questions, the second includes follow-up which includes four questions, the third include physical activity which includes two questions.

**Scoring system for mothers' knowledge:** The mothers' knowledge was calculated for each item as follows: Complete and correct answer was scored (2 points), Incomplete correct answer was scored (1point), while don't know or wrong answer was scored (zero point). The total score for all questions related to knowledge was collected pre, post and follow-up the program.

**Scoring system for mothers' practices: The** mothers' practices were calculated for each item as follows: good practices was scored (2 points), moderate practices was scored (1point), while poor practices was scored (zero point). The total score for all items related to practices was collected pre, post and follow-up the program.

**Scoring system for mothers' perception: The** mothers' perception was calculated for each item as follows: positive perception was scored (2 points), neutral perception was scored (1point), while negative perception was scored (zero point). The total score for all questions related to mothers' perception was collected pre, post and follow-up the program.

**Validity:** Content validity was done through five experts from Faculty Members of Community Health Nursing and Pediatric Nursing Departments.

**Method:**

- An official letters from the Faculty of Nursing, Benha University was forwarded to the Ministry of Health and population to obtain their permission to gaining the data.
- Another official letter to the director of central laboratories of ministry of health and another one to El-Neial Hospital to collect data.
- The mothers were interviewed after explaining the purpose of the study and obtaining her approval to participate in the study with confidentiality in groups from 3-5 mothers.
- Content validity of the tools was tested by a panel of five experts in Community Health Nursing and Pediatric Nursing fields and the modifications were done accordingly based on their responses.
- A pilot study was conducted on 6 mothers with their children, and they are excluded from the main study sample, to test the applicability of the tools, time needed, and clarity. The necessary modifications were done.
- The time planned for the program from November 2013 to April 2014.
- The researchers conducted the study on Sunday and Thursday weekly from (9.00 a.m. to 12.00 p.m.).
- Guidelines booklet which includes; knowledge, related to hypothyroidism as (definition, causes, signs and symptoms, complications, laboratory investigations, treatment and follow up), perception of mothers towards

nutrition, follow-up and physical activities, and mothers' practices related to caring of their children was provided to the mothers at the end of the program.

- **Ethical consideration:** All relevant ethical aspects were considered for ensuring privacy and confidentiality of the collected data through; gaining oral consent for participation in the study, explaining the purpose of the study, right to refuse to continue participation.

**Health program construction:**

The program was conducted at four phases:

**1- Preparatory phase:** A review of recent, current, national and international literature in various aspects of the problem. The tools questionnaire was designed to assess the mothers' knowledge that are needed and child health problems that are faced before implementing the program.

**2- The assessment phase:** The pretest questionnaire was designed and implemented to identify the mothers' knowledge and perception regarding hypothyroidism.

**3- The planning and implementing phase**:

The health program was designed, with general objectives was to improve the mothers' Perception to prevent the health problems related to disease affection.

**The program contents included:**

Role of mothers' in caring and follow up of their children.

Three sessions will be provided for each group of the mothers.

The session was included

First session: Meaning, causes, signs and symptoms, complications, laboratory investigations, treatment and follow up of congenital hypothyroidism.

Second session:-Mothers' perceptions which include three items including 9 questions, the first include nutrition which includes three questions, the

second includes follow-up which includes four questions, the third include physical activity which includes two questions.

Third session: mothers' practices questionnaire which includes 11 questions related to nutrition, follow-up, and physical activity.

The duration of each session was 15-20 minutes according to the presented item. The teaching methods used were discussions, brainstorming, demonstration and re-demonstration, pamphlets, posters and group discussion. Booklets with pictures were distributed as teaching media.

**-Evaluation phase**

To evaluate the effect of the health program to upgrading mothers' knowledge and improving their perception and practices regarding caring of children with congenital hypothyroidism through using the same data collection tools for pre test, post test and follow-up.

**Statistical design**

The calculated data was analyzed and tabulated using "chi square" for number and percentage distribution, and one way Anova was used for mean and standard division, and correlation coefficient was used by using SPSS, version 16 to determine if there are statistically significance relations.

