# Effectiveness of teaching and text message based intervention on physical activities among overweight adolescents in selected schools of Ambala, Haryana

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***Abstract:*** *Overweight and obesity is associated with an increased risk of morbidity and mortality as well as reduced life expectancy.*
***Aim:*** *to assess and compare the physical activities among overweight adolescents before and after teaching and text message based intervention in experimental and comparison group and to determine the association of physical activities among overweight adolescents with their selected variables in experimental and comparison group.*
***Method:*** *A quasi experimental non equivalent control group pretest-posttest design was used for the study. Fifty nine (59) overweight adolescents were selected by using purposive sampling technique. The data was collected by rating scale to assess the physical activities for overweight. Reliability of the tool was established by Cronbach's alpha and was found to be 0.74 (acceptable range is 0.07-1.00).*
***Result:*** *The findings revealed that mean post test score of physical activities ( 18.6±3.92) was significantly higher in experimental group than mean post test score of physical activities (11.06±3.06 ) in comparison group. The mean post test score in experimental group was 18.66 and mean pre test score was 10.80 with mean difference of 7.59 and 't' value was 8.26 (p=0.001) which was highly significant at 0.05 level of significance. There was a significant association found between post test of physical activities of experimental group with BMI (p=0.001) and with religion (p=0.013) and father's occupation (p=0.05) in comparison group as well.*
***Conclusion:*** *Teaching and text message based intervention was effective in improving the physical activities among overweight adolescents.*
***Keywords:*** *Overweight adolescents, physical activities, teaching and text message based intervention*

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## I. Introduction

With a rapid demographic and socioeconomic transition, India is becoming the epicenter of epidemics of both adult and childhood obesity, especially in urban populations. Although the age-standardized rates are low, but in absolute terms, India is the country with the third-highest level of obesity in the world. Over the years, epidemiological studies have reported a consistent increase in the prevalence of childhood overweight and obesity in the subcontinent.[1]

The number of overweight or obese infants and young children (aged 0 to 5 years) increased from 32 million globally in 1990 to 42 million in 2013. In the WHO African Region alone, the number of overweight or obese children increased from 4 to 9 million over the same period. The vast majority of overweight or obese children live in developing countries, where the rate of increase has been more than 30% higher than that of developed countries. If current trends continue, the number of overweight or obese infants and young children globally will increase to 70 million by 2025. Without intervention, obese infants and young children will likely continue to be obese during childhood, adolescence and adulthood. Obesity in childhood is associated with a wide range of serious health complications and an increased risk of premature onset of illnesses, including diabetes and heart disease.[2]

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The most common causes are genetic factors, lack of physical activity, unhealthy eating patterns, or a combination of these factors. Only in rare cases is being overweight caused by a medical condition such as a hormonal problem.[3]

According to Dr.Thakkar, for children in past, the main source of entertainment were outdoor games. But it is a common sight today to see small children glued to a video game or huddled together on a digital device for hours. This is causing serious damage to this generation, and parents must take note of it. Children should not be given a smart-phone or a play-station. Rather should be given such games and kits that drive them outdoors. Encourage children to play cricket, basketball, football, even take them out for a jog every day with parents.[4]

Daily active play and physical activity have traditionally been an important part of life for children and adolescents. Today, computers and social media have decreased the need and desire for children to move and play. Participation in physical activity decreases with age, and the decline is greater in girls than boys. The challenges associated with getting kids active every day should be met with age appropriate physical activities, enthusiastic leadership, and support from family and friends. A sedentary lifestyle is recognized as a major risk factor for obesity and cardiovascular disease. The prevalence of overweight and obesity among children and adolescents is a major public health concern, and weight related health problems are being diagnosed earlier in childhood.[5]

A cross-sectional study was conducted on physical activity and sedentary behaviors as risk factors of obesity among rural adolescents. The aim of this study was to explore relationship between Physical activity and sedentary behavior (screen time) and obesity among adolescents in rural areas. It surveyed 370 from rural areas of Riyadh region in Saudi Arabia. The result showed the association between the moderate to vigorous METs and overweight and obesity among male participants ($p<0.001$). Prolonged screen time has strong association with overweight in males ($p=0.01$) and females ($p<0.001$). Similar association was found between screen time and obesity in males and females ($p<0.001$).[6]

## II.  Material And Methods

This quasi experimental took place at M.M. International School, Mullana and The S.D. Vidya School, Ambala Cantt in August 2016 to June 2017. The ethical clearance was obtained from Institutional Ethical Committee (MMU/IEC/775). This was followed by obtaining permission from the principals of both the schools and assent was taken from the participants of the study and telephonic permission was taken from the parents of the participants of the study.

