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A study to assess the knowledge regarding hazards of mobile phone usage among adolescents of selected school in Thiruvananthapuram District, Kerala

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Abstract

This non-experimental study has been conducted to assess the knowledge regarding hazards of mobile phone usage among adolescents of selected school in Thiruvananthapuram District. The objectives of the study were to assess the level of knowledge regarding hazards of mobile phone usage among the adolescents and to find out the association between level of knowledge regarding hazards of mobile phone usage among the adolescents with their socio-demographic variables. The samples under study comprised of adolescents between the age group 14 to 19 years, both male and female adolescents. 110 samples were selected using simple random sampling technique from the selected school. The tool consisted of semi-structured knowledge questionnaire to assess knowledge regarding hazards of mobile phone usage among the adolescents. Reliability of the tool was tested using split half method, $r = 0.82$. Pilot study was conducted among 11 subjects, other than the main study settings and was found to be feasible. The data was tabulated and analyzed using descriptive and inferential statistics. The findings revealed that level of knowledge of adolescents was statically significant in association with the socio-demographic variables such as age, type of family, occupation of father and education of mother. The study concluded by giving them health education regarding mobile phone, hazards and its prevention.

Keywords: Mobile phone, hazards, adolescent

Introduction

Mobile phone can be used to communicate over a long distance without wires. It works by communicating with a nearby base station, also called the 'cell site' which connects it to the main phone network. When moving, if the mobile phone gets too far from the cell site, the cell sends a message to another cell to tell the new cell to take over the cell. This is called a 'hand off', it is done so well and carefully that the user will usually never even know that the cell was transferred to another cell. It does so by connecting to a cellular network provided by a mobile phone operator, allowing access to the public telephone network. Modern-day mobile phones are gizmos and they have a wide range of other functions such as texting messages, e mail, internet access, short-range wireless communications (infrared, Bluetooth), business applications, banking, gaming, photography.

Today, smart phones is a mobile phone that can do more than other phones, they can work as a computer but are more mobile devices small enough to fit in a user's hand. They are with more advanced computing facilities with so many outstanding features. Your whole life is at fingertip, most of the people use smartphones than the old kind of mobile phone called the feature phones. Smartphones have made lives of people easier and much more comfortable. In last 20 years, worldwide mobile phone subscriptions have grown 12.4 million to over 5.6 billion, penetrating about 70% of the global population. Its usage has also become an important public health hazard. The World Health Organization confirmed that cell phone use indeed represents a health menace, and classified mobile phone radiation as a cardiogenic hazard, possibly carcinogenic to humans. In spite of some knowledge on unfavourable health effects, the usage of mobile phones has increased dramatically especially since the time they have become more affordable and available all over the world.

In India, we note that almost 90% of people from both rural and urban areas, educated and illiterate, and belonging to almost all ages; now dependent on cellular phone.

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The alarming fact is that many of these devices reach the market without any safety testing on their electromagnetic radiation. Media campaigns have launched to increase the awareness about the radiation effects of mobile phones. Study on long- term use of cellular phones and brain tumours: increased risk associated with use for > or =10 years stated that on use of mobile phones for > or =10 years give a consistent pattern of increased risk for acoustic neuroma and glioma. The risk is highest for ipsilateral exposure. The electrical power and mobile communication delivers enormous benefits to society, but there are concerns whether the electric and magnetic field (EMF) emissions associated with delivery of this benefit are linked to cancer or other health hazards. The mobile phones could kill far more people than smoking or asbestos a study by an award winning cancer expert has concluded. He says people should avoid using the mobile phones wherever possible and that governments and the mobile phone industry must take immediate steps to reduce exposure to their radiation. The long term users of mobile phones were four times as likely to develop growths on the side they held the phone and twice as likely as non-users to develop these benign non-cancerous growths. The brain cancers were most frequently developed on side of the head to which the person held their phone. Biggest increase in cancerous growth was in acoustic neuromas which from behind the ear.

