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Research Article

**ASSESSMENT OF THE STATE UTILIZATION OF IODINE &
RATE OF OCCURRENCE OF GOITER IN THE PAST
ENDEMIC POPULATION AFTER THE UTILIZATION OF
SALT OF IODINE FOR COMPLETE 10 YEARS**¹Dr Sana Yameen, ²Hafiza Suqaina Sania, ³Dr Hassan Arslan¹Rashid Latif Medical College Lahore, ²Services Hospital Lahore, ³Tehsil Headquarter Hospital Kallar Syedan, Rawalpindi.**Article Received:** March 2019**Accepted:** April 2019**Published:** May 2019**Abstract:**

Objective: The aim of this research work is to assess the state utilization of iodine & rate of occurrence of goiter in the past endemic population after the utilization of salt of iodine for complete 10 years.

Methodology: In the south regions of Punjab, Pakistan subsequent examination of haphazardly selected fifteen hundred and four, children of eight to ten year of age, 102 patients with Grade-2 or greater grade of goiter were available. We also selected 100 normal healthy controls concerning examination of thyroid. Among all two hundred and two patients, random samples of urine assayed for the presence of iodine as an identifier of the intake of iodine.

Results: The rate of goiter Grade-2 or greater grade was 6.80%. Urinary Iodine's levels of median in the children with goiter and healthy controls were 20.0 µg/dL & 24.5 µg/dL correspondingly. The amounts of greater than ten µg/dL show the adequate intake. The rate of deficiency of iodine among the patients suffering from goiter was 14% versus 12.70% in the group of healthy controls. We found no significant disparity between the participants of both groups.

Conclusion: The salt of iodine was very effective for the provision of adequate intake of iodine but there are some other accountable causative factors for the determination of complication of endemic goiter.

Key Words: Complication, goiter, iodine, deficiency, grade, disparity, methodology, accountable, haphazardly, rate, controls, Urinary.

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INTRODUCTION:

The only present gland of endocrine which go under examination easily is thyroid and the anomalies and complication of this gland are also very common in this endocrine system. From the last some years, it was the acknowledgement that green plants containing iodine have the ability of prevention as well as treatment of the complication of goiter [1]. In the period of last forty years, depending upon the recommendation of the World, health Organization, various countries of the world have initiated the supplementation of the iodine with strengthening of water or salt. Those iodide supplementations are very vital particularly in the areas located on high altitudes where there is deficiency of iodide in the soil. A report published by World Health Organization in 2003 represented that in the whole world 2 billion persons including two hundred and eighty-four million children were available with the deficiency of iodine and about half amount of these persons were available with some grade of goiter [2].

In accordance with the description of UNICEF, when greater than 5.0% of six to twelve year of age school going children were present with the complication of goiter in any area, the utilization of the term of endemic has its application to such regions. The deficiency of iodine is the very frequent reason of avoidable retardation of mind and the damage of brain in the whole world. The recommended routine allowances for iodine are as follow: for adult persons as one hundred and fifty μg per day, females with pregnancy and lactation as two hundred μg per day, children as one hundred and twenty μg per day and infants having less than 1 year of age as fifty μg per day [3].

Achievements of those preventive measures, supplementation with the help of salt of iodine & effective check of the nutrition of iodine are very beneficial in the avoidable medicines. There two purposes of this research work as to give the proof that supplementation of the iodine is sufficient and to modify our information regarding the rate of the complication of goiter regardless of the general view that the rate was severely reducing. The study

population under this case work was on supplementation of iodine with the utilization of salt of iodine from greater than ten-year period.

METHODOLOGY:

