

## Study on Goitre at Dinajpur Town in Bangladesh

\* Badaruddin M,<sup>1</sup> Uddin MB,<sup>2</sup> Khatun MF,<sup>3</sup> Mim A<sup>4</sup>

A total of 258 subjects were studied, 213 males and 45 females in some localities at Dinajpur town. The purpose of the study was to unravel the relation of goitre to intake of iodized-salt, mustard oil and cabbage. In our study the prevalence of goitre was 11.63%, of which grade 1 goitre was 11.24% and grade 2 goitre was 0.39%. In our study males were suffering more than the females. In this study goitre prevalence in those taking iodized salt was 11.49% and in those taking non-iodized salt was 13.04%. It is to note that after more than two decades of enacting iodized salt more than 90% took iodized salt and even then the prevalence of goitre in the two groups were almost identical. In this study goitre prevalence in those taking mustard oil was 12.36% and in those taking non-mustard oil was 11.24%. Goitre prevalence was little more in those who took mustard oil than those who took non-mustard oil. In this study goitre prevalence in those taking cabbage was 11.64% and in those taking non-cabbage was 11.54%.

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### Introduction

**G**oitre is the enlargement of the thyroid gland. The thyroid gland is located in the neck below the larynx, on either side of and anterior to the trachea.<sup>1</sup> The posterior surface of the isthmus is firmly adhered to the second to fourth rings of the trachea, and the pretracheal fascia is here fixed between them. This fixation and the investment of the whole gland by pretracheal fascia were responsible for the gland moving up and down with the larynx during swallowing.<sup>2</sup> Environmental goitrogens include foods such as cassava, cabbage, turnip, maize, bamboo shoots and mustard.<sup>3</sup> The Government of Bangladesh has enacted iodized salt in 1989 and its iodine content should be 45 to 50 parts per million (PPM) at production and at least 20 PPM at the time of

selling.<sup>4</sup> The purpose of the study was to unravel the relation of goitre to intake of iodized-salt, mustard oil and cabbage.

### Methods

Some localities at Dinajpur town in Bangladesh were surveyed for goitre. The purpose of the study was explained to each subject. Subjects were instructed to keep their head erect. Enlargement of thyroid gland was looked for in front of the neck. If it was visible then it was confirmed to be thyroid gland by observing the upward movement of the swelling on deglutition. It was grade 2 goitre. If it was not visible then the neck was palpated with fingers while the subject was requested to swallow. If it was palpable then it was grade 1 goitre. If it was neither visible nor palpable then it was grade 0 goitre.

1. \*Dr. Md. Badaruddin, Professor, Physiology, Northern Private Medical College, Rangpur.
2. Dr. Md. Borhan Uddin, Professor, Pharmacology, Ibn Sina Medical College, Dhaka.
3. Dr. Mst. Firoza Khatun, Ex Curator, Anatomy, Rajshahi Medical college, Rajshahi.
4. Dr. Afroza Mim, Honorary Medical Officer, Medicine Unit, Rajshahi Medical College Hospital, Rajshahi.

\* For correspondence

Besides this the subjects were asked for whether they were taking iodized salt, non-iodized salt or both of them. They were also asked for whether they were taking soybean oil, mustard oil or both of them. Lastly it was inquired for whether the subjects were taking cauliflower, cabbage or both of them or none of them.

### Results

Grade 0 was reported as non-goitre and grade 1 and grade 2 were reported as goitre in the tables.

A total of 258 subjects were studied, 213 males and 45 females. According to the presence of goitre they were classified as follows:

Grade 0:- 188 males and 40 females had grade 0 goitre.

Grade 1:- 24 males and 5 females had grade 1 goitre.

Grade 2:- 1 male had grade 2 goitre.

#### Goitre and salt intake

164 males and 32 females were taking iodized salt, 17 males and 6 females were taking non-iodized salt and 32 males and 7 females were taking both the salts.

Grade 0:- 147 males and 29 females were taking iodized salt, 15 males and 5 females were taking non-iodized salt and 26 males and 6 females were taking both the salts.