Adolescents are the majority of cell phone users in the world. An extensive use of mobile phone by teenagers gives rise to many serious diseases at early age. Adolescent constitute 21.8% of the Indian population. Adolescent belongs to the stage of life with great energy, creativity and enthusiasm. If given right degree of support and opportunity, they are great resource for the present and future of all societies.

Recent studies have shown that the statistical value of cell phone usage is 87% worldwide, 78.29% in India, 95.70% in Kerala and 92% in Karnataka State. About 40% of young adults admit using their cell phones for more than four hours a day. Another study has shown that only 60% of the study participants were aware about the harmful effects of mobile phones and that were too among the youngsters. Since mobile phones have become an integral part of life, their use without any knowledge of their radiation effects is obviously unsafe. This study is focused on the hazards of mobile phone usage among the adolescents, who should be aware regarding the complications and consequences of mobile phone usage. Twenty first century has witnessed the most technical advancements and rapid changes in mass media. All the traditional mass media are losing their importance. Now a day, whereas the newer ones like smart phones, video games, laptops are gaining more importance among the children and adolescents. Children begin to learn about these mass media from their infancy. These has become especially influential in imparting knowledge to young people and socializing them to particular aspiration, values and attitudes. During the transition period the children will learn how to behave from their peers and increasingly from their mass media. In today's world mobile phones which have become an essential part of their life and also plays an inevitable role in the life of young children today.

Adolescents addiction to phones is becoming common. It is necessary to increase the awareness of the negative effects of mobile phone use. Hence the investigator decided to assess the knowledge regarding the hazards of mobile phone

usage among the adolescent of selected school in Thiruvananthapuram District.

Objectives of the study

1. To assess the knowledge regarding the hazards of mobile phone usage among adolescents.
2. To find out the association between level of knowledge of adolescents regarding hazards of mobile phone usage with selected socio demographic variables.

Hypothesis

H1: There will be a significant association between level of knowledge of adolescents and the socio demographic variables.

Materials and Methods

Data is collected from adolescents between the age group 15 to 19 years from selected school, St. Johns higher secondary school, Undancode, Thiruvananthapuram. A sample of 110 was selected using simple random sampling for which a semi- structured questionnaire was used to assess the knowledge regarding hazards of mobile phone usage among adolescents and their socio demographic data. The obtained data were analysed by using both descriptive and inferential statistics on the basis of the objectives of the study.

Result

The study intends to assess the knowledge regarding hazards of mobile phone usage among the adolescents and help to identify the problem evidence based practice in research. The results of the study are discussed under the following headings:

- Description of sample (adolescents) characteristics
- Level of knowledge regarding hazards of mobile phone usage among the adolescents of selected school
- Association between level of knowledge on hazards of mobile phone usage among the adolescents with their socio- demographic variables

Description of sample (adolescents) characteristics

- Among the adolescents, majority of students 41 (37.3%) were in the age group of 14 -15 years of age, (26.4%) of adolescents were in the age group of 16.1-17 years, 20.9% belonged to the age group of 15.1 – 16 years and rest (15.5%) of the adolescents were in the age group of 17.1 – 18 years.
- There was equal number of adolescent boys (50%) and adolescent girls (50%).
- With respect to religion, majority (45.5%) of the adolescents selected were Christians, 35.5% of the adolescents belonged to Hindu community whereas rest of the 19.1% were Muslims.
- Among the adolescents, 10th and 11th standard both were equal in percentage that is 33.6% and a lesser percentage of 32.47% were from standard 12th.
- Out of 110 adolescents, 59 (53.6%) of the adolescents were from nuclear family, (32) 29.1% of them were from extended family and a lesser percent of about 17.35% (19) were from joint family.
- Among the adolescents, 83.6% (92) of adolescents were from rural area which shows the majority percentage and 16.4% (18) were from urban area.
- Among the total 110 adolescents, 48.2% (53) of the adolescents were from family with a monthly income in

between 20,000 and 30,000, 35.5% (39) belonged to family with an income in between 10,000 and 20,000 per month and only 16.4% (18) of adolescents were from the family with a monthly income >30,000.

