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RESEARCH ARTICLE
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A STUDY ON FACTORS AFFECTING PHYSICAL ACTIVITY AMONG ADOLESCENTS OF KURNOOL TOWN, ANDHRA PRADESH.

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Abstract:
Background: Physical Activity contributes to improved musculoskeletal health and the potential for reducing the risk for chronic disease such as Type 2 DM, cardiovascular disease, obesity, and certain cancers. Despite the World Health Organization recommended physical activity levels, many adolescents do not meet these guidelines
Objectives: To estimate physical activity levels among adolescents in last 1 week and to determine the factors affecting it.
Methodology: It was a cross sectional study done for a period of four months among 1320 adolescent students in junior colleges, Kurnool .
Results:. Mean score of physical activity for PE classes is 1.28 which is the least .Also females were less physically active compared to males
Conclusion: The low levels of physical activity among adolescents in this study highlight the need for interventions to promote physical activity. This study identified several factors associated with low physical activity levels, including lack of play ground in college premises, limited break time at college and gender differences

Key words: physical activity, adolescents, risk factors.

Introduction:

As per the World Health Organization, physical activity is described as any movement of skeletal muscle that requires energy expenditure, including activities during work, household chores, travel, sports, and other recreational activities. The health benefits of physical activity (PA) for children and adolescents are well documented .[1] Participation in PA contributes to improved musculoskeletal health and the potential for reducing the risk for chronic disease such as Type 2 DM, cardiovascular disease, obesity, and certain cancers. [2-5]Physical activity also plays a vital role in maintaining the mental wellbeing of the individual, reduce symptoms of depression, delay dementia, and maintain the healthy weight of the person.[6]

Asian populations experience increased risk of type 2 DM at lower BMI values compared to other racial/ethnic groups [7] and compared to other populations worldwide, the Indian population experiences first myocardial infarction earlier in life. Therefore, more research on Physical activity is warranted in the Indian population.

Furthermore, physical activity behaviors are usually maintained from adolescence to adulthood, that is, adolescents who are currently inactive tend to retain these behaviors as they grow older. [8]

According to "WHO-Health for the Worlds' Adolescents 2014" [14]25% adolescents meet the recommended guidelines for physical activity of 60 minutes of moderate to vigorous physical activity for children and adolescents .[9,10] The global decline in adolescent physical activity is a serious public health issue ,[11-15] that is associated with rising rates of NCDs

In order to develop effective strategies for promoting physical activity, and thus targeting these significant public health outcomes, it is important that researchers have a full understanding of the determinants of being physically active .[16]To achieve this objective, a cross-sectional study was conducted among adolescents to assess their physical activity levels and associated factors.

Methodology:

Study area: This study was conducted in selected colleges of Kurnool town from which permission was obtained.

Study design: The study was college based cross sectional study

Study population: Adolescents in the age group of 16-19years

Study period: The study was conducted from June to September 2024.

Sample size calculation: According to "WHO-Health for the Worlds' Adolescents 2014" [17] 25% adolescents meet the recommended guidelines for physical activity of 60 minutes of moderate to vigorous physical activity. Using this prevalence, the sample size was calculated as 1320 using the formula: $n = (Z\alpha)^2 pq/L^2$

Sampling method: Sample was selected by stratified and multistage random sampling. Colleges were selected by stratified random sampling from a list of all colleges in the Kurnool town taken from the Intermediate board of education. During the first stage, the colleges were divided into two groups: one group comprising the government colleges and the other group comprising the private colleges. Among 35 junior colleges in Kurnool town, Govt & Private colleges are in the ratio of 1:6 (i.e 5 govt & 30 private) .During the second stage, 2 colleges were selected from govt.college group and 15 colleges from private college group by simple random sampling(50% of total colleges). Probability proportional to the size sampling technique was used to select 188 and 1132 from government and private colleges, respectively to make a total sample of 1320.

Data collection: The students were explained about the purpose and procedure of the study after obtaining permission from the principals of respective colleges. Students who have given informed consent completed Physical activity Questionnaire for Adolescents (PAQ-A)[18] recalling their physical activity in the last 7 days.

Data entry & Statistical analysis: Data was entered in Microsoft excel 2013 and analyzed using SPSS Software (20th Version). Percentages, Chi square test, Independent t- test, were done. P value <0.05 was considered as statistically significant.

Observations & Results:

Table 1. Age and gender wise distribution of study participants

Age (years)	Females N (%)	Males N (%)	Total**
16	168 (12.73)	171 (12.95)	339
17	227 (17.2)	233 (17.65)	460

18	188 (14.24)	206 (15.6)	394
19	21 (1.59)	106 (8.03)	127
Total*	604 (45.76)	716(54.24)	1320

Row Total* Column Total**

Out of 1320 adolescents under study, majority of study participants were in the age group of 17 followed by 18 and 16. The mean age of students was 17.24 with standard deviation of 0.94.Among 1320 adolescents, 716(54.24%) were males and 604(45.76%) were females.

