An insight into the childhood obesity and importance of lifestyle counselling on obesity status

Dr. Anand S Ranagol, Dr. Savita Koregol and Dr. Chandrashekar Bhuyyar

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Abstract
Background: Obese children also suffer from emotional, mental, and social trauma. Obese children are seen to have depression and very low self-esteem. Also, such children are teased by society and have high peer pressure. Additionally, obesity and overweight pose a high burden on the health care system.

Aims: The present trial was carried out to document the efficacy of counselling about physical activity, nutrition, and weight on obese children of low socioeconomic status.

Materials and Methods: The study was carried out on 48 children and was based on the questionnaire on the lifestyle modification and counselling sessions with questions based on healthy habits and physical exercise. Associated comorbidities such as asthma or diabetes were also asked along with their treating paediatrician. The collected data were subjected to statistical evaluation and the results were formulated.

Results: Counselling for nutrition, physical activity, and weight were provided to study participants and the results showed that 80% (n=12) obese, 66.6% (n=6) overweight, and 58.3% (n=14) healthy subjects received counselling for nutrition. In male participants 61.53% (n=16), 69.23% (n=18), and 65.38% (n=17) respectively were counselled for nutrition, physical activity, and weight. Similarly, in females 68.18% (n=15), 63.63% (n=14), and 63.63% (n=14) respectively were counselled for nutrition, physical activity, and weight. Regarding diabetics in the study (n=2), all the subjects were counselled for weight, nutrition, as well as physical activity. In subjects with asthma, the counselling for nutrition, physical activity, and weight was given to 63.6% (n=7), 54.5% (n=6), and 54.5% (n=6) respectively.

Conclusion: The present study concludes that overweight and obese children do not get more counselling sessions compared to their healthy peers. There is a need for more interactions at home and more reinforcement of counselling sessions in the school curriculum with special emphasis on overweight and obese children regarding their nutrition, physical activity, and weight.

Keywords: Obesity, overweight, BMI, counselling, childhood obesity

Introduction
Obesity in childhood is an issue of concern and is increasing worldwide with the recorded increase by triple value since the late 80s in the U.S alone. Approximately one-third of children in the age range of 2 years to 19 years are obese and overweight in the United States, despite the NHANES survey showing a plateau in obesity increase in the past decade [1]. Obesity has also been linked to ethnicity and socioeconomic status where it is found that obesity is higher in people with low socioeconomic status compared to high. Increasing obesity in children is an issue of concern as obesity and overweight is linked to associated morbidities and complications. Various complications being linked to obesity are diabetes, hypertension, sleep apnea, liver diseases, dyslipidaemia, and insulin resistance [2]. Obesity acquired during childhood tends to remain till adult life leading to early life mortality and morbidity. As obesity and hence mortality, and morbidity are increasing in the present generation, hence, there might be a decrease in life expectancy in the present generation owing to this obesity [3]. Obese children also suffer from emotional, mental, and social trauma. Obese children are seen to have depression and very low self-esteem. Also, such children are teased by society and have high peer pressure. Additionally, obesity and overweight pose a high burden on the health care system [4]. As obesity remains with an individual till adulthood, it also poses long-term financial constrain on the economy. It is estimated that in the future this obesity in children will increase highly.

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Hence, its prevention and insight into this problem are necessary. Till data the data regarding epidemic and strategies for diagnosing, prevention, and control is limited [3].

Cochrane review of 2011 suggested various measures for controlling obesity and overweight in childhood such as implementing physical activity in schooling schedule, focus on healthy lifestyle in children, healthy diet, parent’s involvement in outdoor and physical activities, and improving the home eating habits [6]. These studies included in the Cochrane review failed to develop generalized recommendations in the prevention and management of obesity owing to the differences in the various included studies. In the recent work done in literature, it is concluded that lifestyle modification, behavioural modifications, and diet modification are highly effective in successfully reducing obesity and adiposity with positive alterations in BMI. However, the most effective therapy was not suggested by any study [7].

Orlistat, a pharmacologic agent has been tried in treating obesity and is found to be an effective agent for reducing obesity. However, Orlistat is found to have severe life effects worse than obesity itself. Despite various interventions under investigation as effective measures for treating and managing obesity, there is no therapy still considered as standard for treating obesity [8].