- Out of the total 110 adolescents, major percent of fathers 55.5% (61) were with secondary education, 22.7% (25) were with primary education, 19.1% (21) were with collegiate degree and only 2.7% (3) were having a professional education.
- Among the total 110 adolescents, 49.1% (54) (majority) of mothers completed their secondary education, 22.7% (26) of mothers have completed only their primary education, 23.6% (25) were collegiate and a less percent of 4.5% (5) mothers were professional.
- Out of total 110 adolescents, majority (64.5%) 71 of adolescents' fathers were self-employed, 19.1% (21) of fathers were private employed and 16.4% (18) of fathers were government employed.
- Among the mothers of 110 selected adolescents were mostly 62 (56.4%) unemployed, 23 (20.9%) were self-employed, 13(11.8%) were private employed and a 12 (10.9%) of mothers were government employed.
- Out of 110 adolescents, most 51 (46.4%) of the source of information about the hazards of mobile phone usage among adolescents were from mass medias, less than half percent (38.2%) 42 adolescents had a source of information from family members, 23.6% (26) were from their peer groups, 4.5% (5) were from health professionals and least 2 (1.8%) were from other sources.
- A major percent (85.5%) 94 out of 110 adolescents have thought about the ill effects of mobile phones whereas (14.5%) 16 of adolescents haven't thought about the ill effects of mobile phones.
- Out of 110 adolescents, majority percentage 44.5% (49) were with the opinion that mobile phone is both a boon and curse to students, whereas 40.0% (44) were having an opinion that one cannot live without mobile phones, 12.7% (14) were with the opinion that mobile phones are a boon to students and a very less percent of about 2.7% (3) were with the opinion that mobile phone is a curse.

Level of knowledge regarding hazards of mobile phone usage among the adolescents of selected school

- The average mean of knowledge regarding hazards of mobile phone usage among adolescents is 29.8 with the standard deviation is 5.1, the minimum knowledge score obtained is 12 and maximum score is 40. From

Table 1: Level of knowledge regarding hazards of mobile phone usage among the adolescents of selected school

	Sample (N)	Minimum	Maximum	Mean	Standard deviation
Knowledge score	110	12	40	29.8	5.1

Table 1 reveals that the average mean of knowledge regarding hazards of mobile phone usage among adolescents is 29.8 with the standard deviation is 5.1, the minimum knowledge score obtained is 12 and maximum score is 40.

the above statistical data, it reveals that 92.7% of the adolescents have either moderately adequate knowledge or inadequate knowledge.

Association between level of knowledge on hazards of mobile phone usage among the adolescents with their socio-demographic variables

- This section describes about the association between knowledge of hazards of mobile phone usage among adolescents with the socio- demographic variables such as age, sex, educational status, religion, area of residence, type of family, monthly income of family, educational qualification of father, educational qualification of mother, occupation of father, occupation of mother, source of information in their house, have you ever thought about the ill effects of mobile phones, and their opinion on mobile phones. The following socio- demographic variable showed statistically significant association with the level of knowledge:

Age: The χ^2 value of knowledge scores of adolescents with respect to their age was $\chi^2 = 16.208$ ($p = 0.013$), this shows that, there is significant association found between level of knowledge of adolescents and their age.

Type of family: The χ^2 value of knowledge scores of adolescents with respect to their type of family was $\chi^2 = 17.610$ ($p = 0.001$), this reveals that there is significant association between level of knowledge of adolescents with their type of family.

Education of Mother: The χ^2 value of knowledge scores of adolescents with respect to education of mother was $\chi^2 = 18.056$ ($p = 0.001$), this reveals that there is significant association between level of knowledge of adolescents with the education of mother.

Rest of the socio- demographic variables such as sex, educational status, religion, area of residence, monthly income of family, educational qualification of father, occupation of father, occupation of mother, source of information in their house, have you ever thought about the ill effects of mobile phones, and their opinion on mobile phones were not having significant association with the level of knowledge regarding hazards of mobile phone usage among adolescents

Analysis of the level of knowledge regarding hazards of mobile phone usage among adolescents

From the above statistical data, it reveals that 92.7% of the adolescents have either moderately adequate knowledge or inadequate knowledge.

