

## The Prevalence of Goitre in School Children in Sulaimani City.



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### Abstract

The Survey was done on school children in *Sulaimani* center by randomly selecting schools & students to represent the whole school children population in different areas. The study showed That the total number of school children that had been surveyed were 1427 students, Male:632, Female:795 & the prevalence of goiter in female was:59.24%(471 students), the prevalence of goiter in male was:48.1%(304 students) & the overall prevalence of goiter was:54.3%(775 students).

**Keywords:** Goiter, Iodine deficiency disorders, School children.

### Introduction

Iodine deficiency is the main preventable cause of brain damage in children & therefore constitutes a public-health concern worldwide. Assessment of the magnitude of iodine deficiency disorders (IDD) & monitoring of the progress made towards its elimination represent the cornerstone of the strategy for IDD control. Over the past few years, WHO has developed a database on IDD, in which data on urinary iodine & goiter from all countries of the world are compiled. On the basis of urinary iodine data collected during 1993–2003, the current national, regional & worldwide prevalence of iodine deficiency has been estimated [1-3]. The estimates presented focus on urinary iodine, since it is a more reliable indicator of recent iodine status than clinical goiter[4]. For each country, the most representative estimate of iodine deficiency was selected by use of two criteria: the administrative level for which the sample is representative (eg, national, regional, or local) & the population groups

surveyed (eg, school-age children, pregnant women, adults). Globally, more than 1.9 billion individuals have inadequate iodine nutrition (defined as urinary iodine excretion <100 g/L), of whom 285 million are school-aged children. The world prevalence of school-aged children with inadequate iodine nutrition is 36.4%. The lowest prevalence of iodine deficiency is found in the American Region, where the proportion of households consuming iodized salt is the highest in the world (90%), & the highest prevalence of iodine deficiency is in the European Region, where the proportion of households consuming iodized salt is the lowest (27%) [5].

Iodine deficiency has been identified as a significant public health problem in 129 countries. At least 1500 million people, 29% of the world's population, live in areas at risk of iodine deficiency [6]. In 1990, WHO estimated that 20 million people in the world had varying degrees of

varying degrees of preventable brain damage due to the effects of iodine deficiency on fetal brain development. The population at risk for iodine deficiency estimated to be 1 billion, approximately 20% of whom have goiter [7]. Still 50 million children are exposed to IDD [8]. In 1997 WHO estimated that between 500 - 850 million of these are affected by goiter: eight of the most populous countries in the world, which make up 54% of the world's population, have a significant iodine deficiency problem [6].

The main strategy for the control of iodine deficiency disorders is universal salt iodization, In high-risk areas, where considerable delays in access to iodized salt are likely, iodized oil should be given to women & children. Monitoring the impact of iodization programmes is essential in order to ensure adequate & continuing coverage. In those that have such a program, the change has been dramatic, leading to a drop in goiter prevalence and arise in urinary iodine[9].

The spectrum of the Iodine Deficiency Disorders (IDD)

FETUS: Abortions, Stillbirths, Congenital anomalies, Increased perinatal mortality, Increased infant mortality, Neurological cretinism: mental deficiency, deaf mutism, spastic Diplegia squint, Myxoedematous cretinism: mental deficiency, dwarfism, hypothyroidism, Psychomotor defects

NEONATE Neonatal hypothyroidism

CHILD & ADOLESCENT: Retarded mental and physical development

ADULT Goiter & its complications, Iodine-induced hyperthyroidism (IIH)

ALL AGES: Goiter, Hypothyroidism, Impaired mental function, Increased susceptibility to nuclear radiation [10].

The occurrence of IDD in a given region was regarded as being signaled by certain geographical characteristics, including mountain ranges & alluvial plains, particularly at high altitude & at considerable distance from the sea, confirmed by a high prevalence of goiter in the resident population. The greater availability of urinary iodine estimation & other methods for assessing iodine deficiency has demonstrated that IDD can & do occur in many areas where none of these conditions are met [10].

**Table:-1 the prevalence of goiter in Females: details.**

Grades	Zero	1A	1B	2	3
%	40.75	22.26	20.25	13.33	3.39
Number	324	177	161	106	27

**Table:-2 the prevalence of goiter in males: details.**

Grades	Zero	1A	1B	2	3
%	51.9	21.8	16.9	8.7	0.63
Number	328	138	107	55	4

## Materials & methods

Primary Schools students were surveyed for the presence of clinical goiter from 15<sup>th</sup> February to 15<sup>th</sup> April 2004 using the WHO Criteria for the diagnosis of goiter as follows:

Grade zero: no goiter.

1a: palpable, but not visible, seen in full extension.

1b: palpable & visible in normal position.

2: visible in normal position.

3: very large goiter seen from 10 meters.

The school students were selected according to the following procedure:

All registered primary schools belonging to *Sulaimani* department of education, were considered to be included, their location, number of male & female students. Later on *Sulaimani* center was divided to three geographical areas; North, middle & south. North included 12 regions with 30 schools, middle included 19 regions with 34 schools & south included 15 regions with 38 schools, so the total schools were 102 schools. Randomly in every district 2 schools selected with total of 6 schools Selected for inclusion. In each the male & female students were selected according to the statistical way using random number table.