**Results**

Table (1): shows that around two thirds of study sample their age ranging between 20-30 years, half of them had illiterate and basic education while the majority of them were house wives and nearly three quarters of fathers' have basic education.

Figure (1): portrays that the majority of the studied children 90% were>1year and the rest of them aged one year to three years old.

Table(2): reveals that the majority of mothers' knowledge were improved immediately after the program regarding meaning, causes, and investigation were 90.0%, 100.0 %, 90.0% respectively. This knowledge was decreased through follow up to reach 78.0, 90.0,70 respectively.

The table showed also statistically significant differences related to all items of mothers knowledge.

Table(3): reveals that the majority of mothers' perception were improved immediately after the program regarding increase diet producing energy, Observe mental development of child, and Measuring I.Q. every 6 months were 80.0%, 90.0 %, 90.0% respectively. This perception was decreased through follow up to reach 70.0%, 56.0%, 66.0% respectively.

The table showed also statistically significant differences related to all items of mothers' perception.

Table (4): reveals that the majority of mothers' practices were improved immediately after the program regarding Investigate t3, t4, and TSH regularly, and Observe sleeping periods for child 100.0%, 90.0 %, respectively. These mothers' practices were decreased through follow up to reach 80.0%, 30.0%, respectively.

The table showed also statistically significant differences related to all items of mothers' practices.

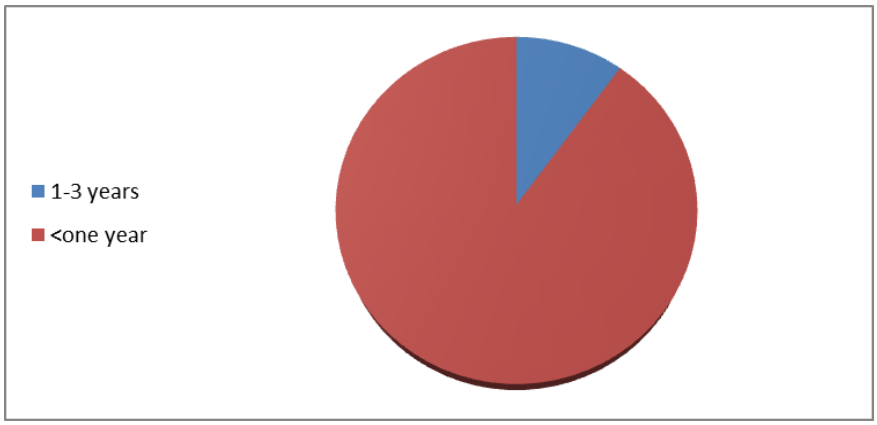
Table (5): clarifies that the mothers' knowledge, perception and practices regarding children with hypothyroidism were increased after implementation the program and follow-up than pre program.

Table (6): reveals that there was highly statistical significance correlation between mothers' knowledge regarding their perception and practice.

Table (1) frequency distribution of studied mothers' regarding demographic characteristics (n=50).

| Demographic characteristics | No | % |
|---|---|---|
| **Mothers' age** | | |
| <20 | 5 | 10.0 |
| 20-30 | 30 | 60.0 |
| 30+ | 15 | 30.0 |
| **Mothers' education** | | |
| Illiterate | 15 | 30.0 |
| basic education | 10 | 20.0 |
| Secondary | 15 | 30.0 |
| University | 10 | 20.0 |
| **Mothers' occupation** | | |
| house wife | 45 | 90.0 |
| Working | 5 | 10.0 |
| **Fathers' age** | | |
| <30 | 25 | 50.0 |
| 30+ | 25 | 50.0 |
| **Fathers' education** | | |
| Illiterate | 5 | 10.0 |
| Basic education | 35 | 70.0 |
| Secondary | 5 | 10.0 |
| University | 5 | 10.0 |
| **Mather/father relation** | | |
| Present | 25 | 50.0 |
| no relation | 25 | 50.0 |
| **Family income** | | |
| Insufficient | 20 | 40.0 |
| Sufficient | 30 | 60.0 |
| **Residence** | | |
| Rural | 40 | 80.0 |
| Urban | 10 | 20.0 |

Figure (1):




Percentage distribution of study sample regarding the child age.