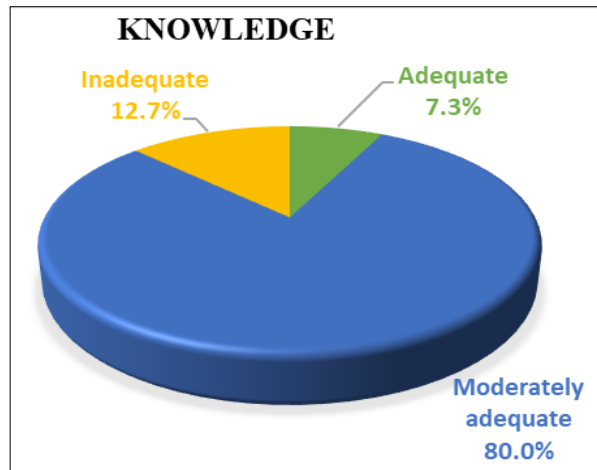


Fig 1: Frequency and percentage distribution of level of knowledge regarding hazards of mobile phone usage among the adolescents

Figure 1: The Pie diagram shows that out of 110 samples (100%), majority of the adolescents (80.0%) have moderately adequate knowledge, 12.7% have inadequate knowledge, and 7.3% have adequate knowledge.

Table 1: Frequency and percentage distribution of level of knowledge scores on knowledge of mobile phones, mobile phone hazards, and prevention of hazards among the adolescents, N= 110

Level of knowledge	Knowledge of Mobile phone		Hazards of mobile phone		Prevention of its hazards	
	n	%	n	%	n	%
Adequate	21	19.1	32	29.1	49	44.5
Moderately adequate	54	49.1	42	38.2	51	46.4
Inadequate	35	31.8	36	32.7	10	9.1

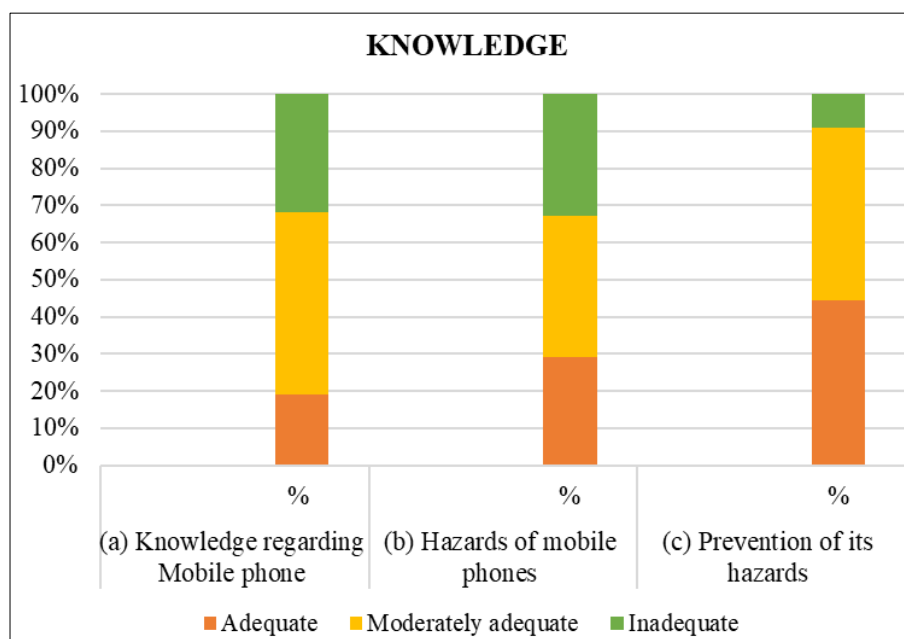


Fig 2: The bar diagram reveals the adolescents’ knowledge based on different sections of the knowledge questionnaire.

(a) Knowledge regarding mobile phones: Out of 110 adolescents, majority of them (54) 49.1% have moderately adequate knowledge, (35) 31.8% of the adolescents have inadequate knowledge, 19.1% (21) have adequate knowledge.

