



A CROSS SECTIONAL STUDY ON RELATION BETWEEN DIETARY PATTERN AND DEVELOPMENTAL STATUS AMONG ADOLESCENT GIRLS

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ABSTRACT

Background of the study: - Adolescence is a sensitive and important phase in an individual's life during which a multidisciplinary approach must be taken to both understanding and solving his/her problems. An estimated 25% of India's population of 138 million is aged 15-25 years. Girls aged 10-19 years comprise about 22% of the female population. The single dietary change with the biggest impact on improving your nutrition and natural health would be to stop eating junk food. Many mature adults, over the years, have forgotten what real food is. Rather than eat 100% home cooked meals, they eat junk that is the creation of modern food science. **Statement of the problem:** - A cross sectional study on relation between dietary pattern and developmental status among adolescent girls in selected school at Sagar Madhya Pradesh. **Objectives:** - (1) To assess the dietary pattern of adolescent girls. (2) To assess the correlation between dietary pattern and developmental status. (3) To assess the correlation between dietary pattern and BMI. (4) To determine the correlation between dietary pattern and development status with their selected demographic variable. (5) To find out the association between dietary pattern and age of puberty. **Research methodology:** - In this study, the quantitative research approach and cross sectional research design was used. The study was conducted in Delhi public school Sagar. The sample consist 100 samples by simple random technique. The data was analyzed using descriptive and inferential Statistics. **Result and discussion:** - The major finding was comparison between dietary pattern and developmental status $p < 0.001$, by using Karl Pearson correlation. In population 10-12 years (38%) adolescents, 13-14 years (43%) adolescent and 15-16 years (19%) adolescents' Dietary habit of adolescents girls vegetarian (52%) and non vegetarian (48%), BMI underweight adolescents (20%), normal (26%) and overweight (54%) Age of puberty less than 10year (13%), 10-12 (63%), 13-14(19%) and 14 year only (4%) The correlation between BMI and dietary pattern is 0.862. **Conclusion:** - The present study to identify and collect the information about the dietary pattern and developmental status the result now adolescent girls eat more junk food than the healthy diet, they gain more weight because they mostly take fried items and maximum adolescent girls get early puberty. Hence need to improve the knowledge about the hazards of the junk food.

Key words: IABP, Intra-Aortic Balloon Pump.

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INTRODUCTION

Adolescence is a period of rapid growth and development. Pubertal growth demands more energy building nutritional need and this period basal metabolism rate also increase so need more quantity of healthy nutrition. Nutritional requirement of girls and boys are differ. All adolescent girls require a proper quantity of nutrition not just for the rapid growth but also to obtain

optimal storage for later requirements during pregnancy and lactation. Healthy nutrition plays the important role to onset of puberty. Now many adolescent girls eat unhealthy food like chips, street food, junk food so it also effect the onset of puberty. [1]

There are nearly 1.2 billion adolescents (10-19 years old) worldwide. In some countries, adolescents make up as much as a quarter of the population and the



number of adolescents is expected to rise through 2050, particularly in low- and middle-income countries (LMICs) where close to 90% of 10- to 19-year-olds live. This has huge implications for the Universal Health Coverage (UHC) agenda. Government commitment to UHC for all ages, a core component of the 2030 Agenda for Sustainable Development, cannot be achieved without reaching an important proportion of country population. This is also the population group that remains overlooked and neglected in nearly every health care system. An estimated 1.2 million adolescents die each year, largely from preventable causes. Adolescents benefited less from the improved health outcomes seen over recent decades among younger children, including because of inadequate levels of resourcing. While the health of younger children remains a priority in many countries, deaths in older adolescents are now greater than for 1 to 4 year old in a growing number of countries. [2]