It is shown that among children, who have obesity, only a few of them are diagnosed with obesity. Hence, only those who are diagnosed get the information on reducing obesity in terms of diet counselling, physical activity, and behavioural modifications. Hence the present trial was carried out to evaluate the efficacy of implementing and identifying a novel strategy for preventing obesity in childhood. Also, the study was aimed at documenting the efficacy of counselling about physical activity, nutrition, and weight on obese children of low socioeconomic status.

Materials and Methods
The present trial was carried out to evaluate the efficacy of implementing and identifying a novel strategy for preventing obesity in childhood. Also, the study was aimed at documenting the efficacy of counselling about physical activity, nutrition, and weight on obese children of low socioeconomic status. The trial included 48 children from the age group of 8 years to 14 years with a mean age of 10.12 years. The demographic characteristics of the study subjects are listed in Table 1.

The present trial also evaluated the factors and parameters as they relate to obesity in the study sample of 48 school-going children. The results are depicted in Table 2. It was seen that 15 subjects were obese (31.25%), 9 were overweight (18.75%), and 50% of the study participants were healthy based on the BMI. Eating habits showed that majority subjects preferred junk from the school canteen which made 41.66% (n=20), 22 (4.83%) subjects got lunchbox from home, and 6 subjects (12.5%) skipped lunch during school. 70.83% (n=34) of subjects liked the physical activity during the school curriculum, whereas, 29.16% (n=14) skipped the physical activity sessions of the school. Physical activity was avoided by 45.83% (n=22) subjects at home. Only 43.75% (n=21) of subjects were seeing a specialized paediatrician for their treatments, 39.58% (n=19) were visiting a general physician, and 16.66% (n=8) were from the high socioeconomic status. The present trial also evaluated the factors and parameters instead of names were used for identification purposes. The height and weight of the study subjects were also recorded. The study was based on the survey where the survey questionnaire, where questions were read out loud to the students so that participants could understand the questions clearly, and the students entered their responses on the respective computers.

The survey also included questions based on lifestyle modification and counselling sessions with questions based on healthy habits and physical exercise. The BMI for each subject was calculated from the height and weight. Other demographic characteristics taken into account were gender, socioeconomic status, and weight. To define obesity and overweight, BMI which was less than 95th percentile and more than 85th percentile was the marked points. The socioeconomic status was divided into low, medium, or high. Associated comorbidities such as asthma or diabetes were also asked along with their treating paediatrician. The collected data were subjected to statistical evaluation and the results were formulated.

Results
The present trial was carried out to evaluate the efficacy of implementing and identifying a novel strategy for preventing obesity in childhood. Also, the study was aimed at documenting the efficacy of counselling about physical activity, nutrition, and weight on obese children of low socioeconomic status. The BMI for each subject was calculated from the height and weight. Other demographic characteristics taken into account were gender, socioeconomic status, and weight. To define obesity and overweight, BMI which was less than 95th percentile and more than 85th percentile was the marked points. The socioeconomic status was divided into low, medium, or high. Associated comorbidities such as asthma or diabetes were also asked along with their treating paediatrician. The collected data were subjected to statistical evaluation and the results were formulated.
The study also assessed the counselling received by the study participant and the results are summarised in Table 3. Counselling for nutrition, physical activity, and weight were provided to study participants and the results showed that 80% (n=12) obese, 66.6% (n=6) overweight, and 58.3% (n=14) healthy subjects received counselling for nutrition. 73.33% (n=11) obese, 65.5% (n=5) overweight, and no healthy subjects received counselling for physical activity. For weight, 66.6% (n=10) obese, 77.7% (n=7) overweight, and 54.16% (n=13) healthy subjects received counselling. In male participants 61.53% (n=16), 69.23% (n=18), and 65.38% (n=17) respectively were counselled for nutrition, physical activity, and weight. Similarly, in females 68.18% (n=15), 63.63% (n=14), and 63.63% (n=14) respectively were counselled for nutrition, physical activity, and weight. Regarding diabetics in the study (n=2), all the subjects were counselled for weight, nutrition, as well as physical activity. In subjects with asthma, the counselling for nutrition, physical activity, and weight was given to 63.6% (n=7), 54.5% (n=6), and 54.5% (n=6) respectively.

