

A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Practice of Personal Audio Devices Usage on Health Among Adolescents in Selected Colleges At Chittoor District, Andhra Pradesh

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ABSTRACT:

The present study was conducted to assess the effectiveness of a structured teaching programme on knowledge and practice of personal audio devices usage on health among adolescents in selected colleges at Chittoor District, Andhra Pradesh. A quantitative approach with a quasi-experimental one-group pre-test and post-test design was adopted. Sixty adolescents were selected by non-probability convenient sampling technique. Data were collected using a self-structured knowledge questionnaire and practice checklist before and after administration of the structured teaching programme. The pre-test findings revealed that 28 (46.7%) adolescents had moderate knowledge, 18 (30%) had inadequate knowledge, and 14 (23.3%) had adequate knowledge regarding personal audio devices usage on health. Regarding practice, 38 (63.3%) adolescents had poor practice and 22 (36.7%) had good practice. After the structured teaching programme, 33 (55%) adolescents had adequate knowledge, 22 (36.7%) had moderate knowledge, and only 5 (8.3%) had inadequate knowledge. In post-test practice, 44 (73.3%) adolescents had good practice, whereas 16 (26.7%) had poor practice. The study concluded that the structured teaching programme was effective in improving knowledge and practice regarding safe personal audio devices usage among adolescents.

KEYWORDS: Personal Audio Devices, Structured Teaching Programme, Knowledge, Practice, Safe Listening, Health Effects, Adolescents, College Students, Hearing Health, Chittoor District.

INTRODUCTION:

Personal audio devices (PADs), including earphones, headphones, wireless earbuds, and smartphones, are widely used by adolescents for listening to music, gaming, watching videos, and online learning. Although these devices provide easy access to entertainment and communication, frequent use at high volume and for prolonged periods can affect hearing health. Unsafe listening practices may cause ear

discomfort, ear infections, tinnitus, temporary hearing difficulty, and noise-induced hearing loss. Sharing earphones may also increase the risk of transmitting bacteria and causing ear infections.

Adolescents and young adults are particularly vulnerable because they commonly use PADs for long durations and may not be aware of safe listening limits. Exposure to sound levels above 85 decibels for prolonged periods can damage the inner ear and may result in permanent hearing loss. The World Health Organization has reported that more than one billion young people aged 12–35 years are at risk of hearing loss due to unsafe recreational listening practices. WHO recommends maintaining a low volume, limiting listening duration, taking regular breaks, using well-fitted or noise-cancelling earphones, and seeking hearing assessment when symptoms such as ringing in the ears or reduced hearing occur.

In India, hearing impairment remains an important public health concern. The National Programme for Prevention and Control of Deafness has increased screening and referral services for people with hearing problems. However, awareness regarding safe use of personal audio devices among adolescents is still limited. Therefore, providing structured health education is essential to improve their knowledge and encourage safe listening practices.

The present study aims to assess the effectiveness of a structured teaching programme on knowledge and practice of personal audio devices usage on health among adolescents in selected colleges at Chittoor District, Andhra Pradesh.

OBJECTIVES OF THE STUDY :

- To assess the pre-test knowledge and practice regarding personal audio devices usage on health among adolescents, Chittoor district, Andhra Pradesh.
- To evaluate the effectiveness of structured teaching programme on knowledge and practice regarding personal audio devices usage on health among adolescents, Chittoor district, Andhra Pradesh.
- To find out the association between the pre-test knowledge and practice score with their selected socio demographic variable.
- To find out the association between the post-test knowledge and practice regarding personal audio devices usage on health among adolescents, Chittoor district, Andhra Pradesh.

HYPOTHESIS OF THE STUDY:

Hypothesis 1: There will be a significant difference between the mean pre-test and post-test knowledge scores regarding personal audio devices usage on health among adolescents after administration of the structured teaching programme.