Adolescent girls form an important vulnerable and neglected sector of the Indian population. Adolescence is a transition phase through which a child becomes an adult. Specific nutritional needs and considerations are required for efficient growth and development. In India, adolescent girls suffer from various nutritional as well as non-nutritional problems. Freedom from malnutrition is a basic human right and their alleviation is a fundamental prerequisite for human and national development. Adolescent girls form an important vulnerable sector of population that constitutes about one-tenth of Indian population. About 30% of India's population belongs to the adolescent age group of 10-19 years. The nutritional status of adolescent girls, the future mothers, contributes significantly to the nutritional status of the community. The purpose of this article is to emphasize on the prevalence of malnutrition status among adolescent girls and to summarize various nutritional problems faced by them in India. [3]

In UNICEF report A third of women of reproductive age in India are undernourished, with a body mass index (BMI) of less than 18.5 kg/m². It is well known that an undernourished mother inevitably gives birth to an undernourished baby, perpetuating an intergenerational cycle of under nutrition. Undernourished girls have a greater likelihood of becoming undernourished mothers who in turn have a greater chance of giving birth to low birth weight babies, perpetuating an intergenerational cycle. This cycle can be compounded further in young mothers, especially adolescent girls who begin childbearing before they have grown and developed enough. When mothers take only short intervals between pregnancies and have many children, this can exacerbate nutrition deficits, which are then passed on to their children. [4].

STATEMENT OF THE PROBLEM

A cross sectional study on relation between dietary pattern and developmental status among adolescent girls in selected schools at Sagar Madhya Pradesh

OBJECTIVE OF THE STUDY

1. To assess the dietary pattern of adolescent girls
2. To assess the developmental status of adolescent girls.
3. To assess the correlation between dietary pattern and developmental status
4. To assess the correlation between dietary pattern and BMI
5. To find out the correlation between dietary pattern and age of the puberty.
6. To determine the correlation between dietary pattern and development status with their selected demographic variable.

RESEARCH HYPOTHESIS

H1 – There will be a significant relationship between dietary pattern and developmental status

H2 – There will be a significant relationship between dietary pattern and developmental status with their selected demographic variable.

RESEARCH METHODOLOGY

In this study, the quantitative research approach and cross sectional research design was used. The study was conducted in Delhi public school Sagar. The sample consist 100 samples by simple random technique. The data was analyzed using descriptive and inferential Statistics.

DEVELOPMENT AND DISCRPTION OF TOOL

Tool consist of three section

Section-A:

It contain socio demographic data which include age, religious, monthly income parent, dietary habit ,education of parent , BMI scale and age of puberty .

Section-B:

This section consists of unstructured dietary pattern assessment through self administered questionnaire or interview method. The tool consist of 25 items to find out the association between dietary pattern or developmental status of adolescent girls.

Interpretation:-

- 1-9 need to improve
- 10-16 healthy diet
- 17-25 over diet

Section-C:

This section consists of developmental assessment questionnaire which administered through interview method to assess the development achievement. The tool consists of 30 items to assess the developmental achievement.



Interpretation

1. 0-5 child has no developmental achievements
2. 6-10 children has poor developmental achievement
3. 11-15 child has below average developmental achievements 16-20 child has good developmental achievements
4. 26-30 children have excellent development achievements.

PROCEDURE FOR DATA COLLECTION

The study aimed to association between dietary pattern and developmental status of adolescent girls. The researcher got permission from principal, and research ethical committee Bhagyoday Tirth Nursing. The institutional ethics review board approved the protocol.

Considering ethics written permission was obtained to conduct main study from the Principal of Delhi Public School Sagar M.P. The data collection period was from 24/10/2019. A total 100 adolescent association between dietary pattern and developmental status of adolescent girls were selected through simple random technique. Prior to the data collection a brief introduction of self was given and informed consent form was filled by the samples to take part and confidentiality was assured. The objectives and reason for conducting the study were explained to the samples. People who met the inclusive criteria were selected as sample. 100 samples were selected. Tools on demographic data and unstructured dietary pattern assessment through self administered questionnaire were given to select adolescent fill their demographic information and mark in the right answer in the unstructured dietary pattern assessment through self administered questionnaire. At the end of data collection also assess the height and weight of every sample by used the anthropometric measurement.