**Study design:** Quasi experimental design
**Study location:** M.M. International School, Mullana and The S.D. Vidya School, Ambala Cantt
**Study duration:** August 2016 to June 2017
**Sample size:** The sample size for the study comprises of 59 overweight adolescents who were in the age group of 13-15 years, 30 in experimental group and 29 in comparison group
Subjects and selection method: The setting was selected conveniently. The sample was selected through purposive sampling technique.
**Rating scale:** Four point rating scale (0-3) consisted of 9 items related to physical activities of adolescents. It was prepared to assess the physical activities of overweight adolescents who were in the age group of 13-15 years. Content validity of the tool was established by 7 experts (3 from nursing field, 1 pediatrician, 1 nutritionist, 1 physical educator and 1 from Preventive and social health department) for its accuracy and relevancy and also to obtain their opinion and suggestions. Reliability of the tool was established by Cronbach's alpha and was found to be 0.74 (acceptable range is 0.07-1.00).

**Inclusion criteria:**
**Overweight adolescents who were:**
- In the age group of 13-15 years
- Having the BMI in the category of overweight (BMI= 25.0 kg/m$^2$ and above)
- Present at the time of the study
- Willing to participate in the study

**Procedure methodology:** After formal administrative approval from schools, final study was conducted in the month of January 2017**.** Fifty nine overweight adolescents (30 in experimental group and 29 in comparison group) were selected using purposive sampling technique.
The subjects were informed regarding the objectives of the study. Written assent was taken from the subjects and telephonic consent was taken from the parents. Prior information was given to parents about the text message based intervention to be sent on their cellular phones. They were requested to make their child to read the messages at the same time daily.

Subjects were screened in terms of BMI assessment which was calculated by measuring height and weight in both groups. After screening, pre test was taken on the 2nd day. Teaching was administered to experimental group on 2nd day only and from the same day text messages were sent to the subjects. After 15th day of intervention post test was taken.

**Statistical analysis:** According to the objectives, hypothesis of the study and opinion of the expert, it was planned to organize, analyze and interpret the data by using both descriptive and inferential statistics i.e. frequency, mean, median, standard deviation, chi-square, ANOVA and 't' test.

## III. Result
**Table 1: Chi- Square Showing Comparison of Experimental and Comparison Group in terms of Selected Variables among Overweight Adolescents**

Table 1 data reveals the comparison of experimental and comparison group in terms of selected variables among overweight adolescents. More than half of the overweight adolescents in experimental and less than half in comparison group were in the age group of 14 i.e.16(53.3%) and 14(48.3%) respectively. Most of the overweight adolescents in experimental group were males 19(63.3%) whereas in comparison group more than half of the overweight adolescents were females 17(58.6%). Majority of the overweight adolescents in experimental and comparison group were Hindu 25(83.3%) and 25(86.2%) respectively. Half of the overweight adolescents in experimental group were in the family income of more than 20,001 i.e. 15(50.0%) whereas majority of the overweight adolescents were in the family income of more than 20,001 i.e. 22(75.9%) respectively. More than half of overweight adolescents in experimental group were having 2 siblings i.e. 16(53%) whereas in comparison group majority of the overweight adolescents were having 1 sibling 22(75.9%). More than half of overweight adolescents in experimental and comparison group were of 1st birth order i.e. 16(53.3%) and 16 (55.2%) respectively. Most of the overweight adolescents belonged to nuclear family i.e. 19(63.3%) and 18(62.1%) in experimental and comparison group respectively. More than half of the adolescents were vegetarian in both the groups i.e. 17(56.7%) and 18(62.1%) respectively. All the overweight adolescents i.e. 30(100%) in experimental group were not taking any type of medications and majority of overweight adolescents i.e. 28(96.6%) in comparison group were not taking any type of medications.