Hypothesis 2: There will be a significant difference between the mean pre-test and post-test practice scores regarding personal audio devices usage on health among adolescents after administration of the structured teaching programme.

METHODOLOGY:

RESEARCH APPROACH:

The research approach guides the researcher regarding from whom the data should be collected, how it should be collected, and how it should be analysed. It also suggests possible conclusions and assists in answering research questions in an accurate and efficient manner. In this study, a quantitative research approach was adopted to achieve the objectives. This approach is considered appropriate in the field of

education due to its practicability in real-life situations, feasibility, and its potential for generalization of findings.

RESEARCH DESIGN:

A research design is the overall plan, structure, and strategy used to obtain answers to the research questions. It serves as the blueprint that guides the researcher in conducting the study systematically. For the present study, a quasi-experimental research design was selected, as it is appropriate for examining the effect of an intervention when full randomization is not feasible.

VARIABLES OF THE STUDY:

The variables of the study includes independent variable, dependent variable and extraneous variable.

INDEPENDENT VARIABLE: In our study the independent variable is structured teaching programme.

DEPENDENT VARIABLE: knowledge and practices regarding personal audio devices usage on health.

EXTRENEOUS VARIABLE: Socio demographic variables which includes - Age, Sex, Religion, Type of family, Student educational status, Father educational status, Mother educational status, Income of the family per month, place of residence, Do you use Personal audio devices?, If yes, specify the type of personal audio device using, Average daily usage of Audio devices.

SETTING:

The setting of the study is PVKN Degree College, Chittoor

The setting was chosen on the basis of the investigators feasibility in terms of availability of required sample. The study was conducted during the month of July

POPULATION:

The population includes the adolescents who use PADs.

Target population:

The target population of the present study includes the adolescents who use PADs in selected college (PVKN Degree College, Chittoor, AP).

SAMPLE:

The sample includes the adolescent who are studying in selected college at Chittoor (PVKN degree college, Chittoor, AP) falling under inclusive criteria.

SAMPLE SIZE:

Sample size is- 60

The formula for sample size (SS):

The Cochran formula is:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where:

- e is the desired level of precision (i.e. the margin of error), (99% confidence level)
- p is the (estimated) proportion of the population which has the attribute in question,

- q is $1 - p$.

SAMPLE TECHNIQUE:

As the selection of sample depends on availability of adults using PADs so, Non probability convenient sampling technique was adopted based on inclusion criteria.

CRITERIA FOR SAMPLE SELECTION:**INCLUSION CRITERIA:**

- Adolescents aged between 12-19 years.
- Students who are currently studying in selected colleges at chittoor.
- Students who use personal audio devices.
- Students who are present during the time of data collection.
- The students who are willing to participate in the study.

EXCLUSION CRITERIA:

- Students who don't use personal audio device.
- Those who are absent during data collection.
- The students who are not willing to participate in the study.
- Students who are included in the pilot study.

DEVELOPMENT OF DESCRIPTION OF THE TOOL:

Data collection tools are procedures or instruments used by the researcher to observe measure the key variables in research problem. tool was developed, based on the review of relevant literature from textbooks, journals, websites, under the guidance of experts, to assess the effectiveness of structured teaching programme on knowledge and practice on Personal Audio Devices Usage on health Among Adolescents in Selected Colleges at Chittoor District, A.P.

It comprises of two section:**Section-I:**

It includes socio demographic variables like Age, Sex, Religion, Type of family, Student educational status, Father educational status, Mother educational status, Income of the family per month, place of residence, Do you use Personal audio devices?, If yes, specify the type of personal audio device using, Average daily usage of Audio devices,

Section- II

- A. It includes self-structured Multiple choice question To assess the effectiveness of structured teaching programme on knowledge and practice regarding Personal Audio Devices Usage on health Among Adolescents.
- B. It includes self- structured checklist to assess the effectiveness of structured teaching programme on practice regarding Personal Audio Devices Usage on health Among Adolescents.