RESULT

The major finding was comparison between dietary pattern and developmental status $p < 0.001$, by using Karl Pearson correlation. In population 10-12 years (38%) adolescents, 13-14 years (43%) adolescent and 15-16 years (19%) adolescents' Dietary habit of adolescents girls vegetarian (52%) and non vegetarian (48%), BMI underweight adolescents (20%), normal (26%) and overweight (54%) Age of puberty less than 10 year (13%), 10-12 (63%), 13-14 (19%) and 14 year only (4%) The correlation between BMI and dietary pattern is 0.862.

The table indicate the dietary pattern among adolescent girls, during the data collection researcher found that majority of adolescent take over diet that include mainly junk food, the finding reveal that 5 (5%) have take poor diet, 13 adolescent (13%) take normal diet mainly homemade food, and 82 adolescents (82%) take over diet mainly fried items.

The table indicate the developmental status of the adolescent girls, majority of excellent 40(40%) development achievement of adolescent girls, good 25 (25%) development achievement, average 17 (17%) developmental achievement, below average 13 (13%) developmental achievement, poor 5(5%) development achievement and no development.

The table shows that the correlation between dietary pattern and BMI. The mean value of dietary pattern had 20.41 and BMI had 23.51. The standard deviation of dietary pattern had 4.54 and BMI had 4.52. The mean difference between dietary pattern and BMI had 3.01 and standard deviation difference had 0.2 and Correlation coefficient $r = .862$ ($p = 0.01$) level of significance.

The table shows that the correlation between dietary pattern and developmental status. The mean value of dietary pattern had 20.41 and developmental status had 23.39. The standard deviation of dietary pattern had 4.54 and developmental status had 4.35. The mean difference between dietary pattern and developmental status had 2.98 and standard deviation difference had 0.19 and Correlation coefficient $r = .870$ ($p = 0.01$) level of significance.

The table and bar diagram shows that there was a significant association between dietary pattern and BMI of adolescent girls ($X^2 = 76.427$, $d.f = 4$, $p = 0.0001$) at $p < 0.001$ level. This clearly infers there was significant relationship between dietary pattern and BMI of adolescent girls.

The table revealed that the demographic variables dietary habits, BMI and age of puberty had shown statistically high significant association with dietary pattern ($X^2 = 19.090$, $d.f = 2$, $p = 0.0001$), ($X^2 = 66.050$, $d.f = 4$, $p = 0.0001$) and ($X^2 = 37.922$, $d.f = 6$, $p = 0.0001$) at $p < 0.001$ level. The demographic variable education had shown statistically significant association ($X^2 = 17.458$, $d.f = 6$, $p = 0.006$) with dietary pattern at $p < 0.01$ level. The demographic variables religion and monthly income had shown statistically significant association ($X^2 = 12.404$, $d.f = 4$, $p = 0.015$) and ($X^2 = 13.704$, $d.f = 6$, $p = 0.033$) with dietary pattern at $p < 0.05$ level. The demographic variable age had not statistically significant association with dietary pattern of adolescent girls.

The table revealed that the demographic variables BMI had shown statistically high significant association with development status ($X^2 = 54.330$, $d.f = 6$, $p = 0.0001$) at $p < 0.001$ level. The demographic variable dietary habit and age of puberty had shown statistically significant association ($X^2 = 11.822$, $d.f = 3$, $p = 0.008$) and ($X^2 = 26.193$, $d.f = 9$, $p = 0.002$) with development status at $p < 0.01$ level. The demographic variables education had shown statistically significant association $X^2 = 19.941$, $d.f = 9$, $p = 0.018$) with development status at $p < 0.05$ level. The demographic variables age, religion and monthly income had not statistically significant association with development status of adolescent girls.



DISCUSSION

The study was undertaken to collect the information about the dietary pattern and developmental status among adolescent girls in Delhi Public school Sagar. Study was conducted for a period of four weeks in selected school Sagar. Based on inclusive criteria, 100 samples were selected by using simple random technique. Quantitative research approach with cross sectional research design was used to collect the information among adolescent girls about diet pattern and development status.

The conceptual framework based on health believe model. The tool used in this study consists of three parts. Part one was demographic variables, part two was assessment of dietary pattern self-administered questionnaire and third part was assess the developmental status by interview method. Descriptive and inferential statistics were used for statistical calculations of obtained research data.