**Table (2) Frequency distribution of studied mothers' knowledge according congenital hypothyroidism through program phases** (n=50).

| **Mothers knowledge about hypothyroidism** | | **Pre** | | **Post** | | **Follow-up** | | **X ²** | **p-value** |
|---|---|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % | | |
| Meaning | correct and complete | 5 | 10.0 | 45 | 90.0 | 39 | 78.0 | 88.75 | 0.00 |
| | correct and incomplete | 7 | 14.0 | 5 | 10.0 | 5 | 10.0 | | |
| | incorrect | 38 | 76.0 | 0 | 0.0 | 6 | 12.0 | | |
| Site | correct and complete | 25 | 50.0 | 44 | 88.0 | 44 | 88.0 | 35.69 | 0.00 |
| | correct and incomplete | 3 | 6.0 | 1 | 2.0 | 5 | 10.0 | | |
| | incorrect | 22 | 44.0 | 5 | 10.0 | 1 | 2.0 | | |
| Function | correct and complete | 4 | 8.0 | 40 | 80.0 | 40 | 80.0 | 87.85 | 0.00 |
| | correct and incomplete | 20 | 40.0 | 10 | 20.0 | 10 | 20.0 | | |
| | incorrect | 26 | 52.0 | 0 | 0.0 | 0 | 0.0 | | |
| Hypothyroidism diseases | correct and complete | 4 | 8.0 | 15 | 30.0 | 20 | 40.0 | 27.44 | 0.00 |
| | correct and incomplete | 25 | 50.0 | 30 | 60.0 | 25 | 50.0 | | |
| | incorrect | 21 | 42.0 | 5 | 10.0 | 5 | 10.0 | | |
| Causes | correct and complete | 2 | 4.0 | 50 | 100.0 | 45 | 90.0 | 123.02 | 0.00 |
| | correct and incomplete | 15 | 30.0 | 0 | 0.0 | 0 | 0.0 | | |
| | incorrect | 33 | 66.0 | 0 | 0.0 | 5 | 10.0 | | |
| Symptoms | correct and complete | 5 | 10.0 | 38 | 76.0 | 34 | 68.0 | 56.08 | 0.00 |
| | correct and incomplete | 20 | 40.0 | 9 | 18.0 | 10 | 20.0 | | |
| | incorrect | 25 | 50.0 | 3 | 6.0 | 6 | 12.0 | | |
| Complications | correct and complete | 7 | 14.0 | 30 | 60.0 | 40 | 80.0 | 72.31 | 0.00 |
| | correct and incomplete | 20 | 40.0 | 20 | 40.0 | 10 | 20.0 | | |
| | incorrect | 23 | 46.0 | 0 | 0.0 | 0 | 0.0 | | |
| investigation | correct and complete | 0 | 0.0 | 45 | 90.0 | 35 | 70.0 | 100.6 | 0.00 |
| | correct and incomplete | 25 | 50.0 | 0 | 0.0 | 15 | 30.0 | | |
| | incorrect | 25 | 50.0 | 5 | 10.0 | 0 | 0.0 | | |
| treatment | correct and complete | 1 | 2.0 | 36 | 72.0 | 33 | 66.0 | 68.29 | 0.00 |
| | correct and incomplete | 15 | 30.0 | 9 | 18.0 | 10 | 20.0 | | |
| | incorrect | 34 | 68.0 | 5 | 10.0 | 7 | 14.0 | | |
| Follow-up | correct and complete | 14 | 28.0 | 0 | 0.0 | 5 | 10.0 | 55.33 | 0.00 |
| | correct and incomplete | 22 | 44.0 | 50 | 100.0 | 45 | 90.0 | | |
| | incorrect | 14 | 28.0 | 0 | 0.0 | 0 | 0.0 | | |