## Results

The total number of school children that had been surveyed were 1427 students.

Male: 632, Female: 795.

The prevalence of goiter in female was: 59.24 % ( 471 students) as shown in table 1.

The prevalence of goiter in male was: 48.1 % ( 304 students) as shown in table 2.

The overall prevalence of goiter was: 54.3 % ( 775 students).

## Discussion

Estimates of IDD in the literature relied mainly on the survey of risk groups as school children or pregnant ladies or the estimation of urinary iodine secretion. Since the urinary iodine estimation was not available in the near locality, we depended on surveying school children for clinical signs of goiter according to the WHO criteria as was mentioned in details in the materials & methods.

Our results showed that:

The prevalence of goiter in female was: 59.24% (471 students).

The prevalence of goiter in male was: 48.1% (304 students).

The overall prevalence of goiter was: 54.3% (775 students).

WHO estimates showed that the prevalence of goiter in eastern Mediterranean regions which includes our region was 54.1% in the general population & 55.4% in school children which goes with our results (1). Local studies had been done previously on the prevalence of goiter in *Sulaimani* & other areas of Iraq. One study surveyed school students in *Sulaimani* city age between 6-25 years & showed prevalence of 68% (11). Other study done in a *Sulaimany* district area pishdar showed high prevalence of goiter of 75% in ages 16-75 years (12). A cross-sectional survey of primary-school children in Bahrain was conducted to estimate the prevalence of goiter & iodine deficiency according to age, sex & area of residence. Only 1.7% had

goiter & 16.2% had low urinary iodine levels, showing much lower prevalence as the area is near the sea with higher iodine content foods consumption (13). The total goiter prevalence was found to be low 6.2% in India – Delhi & indicated that the population is in a transition phase from iodine deficient (as revealed by Total Goiter Prevalence) to iodine sufficient nutriture (as revealed by median UIE 200 microg/l). A significant progress has been achieved towards elimination of IDD [14]. Thyroid enlargement occurring in more than 10% of a population is termed endemic goiter [15]. Data from the goiter prevalence surveys and urinary iodine determinations can be used to assess the severity of IDD and the urgency of its correction: Presence of 30-100% typical goiter prevalence in an area indicate stage III: sever IDD and the need for correction is critical [16]. Since our goiter prevalence in school children is 54.3% so the following recommendations are raised.

### Recommendations

1. Iodine deficiency disorders & goiter are still prevalent in the region & still more to be done to eradicate this disorder by better implementation & consolidation of salt iodination program in the community already in progress under the supervision of WHO.
2. Education of the public about the consumption of only iodinated salt & follow up of iodine content of marketed salt.
3. Cohort studies to be carried out in the region for better quantification of goiter prevalence in the region.
4. Importing the equipments necessary for quantification of urinary iodine measurement necessary for accurate analysis of iodine deficient status.

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## رێژەی بلاویونەوهی پەریزادە لە ناو خۆیندکارانی خۆیندنگا سەرەتایەکانی ناو شارێ سلیمانی :

تاها عوسمان مەحوی

کۆلیجی پزیشکی زانکۆی سلیمانی / هەریمی کوردستان - عێراق

### پوختە

سەرژمێریاری لە ناو خۆیندکارانی خۆیندنگا سەرەتایەکانی ناو شارێ سلیمانی کرا بە شیبۆیەکی هەرەمەکی خۆیندنگاگان و خۆیندکارەکان هەلبژێران، یە شیبۆیەکی هەموو خۆیندکارەکانی ناو شار لە ناوچە جبا جباکاندا بگرتیەوه. لە تۆزینەوه کەدا ژمارە خۆیندکارە هەلبژێراوەکان ۱۴۲۷ خۆیندکار بوون، ۶۳۲ کۆر و ۷۹۵ کچ وە رێژەی بلاویونەوهی پەریزادە لە ناو خۆیندکارە کچەکاندا ۵۹٪ ( ۴۷۱ ) خۆیندکار وە لە ناو کۆرەکاندا ۴۸٪ ( ۳۰۴ ) خۆیندکار بوون، وە یە گشت رێژەی بلاویونەوهی پەریزادە ۵۴٪ ( ۷۷۵ ) خۆیندکار بوون.

## نسبة انتشار تضخم الغدة الدرقية لطلاب المرحلة الابتدائية في مركز محافظة السليمانية.

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### الخلاصة

تمت دراسة هذا المرض على طلاب المدارس الابتدائية في مركز محافظة السليمانية باخذ نمذج عشوائية من المدارس ومن الطلاب كي تمثل جميع طلاب المرحلة الابتدائية لمختلف المناطق وكانت النتائج كالآتي :  
تم فحص ۱۴۲۷ طالب و طالبة، منهم ۶۳۲ ذكر و ۷۹۵ انثى، وكانت نسبة انتشار تضخم الغدة الدرقية لدى الاناث ۵۹٪ ( ۴۷۱ ) طالبة و نسبة انتشار تضخم الغدة الدرقية لدى الذكور ۴۸٪ ( ۳۰۴ ) طالب وان نسبة انتشار تضخم الغدة الدرقية بشكل عام كان ۵۴٪ ( ۷۷۵ ) طالب و طالبة.