All overweight adolescents in experimental and comparison group were not at any other health risks i.e. 30(100%) and 29(100%) respectively. Most of mothers of overweight adolescents i.e. 20(66.7%) in experimental group were having education up to higher secondary and more than one third of mothers overweight adolescents i.e. 12(41.4%) were post graduate in comparison group. Nearly one third i.e.11(36.7%) of overweight adolescent's father's educational status up to higher secondary and 11 (36.7%) were graduates in experimental group and less than half of overweight adolescent's fathers were graduates 13(44.8%) in comparison group. Majority of mothers of overweight adolescents were home maker in both experimental and comparison group i.e. 25(83.3%) and 25(86.2%). Most of fathers of overweight adolescents were self employed in both the groups respectively i.e. 14(46.7%) and 19(65.5%). More than half of overweight adolescents in experimental and were living in rural area i.e. 16(53.3%) and majority of overweight adolescents in comparison group were living in urban area i.e. 28(96.6%). Majority of the adolescents in experimental and comparison group were overweight i.e. 25(83.3%) and 21(72.4%) respectively.

Chi-square test was applied to compare the experimental and comparison group with respect to every selected variable which conclude that all variables are homogenous and comparable except number of siblings (p=0.01), mother's educational status (p=0.004) and place of living (p=0.00).

N=59

| S. No. | Selected variables | Experimental group (n=30) f (%) | Comparison group (n=29) f (%) | Chi-square | df | p value |
|---|---|---|---|---|---|---|
| 1 | **Age in years:** | | | | | |
| 1.1 | 13 | 11(36.7) | 12(41.4) | 0.160 | 2 | 0.92[NS] |
| 1.2 | 14 | 16(53.3) | 14(48.3) | | | |
| 1.3 | 15 | 3(10.0) | 3(10.3) | | | |
| 2. | **Gender:** | | | | | |
| 2.1 | Male | 19(63.3) | 12(41.4) | 2.850 | 1 | 0.09[NS] |
| 2.2 | Female | 11(36.7) | 17(58.6) | | | |
| 3. | **Religion:** | | | | | |
| 3.1 | Hindu | 25(83.3) | 25(86.2) | | | |
| 3.2 | Sikh | 4(13.3) | 4(13.8) | 0.98 | 2 | 0.61[NS] |
| 3.3 | Christian | - | - | | | |
| 3.4 | Muslim | 1(3.3) | - | | | |

