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RESEARCH ARTICLE

NUTRITIONAL STATUS OF CHILDREN IN GOVERNMENTAL JUVENILE CENTRES IN TAMILNADU

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ABSTRACT

Children's health and nutrition are a major cause of concern for the all-round development. Children found to have committed offences, street children and abandoned children, who are in need of protection against exploitation, child abuse are being admitted in the juvenile centers through Juvenile Justice Boards. The research was undertaken to assess the nutritional status of children in the juvenile centers. A total number of 327 children living in the six selected juvenile centers were selected for the study. Nutritional status of the juvenile children admitted in the six observation homes during the study period were assessed by using an interview schedule. On the whole 38 per cent of the Juvenile children were found to be underweight. Only 10 per cent of the children were found to be overweight. Out of three hundred and twenty seven Juvenile children 20 children had dyspigmentation of hair indicating the presence of protein deficiency. On the whole 8 per cent of children had pale conjunctiva a classical symptom of vitamin A deficiency. Based on the nutritional status of children living in the juvenile centers, appropriate educational strategies were developed and health and nutrition education was given. Database on the health and nutrition was developed. Education given using charts, posters, short film and flex boards had brought in attitudinal change among the juvenile children to have wholesome food, to avoid plate wastage and skipping of meal and to lead a physically, morally and spiritually a happy life.

INTRODUCTION

Over one third of India's citizens are children in the age group of 0-18 years. Despite the fact that India has a huge child population and the poor indicators for children's health, education, development and survival, children's issues get meagre attention in India.

Millions of children live in the streets of cities scattered all over the world. While their presence may be noticed in developed as well as developing countries, majority of street children live in the poor nations of Africa, Asia, and Latin America, especially India and Brazil. Some estimates put the number of street children living in India's six most populous cities at 500,000. War, poverty, urbanization, rapid economic growth, the breakdown of families, and domestic violence are the most immediate causes of this phenomenon's growing proportions[1].

The steadily growing number of street children worldwide could be between 100 and 150 million.India has the highest number of street children on the whole. UNICEF itself estimated that 11 million children lived in the streets of India, while other groups put the number as high as 18 million. Two in three are male. Moreover, while the majority are between 11 and 15 years old, a large percentage belong to 6-10 age group[2].

The Juvenile Justice Act (Care and Protection of Children) was approved in 2000 to reform the 1986 Act, is designed as a comprehensive legal framework by which the Indian government has pledged to alleviate the devastating impact that underdevelopment, poverty, and crime have on children. The Act spells out the government's responsibilities in the care, the protection and the development of neglected children, but also tackles issues related to crime prevention and the rehabilitation of juvenile delinquents.

Juvenile delinquency, also known as juvenile offending, or youth crime, is participation in illegal behavior by minors (Juveniles). Most legal systems prescribe specific procedures for dealing with juveniles, such as juvenile detention centers and courts. A juvenile delinquent is a person who is typically

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under the age of 18 and commits an act that otherwise would have been charged as a crime if they were an adult[3].

A substantial number of children engage in delinquency. Antisocial and aggressive behaviors may begin as early as preschool or in the first few grades of elementary school. Such childhood misconduct tends to be resistant to change; for example, the parents disciplining more harshly, often predicts continuing problems during adolescence, as well as adult criminality[4].

School dissatisfaction is a major cause of child delinquency. Some students get dissatisfied with school life. Parental irresponsibility, unmanageable student teacher ratio, lack of entertainment and sports facilities in school, indifference of the teachers may contribute to this. Such dissatisfied students become regular absentees in schools and start wandering on their own and become gamblers, eve-teasers, pick pockets, drunkards, smokers and drug addicts.

Poor health is a chronic problem for street children. Half of all children in India are malnourished, but for street children the proportion is much higher. These children are not only underweight, but their growth has often been stunted; for example, it is very common to mistake a 12 year old for an 8 year old.

The scale of diet provided to the children in the center is, as per the guidance formed by department of Social Welfare and Nutritious Meal Programme. The menu is formulated by the department based on the Recommended Dietary Allowance for children[5].

Children's health and nutrition are a major cause of concern for the all-round development of children. The present research was undertaken to assess the nutritional status of the juvenile children living in the selected juvenile centers and to suggest appropriate strategies to uplift the nutritional status and all-round development of children.