**Table (3) Percent distribution of studied mothers' perception according congenital hypothyroidism through program phases** (n=50).

| **Mothers' perception** | | **Pre** | | **Post** | | **Follow-up** | | **X ²** | **p-value** |
|---|---|---|---|---|---|---|---|---|---|
| **Nutrition** | | No | % | No | % | No | % | | |
| Increase diet containing iodine | positive perception | 5 | 10.0 | 37 | 74.0 | 28 | 56.0 | 44.90 | .000 |
| | Neutral | 25 | 50.0 | 8 | 16.0 | 15 | 30.0 | | |
| | negative perception | 20 | 40.0 | 5 | 10.0 | 7 | 14.0 | | |
| Increase diet producing energy | positive perception | 5 | 10.0 | 40 | 80.0 | 35 | 70.0 | 62.33 | .000 |
| | Neutral | 35 | 70.0 | 5 | 10.0 | 15 | 30.0 | | |
| | negative perception | 10 | 20.0 | 5 | 10.0 | 0 | 0.0 | | |
| Increase fruits and vegetables | positive perception | 0 | 0.0 | 35 | 70.0 | 20 | 40.0 | 61.13 | .000 |
| | Neutral | 40 | 80.0 | 10 | 20.0 | 30 | 60.0 | | |
| | negative perception | 10 | 20.0 | 5 | 10.0 | 0 | 0.0 | | |
| **Follow-up** | | | | | | | | | |
| Observe mental development of child | positive perception | 0 | 0.0 | 45 | 90.0 | 28 | 56.0 | 84.90 | .000 |
| | Neutral | 35 | 70.0 | 5 | 10.0 | 18 | 36.0 | | |
| | negative perception | 15 | 30.0 | 0 | 0.0 | 4 | 8.0 | | |
| Measuring mental growth and development | positive perception | 0 | 0.0 | 35 | 70.0 | 10 | 20.0 | 73.33 | .000 |
| | Neutral | 40 | 80.0 | 10 | 20.0 | 40 | 80.0 | | |
| | negative perception | 10 | 20.0 | 5 | 10.0 | 0 | 0.0 | | |
| Regular t3,t4,and TSH investigation | positive perception | 0 | 0.0 | 42 | 84.0 | 10 | 20.0 | 86.31 | .000 |
| | Neutral | 40 | 80.0 | 7 | 14.0 | 35 | 70.0 | | |
| | negative perception | 10 | 20.0 | 1 | 2.0 | 5 | 10.0 | | |
| Measuring I Q every 6 months | positive perception | 15 | 30.0 | 45 | 90.0 | 33 | 66.0 | 39.62 | .000 |
| | Neutral | 25 | 50.0 | 5 | 10.0 | 11 | 22.0 | | |
| | negative perception | 10 | 20.0 | 0 | 0.0 | 6 | 12.0 | | |
| **Physical activity** | | | | | | | | | |
| Observe child during his/her activity | positive perception | 0 | 0.0 | 40 | 80.0 | 35 | 70.0 | 93.17 | .000 |
| | Neutral | 15 | 30.0 | 10 | 20.0 | 10 | 20.0 | | |
| | negative perception | 35 | 70.0 | 0 | 0.0 | 5 | 10.0 | | |
| Monitoring sleeping pattern | positive perception | 0 | 0.0 | 40 | 80.0 | 20 | 40.0 | 76.00 | .000 |
| | Neutral | 30 | 60.0 | 10 | 20.0 | 25 | 50.0 | | |
| | negative perception | 20 | 40.0 | 0 | 0.0 | 5 | 10.0 | | |

**Table (4) Percent distribution of studied mothers' practices according congenital hypothyroidism practices through program phases** (n=50).