| S. No. | Selected variables | Experimental group (n=30) f (%) | Comparison group (n=29) f (%) | Chi-square | df | p value |
|---|---|---|---|---|---|---|
| 4. | **Income per month:** | | | | | |
| 4.1 | <5000 | - | - | | | |
| 4.2 | 5000-10000 | 2(6.7) | 3(10.3) | | | |
| 4.3 | 10001- 15000 | 4(13.3) | 0(0.00) | 7.43 | 3 | 0.06 NS |
| 4.4 | 15001-20000 | 9(30.0) | 4(13.8) | | | |
| 4.5 | ≥ 20001 | 15(50.0) | 22(75.9) | | | |
| 5. | **No. of siblings:** | | | | | |
| 5.1 | 1 | 10(33%) | 22(75.9) | | | |
| 5.2 | 2 | 16(53%) | 5(17.2) | 13.24 | 4 | 0.01* |
| 5.3 | 3 | 3(10) | 1(3.4) | | | |
| 5.4 | 4 | 1(3) | - | | | |
| 5.5 | >4 | - | 1(3.4) | | | |
| 6. | **Birth order:** | | | | | |
| 6.1 | 1st | 16(53.3) | 16(55.2) | 1.16 | 3 | 0.76 NS |
| 6.2 | 2nd | 12(40.0) | 10(34.5) | | | |
| 6.3 | 3rd | 2(6.7) | 2(6.9) | | | |
| 6.4 | 4th | - | 1(3.4) | | | |
| 7. | **Type of family:** | | | | | |
| 7.1 | Nuclear | 19(63.3) | 18(62.1) | 2.21 | 2 | 0.33 NS |
| 7.2 | Joint | 9(30.0) | 11(37.9) | | | |
| 7.3 | Extended | 2(6.7) | - | | | |
| 8. | **Dietary habits:** | | | | | |
| 8.1 | Vegetarian | 17(56.7) | 18(62.1) | 0.18 | 2 | 5.99 NS |
| 8.2 | Non-vegetarian | 8(26.7) | 7(24.1) | | | |
| 8.3 | Eggetarian | 5(16.7) | 4(13.8) | | | |
| 9. | **Medication:** | | | | | |
| 9.1 | Yes | - | 1(3.4) | 1.05 | 1 | 0.30 NS |
| 9.2 | No | 30(100) | 28(96.6) | | | |
| 10. | **Any other health risk (smoking, alcohol):** | | | | | |
| 10.1 | Yes | - | - | | | |
| 10.2 | No | 30(100) | 29(100) | ------ | ---- | ------ |
| 11. | **Mother's educational** | | | | | |
| 11.1 | **status:** | 1(3.3) | 1(3.4) | | | |
| 11.2 | Non-literate | 20(66.7) | 6(20.7) | 13.19 | 3 | 0.004* |
| 11.3 | Up to higher | 5(16.7) | 10(34.5) | | | |
| 11.4 | secondary | 4(13.3) | 12(41.4) | | | |
| | Graduate | | | | | |
| | Postgraduate | | | | | |
| 12. | **Father's educational** | | | | | |
| 12.1 | **status:** | - | - | | | |
| 12.2 | Non-literate | 11(36.7) | 7(24.1) | 2.26 | 2 | 0.32 NS |
| 12.3 | Up to higher secondary | 11(36.7) | 9(31.0) | | | |
| 12.4 | Graduate | 8(26.7) | 13(44.8) | | | |
| | Postgraduate | | | | | |
| 13. | **Mother's occupation:** | | | | | |
| 13.1 | Private service | 4(13.3) | 2(6.9) | | | |
| 13.2 | Government service | 1(3.3) | 2(6.9) | 0.98 | 2 | 0.61 NS |
| 13.3 | Business/ self | - | - | | | |
| 13.4 | employed | 25(83.3) | 25(86.2) | | | |
| | Home maker | | | | | |
| 14. | **Father's occupation** | | | | | |
| 14.1 | Farmer/ laborer | 1(3.3) | - | | | |
| 14.2 | Private service | 10(33.3) | 5(17.2) | | | |
| 14.3 | Government service | 5(16.7) | 5(17.2) | 3.40 | 3 | 0.33 NS |
| 14.4 | Business/ self emp | 14(46.7) | 19(65.5) | | | |
| 15. | **Place of living:** | | | | | |
| 15.1 | Rural | 16(53.3) | 1(3.4) | 17.89 | 1 | 0.00* |
| 15.2 | Urban | 14(46.7) | 28(96.6) | | | |
| 16. | **Body mass index** | | | | | |
| 16.1 | **(BMI)** | 25(83.3) | 21(72.4) | 1.02 | 1 | 0.31 NS |
| 16.2 | Overweight | 5(16.7) | 8(27.6) | | | |
| | Obese | | | | | |

$\chi^2(1)=3.84$, $\chi^2(2)=5.99$, $\chi^2(3)= 7.82$

NS- not significant (p>0.05), *- significant (p≤0.05)

**Table 2: Mean, Mean difference, Standard deviation of difference, Standard error of mean difference and 't ' value of Physical Activities before Teaching and Text Message Based Intervention among Overweight Adolescents in Experimental and Comparison Group**

Table 2 depicts that mean score of physical activities before teaching and text message based intervention among overweight adolescents in experimental group was 10.80 and means score in comparison group before teaching and text message based intervention was 11.38 with mean difference of 0.57. The calculated 't' value was found to be 0.74 and p=0.45 which was non significant at 0.05 level of significance.

**N=59**

| Variable | Group | Mean | $M_D$ | $SD_D$ | $SE_{MD}$ | 't' value | p value |
|---|---|---|---|---|---|---|---|
| Physical Activities | Experimental (n=30) | 10.80 | 0.57 | 4.68 | 0.77 | 0.74 | 0.45 NS |
| | Comparison (n=29) | 11.38 | | | | | |

't'(57)= 2.00[NS]- not significant(p>0.05)

**Table 3: Mean, Mean difference, standard deviation of difference, standard error of mean difference and 't ' value of physical activities after teaching and text message based intervention among overweight adolescents between experimental and comparison group**

Table 3 depicts that mean score of physical activities after teaching and text message based intervention among overweight adolescents in experimental group was 18.66 and mean score in comparison group after teaching and text message based intervention was 11.07 with mean difference of 7.59. The calculated 't' value was found to be 8.26 and p=0.001 which was significant at 0.05 level of significance.