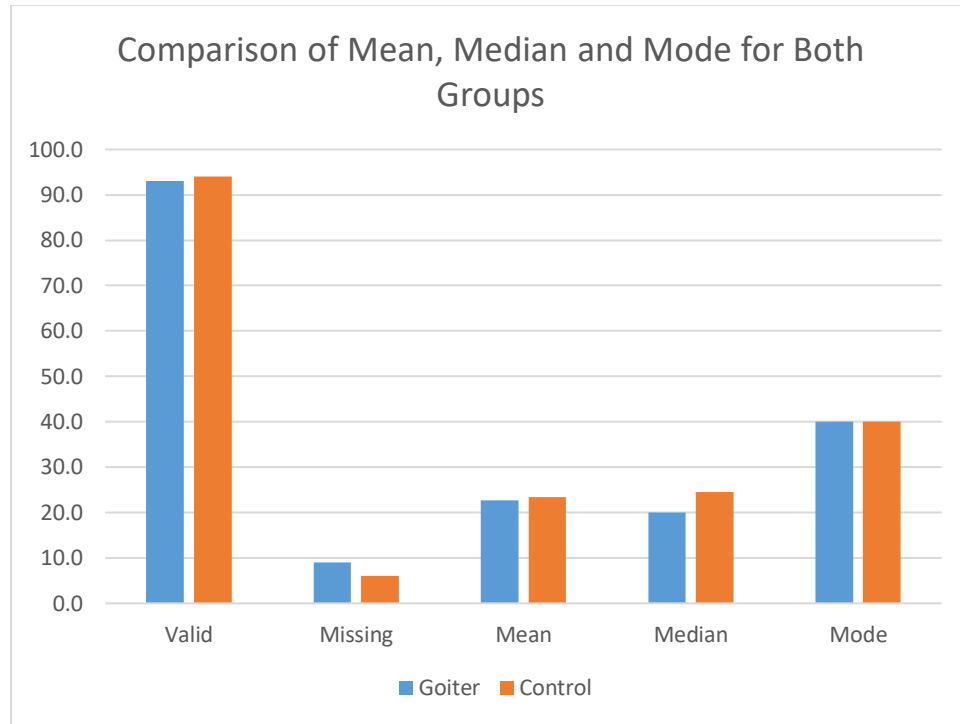
This was a case control research work conducted in the southern areas of Punjab, Pakistan. This area has very high occurrence of the endemic goiter, fifteen hundred and four haphazardly selected from eight to ten years old children examined in this case work. Among all, 102 patients in which fifty-three were males and forty-nine were females found with goiter of Grade-2 or greater grade was available. We selected one hundred healthy children with matched age as control in which forty-seven were male and fifty-three were females. World Health Organization method was in use for the grading of goiter: - 1-A, just palpable; 1-B, visible only with the extension of the neck, 2 observables in routine position; 3 observables from a distance of three meters.

The iodine in the stool excretion was very less, therefore, we evaluated the iodine of urine like a secondary identifier of intake of iodine; so a random sample of urine obtained from each child in both groups of patients and healthy controls and assayed with the help of spectrophotometry in the laboratory.

RESULTS:

The rate of occurrence of goiter Grade-2 or greater grade was 6.80%. The medians of iodine in urine were 20.0 $\mu\text{g}/\text{dL}$ in the children suffering from the disease of goiter & 24.5 $\mu\text{g}/\text{dL}$ in the healthy controls. The rate of the extreme deficiency of iodine based upon the iodine content in urine smaller than 2.0 $\mu\text{g}/\text{dL}$, were 2.20% in the patients suffering from goiter and 5.30% in the healthy controls. The concluded disparity was not much significant in the participants of both groups of patients and healthy controls. Because the excretion of the iodine greater than 10 $\mu\text{g}/\text{dL}$ in the urine shows adequate and greater than 5 $\mu\text{g}/\text{dL}$ which is acceptable utilization of the iodine. So we can conclude that although the supplementation of iodine was adequate, the prevalence of the complication of goiter was still high in those particular endemic regions of the country as described in Table-1 & Table-2.

N.		Goiter	Control
	Valid	93.0	94.0
Missing	9.0	6.0	
Urinary Iodine excretion (mcg/dL)	Mean	22.677	23.404
	Median	20.0	24.5
	Mode	40.0	40.0

**Table-II: Population distribution according to median of urine iodide excretion ($\mu\text{g/dL}$) in both groups.**

Median urine iodine ($\mu\text{g/dl}$)		Goiter		Control	
		No	%	No	%
Severe iodine def.	=or<2	2	2.20%	5.0	5.30%
Moderate def.	2.1-4.9	4.0	4.30%	2.0	2.10%
Mild def.	5-9.9	7.0	7.50%	5.0	5.30%
Optimal	10-19.9	27.0	29.00%	24.0	25.50%
More than adequate	20-29.9	25.0	26.90%	27.0	28.70%
possible excess intake	= or> 30	28	30.10%	31.0	33.00%
Total		93.0	100.00%	94.0	100.00%
Missing system		9.0		6.0	
Total		102.0		100.0	