MATERIALS AND METHODS

Children found to have committed offences, street children and abandoned children, who are in need of protection against exploitation, child abuse are being admitted in the observation homes through Juvenile Justice Boards. These institutions provide care, treatment, training and rehabilitation to the children. Totally there are eight Governmental and non-Governmental observation homes in Tamil Nadu under this Act. Out of this, six centers are Governmental observation homesand two homes are run by non-governmental organizations. All the six observation homes situated at Tiruchirapalli, Salem, Tirunelveli, Thanjavur, Cuddalore and Chennai were selected for the research project. All the children living in the six selected observation homes were selected for the study. A total number of 327 children were selected. Assessment of the nutritional status was done by the researcher. Pre-structured interview schedule was prepared for collecting information about the sex, age, socio-economic status, family background, anthropometric measurement, clinical examination, dietary pattern (24 recall method), reason for delinquency, life style pattern, hygienic practices and health status of the children.

Diet Survey

Dietary pattern of the selected subjects were collected using the same interview schedule. The type of diet consumed, meal pattern, skipping of meals, water intake and consumption of each food item was elicited and recorded. Nutrient intake was calculated by recording the food intake of the subjects for three consecutive days by 24 hour food recall method.

Twenty- four hour food recall is the simplest form of dietary intake data collection. In a twenty-four hour recall, the interviewer takes the client through a recent 24 hour period (usually midnight to midnight) to determine what foods and beverages the client consumed. All the foods consumed by the subject are recorded by volume[6].

Knowledge Attitude and Practices (KAP)

Knowledge Attitude and Practices (KAP) were assessed using a checklist to find out the effect of intervention programmes with the components such as nutritious foods, hygiene and sanitation.

KAP assessment was used to find out the nutrition knowledge. Multiple choice questions were prepared to find the pre and post knowledge, attitude and practices of the selected children. Scores were allotted for each question and the impact was assessed. Scoring was done on the following basis. Scores of one, half and zero were awarded respectively to each correct, partially correct and wrong answer. Gain in scores and percent improvement was calculated using the following equation.

Gain in scores = Scores of post test - Scores of pre test

$$\text{Percentage of Improvement} = \frac{\text{Gain in scores}}{\text{Pre Test scores}} \times 100$$

RESULTS AND DISCUSSION

The selected juvenile children were distributed in the age group of 6 to 18 years. In general irrespective of the Juvenile center, it was observed that the Juvenile home had more number of male inmates (319) compared to the females (8). Out of 319 male inmates 49 per cent were between the age group of 16 to18 years followed by 44 per cent between 11to15 years. Out of eight girls five of them were 16 to18 years, and no girls were found to be in the age group of 6 to10 years irrespective of the centers. It was noted that except the Tiruchirapalli the other five juvenile centers did not have any girl inmates during the study period.

Majority (56%) of the subjects had studied up to sixth or tenth standard. Only nine per cent of the children were found to have completed their higher secondary qualification. Ten per cent of the subjects were uneducated. The poor educational status of the children can be attributed to their poor income status.

Table 1 Nature of delinquency

	Nature of Delinquency								
	Theft	**Murder**	**Attempt to murder**	**Kidnap**	**Child marriage**	**Rape**	**Love affair**	**Fight**	**Robbery**
Trichirapalli (n=26)	15	3	3	0	1	2	1	1	0
Salem (n=51)	33	7	0	0	1	0	1	3	6
Thanjavur (n=81)	2	2	0	0	0	0	0	4	2
Thirunelveli (n=50)	17	9	3	1	0	0	2	8	10
Cuddalore (n=26)	9	5	3	0	0	0	4	2	3
Chennai (n=85)	29	7	12	4	0	4	7	9	13
Total	**105**	**33**	**21**	**5**	**2**	**6**	**15**	**27**	**34**
Trichirapalli Girls(n=8)			Theft – 3 Illegal Childbirth – 1 Child Marriage – 2 Forced Prostitution – 1 Kidnaped – 1						

Table 2 a Mean Nutrient Intake of Children in Tiruchirapalli Center

Nutrient	Mean nutrient intakeupto 15 years boys (n=9)	RDA upto 15 years boys	Percent of deficit	Mean nutrient intakeupto 16-18 years boys (n=17)	RDA 16-18 years Boys	Percent of deficit
Energy (kcal)	2601	2748	±147	2817	3037	±220
Protein (g)	60	54.2	±5.8	60	61.5	±1.5
Fat (g)	26	20	±6	28	15	±13
Iron (mg)	30	32	±2	30	27	±3
Calcium (mg)	437	800	±363	445	600	±155
Carotene (µg)	529	4800	±4271	533	4800	±4267
Thiamine (mg)	1.7	1.2	±0.5	1.6	1.3	±0.3
Riboflavin (mg)	0.6	1.5	±0.9	0.8	1.6	±0.8
Vitamin C (mg)	45	50	±5	48	50	±2