Scoring key:

Scoring key prepare for:

Section-I:

By coding the demographic variable.

Section-II:

- A. It includes self - structured Multiple choice question to assess the effectiveness of structured teaching

programme on knowledge regarding Personal Audio Devices Usage on health Among Adolescents.

- Total 10 Multiple Choice question self - structured questions each correct answer carries '1' mark, wrong answer carries '0' mark.
- The total score is 10.

The scoring are categorized as follows:

- Adequate knowledge >75%
- Moderate knowledge 51- 75%
- Inadequate knowledge 50%

B. It includes self- structured checklist to assess the effectiveness of structured teaching programme on practice regarding Personal Audio Devices Usage on health Among Adolescents.

The scoring are categorized as follows:

- Good practice >50%
- Poor practice <50%

PROCEDURE OF DATA COLLECTION:

Prior formal permission was obtained from the principal of PVKN Degree College, Chittoor, AP. 60 samples were selected by non-probability convenient sampling technique.

The researcher made them sit comfortably and introduced himself to the participants and explained the purpose of the study and took a written consent, Instructions were given to the participants to answer the questionnaire frankly, then the researcher administered the questionnaire tool to the participants for the pre-test and after a period of duration, educational programme intervention is given to the same 60 participants and post-test has been conducted. And researcher thanked the participants for their cooperation.

DATA ANALYSIS AND INTERPRETATION:

Analysis was done with the help of descriptive and inferential statistics to meet the objectives of the study. The data thus collected was tabulated, analysed and interpreted.

Distribution Of Pre-Test Level Of Knowledge Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents At The Selected College, Chittoor District, Andhra Pradesh.

Pre-test level Knowledge	Frequency	Percentage %
Inadequate Knowledge	18	30.0%
Moderate Knowledge	28	46.7%
Adequate Knowledge	14	23.3%

INFERENCE:

Shows that majority of adolescents had a moderate level of knowledge 28 (46.7%) regarding personal audio device (PAD) usage, 18(30%) were having inadequate knowledge and Only 14 (23.3%) were having adequate knowledge on PAD-related health effects.

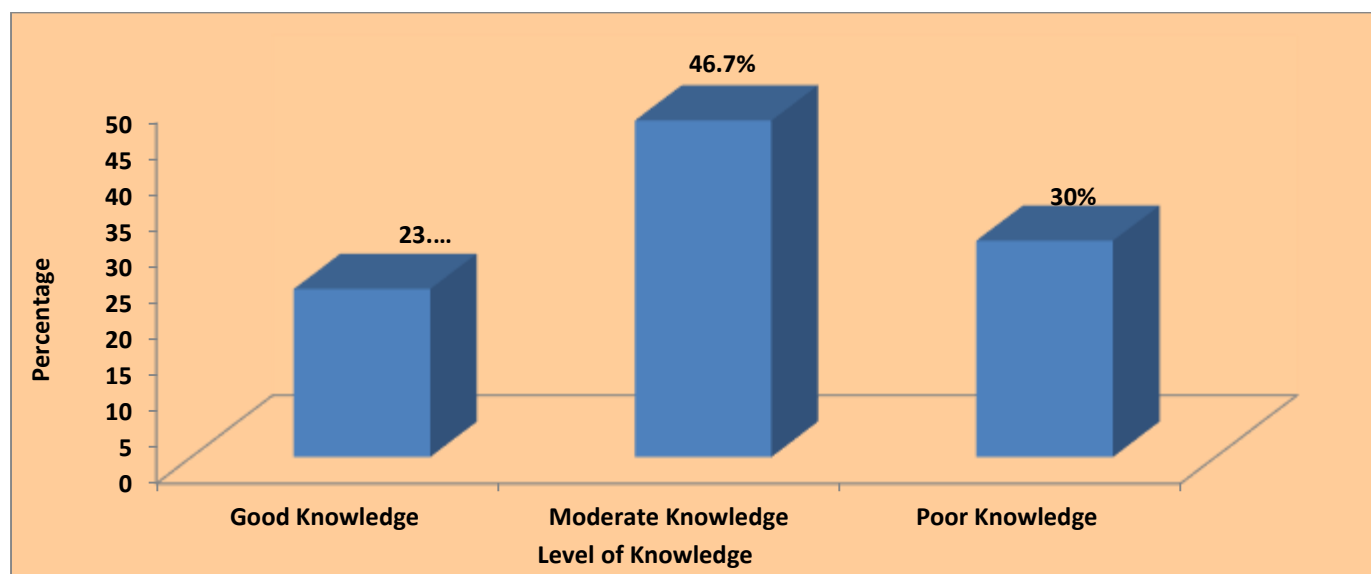
Distribution Of Pre-Test Level Of Practice Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents At The Selected College, Chittoor District, Andhra Pradesh.

