Research Paper Medical Science

# Assessment of Dietary Problems in Persons with Down's Syndrome & Subsequent Dietary Councelling in Rashtriya Baal Swasthya Karyakram Programme in Bhopal District.

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**ABSTRACT**

*A new sunrise in the history of health care system of Madhya Pradesh for persons with Down's Syndrome. In Bhopal District Early Intervention Centre under a common roof a person with Down's Syndrome will be able to avail all facilities right from the screening processes to relevant treatment & cure. Aims & Objectives: Assessment of dietary problems in persons with Down's Syndrome & subsequent dietary consultation. To recommend appropriate dietary plan. Methodology: It is a cross sectional analytical study which was under taken to do dietary evaluation of Down's Syndrome children. Data generated was stored in MS excel sheets for statistical analysis. Results: Out of 106 enrolled subjects almost all were having speech problems & subsequent dietary problems followed by low immunity (69.8%), constipation (25.4%), problem in chewing & swallowing (20.7%), Diarrhea (16.9%), hypothyroidism (13.2%), Obesity (12.2%), Heart defects (11.32%), food allergies in 8.4% & coeliac disease (1.8%). None of them was having Diabetes Mellitus as complication. As positive findings about 83.01% have received breast feeding in their early days of life & about 25.4% were receiving speech & hearing therapy for their cognitive development.*

**KEYWORDS : Down's Syndrome, District early intervention centre, Screening & diagnostic facility, Dietary consultation, Bhopal district.**

**Introduction**:
After analyzing alarming figures of prevalence of Down's syndrome & it's complications in the country, a very bright start up/ beginning in the history of Madhya Pradesh Government Health Care System has been undertaken by district authorities. Here, in District Early Intervention Centre under a common roof a person with Down's Syndrome will be able to avail all facilities right from the screening processes to relevant treatment & cure. No more neglect & difficulties for achieving right treatment at right time. Proper assessment procedures, early diagnosis & timely appropriate intervention/treatment is the key to manage life of a person with Down's Syndrome. Quality of life, life expectancy aspect & issues related with earning for self-sustenance/dignified life are the main points which will be tackled through this programme under the umbrella of Rashtriya Baal Swasthya Karyakram (MoH & FW, GOI, 2016)

**Aims & Objectives**:
Assessment of dietary problems in persons with Down's Syndrome & subsequent dietary consultation. To recommend appropriate dietary plan to them.

**Methodology**:
Design wise it is a cross sectional analytical study which was under taken in District Early Intervention Centre, Bhopal. The study population comprised of persons with Down's syndrome. All persons diagnosed for Down's Syndrome either male or female upto the age of 18 yrs were included in the study. All persons diagnosed for Down's Syndrome either male or female above the age of 18 yrs were excluded from the study. Validated procedures for confirmation of Down's Syndrome diagnosis were karyotyping (from a certified laboratory) & clinical assessment by trained pediatrician & other medical experts etc. For dietary evaluation a semi structured open as well as closed ended questionnaire as tool was administered in the study population. Variables included all the major complications of Down's Syndrome & their related dietary consequences. Data generated was stored in MS excel sheets for statistical analysis. Study was conducted after getting permission from due authorities. Help of care takers was taken while filling information. Verbal consent was taken & confidentiality of data was maintained.

**Results**:
The number of study subjects was 106 and among them 58 were males & 48 were females. 22 & 17 respectively were in the age group of 0-5 yrs, 15 & 16 respectively in 5-10 yrs, 14 & 5 respectively in 10 to 15 yrs & 7 & 4 respectively were in 15-18 yrs age group.

Table No. 1 shows that out of 106 enrolled subjects almost all were having speech problems followed by low immunity (69.8%), constipation (25.4%), problem in chewing & swallowing (20.7%), Diarrhea (16.9%), hypothyroidism (13.2%), Obesity (12.2%), Heart defects (11.32%), food allergies in 8.4% & coeliac disease (1.8%). None of them was having Diabetes Mellitus as complication. As positive findings about 83.01% have received breast feeding in their early days of life & about 25.4% were receiving speech & hearing therapy for their cognitive development.

**Table No. 1: Distribution of study population as per presence/absence of complications associated with Down's Syndrome.**

| S.No | Complications | Present (n) | Percent (%) | Other Comments |
|---|---|---|---|---|
| 1. | Heart Defects | 12/106 | 11.32% | Dietary councelling done. |
| 2. | Hypothyroidism | 14/106 | 13.2% | Dietary councelling done. |
| 3. | Obesity | 13/106 | 12.2% | Dietary councelling done. |
| 4. | Constipation | 27/106 | 25.4% | Dietary councelling done. |
| 5. | Diarrhoea (? due to malabsorption) | 18/106 | 16.9% | Dietary councelling done. |
| 6. | Recurrent Infection | 74/106 | 69.8% | Dietary councelling done. |
| 7. | Food Allergies | 9/106 | 8.4% | Dietary councelling done. |
| 8. | Diabetes Mellitus | Nil | 0% | Dietary councelling done. |
| 9. | Coeliac Disease | 2/106 | 1.8% | Dietary councelling done. |
| 10. | Gross Problem in chewing/ swallowing | 22/106 | 20.7% | Dietary councelling done. |
| 11. | Speech Problem | All | 100% | Dietary councelling done. |

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| 12. | Received speech/hearing therapy properly | 27/106 | 25.4% | Dietary councelling done. |
| 13. | Breast feeding done | 88/106 | 83.01% | Dietary councelling done. |