Table 2. Mean and SD for individual items of the physical activity questionnaire for adolescents (PAQ-A)

PA variable	Mean	SD
Physical Education classes	1.28	0.89
Lunch	2.01	1.00
After college	2.14	1.03
Evening	2.47	1.08
Week end	2.64	1.09
Describe best	2.85	1.13
Week summary	3.16	0.48
Check list	3.12	0.54

It can be observed from the table that mean score of physical activity for PE classes is 1.28 which is the least and with high scores for week summary being 3.16.

Table 3. Comparison of physical activity based on type of college using independent t-test

PA variable	Government	Private	t-value	P value
Physical Education classes	2.01	1.16	12.81	P=0.05*
Lunch	2.09	1.99	1.25	P=0.211
After college	2.51	2.12	4.8	p<0.0001*
Evening	2.76	2.42	4.01	p<0.0001*
Week end	2.72	2.63	1.05	P=0.25
Describe best	3.09	2.82	3.1	P=0.001*
Week summary	3.24	3.17	2.09	P=0.03*
Check list	3.38	3.12	6.2	P<0.001*

Significant p<0.05

In the above table , PA summative score for individual items was compared between government and private colleges .For all the items there was statistically significant difference between government and private colleges (p<0.05) except for lunch item and week end item.

Table 4. Comparison of physical activity among the study participants based on age.

Age(y)	**Total PAQ-A Score**			
	<2	**2-4**	**Total****	
16-17	31 (3.87)	768 (96.12)	799	X^2=0.0962
18-19	22 (4.22)	499 (95.77)	521	
Total*	53	1267	1320	P=0.756

Row Total* Column Total**

It can be observed from the above table that there was no statistically significant association between age and physical activity (P=0.756)

Table 4. Gender based comparison of physical activity using independent t-test using one – tailed test of significance.

Variable	**Girls**	**Boys**	**t-value**	**P value**
Physical Education classes	1.18	1.36	3.75	0.0001*

Lunch	1.92	2.08	2.93	0.003*
After college	1.99	2.27	4.95	0.0001*
Evening	2.37	2.55	3.13	0.0017*
Week end	2.56	2.71	2.46	0.014*
Describe best	2.8	2.9	1.49	0.13
Week summary	3.11	3.23	4.8	0.0001*
Check list	3.07	3.23	5.27	0.0001*

*significant p<0.05

In the above table, mean scores for all the physical activity items was compared between girls and boys. For all the items, statistically significant gender difference (p<0.05) was found except for the item-describe the best.

Table 5. Physical activity among study participants based on socioeconomic status using chi-square test

Socioeconomic status	**Total PAQ-A score**			
	<2	**2-4**		
Upper	2 (22.22)	7 (77.78)	9	X^2=22.14
Middle	26 (4.12)	605 (95.88)	631	
Lower	25 (3.68)	655 (96.32)	680	P=0.000016*
Total	53	1267	1320	

*Significant p<0.05

It can be observed from the above table that there was statistically significant association between socioeconomic status and physical activity (p<0.000016)

Discussion: In the current study, mean physical activity scores were low for all items compared to the study done by Peter R.E.Crocker [18]. This could be due to a limited break time that is only given for snacks at school or inadequate playing materials.

In the present study, means scores for all the physical activity items was compared between girls and boys. For all the items, statistically significant gender difference (p<0.05) was found except for the item-describe the best i.e boys were more physically active than girls.

As expected, girls as they have lower self efficacies they were less physically active when compared to boys. Apart from self efficacy, many cultural factors like not allowing girls for outdoor games, restricting them to household might be the reason for girls being less physically active. Also in John C. Spence et al study[119], male students were more physically active (mean = 2.99, SD = 0.71) than females (mean =2.79, SD = 0.63)

In the present study, PA summative score for individual items was compared between government and private colleges .For all the items there was statistically significant difference between government and private colleges (p<0.05) except for lunch item and week end item i.e students of government college were more active than private college.

Contributing factors such absence of physical education in colleges, and deprioritization of physical activity often result in low levels of physical activity among adolescents in private colleges

In the current study it was found that there was statistically significant association between socioeconomic status and physical activity (p<0.000016) i.e. students of lower SES were more physically active compared those from high SES. This could be explained by the fact that adolescents from high socioeconomic backgrounds may engage in different types of sedentary activities, such as academic pursuits or screen time on mobile or television.