Table 1. Assess the dietary pattern among adolescent girls

Dietary pattern	Frequency	Percentage
Poor diet	5	5
Normal diet	13	13
Over diet	82	82

Table 2. Assess the developmental status among adolescent girls

Developmental status	Frequency	Percentage
No development	0	0
Poor development	5	5
Below average	13	13
Average	17	17
Good	25	25
Excellent	40	40

Table 3. Correlation between dietary pattern and BMI

Variables	Mean	Standard Deviation	Correlation Coefficient
Dietary pattern	20.41	4.54	r= .862 p= 0.01
BMI	23.51	4.52	

Table 4. Correlation between dietary pattern and developmental status

Variables	Mean	Standard Deviation	Correlation Coefficient
Dietary pattern	20.41	4.54	r= .870 p= 0.01
Developmental status	23.39	4.35	

Table 5. Association of dietary pattern and puberty

	Underweight		Normal		Over Weight		Chi-Square Value
	No.	%	No.	%	No.	%	
Dietary Pattern							$\chi^2=76.427$ d.f=4 p = 0.0001 S***
Poor	2	2.0	0	0	0	0	
Healthy	14	14.0	2	2.0	0	0	
Over diet	2	2.0	14	14.0	66	66.0	

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The study was undertaken to collect the information about the dietary pattern and developmental status among adolescent girls in Delhi Public school Sagar. Study was conducted for a period of four weeks in selected school Sagar. Based on inclusive criteria, 100 samples were selected by using simple random technique. Quantitative research approach with cross sectional research design was used to collect the information among

adolescent girls about diet pattern and development status. The conceptual framework based on health believe model. The tool used in this study consists of three parts. Part one was demographic variables, part two was assessment of dietary pattern self administered questionnaire and third part was assess the developmental status by interview method. Descriptive and inferential statistics were used for statistical calculations of obtained research data.



Table.6. Association of dietary pattern status with their selected demographic variables

Demographic Variables	Poor		Healthy		Over Diet		Chi-Square Value	
	No.	%	No.	%	No.	%		
Age							X ² =1.976 d.f=4 p = 0.740 N.S	
10 - 12	1	1.0	5	5.0	32	32.0		
13 - 14	1	1.0	9	9.0	33	33.0		
15 - 16	0	0	2	2.0	17	17.0		
Religion							X ² =12.404 d.f=4 p = 0.015 S*	
Hindu	1	1.0	10	10.0	63	63.0		
Christian	0	0	1	1.0	14	14.0		
Jain	1	1.0	5	5.0	5	5.0		
Education							X ² =17.458 d.f=6 p = 0.006 S**	
Uneducated	0	0	6	6.0	6	6.0		
Primary	0	0	3	3.0	32	32.0		
Graduate	1	1.0	6	6.0	38	38.0		
Post Graduate	1	1.0	1	1.0	6	6.0		
Monthly Income							X ² =13.704 d.f=6 p = 0.033 S*	
5000 – 10000	0	0	5	5.0	5	5.0		
10000 – 15000	2	2.0	5	5.0	35	35.0		
15000 – 20000	0	0	6	6.0	32	32.0		
Above 20000	0	0	0	0	10	10.0		
Dietary Habit							X ² =19.090 d.f=2 p = 0.0001 S***	
Vegetarian	0	0	16	16.0	36	36.0		
Non-vegetarian	2	2.0	0	0	46	46.0		
BMI							X ² =66.058 d.f=4 p = 0.0001 S***	
Underweight	2	2.0	14	14.0	4	4.0		
Normal weight	0	0	2	2.0	24	24.0		
Over weight	0	0	0	0	54	54.0		
Age of puberty								X ² =37.922 d.f=6 p = 0.0001 S***
Less than 10 years	1	1.0	2	2.0	10	10.0		
10 to 12 years	0	0	2	2.0	61	61.0		
13 - 14 years	1	1.0	8	8.0	10	10.0		
Above 14 years	0	0	4	4.0	1	1.0		