Pre test level of Practice	Frequency	Percentage %
Good practice	22	36.7

Poor practice	38	63.3
Total	60	100

INFERENCE:

shows that majority of students 38 (63.3%) exhibited poor practice related to safe PAD usage, whereas only 22 (36.7%) had good practice. This indicates that unsafe usage behaviour was more common than safe practices among the adolescents.



Distribution Of Association Between Pre-Test Level Of Knowledge Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents With Their Selected Demographic Variables.

Demographic variables		Pre-test level of Knowledge						Chi-square	P value
		Poor Knowledge		Moderate Knowledge		Good Knowledge			
		F	%	F	%	F	%		
Age	16 Years	0	0.0	0	0.0	0	0.0	14.513	0.006
	17 Years	1	5.6	4	14.3	2	14.3		
	18 Years	10	55.6	5	17.9	0	0.0		
	19 Years	7	38.9	19	67.9	12	85.7		
Gender	Male	8	44.4	19	67.9	10	71.4	3.277	0.194
	Female	10	55.6	9	32.1	4	28.6		
Religion	Hindu	17	94.4	22	78.6	10	71.4	8.492	0.075
	Christian	1	5.6	5	17.9	1	7.1		
	Muslim	0	0.0	1	3.6	3	21.4		
Student	10th Class	0	0.0	0	0.0	1	7.1	6.865	0.334
	Intermediate	1	5.6	3	10.7	0	0.0		

Education Status	Graduation	16	88.9	22	78.6	13	92.9		
	PG & above	1	5.6	3	10.7	0	0.0		
Education of the father	Illiterate	1	5.6	5	17.9	0	0.0	14.898	0.018
	Primary	2	11.1	6	21.4	4	28.6		
	Secondary	6	33.3	15	53.6	8	57.1		
	Higher Secondary	2	11.1	2	7.1	0	0.0		
	Graduation & Above	7	38.9	0	0.0	2	14.3		
Education of the mother	Illiterate	3	16.7	8	28.6	2	14.3	15.599	0.049
	Primary	2	11.1	7	25.0	5	35.7		
	Secondary	3	16.7	10	35.7	5	35.7		
	Higher Secondary	4	22.2	2	7.1	0	0.0		
	Graduation & Above	6	33.3	1	3.6	2	14.3		
Family Income	< Rs10000	13	72.2	11	39.3	1	7.1	16.759	0.033
	Rs.10001 - Rs.15000	4	22.2	7	25.0	7	50.0		
	Rs.15001 - Rs 20000	0	0.0	5	17.9	3	21.4		
	Rs 20001 - Rs 25000	0	0.0	3	10.7	1	7.1		
	> Rs 25001	1	5.6	2	7.1	2	14.3		
Place Residence	Rural	11	61.1	20	71.4	13	92.9	4.571	0.334
	Urban	6	33.3	6	21.4	1	7.1		
	Semi Urban	1	5.6	2	7.1	0	0.0		
Use PAD	Yes	11	61.1	20	71.4	8	57.1	1.008	0.604
	No	7	38.9	8	28.6	6	42.9		
Type of PAD	Wired Earphone	2	11.1	10	35.7	10	71.4	13.874	0.031
	Wireless Earbuds	10	55.6	8	28.6	2	14.3		
	Over-car Head Phone		11.1	4	14.3	1	7.1		