| Mothers practices | | Pre | | Post | | Follow-up | | $X^2$ | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % | | |
| Increase diet containing iodine | Healthy | 0 | 0.0 | 40 | 80.0 | 25 | 50.0 | 104.05 | .000 |
| | Neutral | 20 | 40.0 | 10 | 20.0 | 25 | 50.0 | | |
| | Unhealthy | 30 | 60.0 | 0 | 0.0 | 0 | 0.0 | | |
| Increase diet produce energy | Healthy | 5 | 10.0 | 40 | 80.0 | 25 | 50.0 | 93.429 | .000 |
| | Neutral | 15 | 30.0 | 10 | 20.0 | 25 | 50.0 | | |
| | Unhealthy | 30 | 60.0 | 0 | 0.0 | 0 | 0.0 | | |
| Increase fruits and vegetables | Healthy | 0 | 0.0 | 35 | 70.0 | 25 | 50.0 | 85.577 | .000 |
| | Neutral | 25 | 50.0 | 15 | 30.0 | 25 | 50.0 | | |
| | Unhealthy | 25 | 50.0 | 0 | 0.0 | 0 | 0.0 | | |
| Observe mental activity for concen-tration and soon | Healthy | 0 | 0.0 | 35 | 70.0 | 10 | 20.0 | 117.33 | .000 |
| | Neutral | 20 | 40.0 | 15 | 30.0 | 40 | 80.0 | | |
| | Unhealthy | 30 | 60.0 | 0 | 0.0 | 0 | 0.0 | | |
| Caring follow-up for measuring mental status | Healthy | 5 | 10.0 | 35 | 70.0 | 15 | 30.0 | 112.95 | .000 |
| | Neutral | 10 | 20.0 | 15 | 30.0 | 35 | 70.0 | | |
| | Unhealthy | 35 | 70.0 | 0 | 0.0 | 0 | 0.0 | | |
| Investigate t3,t4, and TSH regularly | Healthy | 25 | 50.0 | 50 | 100.0 | 40 | 80.0 | 35.404 | .000 |
| | Neutral | 25 | 50.0 | 0 | 0.0 | 10 | 20.0 | | |
| | Unhealthy | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | | |
| Measuring IQ every 6 months | Healthy | 0 | 0.0 | 35 | 70.0 | 10 | 20.0 | 86.152 | .000 |
| | Neutral | 15 | 30.0 | 10 | 20.0 | 30 | 60.0 | | |
| | Unhealthy | 35 | 70.0 | 5 | 10.0 | 10 | 20.0 | | |
| Practicing activity with child | Healthy | 0 | 0.0 | 35 | 70.0 | 25 | 50.0 | 95.000 | .000 |
| | Neutral | 20 | 40.0 | 15 | 30.0 | 25 | 50.0 | | |
| | Unhealthy | 30 | 60.0 | 0 | 0.0 | 0 | 0.0 | | |
| Observe child during making activity | Healthy | 0 | 0.0 | 40 | 80.0 | 20 | 40.0 | 100.00 | .000 |
| | Neutral | 25 | 50.0 | 10 | 20.0 | 30 | 60.0 | | |
| | Unhealthy | 25 | 50.0 | 0 | 0.0 | 0 | 0.0 | | |
| Observe sleeping periods for child | Healthy | 0 | 0.0 | 45 | 90.0 | 15 | 30.0 | 124.03 | .000 |
| | Neutral | 25 | 50.0 | 5 | 10.0 | 35 | 70.0 | | |
| | Unhealthy | 25 | 50.0 | 0 | 0.0 | 0 | 0.0 | | |

**Table (5): Mean and standard deviation of mothers' knowledge perception and practices regarding children with hypothyroidism** (n=50).

| Items | Pre | Post | Follow-up | F test | p-value |
|---|---|---|---|---|---|
| | Mean ±SD | Mean ±SD | Mean ±SD | | |
| Mothers knowledge | 6.12±2.57 | 16.40±1.84 | 16.10±2.40 | 325.12 | .000 |
| Attitude | 7.30±2.30 | 17.56±2.71 | 14.04±3.41 | 167.21 | .000 |
| Practices | 5.40±3.32 | 17.70±3.38 | 14.00±3.35 | 177.12 | .000 |

