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Research Article

A Study to Assess the Effectiveness of Video Assisted Teaching on Knowledge Regarding Ergonomic Exercises and It's Uses Among Higher Secondary School Students at Selected Schools of Olpad Taluka, Surat, Gujarat

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ABSTRACT

Objective: The objective of this study was to assess the knowledge regarding ergonomic exercises and their uses among higher secondary school students at selected schools of Olpad Taluka, Surat, Gujarat.

Research Methodology: A quantitative research approach was adopted, and 60 participants from selected rural areas of Olpad Taluka were selected by using a non-probability convenience sampling technique. Formal permission was obtained from the concerned authority before data collection. A self-structured knowledge questionnaire was used to collect the data from the participants. A self-structured knowledge questionnaire was prepared to assess the knowledge of the samples. Content validity of the developed tool and structured teaching programme was established by five experts, and necessary modifications were made as suggested by them. Reliability of the tool was ascertained by Karl Pearson's coefficient of correlation (r) method.

Result: The mean pre-test knowledge score was 9.50, and the mean post-test knowledge score was 14.60. The significance of the difference between pre-test and post-test knowledge was statistically tested using a paired t-test, and it was found to be significant at the 0.05 level (t = 19.61, t = 2.00, respectively). There was a significant increase in the knowledge of the samples after the administration of video-assisted teaching on knowledge regarding ergonomic exercises and their uses among higher secondary school students at selected schools in Olpad Taluka, Surat, Gujarat. Hence, it is concluded that video-assisted teaching was effective in improving the knowledge of higher secondary school students in Olpad Taluka, Surat, Gujarat.

Keywords: Video assisted teaching Ergonomic Exercise and it's uses Higher secondary school students Selected school

INTRODUCTION

In the present era of modernization and technological advancement, lifestyle patterns among students have undergone a significant transformation. The increasing use of digital devices such as smartphones, tablets, and computers has led to a sedentary lifestyle, resulting in various postural and musculoskeletal problems among adolescents.

Prolonged sitting, poor posture, and inadequate physical activity have become common among higher secondary school students, making them vulnerable to musculoskeletal discomfort, eye strain, and fatigue. To address these growing concerns, ergonomic practices and exercises play a crucial role in maintaining physical well-being and promoting healthy study habits. Ergonomic exercises refer to a series of structured physical movements and stretches designed to promote correct posture, reduce physical strain, and enhance comfort during daily activities such as studying or using electronic gadgets.

These exercises help maintain the natural alignment of the body, prevent musculoskeletal disorders, and improve concentration and academic performance. In the school environment, where students often spend long hours sitting in classrooms or studying at home, awareness and practice of ergonomic exercises are essential for preventing long-term health complications.

OBJECTIVES OF THE STUDY

To Assess the knowledge regarding ergonomic exercises and it's uses among higher secondary school students at selected schools of Olpad taluka, Surat, Gujarat.

To Assess the effectiveness of video Assisted teaching on knowledge regarding ergonomic exercises & it's uses among

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higher secondary school students at selected schools of Olpad taluka, Surat, Gujarat.

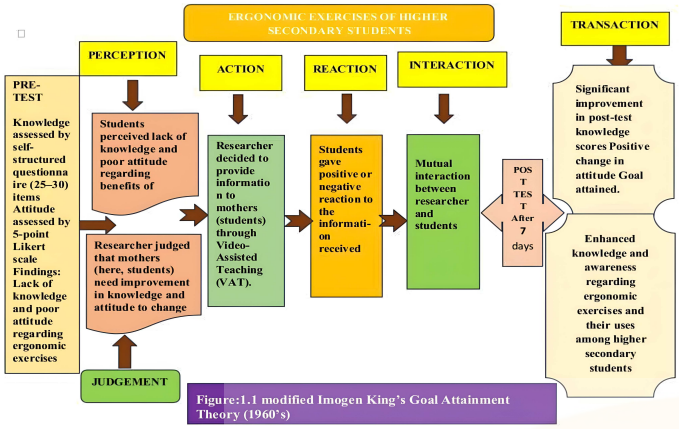

Figure:1.1 modified Imogen King's Goal Attainment Theory (1960's)

HYPOTHESIS

H0: There is no significant difference between mean pre-test & mean post-test knowledge score regarding ergonomic exercise and it's uses among higher secondary school students at 0.05 level.