(b) Hazards of mobile phone: Among the total 110 adolescents, majority of them (51) 46.4% have moderately

adequate knowledge, (32) 29.1% have adequate knowledge.

(c) Prevention of its hazards: Among the total 110 adolescents, majority of them (42) 38.2% have moderately adequate knowledge, (49) 44.5% of the adolescents have inadequate knowledge, (10) 9.1% have adequate knowledge.

Table 2: Chi square test showing association between the level of knowledge of adolescents regarding hazards of mobile phone usage with their Socio- demographic variables

Socio- demographic variables		Knowledge								χ^2	Df	P
		Inadequate		Moderately Adequate		Adequate		Total				
		N	%	N	%	N	%	N	%			
Age	14-15	21	51.2	17	41.5	3	7.3	41	100	16.208	6	0.013*
	15.1-16	6	26.1	11	47.8	6	26.1	23	100			
	16.1-17	7	24.1	20	69	2	6.9	29	100			
	17.1-18	10	58.8	4	23.5	3	17.6	17	100			
	18.1-19	0	0	0	0	0	0	0	0			
Gender	Male	22	40	26	47.3	7	12.7	55	100	0.000	2	1.000
	Female	22	40	26	47.3	7	12.7	55	100			
Religion	Hindu	18	46.2	16	41	5	12.8	39	100	5.388	4	0.250
	Christian	17	34	24	48	9	18	50	100			
	Muslim	9	42.9	12	57.1	0	0	21	100			
Education	10 th	16	43.2	17	45.9	4	10.8	37	100	1.581	4	0.812
	11 th	12	32.4	20	54.1	5	13.5	37	100			
	12 th	16	44.4	15	41.7	5	13.9	36	100			
Type of family	Nuclear	19	32.2	28	47.5	12	20.3	59	100	17.610	4	0.001*
	Joint	4	21.1	13	68.4	2	10.5	19	100			
	Extended	21	65.6	11	34.4	0	0	32	100			
Place of residence	Urban	10	55.6	6	33.3	2	11.1	18	100	2.231	2	0.328
	Rural	34	37	46	50	12	13	92	100			
Income	10000-20000	14	35.9	17	43.6	8	20.5	39	100	4.87	4	0.299
	20001-30000	22	41.5	25	47.2	6	11.3	53	100			
	>30001	8	44.4	10	55.6	0	0	18	100			
Education of father	Primary	12	48	10	40	3	12	25	100	6.678	4	0.154
	Secondary	22	36.1	34	55.7	5	8.2	61	100			
	Collegiate	10	41.7	8	33.3	6	25	24	100			
Education of mother	Primary	8	32	16	64	1	4	25	100	18.056	4	0.001*
	Secondary	15	27.8	28	57.9	11	20.4	54	100			
	Collegiate	21	67.7	8	25.8	2	6.5	31	100			
Occupation of father	Self employed	29	40.8	36	50.7	6	8.5	71	100	13.654	4	0.008*
	Govt. employed	5	27.8	6	33.3	7	38.9	18	100			
	Private employed	10	47.6	10	47.6	1	4.8	21	100			
Occupation of mother	Self employed	8	34.8	14	60.9	1	4.3	23	100	6.753	6	0.344
	Govt. employed	7	58.3	3	25	2	16.7	12	100			
	Private employed	7	53.8	4	30.8	2	15.4	13	100			
	Unemployed	22	35.5	31	50	9	14.5	62	100			
Source of information	Mass media	22	43.1	20	39.2	9	17.6	51	100	3.348	2	0.187
	Health professional	0	0	5	100	0	0	5	100			
	Peer group	9	34.6	13	50	4	15.4	26	100			
	Family members	20	47.6	16	38.1	6	14.3	42	100			
	Others	2	100	0	0	0	0	2	100			
Have you ever thought about the ill effects of mobile phones?	Yes	41	43.6	40	42.6	13	13.8	94	100	5.776	2	0.056
	No	3	18.8	12	75	1	6.3	16	100			
Opinion about mobile phones	Boon to students	5	35.7	8	57.1	1	7.1	14	100	4.110	6	0.662
	Curse to students	2	66.7	1	33.3	0	0	3	100			
	Both boon and curse to students	20	40.8	20	40.8	9	18.4	49	100			
	One cannot live without mobile phones	17	38.6	23	52.3	4	9.1	44	100			

*Significant at 0.05 level

Table 2 reveals the association between the demographic variables of adolescents with their level of knowledge regarding hazards of mobile phone usage.