Table 1: Demographic characteristics of the study participants

| S. No. | Characteristic       | Number (n) | Percentage (%) |
|--------|---------------------|------------|----------------|
| 1.     | Mean age            | 10.12±2.06 |                |
| 2.     | Age Range (in years)| 8-14 years |                |
| 3.     | Gender              |            |                |
| a.     | Male                | 26         | 54.16%         |
| b.     | Female              | 22         | 45.83%         |
| 4.     | Education Status    |            |                |
| a.     | 6th standard        | 19         | 39.58%         |
| b.     | 7th standard        | 18         | 37.5%          |
| c.     | 8th standard        | 11         | 22.91%         |
| 5.     | Socioeconomic status|            |                |
| a.     | Low                 | 14         | 29.16%         |
| b.     | Medium              | 26         | 54.16%         |
| c.     | High                | 8          | 16.66%         |

Table 2: Characteristics of the study subjects as it relates to obesity

| S. No. | Characteristic       | Number (n) | Percentage (%) |
|--------|---------------------|------------|----------------|
| 1.     | BMI                 |            |                |
| a.     | Obese (more than 95%) | 15         | 31.25%         |
| b.     | Overweight (less than/equal to 95%) | 9          | 18.75%         |
| c.     | Healthy (<85%)      | 24         | 50%            |
| 2.     | Eating habits in school |            |                |
| a.     | Lunchbox from home  | 22         | 4.83%          |
| b.     | From Canteen        | 20         | 41.66%         |
| c.     | Skips Lunch         | 6          | 12.5%          |
| 3.     | Physical activity in school |    |                |
| a.     | Joins               | 34         | 70.83%         |
| b.     | Skips               | 14         | 29.16%         |
| 4.     | Physical activity at home |    |                |
| a.     | Yes                 | 26         | 54.16%         |
| b.     | No                  | 22         | 45.83%         |
| 5.     | Primary treatment centre |    |                |
| a.     | Physician           | 19         | 39.58%         |
| b.     | Paediatrician       | 21         | 43.75%         |
| c.     | Variable            | 8          | 16.66%         |
| 6.     | Associated diseases |            |                |
| a.     | Diabetes            | 2          | 4.16%          |
| b.     | Asthma              | 11         | 22.91%         |
| c.     | Adenoids            | 6          | 12.5%          |

Table 3: Association of lifestyle modification with counselling and study parameters

| S. No. | Parameter       | Counselling for nutrition | Counselling for physical activity | Counselling for weight |
|--------|----------------|---------------------------|-----------------------------------|------------------------|
| 1.     | Obese (more than 95%) | 80% (n=12) | 73.33% (n=11) | 66.6% (n=10) |
| b.     | Overweight (less than/equal to 95%) | 66.6% (n=6) | 55.5% (n=5) | 77.7% (n=7) |
| c.     | Healthy (<85%) | 58.3% (n=14) | - | 54.16% (n=13) |
| 2.     | Eating habits in school |            |            |            |
| a.     | Lunchbox from home  | 50% (n=11) | 22.72% (n=5) | 40.9% (n=9) |
| b.     | From Canteen        | 70% (n=14) | 45% (n=9) | 65% (n=13) |
| c.     | Skips Lunch         | 66.6% (n=4) | 83.3% (n=5) | 33.3% (n=2) |
| 3.     | Gender             |            |            |            |
| a.     | Male               | 61.53% (n=16) | 69.23% (n=18) | 65.38% (n=17) |
| b.     | Female             | 68.18% (n=15) | 63.63% (n=14) | 63.63% (n=14) |
| 4.     | Associated diseases |            |            |            |
| a.     | Diabetes           | 100% (n=2) | 100% (n=2) | 100% (n=2) |
| b.     | Asthma             | 63.6% (n=7) | 54.5% (n=6) | 72.72% (n=8) |

Discussion
The present trial was carried out to evaluate the efficacy of implementing and identifying a novel strategy for preventing obesity in childhood. Also, the study was aimed at documenting the efficacy of counselling about physical activity, nutrition, and weight on obese children of low.
The present study concludes that overweight and obese children do not get more counselling sessions compared to their healthy peers. There is a need for more interactions at home and more reinforcement of counselling sessions in the school curriculum with special emphasis on overweight and obese children regarding their nutrition, physical activity, and weight. The present trial had few shortcomings including bias of geographical area; non-inclusion of the interaction of obese children to their parent/teacher in study questionnaire, way of assessing the counselling availability was children response to the questionnaire which cannot be fully trusted, small sample size, and short monitoring period. The prospective longitudinal trials with a larger sample size and longer monitoring period are required to reach a definitive conclusion.

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