Table 2 b Mean Nutrient Intake of Children in Salem Center

Nutrient	Mean nutrient intakeupto 15 years boys (n=18)	RDA upto 15 years boys	Percent of deficit	Mean nutrient intakeupto16-18 years boys (n=33)	RDA 16-18 years Boys	Percent of deficit
Energy (kcal)	2291	2748	±457	2319	3037	±718
Protein (g)	62	54.2	±7.8	64	61.5	±2.5
Fat (g)	28	20	±8	29	15	±14
Iron (mg)	15	32	±17	17	27	±10
Calcium (mg)	399	800	±401	454	600	±146
Carotene (µg)	2008	4800	±2792	2018	4800	±2782
Thiamine (mg)	1.6	1.2	±0.4	1.6	1.3	±0.3
Riboflavin (mg)	0.9	1.5	±0.6	0.8	1.6	±0.8
Vitamin C (mg)	48	50	±2	44	50	±6

It was surprising to note that 22 percent of children were under the protection of Thanjavur Juvenile center. The remaining 256 number of children (78 percent) were found to be in conflict with law. Forty two percent of boys were found to have committed the crime of theft followed by murder charges (13%). It was pathetic to note that out of 8 girls three girls were found to have committed the offence of theft and the rest of the girls were found to be the victims of child marriage (2), forced prostitution (1) and illegal childbirth (1).

Eighty nine per cent of the Juveniles were non- vegetarians and rest were vegetarian (28) and ova vegetarian (8). All the Juvenile homes provided a serving of chicken once in a week in the form of gravy preparation. Likewise egg was given thrice a week. All the selected Juvenile children followed a four meal pattern namely breakfast, lunch, evening tea and dinner. It was clear that 18 per cent of the subjects skipped their meals.

Mean nutrient intake

Mean nutrient intake of all the six centers compared with Recommend Dietary Allowances, 2009 are presented in Table II.

It was observed that the Juvenile children showed a deficit intake of nutrients like energy, protein, calcium, carotene, riboflavin and vitamin C. It was also observed that the intake of fat, iron and thiamine were above the Recommended Dietary Allowances.

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Table 2 C Mean Nutrient Intake of Children in Thanjavur Center

Nutrient	Mean nutrient intake up to 9 years (n=10)	RDA Upto 9 years	Percent of defict	Mean nutrient intake upto 15 years boys (n=18)	RDA upto 15 years boys	Percent of deficit	Mean nutrient intakeupto16-18 years boys (n=33)	RDA 16-18 years Boys	Percent of deficit
Energy (kcal)	2081	1691	±390	2212	2748	±536	2215	3037	±822
Protein (g)	57	29.6	±27.4	55	54.2	±0.8	54	61.5	±7.5
Fat (g)	24	20	±4	23	20	±3	24	15	±9
Iron (mg)	15	15	0	15	32	±17	15	27	±12
Calcium (mg)	344	600	±256	356	800	±244	352	600	±248
Carotene (µg)	1108	4800	±3692	1100	4800	±3692	1103	4800	±3697
Thiamine (mg)	1.4	1.0	±0.4	1.3	1.2	±0.1	1.5	1.3	±0.2
Riboflavin (mg)	0.7	1.2	±0.5	0.8	1.5	±0.7	0.7	1.6	±0.9
Vitamin C (mg)	54	40	±14	56	50	±6	52	50	±2

Table 2d Mean Nutrient Intake of Children in Thirunelveli Center

Nutrient	Mean nutrient intake upto 15 years boys (n=29)	RDA upto 15 years boys	Percent of deficit	Mean nutrient intake upto16-18 years boys (n=21)	RDA 16-18 years Boys	Percent of deficit
Energy (kcal)	2120	2748	±628	2321	3037	±716
Protein (g)	62	54.2	±7.8	65	61.5	±3.5
Fat (g)	28	20	±8	34	15	±19
Iron (mg)	15	32	±17	21	27	±6
Calcium (mg)	399	800	±401	562	600	±38
Carotene (µg)	2008	4800	±2792	1696	4800	±3104
Thiamine (mg)	1.6	1.2	±0.4	1.8	1.3	±0.5
Riboflavin (mg)	0.9	1.5	±0.6	1	1.6	±0.6
Vitamin C (mg)	48	50	±2	53	50	±3