**Table (6) statistical correlations of mothers' knowledge regarding their perception and practice** (n=50).

| Item | Knowledge | |
|---|---|---|
| | r | p-value |
| Perception | .755 | 0.000 |
| Practices | .801 | 0.000 |

## Discussion

Congenital hypothyroidism are detected in 1/3,500–4,000 newborns worldwide, is the most common preventable cause of mental retardation. Neonatal screening programs are reported to improve prognosis by reducing the number of cases of mental retardation [(12)]**.**

**According to socio-demographic characteristics the results showed that** around two thirds of study sample their age ranging between 20-30 years, half of them had illiterate and basic education while the majority of them were house wives and nearly three quarters of fathers' have basic education**,** this results contradicted with **Rastogi and Franchi** [(13)]**,**who reported that Older mothers(>39years) had a higher incidence (1:1,328) compared to younger mothers (<20years,1:1,703). This may be due to differences in study sample and site for the study conducted

Regarding child characteristics the study portrayed that the majority of the studied children less than1year, placed rural residence and More than one third of them were the middle ranking among his siblings this may be due to the early investigation and follow up. this is in line with **Bekhit and Yousef** [(11)]**,**who emphasize that Infant diagnosed with CH were followed every 2 weeks for the first 3 months, every month for the first year, every 2 months for the 2nd and 3rd years and every 6 months until adolescence is reached.

Regarding mothers' knowledge there are statistically significant differences between pre, post and follow-up implementing the program and the majority of mothers' knowledge were improved immediately after the program, this

knowledge was decreased through follow up. The mothers' knowledge was improved due to their needs to be aware about the disease for their child and the positive effect of the health educational program. This results in line with **Glinoer** [14]**,**who reported that the regulation of thyroid function and thyroid functional disorders that need to be recognized, carefully assessed, clearly understood and correctly managed. and also **Micle etal.** [15]**,**who reported that the children's with hypothyroidism should be given particular growth dynamics, the challenges in diagnosis, follow-up, and correct treatment require a wide amount of knowledge in pediatrics, as well as other fields .

According mothers' perception these results revealed that the majority of them their perception were improved immediately after the program regarding increase diet producing energy, Observe mental development of child, and Measuring I Q every 6 months. This perception was decreased after three months of the program implementation this result may be due to effect of knowledge related to hypothyroidism in the educational program and around three quarter engaged at level of education. This results in line with **Bevilacqua etal.** [16]**,** who reported that the implementation of newborn screening programs in developing countries was analyzed considering aspects such as program performance, funding mechanisms for screening services, perception s of parental and healthcare professionals .

Concerning mothers' practices the study revealed that the majority of mothers' practices were improved immediately after the program regarding Investigate t3, t4, and TSH regularly, and Observe sleeping periods for child. These mothers' practices were decreased through follow up implementing the program this improvement related to increasing the mothers knowledge related to hypothyroidism signs and symptoms and the healthy practices to improve child health status.

The mothers' knowledge, perception and practices regarding children with hypothyroidism were increased after implementation the program and follow-up than pre-program this result may be due to more knowledge about hypothyroidism. This results agreement with **Krotoski, etal.** [17]**,**who recognized that Congenital hypothyroidism (CH), as a priority model because of its high prevalence, availability of screening methods, and cost effective intervention, the Training Working Group should be developed educational materials for policy makers and training modules for health care professionals, researchers, and affected families**.**

The study revealed that there was highly statistical significance correlation between mothers' knowledge regarding their perception and practice these may be due to needs of mothers to improve child health status.

## Conclusion

The mothers' knowledge and perception was improved after the program and the practices were slightly improved after the program. There are statistically correlation between mothers' knowledge regarding perception and practices.

## Recommendation

1- Illustrated booklets, containing information, practices which must be implemented with a hypothyroidism child should be available for all mothers having hypothyroidism child.

2- Continuous educational program for mothers regarding complication, treatment, and practices regarding hypothyroidism.

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