	Bluetooth Neckband	4	22.2	6	21.4	1	7.1		
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NOTE: ** P = < 0.01 Level *P = < 0.05 Level NS = not significant

INFERENCE :

The study reveals that age, father education, mother education, family income, and type of PAD used shows significance at $P < 0.05$ and Variables that fall under $P < 0.01$ are considered marginally significant and other variables such as gender, religion, student education status, place of residence, and use of PAD were not found to have significant association with level of knowledge.

Distribution Of Association Between Pre-Test Level Of Practices Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents With Their Selected Demographic Variables.

Demographic variables		Pre-test level of Practical Knowledge				Chi-square	p-value
		Good practices		Poor practices			
		F	%	F	%		
Age	16 Years	0	0.0	0	0.0	0.890	0.828
	17 Years	3	13.6	4	10.5		
	18 Years	4	18.2	11	28.9		
	19 Years	15	68.2	23	60.5		
Gender	Male	7	31.8	30	79.0	13.09	0.000
	Female	15	68.2	8	21.0		
Religion	Hindu	17	77.3	32	84.2	2.811	0.245
	Christian	2	9.1	5	13.2		
	Muslim	3	13.6	1	2.6		
Student Education Status	10th Class	1	4.5	0	0.0	9.486	0.023
	Intermediate	1	4.5	3	7.9		
	Graduation	16	72.7	35	92.1		
	PG & above	4	18.2	0	0.0		
Education of the father	Illiterate	1	4.5	5	13.2	10.623	0.031
	Primary	3	13.6	9	23.7		
	Secondary	11	50.0	18	47.4		
	Higher Secondary	0	0.0	4	10.5		
	Graduation & above	7	31.8	2	5.3		
Education of the mother	Illiterate	8	36.4	5	13.2	11.173	0.025
	Primary	6	27.3	8	21.1		
	Secondary	2	9.1	16	42.1		
	Higher Secondary	1	4.5	5	13.2		

	Graduation & Above	5	22.7	4	10.2		
Family Income	< Rs10000	5	22.7	20	52.6	10.694	0.030
	Rs.10001-Rs.15000	12	54.5	6	15.8		
	Rs.15001 - Rs 20000	2	9.1	6	15.8		
	Rs 20001 - Rs 25000	1	4.5	3	7.9		
	> Rs 25001	2	9.1	3	7.9		
Place Residence	Rural	16	72.7	28	73.7	0.034	0.983
	Urban	5	22.7	8	21.1		
	Semi Urban	1	4.5	2	5.3		
Use PAD	Yes	7	31.8	32	84.2	16.812	0.000
	No	15	68.2	6	15.8		
Type of PAD	Wired Earphone	9	40.9	13	34.2	1.117	0.773
	Wireless Ear buds	6	27.3	14	36.8		
	Over-car Head Phone	2	9.1	5	13.2		
	Bluetooth Neckband	5	22.7	6	15.8		

