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A Study on Fat Percentage Difference between Caesarean and Non-Caesarean School Boy

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Abstract:
Background: Now-a-days, Childhood obesity is one of the common problem in advanced countries of the world. The main reason is predicted as- lack of physical exercise, increasing habit of fast food and other various causes. There is one question which always arise in our mind whether delivery mode can affect children's Fat%!
The purpose of the study is to find out the difference in fat percentage level between caesarean and non-caesarean school Boys.
Materials & Method: Total number of subject selected for the study was 96, out of which 48 were Caesarean and 48 Non-Caesarean. They were doing study in class IX-X level from 'Patha-Bhavana and Siksha-Satra, Visva-Bharati' located at Bolpur, West Bengal, India. Dial type Skin Fold Caliper was used for measuring fat% and Brozek et al1963 fat percentage measurement formula & Jackson Pollock body density measurement formula. The collected data were calculated by using descriptive statistics and "t" test and level of significance was set on 0.05 level.
Result: There were a significance difference exist on Fat% level between caesarean and non-caesarean boys.
Conclusion: The finding demonstrated that caesarean born Boys possess higher Fat% level than Non- Caesarean Boys.

Keywords: *Fat, caesarean, non- caesarean, delivery, skin fold*

1. Introduction

Now-a–days, Caesarean delivery rate is increasing in progressing world. One of the most important reasons was painless and safe delivery, that keep the family members quiet calm than the normal delivery. In the United states, the caesarean section rate has increased by 48% since 1996, reaching a level of 31.8% in 2007. But always a question arises whether delivery mode can affect children body fat% level.

A caesarean section is a surgical procedure in which incisions are made through a woman's abdomen and uterus to deliver her baby. Caesarean section, also called C- Section, is performed whenever any abnormal condition comes during delivery. Complicate labor and vaginal delivery threatening the life or mother's health as well as the baby. Difficult labor is also caused by one of the three following condition; abnormalities in the mother's birth canal; abnormalities in the position on the fetus; or abnormalities in the labor., including weak or in frequent contractions. (1)

Overweight and obesity rates are also increasing across the world. In school children, they insecure themselves with the increased risk for metabolic disorders in adulthood. Body fat includes essential body fat and storage body fat. Essential body fat is necessary to maintain life and reproductive functions. The essential body fat percentage for women is greater than that for men, due to the demands of childbearing and other hormonal functions. Storage body fat accumulates in adipose tissue. Adipose tissue is a normal constituent of the human body which play an important role in storing energy as fat for metabolic demands. Obesity is storage of an excess of body fat frequently resulting in a significant impairment to health. (15)

Childhood obesity depends on many factors like, lack of Physical Exercise, excessive consumption of fast food and other various causes, but how it can affect the delivery mode of the children and their body fat% level.

Many studies suggest that Babies born by Cesarean Section more likely to become obese in later life than normal born baby. The reason may be intestinal bacteria's which acquired during birth. An explanation for the different risks for obesity with two different birth methods may lie in the microbiome, the communities of microorganisms colonizes the human gastrointestinal tract.

2. Methodology

In order to find out the difference in Fat% level between caesarean and non- caesarean school boys, the researcher randomly selected 96 school boys, out of that 48were Caesarean and 48 Non- Caesarean. These school boys were doing study in class IX-X-level from 'Patha-Bhavana' and 'Siksha-Satra'School section of Visva-Bharati' located at Bolpur, West Bengal, India. The Dial Type Skinfold Caliper was used to measure fat% of these subjects. The researcher used Brozek et al. 1963 fat percentage measurement formula and Jackson Pollock & Word Body density measurement formula. The researcher measured the right side of the body through Skinfold Caliper as mentioned in the protocol for the formula used.

The formula which is used for the study is mentioned fig below:

Brozek et al.1963-

%Fat=100(4.570/Body Density-4.142)

Jack son, Pollock & word 1980-

Body Density=1.096095-0.0006952(X)+0.0000011(X)^2-0.0000714 x age.

Where X= Sum of Triceps, Abdomen, Supra iliac and Thigh skin fold in mm x age=Age in years

Figure 1

The collected data were calculated by using descriptive statistics and "t" test and level of significance was set on 0.05 level.