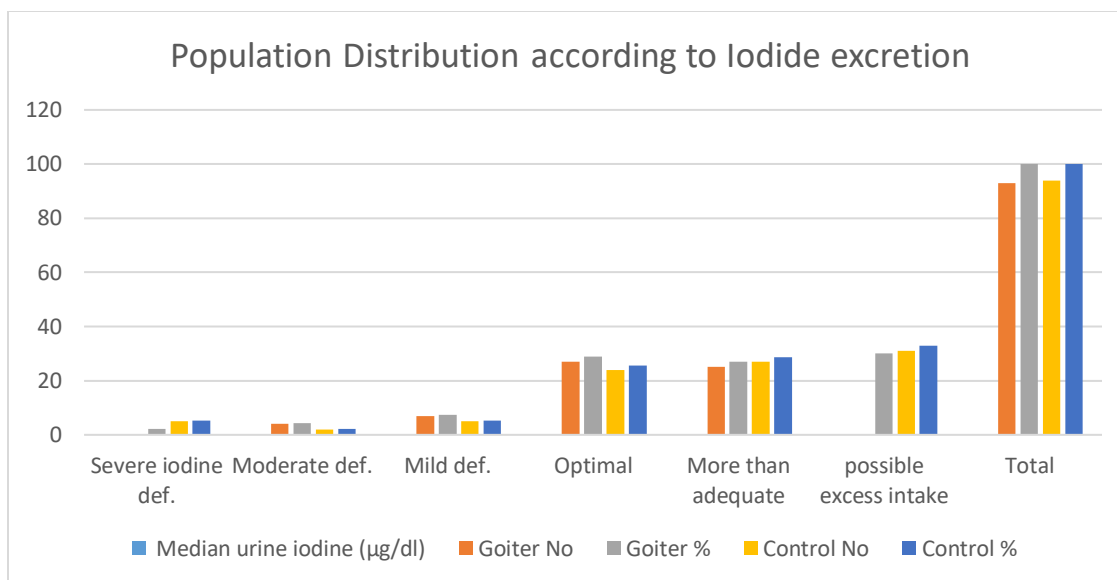


Table-III: The scale used by WHO/ICCIDD/UNICEF to relate iodine nutrition to urinary iodine concentration

Iodine Concentration (µg/day)	Approx. Iodine Intake(µg/day)	Deficiency
<2	<30	Severe deficiency
2.0-4.9	30.0-74.0	Moderate deficiency
5.0-9.9	75.0-149.0	Mild deficiency
10.0-19.9	150.0-299.0	Optimal
20.0-29.9	300.0-449.0	More than adequate
>29.9	>449	Possible excess

DISCUSSION:

The acknowledgements show that the measurement of iodine in urine in random samples gives a proper evaluation of the nutrition of iodine in the iodine. Some research work as work of Bilabina [4] conducted in Togo, gave comparison of iodine in urine with content of iodine in the water intake and discovered direct important association. Markou [5] in his case work conducted in Azerbaijan has compared a fresh fast iodide assay method of urine with the classic method of the old version. The recent new method was very acceptable substitute whereas it was much fact and cheap as compared to the old one. Lastly chairman of the international council for the control of iodine deficiency disorders (ICCIDD), Jack Ling have belief that various individuals are unaware about the intake of iodine salt, meat, products related to diary or food available in seas as fish, it is best to check the intake of the iodine with the utilization of the evaluation of random iodine in urine iodine [6].

The formation of the international council for the control of iodine deficiency disorders carried out in 1985. UNICEF, government of Australia and world health organization supported the formation of this organization, to make a connection to fill the blank space between recent available awareness and the application of this knowledge to get the sufficiency of iodine for millions of people at danger as described in Table-3. Possibly both the deficiency of iodine and excess of iodine [3, 7-8] can be the reason of goiter. The rule out in our patients is necessary for both prospects as the major reason of the endemic goiter due to more common serious deficiency of iodine and a little greater excretion of iodine from urine in the healthy controls. While comparing with the past case works [9-11] of Mostafavi [12] and Mozaffari [13] which carried out in the areas very much similar to our regions, the rate of goiter as described in current case work looks to be more constant because of the fact that

endocrinologist of children has examined the patients physically.

CONCLUSION:

While reviewing the above method of scaling and the outcome of the recent content of iodine in the urine of our population, we can have concluded that: We were victorious in the supplementation of iodine in the regions under the domain of this case work. The members of both groups found with adequate and similar intake of iodine, so, the question arises about the role of deficiency of iodine in the determination of goiter. There are evidences of the deficiency of iodine as a major reason of this disease of goiter and avoidable psychological retardation, but there is persistence of goiter as common as rates of endemic regardless of the sufficient supplementation of iodine. There is still a need of future case works for the discovery of probable reason or reasons of the goiter's persistence.

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