**N=59**

| Variable | Group | Mean | $M_D$ | $SD_D$ | $SE_{MD}$ | 't' value | p value |
|---|---|---|---|---|---|---|---|
| Physical Activities | Experimental (n=30) | 18.66 | 7.59 | 5.56 | 0.91 | 8.26 | 0.001* |
| | Comparison (n=29) | 11.07 | | | | | |

't'(57)= 2.00             * - significant (p ≤0.05)

**ANOVA and 't' test value showing association of Physical Activities for overweight with selected demographic variables**

Table 4 depicts that ANOVA and 't' test value for association of physical activities score with selected variables. The findings revealed that in experimental group computed 'F/t' value of overweight adolescents with all variables found to be non-significant except body mass index i.e. p=0.001 which was found to be significant at 0.05 level of significance. Similarly in comparison group all the computed 'F/t' values of overweight adolescents with all variables found to be non- significant except religion i.e. p=0.013 and father's occupation i.e. p= 0.05 which was found to be significant at 0.05 level of significance.

**N=59**

| S. No. | Selected variables | Experimental group (n=30) | | | | Comparison group (n=29) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | df | F/t | p value | Mean | df | F/t | p value |
| **1.** | **Age** | | | | | | | | |
| 1.1 | 13 | 18.00 | 2/27 | 0.24 | 0.78 NS | 10.33 | 2/26 | 0.88 | 0.42 NS |
| 1.2 | 14 | 19.00 | | | | 11.86 | | | |
| 1.3 | 15 | 19.33 | | | | 10.33 | | | |
| **2** | **Gender** | | | | | | | | |
| 2.1 | Male | 19.21 | 28 | 0.99 | 0.32 NS | 10.67 | 27 | 0.58 | 0.56 NS |
| 2.1 | Female | 17.73 | | | | 11.35 | | | |
| **3.** | **Religion** | | | | | | | | |
| 3.1 | Hindu | 18.68 | | | | 10.52 | | | |
| 3.2 | Sikh | 17.73 | 2/27 | 0.45 | 0.64 NS | 14.50 | 27 | 7.04 | 0.013* |
| 3.3 | Christian | | | | | | | | |
| 3.4 | Muslim | 22.00 | | | | - | | | |
| **4.** | **Total family income per  month** | | | | | | | | |
| 4.1 | ≤5000 | - | | | | - | | | |
| 4.2 | 5000-10000 | 14.00 | 3/26 | 1.48 | 0.24 NS | 8.00 | 2/26 | 1.76 | 0.19 NS |
| 4.3 | 10001-15000 | 17.00 | | | | 00.00 | | | |
| 4.4 | 15001-20000 | 19.22 | | | | 11.50 | | | |
| 4.5 | ≥20001 | 19.40 | | | | 11.41 | | | |