3. Analysis of data

To find out the difference in fat% level between caesarean and non –caesarean school boys, descriptive statistics and "t" test were applied at 0.05 level of Significant and it is presented in the table.

Category	Mean	SD	t-value
Caesarean	18.23	6.42	3.01*
Non-Caesarean	15.04	4.44	

Table 1: Mean, SD and t-value of Fat% of Caesarean and Non-Caesarean boys
Table value- t 0.05 (94) = 1.990
**= Significant*

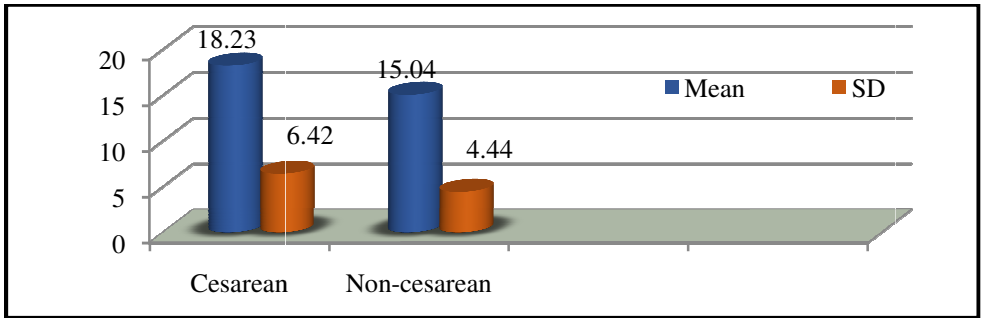

Figure 2: Graphical representation of Mean and SD of Fat % of Caesarean and Non-Caesarean Boys

Table-1 and Figure-2 clearly revelled that, the Mean and SD of Caesarean and Non-Caesarean Boys were 18.23±6.42 mm. and 15.04±4.44mm.The calculated "t-value" (3.01) is higher than Tabulated "t-value" (1.990) at 0.05(df= 94).So according to statistics, it can be said that there was a significant difference exist on Fat% between Caesarean and Non-Caesarean boys.

4. Results and Discussion

The researcher accomplished with the findings and the purpose of the study which was initially conceptualized. In newborn cohort study from U.S., Rooney et al.reported that the mode of delivery was associated with increased relative risk of obesity in childhood for Caesarean delivery(9). A case-control study from urban China also reported that Caesarean Section was associated with an increased risk of obesity in preschool children (11).A study conducted in U. K. by Blustein et al. with 10,219 children identified a significance association between Caesarean Section and overweight in 11 years old(10).

The Susanna Y. Huh and colleagues completed their work with 1255 mother child pairs attending 8 outpatient maternity practices in the Boston area between 1999 and 2002. They found nearly 16% children delivered by Caesarean Section became obese compared with 7.5% of those born vaginally. The reason may be different intestinal bacteria. This type of bacteria belongs mothers birth canal.

When babies born by normal delivery then this type of bacteria direct transfer from mom to baby, but c-section baby have lower levels of this bacteria. Gut bacteria is a type of bacteria. This bacterium affects the efficiency of energy extraction from nutrients and may stimulate cells to boost insulin resistance. Inflammation, and fat deposits, the researcher write. Specifically, higher numbers of Firmicutes and lower numbers of Bactoroides colonize the guts of children born by caesarean delivery. This pattern in the gut microbiomes of obese individuals and larger number of firmicutes bacteria causes obesity (8).
The present study shows the similar trend of result which the other researcher had discussed in their previous study.

5. Conclusions

Within the limitation of the present study the following conclusions were drawn on the basis of obtain difference exist on Fat percentage level of Caesarean and Non-caesarean boys. The finding demonstrated that fat% level of a baby who born Caesarean section have more than a baby who had born by Normal delivery.

6. Recommendation

On the basis of the findings of the present study, the following recommendation can be made-

a) Similar study may be conducted on larger subjects with same or other variables.
b) Similar study may be conducted on the basis of socio-economic condition, rural and urban areas student.
c) The present study will helpful for further research in the field of Physical Education and Medical Science.

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