The χ^2 value of knowledge scores of adolescents with respect to their age was $\chi^2 = 16.208$ ($p = 0.013$), this shows that, there is significant association found between level of knowledge of adolescents and their age, as it showed that within the age group of 14 - 15 years majority (51.2%, $N=21$) of the adolescents were having inadequate knowledge, age group 15.1- 16 years most of the adolescents have moderately inadequate knowledge (47.8%,

$N= 11$), 16.1- 17 years majority of adolescents have moderately adequate knowledge (69%), and in age group 17.1 – 18 years most of the adolescents (58.8%, $N= 10$) have inadequate knowledge.

In relation to the gender of the sample adolescents, χ^2 value of knowledge scores of adolescents with respect to their gender was $\chi^2 = 0.000$ ($p = 1.000$), the association between level of knowledge of adolescents with their gender is not statistically significant.

With regards to the religion of adolescents, it reveals that there is no significant association between level of

knowledge of adolescents with their religion. As the χ^2 value of knowledge scores of adolescents with respect to their religion was $\chi^2 = 5.388$ ($p = 0.250$), this

The association between level of knowledge of adolescents with their education is not statistically significant as the values of χ^2 of knowledge scores of adolescents with respect to their education was $\chi^2 = 1.581$ ($p = 0.812$).

Significant association is shown with the χ^2 value of knowledge scores of adolescents with respect to their type of family was $\chi^2 = 17.610$ ($p = 0.001$), so, there is significant association between level of knowledge of adolescents with their type of family.

The χ^2 value of knowledge scores of adolescents with respect to their place of residence was $\chi^2 = 2.231$ ($p = 0.328$), this reveals that there is no significant association between level of knowledge of adolescents with their place of residence.

There is no significant association between level of knowledge of adolescents with the monthly income, As the χ^2 value of knowledge scores of adolescents with respect to the monthly income was $\chi^2 = 4.887$ ($p = 0.299$).

In accordance with the education of father, χ^2 value of knowledge scores of adolescents with respect to education of father was $\chi^2 = 6.678$ ($p = 0.154$), this reveals that the association between level of knowledge of adolescents with the education of father is not statistically significant.

The χ^2 value of knowledge scores of adolescents with respect to education of mother was $\chi^2 = 18.056$ ($p = 0.001$), this reveals that there is significant association between level of knowledge of adolescents with the education of mother.

The above table shows that the χ^2 value of knowledge scores of adolescents with respect to occupation of father was $\chi^2 = 13.654$ ($p = 0.008$), this explains that there is significant association between level of knowledge of adolescents with the occupation of father.

There is no significant association between level of knowledge of adolescents with the occupation of father, As the χ^2 value of knowledge scores of adolescents with respect to occupation of mother was $\chi^2 = 13.654$ ($p = 0.008$).

With regards to the χ^2 value of knowledge scores of adolescents with respect to mass media was $\chi^2 = 3.348$ ($p = 0.187$), χ^2 value of knowledge scores of adolescents with respect to health professional was $\chi^2 = 5.842$ ($p = 0.054$), χ^2 value of knowledge scores of adolescents with respect to peer group was $\chi^2 = 0.489$ ($p = 0.783$), χ^2 value of knowledge scores of adolescents with respect to family members was $\chi^2 = 2.326$ ($p = 0.313$), χ^2 value of knowledge scores of adolescents with respect to other sources was $\chi^2 = 3.056$ ($p = 0.217$). This explains that there is no significant association between level of knowledge of adolescents with the source of information such as mass media, health professional, peer group, family members and others sources.