| S. No. | Selected variables | Experimental group (n=30) | | | | Comparison group (n=29) | | | |
|--------|--------------------|------|-----|-----|---------|------|-----|-----|---------|
| | | Mean | df | F/t | p value | Mean | df | F/t | p value |
| **5.** | **No. of siblings** | | | | | | | | |
| 5.1 | 1 | 17.10 | | | | 11.36 | | | |
| 5.2 | 2 | 19.50 | 3/26 | 1.02 | 0.39 NS | 10.20 | 3/25 | 0.25 | 0.85 NS |
| 5.3 | 3 | 18.33 | | | | 10.00 | | | |
| 5.4 | 4 | 22.00 | | | | - | | | |
| 5.5 | >4 | - | | | | 10.00 | | | |
| **6.** | **Birth order** | | | | | | | | |
| 6.1 | 1st | 19.06 | 2/27 | 0.20 | 0.81 NS | 11.81 | 3/25 | 1.35 | 0.28 NS |
| 6.2 | 2nd | 18.33 | | | | 10.70 | | | |
| 6.3 | 3rd | 17.50 | | | | 7.50 | | | |
| 6.4 | 4th | - | | | | 10.00 | | | |
| **7.** | **Type of family** | | | | | | | | |
| 7.1 | Nuclear | 19.05 | 2/27 | 0.96 | 0.39 NS | 11.17 | 27 | 0.21 | 0.83 NS |
| 7.2 | Joint | 17.33 | | | | 10.91 | | | |
| 7.3 | Extended | 21.00 | | | | - | | | |
| **8.** | **Dietary habits** | | | | | | | | |
| 8.1 | Vegetarian | 18.00 | 2/27 | 2.16 | 0.13 NS | 11.50 | 2/26 | 2.11 | 0.14 NS |
| 8.2 | Non vegetarian | 21.00 | | | | 11.57 | | | |
| 8.3 | Eggetarian | 17.20 | | | | 8.25 | | | |
| **9.** | **Medication:** | | | | | | | | |
| 9.1 | Yes | - | | | | 9.00 | 27 | 0.67 | 0.50 NS |
| 9.2 | No | 18.67 | - | - | - | 11.14 | | | |
| **10.** | **Any other health risk :** | - | | | | - | | | |
| 10.1 | Yes | 18.67 | - | - | | 11.07 | | | |
| 10.2 | No | | | | | | | - | |
| **11.** | **Mother's educational status:** | | | | | | | | |
| 11.1 | Non-literate | 13.00 | | | | 7.00 | | | |
| 11.2 | Up to higher secondary | 19.35 | 3/26 | 1.22 | 0.32 NS | 11.83 | 3/25 | 0.97 | 0.41 NS |
| 11.3 | Graduate | 17.00 | | | | 10.40 | | | |
| 11.4 | Postgraduate | 18.75 | | | | 11.58 | | | |
| **12.** | **Father's educational status:** | - | | | | - | | | |
| 12.1 | Non-literate | 16.73 | | | | 11.14 | | | |
| 12.2 | Up to higher secondary | 19.45 | | | | 10.33 | | | |
| 12.3 | Graduate | 20.25 | 2/27 | 2.43 | 0.10 NS | 11.54 | 2/26 | 0.39 | 0.67 NS |
| 12.4 | Postgraduate | | | | | | | | |
| **13.** | **Mother's occupation:** | 18.50 | | | | 13.00 | | | |
| 13.1 | Private service | 21.00 | 2/27 | 0.17 | 0.84 NS | 13.50 | | | |
| 13.2 | Government service | - | | | | - | | | |
| 13.3 | Business | 18.60 | | | | 10.72 | 2/26 | 1.20 | 0.31 NS |
| 13.4 | Home maker | | | | | | | | |
| **14.** | **Father's occupation:** | 22.00 | | | | - | | | |
| 14.1 | Farmer/laborer | 20.60 | | | | 12.00 | | | |
| 14.2 | Private service | 17.60 | 3/26 | 1.76 | 0.17 NS | 13.60 | 2/26 | 3.20 | 0.05* |
| 14.3 | Government service | 17.43 | | | | 10.16 | | | |
| 14.4 | Business | | | | | | | | |
| **15.** | **Place of living:** | | | | | | | | |
| 15.1 | Rural | 18.56 | 28 | 0.15 | 0.88 NS | 12.00 | 27 | 0.30 | 0.76 NS |
| 15.2 | Urban | 18.79 | | | | 11.04 | | | |
| **16.** | **Body mass index(BMI)** | | | | | | | | |
| 16.1 | Overweight | 19.64 | 28 | 3.67 | 0.001* | 10.95 | 27 | 0.32 | 0.74 NS |
| 16.2 | Obese | 13.80 | | | | 11.38 | | | |

**t (27)= 2.00, t(28)= 2.05**          NS - not significant (p>0.05)* - significant (p≤0.05)

## IV. Discussion

The aim of the study was to evaluate the effectiveness of teaching and text message based intervention on physical activities among overweight adolescents in selected schools of Ambala, Haryana.

There was a significant difference between experimental and comparison group after teaching and text message based intervention physical activities (calculated 't' value was 8.26, p=0.001) at 0.05 level of significance. These findings are consistent with the findings of the study conducted by **Pamela McCoy, Sophia Leggett, Azad Bhuiyan, David Brown, Patricia Frye and Bryman Williams**(2017) showed that the intervention group participants increased exercise time by approximately eight percent (p = 0.03), while the control group's exercise time remained constant. The pilot study suggested the text messages as an effective tool.[7]

In present study of physical activities, there was a significant association among overweight adolescents with all variables except body mass index in experimental group and religion and father's occupation in comparison group. The study findings were equally supported and contradictory to a cross-sectional study conducted by **Natalija Smetanina, Edita Albaviciute, Veslava Babinska** et al (2010) on Prevalence of overweight/obesity in relation to dietary habits and lifestyle among 7–17 years old children and adolescents in Lithuania. Lower meals frequency and breakfast skipping were directly associated with overweight/obesity (p< 0.05) but physical inactivity was not associated with higher BMI. Children's overweight/obesity was directly associated with lower paternal education and unemployment.[8]

## V. Conclusion

The study concluded that teaching and text message based intervention was effective in improving the physical activities among overweight adolescents.

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