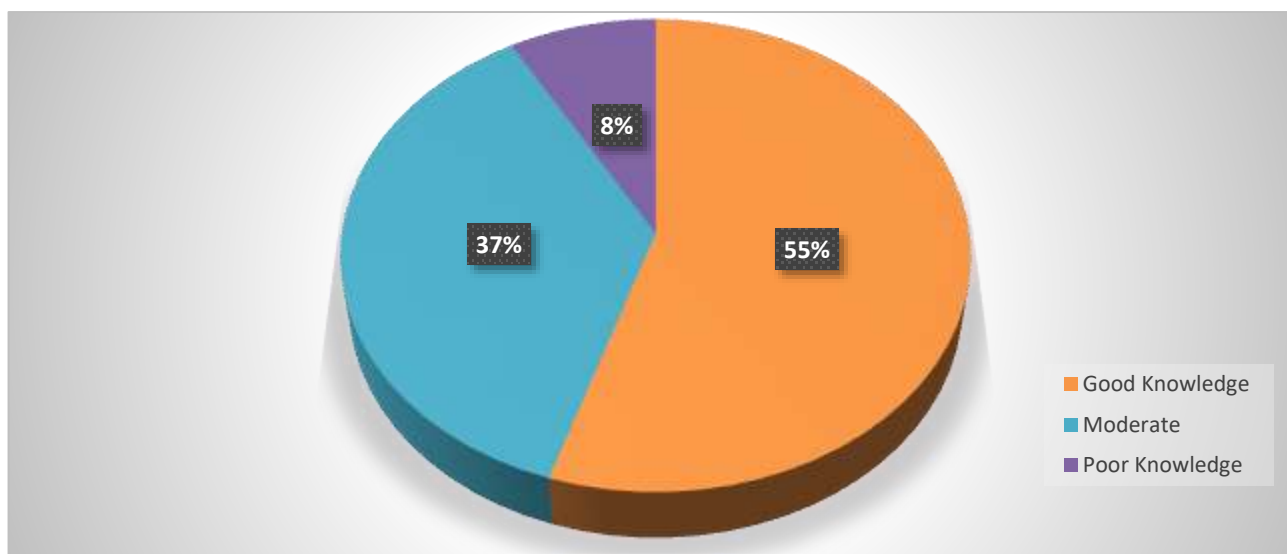
NOTE: ** P = < 0.01 Level *P = < 0.05 Level NS = not significant

INFERENCE: The study reveals that student education status, father education, mother education, family income, shows significance at P < 0.05 and gender and use of PAD P < 0.01 are highly significant and other variables such as age, religion, place of residence and type of PAD were not found to have significant association with level of practices.

Distribution Of Post-Test Level Of Knowledge Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents At The Selected College, Chittoor District, Andhra Pradesh.

Post test level of Knowledge	Frequency	Percentage
Inadequate Knowledge	5	8.3
Moderate Knowledge	22	36.7
Adequate Knowledge	33	55.0

INFERENCE: Shows that more than half of the respondents, 33 (55%), had adequate knowledge regarding personal audio device (PAD) usage on health, About 22 (36.7%) were moderate knowledge, only 5 (8.3%) had inadequate knowledge . Overall improvement in knowledge levels after the intervention. This suggests that educational programs were effective in enhancing adolescents understanding about the health effects of PAD use.



Distribution Of Post-Test Level Of Practice Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents At The Selected College, Chittoor District, Andhra Pradesh.

Post test level of Practice	Frequency	Percentage
Good practice	44	73.3
Poor practice	16	26.7

INFERENCE: Shows that a majority of the respondents, 44 (73.3%), exhibited good practice regarding the use of personal audio devices, whereas 16 (26.7%) had poor practice after the intervention. This suggests that educational programs were effective in enhancing adolescents understanding about the health effects of PAD use.

Mean And Standard Deviation Of Pre Test And Post Test Level Of Knowledge And Practices Regarding The Health Effects Of Personal Audio Device Usage Among Adolescents At The Selected College, Chittoor District, Andhra Pradesh.

Pre & post-test knowledge and practice	Mean	N	S.D	Mean Difference	t-value	Sig.
Pre Knowledge	4.63	60	2.123	-3.533	11.521*	0.000
Post Knowledge	8.17	60	1.224			
Pre Practice	5.00	60	2.025	-1.217	3.762**	0.000
Post Practice	6.22	60	1.648			

INFERENCE : Shows that the mean and standard deviation mean pre-test knowledge score was 4.63 (SD = 2.123), which increased significantly to 8.17 (SD = 2.025) in the post-test, with a mean difference of 3.533 and a t-value of 11.521, indicating a highly significant improvement (p = 0.000). Similarly, the mean pre-test practice score was 5.00 (SD = 1.648), which improved to 6.22 (SD = 1.224) in the post-test, showing a significant change with a t-value of 3.762 and p = 0.000.