The above table reveals that the χ^2 value of knowledge scores of adolescents with respect to their thought of ill effects of mobile phones was $\chi^2 = 5.776$ ($p = 0.056$). This shows that there is no significant association between the level of knowledge of hazards of mobile phone usage with the adolescents thought about ill effects of mobile phones.

The χ^2 value of knowledge scores of adolescents with respect to their thought of ill effects of mobile phones was $\chi^2 = 4.110$ ($p = 0.662$). This shows that there is no significant association between the level of knowledge of

hazards of mobile phone usage with their opinion about mobile phones.

Discussion

The essence of any research project is based on study findings, limitations, interpretation of research results and recommendations that incorporate the study implications. It also gives the meaning to the results obtained in the study.

Discussion refers to whether the research study findings supports or differs from previous literature. The present study was intended to assess the knowledge regarding hazards of mobile phone usage among the adolescents in selected school. 110 samples were selected by simple random sampling method. As per the ethical consideration, health education was given about the mobile phones, hazards of mobile phone and its prevention. It was aimed at the improvement of the knowledge of adolescents regarding hazards of mobile phone usage, so that they develop positive attitude and good practice towards it. Variables collection and analysis was done based on the objectives of the study. Findings of the study were discussed in terms of objectives and hypotheses that are formulated during the beginning of the study.

To assess the level of knowledge of adolescents regarding the hazards of mobile phone usage

From the study, it was revealed that the level of knowledge on adolescents regarding hazards of mobile phone usage is moderately adequate knowledge that is 80% out of 110 adolescents showed moderately adequate knowledge, 12.7% were having inadequate knowledge and only 7.3% were having adequate knowledge. While looking in detail about knowledge scores, the knowledge level regarding the mobile phone is moderately adequate (49.1%), knowledge regarding hazards of mobile phone is also moderately adequate (38.2%) and knowledge regarding the prevention of its hazards is also found to be moderately adequate (46.5%).

The above study is supported by a study conducted to assess the knowledge regarding the hazards of mobile phone uses and prevention among adolescents (2013). They tested the knowledge and the attitude on hazards of mobile phone uses and prevention among adolescents. Descriptive design was used. The study was conducted in Suryapet. 50 adolescents were selected by using non-probability convenient sampling. The investigator assessed the level of knowledge and the attitude using structured questionnaire and modified three-point Likert scale. The study revealed that 72% of adolescents had good knowledge and 22% had average knowledge. It was found that majority (80%) of the adolescents had positive attitude and 14% had negative attitude towards hazards of mobile phones.

The second objective was to find out the association between the level of knowledge regarding hazards of mobile phone usage among the adolescents with their socio-demographic variables.

The following socio-demographic variable showed statistically significant association with the level of knowledge:

Age, the χ^2 value of knowledge scores of adolescents with respect to their age was $\chi^2 = 16.208$ ($p = 0.013$); type of family, the χ^2 value of knowledge scores of adolescents with respect to their type of family was $\chi^2 = 17.610$ (p

=0.001); and education of mother, the χ^2 value of knowledge scores of adolescents with respect to education of mother was $\chi^2 = 18.056$ ($p = 0.001$), these reveals that there is significant association between level of knowledge of adolescents with the socio- demographic variables such as age, type of family and education of mother.

Rest of the socio- demographic variables such as sex, educational status, religion, area of residence, monthly income of family, educational qualification of father, occupation of father, occupation of mother, source of information in their house, have you ever thought about the ill effects of mobile phones, and their opinion on mobile phones were not having significant association with the level of knowledge regarding hazards of mobile phone usage among adolescents.

Conclusion

Present study deals with assess the level of knowledge regarding hazards of mobile phone usage among adolescents. After assessing the study we understand that adolescents have more positive attitude towards the hazards of mobile phone usage.

The following were the conclusions that are drawn from the present study:

- Adolescents have moderately adequate knowledge regarding hazards of mobile phone usage.
- There is significant relation between adolescents' level of knowledge regarding hazards of mobile phone usage and their demographic variables.

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