Table 7. Association of developmental status with their selected demographic variables

Demographic Variables	Below Average		Average		Good		Excellent		Chi-Square Value
	No.	%	No.	%	No.	%	No.	%	
Age									X ² =2.944 d.f=6 p = 0.616 N.S
10 – 12	3	3.0	7	7.0	16	16.0	12	12.0	
13 – 14	4	4.0	6	6.0	15	15.0	18	18.0	
15 – 16	0	0	3	3.0	8	8.0	8	8.0	
Religion									X ² =5.937 d.f=6 p = 0.430 N.S
Hindu	6	6.0	10	10.0	29	29.0	29	29.0	
Christian	0	0	2	2.0	6	6.0	7	7.0	
Jain	1	1.0	4	4.0	4	4.0	2	2.0	
Education									X ² =19.941 d.f= 9 p= 0.018 S*
Uneducated	2	2.0	5	5.0	4	4.0	1	1.0	
Primary	0	0	3	3.0	14	14.0	18	18.0	
Graduate	3	3.0	6	6.0	19	19.0	17	17.0	
Post Graduate	2	2.0	2	2.0	2	2.0	2	2.0	
Monthly Income									X ² =8.992 d.f=9
5000 – 10000	2	2.0	3	3.0	1	1.0	4	4.0	



10000 – 15000	2	2.0	6	6.0	17	17.0	17	17.0	p = 0.438 N.S
15000 – 20000	3	3.0	5	5.0	18	18.0	12	12.0	
Above 20000	0	0	2	2.0	3	3.0	5	5.0	
Dietary Habit									X ² =11.822 d.f=3 p = 0.008 S**
Vegetarian	5	5.0	14	14.0	16	16.0	17	17.0	
Non-vegetarian	2	2.0	2	2.0	23	23.0	21	21.0	
BMI									X ² =54.330 d.f=6 p = 0.0001 S***
Underweight	7	7.0	9	9.0	3	3.0	1	1.0	
Normal weight	0	0	3	3.0	14	14.0	9	9.0	
Over weight	0	0	4	4.0	22	22.0	28	28.0	
Age of puberty									X ² =26.193 d.f=9 p = 0.002 S**
Less than 10 years	1	1.0	2	2.0	3	3.0	7	7.0	
10 to 12 years	1	1.0	5	5.0	31	31.0	26	26.0	
13 - 14 years	4	4.0	7	7.0	4	4.0	4	4.0	
Above 14 years	1	1.0	2	2.0	1	1.0	1	1.0	

CONCLUSION

The present study to identify and collect the information about the dietary pattern and developmental status the result now adolescent girls eat more junk food than the healthy diet, they gain more weight because they mostly take fried items and maximum adolescent girls get early puberty. Hence need to improve the knowledge about the hazards of the junk food.

The major findings of the study was summarized as follows

In this study population 10-12years (38%) adolescents, 13-14 years (43%) adolescent and 15-16 years (19%) adolescents. Dietary habits of adolescent girl vegetarian (52%) and non vegetarian (48%), BMI underweight adolescents (20%), normal (26%) and over weight (54%). Age of puberty less than 10years (13%), 10-12 (63%), 13-14 (19%) and 14 years only (4%). The association between BMI and dietary pattern was significant relationship $\chi^2 = 76.427$, $p = 0.0001$ and $df = 4$. The association between dietary pattern and developmental status was significant relationship chi square – 76.059, $p =$

0.0001 and $df = 6$. Adolescent girls 2% was under weight and 14 % normal weight and 66% over weight.

Cross sectional – It refers to cross sectional study is a type of observation and prevalence based study that analyzes data from a population, or a representative subset, at a specific point in time

Association – It refers to what is the interconnection between adolescent childhood development and dietary pattern.

Developmental status – It refers to a processing stage of physical and psychological development that generally occurs during the period from puberty to age of majority.

Dietary pattern – It refers to a dietary pattern is refers to the combination of different type of food and beverage in the diet and they are habitually consumed.

Adolescent girls – It refers to girls who are between the age group of 10 to 16.

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