Grade 1:- 16 males and 3 females were taking iodized salt, 2 males and 1 female were taking non-iodized salt and 6 males and 1 female were taking both the salts.

Grade 2:- 1 male was taking iodized salt.

#### Goitre and oil intake

134 males and 35 females were taking soybean oil, 24 males and 1 female were taking mustard oil and 55 males and 9 females were taking both the oils.

Grade 0: 119 males and 31 females were taking soybean oil, 20 males and 1 female

were taking mustard oil and 49 males and 8 females were taking both the oils.

Grade 1: 14 males and 4 females were taking soybean oil, 4 males were taking mustard oil and 6 males and 1 female were taking both the oils.

Grade 2: 1 male was taking soybean oil.

#### Goitre and vegetables intake

Twelve males and 2 females were taking cauliflower, 1 male and 1 female were taking cabbage, 190 males and 40 females were taking both cauliflower and cabbage and 10 males and 2 females were taking neither cauliflower nor cabbage.

Grade 0: 10 males and 2 females were taking cauliflower, 1 male and 1 female were taking cabbage, 168 males and 35 females were taking both cauliflower and cabbage and 9 males and 2 females were taking neither cauliflower nor cabbage.

Grade 1: 2 males were taking cauliflower, 21 males and 5 females were taking both cauliflower and cabbage and 1 male was taking neither cauliflower nor cabbage.

Grade 2: 1 male was taking both cauliflower and cabbage.

Table I: Prevalence of goitre according to sex

Subjects	Male	Female	Total
Goitre	25 (11.74%)	5 (11.11%)	30 (11.63%)
Non-goitre	188 (88.26)	40 (88.89%)	228 (88.37%)
Total	213 (100%)	45 (100%)	258 (100%)

Table II: Prevalence of goitre in those who took iodized salt

Subjects	Iodized salt	Non-iodized salt	Total
Goitre	27 (11.49%)	3 (13.04%)	30 (11.63%)
Non-goitre	208 (88.51%)	20 (86.96%)	228 (88.37%)
Total	235 (100%)	23 (100%)	258 (100%)

Table III: Prevalence of goitre in those who took mustard oil

Subjects	Mustard oil	Non-mustard oil	Total
Goitre	11 (12.36%)	19 (11.24%)	30 (11.63%)
Non-goitre	78 (87.64%)	150 (88.76%)	228 (88.37%)
Total	89 (100%)	169 (100%)	258 (100%)

Table IV: Prevalence of goitre in those who took cabbage

Subjects	Cabbage	Non-cabbage	Total
Goitre	27 (11.64%)	3 (11.54%)	30 (11.63%)
Non-goitre	205 (88.36%)	23 (88.46%)	228 (88.37%)
Total	232 (100%)	26 (100%)	258 (100%)

### Discussion

In our study the prevalence of goitre was 11.63%, of which grade 1 goitre was 11.24% and grade 2 goitre was 0.39%. Three major surveys – the East Pakistan Nutrition Survey of 1962-64, the National Goitre Prevalence Study of 1981-82 and the National Iodine Deficiency Disorders Survey in Bangladesh-1993 showed prevalence rates of goitre in this country to the extent of 20%, 10.5% and 47.1% respectively<sup>5</sup>. Alam F and Moslem F (1998) found goitre in 73.5% in 1998. They studied 210 thyroid related disease patients, not in general population<sup>6</sup>. In our study males were suffering more than the females (Table I).

In this study goitre prevalence in those taking iodized salt was 11.49% and in those taking non-iodized salt was 13.04%. This difference is not significant. Those taking both the iodized salt and non-iodized salt were grouped into those taking iodized salt (Table II).

In this study goitre prevalence in those taking mustard oil was 12.36% and in those taking non-mustard oil was 11.24%. This difference is not significant. Those taking both the soybean oil and mustard oil were grouped into those taking mustard oil (Table III).

In this study goitre prevalence in those taking cabbage was 11.64% and in those taking non-cabbage was 11.54%. This difference is not significant. Those taking both the cauliflower and cabbage were grouped into those taking cabbage. Those taking cauliflower and those who were taking neither cauliflower nor cabbage were grouped into those taking non-cabbage (Table IV).

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