**Table No. 2: Distribution of study population's complications as per age specific groups.**

| S. No | Variables Under Study | 0-5 yrs | 5-10 yrs | 10-15 yrs | >15 yrs |
|---|---|---|---|---|---|
| 1. | Heart Defects | 7 | 3 | 2 | 0 |
| 2. | Hypothyroidism | 2 | 1 | 6 | 5 |
| 3. | Frequent Infections | 34 | 23 | 12 | 5 |
| 4. | Obesity | 1 | 1 | 7 | 4 |
| 5. | Constipation | 13 | 8 | 5 | 1 |
| 6. | Diarrhoea | 8 | 3 | 4 | 3 |
| 7. | Food Allergies | 2 | 3 | 3 | 1 |
| 8. | Coeliac Ds. | 0 | 0 | 1 | 0 |
| 9. | Diabetes Mellitus | 0 | 0 | 0 | 0 |
| 10. | Breast Feeding done | 36 | 28 | 14 | 10 |

**Discussion**:
With appropriate support and encouragement each person with Down Syndrome can reach their individual potential. Infants and children with Down Syndrome can have feeding and drinking difficulties. A smaller oral cavity and low muscle tone in the facial muscles can be contributing factors. In addition, the tongue may appear larger due to a high arched palate, a smaller oral cavity and reduced muscle tone in the tongue. Teeth tend to appear at a later stage. Many children are mouth breathers due to smaller nasal passages, and may have difficulties coordinating sucking, swallowing and breathing whilst feeding. All of these factors can impact on how a child develops efficient oral and feeding skills. Intervention by a Speech and Language Therapist at an early stage will encourage oral motor and feeding skills. Some infants with Down Syndrome may require support of a Paediatric Dietitian for feeding difficulties, poor weight gain, weaning advice, and oral sensitivity. If weaning is delayed beyond 26 weeks, in particular the introduction of iron rich foods, there may be a risk of iron deficiency anaemia. If weight is faltering, providing more nutrient-rich food can improve their nutritional intake. For infants who are weaning, extra calories can be added to food by using breast milk or infant formula, in place of water, to blend home made pureed meals or to mix into dried baby food. Butter, full fat spread or oils such as olive oil, sunflower oil or rapeseed oil can be added to pureed vegetable and potato.

Children require small, regular, calorie-rich meals. Using calorie-rich household ingredients to add to foods will provide additional calories e.g. oil, butter, full fat spreads, cream, cream cheese, grated cheese, sugar. Some children may require support of a suitable paediatric nutritional supplement.

Excessive weight gain is a problem for many older children and adults with Down Syndrome. Adolescents and adults with Down Syndrome tend to be shorter & have a lower resting metabolic rate of 10-15% than their peers, which further predisposes to weight gain. A sensible approach to eating and regular exercise & Food Pyramid will help.

Down Syndrome and Diet-Related Issues

Heart Defects: 40-50% of babies with Down Syndrome have congenital heart defects. Infants requiring cardiac surgery will benefit from the intervention of a Paediatric Dietitian to provide nutrition support prior to and post corrective cardiac surgery.

Thyroid Disorder: Blood testing to check thyroid function is normally carried out annually up to five years of age, and at least once every two years thereafter throughout life. Weight gain is a feature of hypothyroidism. Thyroid function should always be checked in those with rapid weight gain.

Coeliac disease: Dietary intervention is required to manage coeliac disease with the implementation of a gluten-free diet for life.

Diabetes: A healthy balanced diet is important to help control diabetes and prevent long term complications.

Constipation: Children with Down Syndrome have generalised low muscle tone, which predisposes them to constipation. The onset of walking and improvement in abdominal muscle tone can help to alleviate difficulties with constipation. Ensuring an adequate fluid intake, yogurt products and eating a variety of fibre rich foods can help manage constipation. In addition laxative medication may be required.

Structural Problems of the Gut: Structural problems of the gut are more common in infants and children with Down Syndrome and generally require surgical intervention and support from a specialist dietitian.

Infection: Infants and children with Down Syndrome can be more vulnerable to infection, in particular chest, ear, nose, throat and eye infections. Repeated infections requiring antibiotics can impact on a child's appetite. Inclusion of a daily probiotic yoghurt or probiotic yoghurt drink may promote the growth of healthy bacteria in the gut following antibiotics. Loss of appetite and food refusal because of illness can impact on a child's nutritional status, growth and well-being.

Food Intolerances and Allergies: Some parents of children with Down Syndrome often wish to exclude cow's milk from their child's diet due to symptoms such as blocked or runny nose, wheeze, irritability, colic, crying. Unsupervised dietary restriction can affect a child's growth, and bone health, leading to nutritional deficiency and failure to thrive.

An optimized methodology of T.N.I. (Targeted Nutritional Intervention) can be implemented in deficient cases. TNI consists of taking food supplements containing vitamins, minerals, digestive enzymes and amino acids, as well as certain oils rich in essential fatty acids.

For cognitive improvement of children with Down's Syndrome sensitization & presentation of food are very important aspects which should always be kept in mind while serving.

**Conclusion**:
Results of this study indicate that attention toward improving the nutritional status of Down's Syndrome person should be accorded high priorty to ensure improvement in overall quality of life.

**Recommendations:**
More & more such institutions are required to be operational in all other districts of the country for improved quality of living of Down's Syndrome affected population.

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