Table 2 e Mean Nutrient Intake of Children in Cuddalore Center

Nutrient	Mean nutrient intake up to 9 years (n=1)	RDA Upto 9 years	Percent of defict	Mean nutrient intakeupto 15 years boys (n=9)	RDA upto 15 years boys	Percent of deficit	Mean nutrient intakeupto16-18 years boys (n=16)	RDA 16-18 years Boys	Percent of deficit
Energy (kcal)	2101	1691	±410	2021	2748	±727	2117	3037	±920
Protein (g)	57	29.6	±27.4	57	54.2	±2.8	54	61.5	±7.5
Fat (g)	24	20	±4	27	20	±7	24	15	±9
Iron (mg)	15	15	0	22	32	±10	15	27	±12
Calcium (mg)	344	600	±256	432	800	±368	352	600	±248
Carotene (µg)	1108	4800	±3692	1036	4800	±3764	1103	4800	±3697
Thiamine (mg)	1.4	1.0	±0.4	1.3	1.2	±0.1	1.5	1.3	±0.2
Riboflavin (mg)	0.7	1.2	±0.5	0.9	1.5	±0.6	0.7	1.6	±0.9
Vitamin C (mg)	54	40	±14	56	50	±6	52	50	±2

Table 2 f Mean Nutrient Intake of Children in Chennai Center

Nutrient	Mean nutrient intake up to 9 years (n=2)	RDA Upto 9 years	Percent of defict	Mean nutrient intakeupto 15 years boys (n=32)	RDA upto 15 years boys	Percent of deficit	Mean nutrient intakeupto16-18 years boys (n=51)	RDA 16-18 years Boys	Percent of deficit
Energy (kcl)	1894	1691	±203	2018	2748	±730	2108	3037	±929
Protein (g)	55	29.6	±25.4	57	54.2	±2.8	54	61.5	±7.5
Fat (g)	29	20	±9	25	20	±5	24	15	±9
Iron (mg)	20	15	5	17	32	±15	15	27	±12
Calcium (mg)	422	600	±178	455	800	±345	352	600	±248
Carotene (µg)	522	4800	±4278	574	4800	±4226	578	4800	±4222
Thiamine (mg)	1.3	1.0	±0.3	1.3	1.2	±10.7	1.5	1.3	±0.2
Riboflavin (mg)	0.9	1.2	±0.3	0.8	1.5	±0.7	0.7	1.6	±0.9
Vitamin C (mg)	54	40	±14	56	50	±6	52	50	±2

It was observed that the Juvenile children showed a deficit intake of nutrients like energy, iron, calcium, carotene and riboflavin. It was also observed that the intake of protein, fat, and thiamine and vitamin C were above the Recommended Dietary Allowances.

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It was evident that on the whole 38 per cent of the Juvenile children were found to be underweight. It was also observed that among the 327 selected juvenile children 65 per cent of the children in the Thanjavur Juvenile center were found to be underweight followed by Trichi center (46%). Only 10 per cent of the children were found to be slightly overweight.

It was revealed that except 14 per cent of the Juvenile children (>0.85), the rest of the children had normal waist to hip ratio (<0.80) indicating the absence of abdominal fat.

It was clear that out of 327 Juvenile children 20 children had dyspigmentation of hair clearly indicating the presence of iron and protein deficiency. Twenty seven children on the whole had pale conjunctiva a classical symptom of vitamin a deficiency. Also, bleeding gum symptom of vitamin C was observed among 26 juvenile children. Presence of dental carries (76) indicates poor personal hygiene among the Juvenile children.

It was clear that 84 per cent of the children played games. Except two centers namely Thanjavur and Chennai, none of the center had play grounds nor encouraged out door games. On the whole, 72% of children restricted themselves to indoor games like carem(236) and chess(68).

On the whole 69 % of children excercised daily. Instructed yoga training twice or thrice a week was given to the children irrespective of their sex in all the six center. It was also observed that 13 % of children did mild exercises. All the six Juvenile home did not allow the children to walk, jog or to cycle.

It was observed that all the children took bath daily. Seventy six percent of children had good toilet habits.

CONCLUSION

In general the juvenile children showed deficit intake of nutrient like energy, iron, calcium and vitamin. Intake of fiber rich cereals and fruits were low. Though the children were given training in yoga, adequate infrastructural facilities like playground, recreationalhall and computer can improve the mental wellbeing of the juvenile children. The strategic inputs developed by the investigator like electronic teaching aid, clip art, flip chart and nutrition and health calendar had brought about remarkable changes in the juvenile children. It had also improved the personel hygiene and health and nutritional knowledge of the juvenile children living in the center. The short film and the database on the health and nutrition had brought in attitudinal change among the juvenile children to have wholesome food, to avoid plate wastage, skipping of meal and to lead a physically, spiritually and morally a happy life.

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