Conclusion: In conclusion, physical inactivity is a major health concern among adolescents, which can lead to several non communicable diseases. This study has highlighted the low levels of physical activity among adolescents with many contributing factors like lack of playgrounds near homes, and gender differences, with females found to be less likely to participate in physical activity than males

Recommendations: Educating the students about the consequences of physical inactivity and implementing antiobesity campaigns among the students might help in improving the self esteem and confidence of the students in performing their day to day activities.

It is also recommended that further studies should be carried out to find out more predictors of physical inactivity especially studies involving dietary habits as well as parental and peer support among the adolescents.

Limitations: The limitation of the current study was that it was cross sectional, hence the relationships established between the predictors and outcome cannot be assured perfectly. The use of self report is easy to administer and cost effective but has limiting factor of recall bias and estimation error.

Conflict of interest: There are no conflicts of interest

References:

1. Strong WB, Malina RM, Blimkie CJ, et al. Evidence based physical activity for school-age youth. *J Pediatr*.2005;146(6):732–737. PubMed doi:10.1016/j.jpeds.2005.01.055
2. Lee IM. Physical activity and cancer prevention—data from epidemiologic studies. *Med Sci Sports Exerc*.2003;35(11):1823–1827. PubMed doi:10.1249/01.MSS.0000093620.27893.23
3. Biddle S, Gorely T, Stensel D. Health-enhancing physical activity and sedentary behaviour in children and adolescents.*J Sports Sci*. 2004;22(8):679–701. PubMed doi:101080/026404104 10001712412
4. Eisenmann J, Welk G, Ihmels M, Dollman J. Fatness, fitness,and cardiovascular disease risk factors in children and adolescents. *Med Sci Sports Exerc*. 2007;39(8):1251–1256. PubMed doi:10.1249/MSS.0b013e318064c8b0
5. Wang G, Dietz WH. Economic burden of obesity in youths aged 6 to 17 years: 1979-1999. *Pediatrics*.2002;109(5):E81–E1. PubMed doi:10.1542/peds.109.5.e81
6.Newtonraj A, Vincent A, Gowtham PJ, Haritha S, Ilaveyini S. Level of insufficient physical activity among adults in a rural area of South India:A population-based cross-sectional study. J Curr Res Sci Med 2019;5:105–9.
7.Ramachandran, A., Chamukuttan, S., Shetty, S.A., Arun, N., & Susairaj, P. Obesity in Asia – is it different from rest of the world. *Diabetes Metab Res Rev, 28*(Suppl 2), 47–51.
8.Telama R, Yang X, Leskinen E, Kankaanpää A, Hirvensalo M, Tammelin T, et al. Tracking of physical activity from early childhood through youth into adulthood. Med Sci Sports Exerc 2013; [Epub ahead of print].
9. www.who.int/adolescent/second-decade
10.U.S. Department of Health and Human Services, 2008.
11.WHO. (2011b) Global recommendations on physical activity for health. *Geneva: World Health Organization*
12.Biddle, S., Gorely, T., & Stensel, D. (2004). Health-enhancing physical activity and sedentary behaviour in children and adolescents. *J. Sports Sci,* 22, 679-701.
13.Jago, R., Wedderkopp, N., Kristensen, P. L., Møller, N. C., Andersen, L. B., Cooper, A. R., & Froberg, K. (2008). Six-year change in youth physical activity and effect on fasting insulin and HOMA-IR. *American Journal of Preventive Medicine*, *35*(6), 554-560.
14.Marcus, B. H., Forsyth, L. H., Stone, E. J., Dubbert, P. M., McKenzie, T. L., Dunn, A. L., & Blair, S. N. (2000). Physical activity behavior change: Issues in adoption and maintenance. *Health Psychology*, *19*(Suppl.), 32–41.

15.Swaminathan, S., Selvam, S., Thomas, T., Kurpad, A.V., & Vaz, M. (2011). Longitudinal trends in physical activity patterns in selected urban south Indian school children. *IndianJ Med Res, 134,* 174-180.
16.Baranowski, T., Anderson, C., & Carmack, C. (1998). Mediating variable framework in physical activity interventions: How are we doing? How might we do better?*American Journal of Preventive Medicine,* 15, 266–297.
17**.** www.who.int/adolescent/second-decade
18 .Peter. R. E.Crocker, Donald A. Bailey, Robert A. Faulkner, Kent C. Kowalski & Robert McGrath.” Measuring general levels of physical activity: preliminary evidence for the Physical activity questionnaire for older children”. Journal of American College of Sports Medicine.
19.John C. Spence, Chris M. Blanchard, Marianne Clark, Ronald C. Plotnikoff,Kate E. Storey & Linda McCargar. “The Role of Self-Efficacy in Explaining Gender Differences in Physical Activity Among Adolescents”: A Multilevel Analysis. Journal of Physical Activity and Health, 2010, 7, 176-183.