DISCUSSION:

The present study was conducted to assess the effectiveness of a teaching programme on knowledge and practice regarding personal audio device (PAD) usage and its health effects among adolescents in

selected colleges. The study included 60 adolescents. Most of the participants were 19 years old, male, graduates, and from rural areas. About 65% of the participants were using personal audio devices, and wired earphones were the most commonly used type of device.

The pre-test findings revealed that many adolescents had insufficient knowledge regarding safe PAD usage. Only 23.3% had adequate knowledge, whereas 46.7% had moderate knowledge and 30% had inadequate knowledge. In relation to practice, 63.3% of adolescents had moderate practice knowledge, while 15% had inadequate practice knowledge. These findings indicate that adolescents may use personal audio devices without adequate awareness about safe volume level, duration of use, hearing protection, and possible health problems such as ear pain, tinnitus, ear infection, and hearing loss.

After administration of the teaching programme, there was a marked improvement in the knowledge level of adolescents. The percentage of adolescents with adequate knowledge increased from 23.3% in the pre-test to 55% in the post-test. At the same time, inadequate knowledge reduced from 30% to 8.3%. This shows that the teaching programme helped adolescents understand the importance of safe listening habits and prevention of health problems caused by excessive PAD use.

The post-test findings also showed improvement in practice-related knowledge. In the post-test, 30% of adolescents had adequate practice knowledge and 50% had moderate practice knowledge. This indicates that the teaching programme encouraged adolescents to follow safer practices, such as reducing the volume level, limiting the duration of use, taking breaks while listening, and avoiding prolonged use of earphones.

The effectiveness of the teaching programme was confirmed by the mean score comparison. The mean knowledge score increased from 4.63 in the pre-test to 8.17 in the post-test, with a statistically highly significant t value of 11.521. The mean practice score also increased from 5.25 to 6.03, with a statistically significant t value of 2.449 at $p = 0.017$. Therefore, the findings clearly show that the teaching programme was effective in improving knowledge and practice regarding personal audio device usage among adolescents.

Overall, the study concludes that adolescents require regular health education regarding safe use of personal audio devices. College-based teaching programmes, awareness campaigns, and counselling can help adolescents develop healthy listening habits and prevent ear-related health problems.

CONCLUSION:

The present study concluded that personal audio device usage is common among adolescents, and many of them may not have adequate awareness regarding its safe use and possible health effects. Adolescents often use earphones, earbuds, headphones, and neckbands for listening to music, watching videos, gaming, and attending online classes. Continuous use of these devices at high volume and for long periods can lead to ear discomfort, ear pain, tinnitus, reduced hearing ability, ear infections, headache, poor concentration, and sleep disturbance. The findings of the study showed that adolescents required education regarding the safe use of personal audio devices. The teaching programme helped them understand the importance of maintaining a safe volume level, limiting listening time, taking regular breaks, avoiding the use of devices in noisy surroundings, keeping earphones clean, and seeking medical advice when they experience hearing-related symptoms.

The study further concluded that health education is an important method to promote healthy listening habits among adolescents. Nurses, teachers, and parents have an important role in guiding adolescents about responsible use of personal audio devices. Regular awareness programmes, counselling sessions,

posters, demonstrations, and health education classes can help adolescents prevent hearing-related problems.

Therefore, the study concludes that a teaching programme is useful in improving knowledge and practice regarding personal audio device usage among adolescents. Early awareness and regular education can encourage safe listening behaviour and help prevent long-term ear and hearing problems among adolescents.

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