H1: There is significant difference between mean pre-test and mean post-test knowledge score regarding ergonomic exercises and it's uses among higher secondary school students at 0.05 level.

METHODOLOGY

The methodology of a research study serves as the blueprint that guides the entire research process and ensures scientific rigor. This chapter describes the research approach, design, variables, setting, population, sample, sampling technique, development and description of the tool, data collection procedure, and plan for data analysis employed to assess the effectiveness of video-assisted teaching on knowledge regarding ergonomic exercises and their uses among higher secondary students.

The study was conducted in selected higher secondary schools of Olpad Taluka, Surat district, Gujarat, during the academic year [mention year, if applicable]. This chapter outlines the systematic steps under taken to achieve the objectives of the study in are liable and valid manner.

Research approach: Quantitative Research Approach

Research Design: Quasi Experimental one group Pre-test Post-test Design. The intervention and assessment framework was conceptually rooted in Imogene King Goal Attainment theory focusing on the dynamic interaction between educator and a student through perception judgment action reaction interaction and transaction to achieve measurable learning outcomes

Variable

Research Variable: Knowledge Regarding Ergonomic Exercise And it's uses.

Demographic Variable- age of student, standard of education, education of mother, family income, Residential area.

Independent variable: Video assisted teaching (VAT) Program regarding ergonomic exercise and their uses.

Dependent variable: Level of knowledge regarding ergonomic exercise and their uses.

Research Setting

-The setting is the physical location and conditions in which data collection takes place.

-This study was conducted at **Mahadev Shastri Vidhyalay, Olpad Taluka, Surat, Gujarat.**

Sampling technique: Non probability convenient sampling technique was employed to recruit participants who full filled all eligibility criteria.

Target Population: All Higher Secondary **School Students (11 and 12)** in Olpad Taluka, Surat, Gujarat

Accessible population: Higher secondary school students enrolled at Mahdev Shastri Vidhyalay during the data collection window.

Sample: 60 students.

CRITERIA FOR SAMPLE SELECTION

INCLUSION CRITERIA

Students officially enrolled in class 11 or 12 at the selected school.

Students present during both the pre-test, intervention, and post test sessions.

Students willingly to participate with signed informed consents forms.

EXLUSION CRITERIA

Students who had prior formal exposure or participated in any structured video assisted teaching or workshop on ergonomics exercises.

Students absent during any phase of data collection or the educational session.

DELIMITATION OF THE STUDY

The study is limited to 60 samples only.

The study is limited to selected schools of Olpad Taluka, Surat, Gujarat.

DATA COLLECTION INSTRUMENTS

Data were gathered via a researcher developed self strucured tool prepared in English and translated into the regional language (gujrati) to ensure full comprehension by students. The tool consists of two sections

SECTION A (Socio-demographic data)

It includes demographic attributes like age, class standard, mother education, family income and residential background.

SECTION B (Self Structured knowledge questionnaires)

Galley Proof

Contains 20 objective single best response multiple choice items addressing the definition of ergonomics, biochemical risk factors, warning sign symptoms of muscoskeletal discomfort and specific ergonomic movements.

VALIDITY, RELIABILITY AND PILOT TESTING

Content Validity: The preliminary draft of the questionnaire and teaching module was reviewed and validated by five experts evaluators across child health Nursing, Mental health nursing, Obstetrics and Gynecological Nursing, alongside physiotherapies and certified language editors suggested item revisions were integrated into the final versions.

Reliability: the instruments reliability was determined via the test-retest method on a nonparticipating student cohort. Karl Pearson correlation yielded r= 0.80 establishing acceptable internal consistency and temporal stability.

Pilot Study: A formal pilot study was conducted on September 8 2025 among 6 students at Madhymik shala Talad Surat. The participants completed the questionnaire within 30 minute without procedural ambiguity, confirming the operational feasibility of the research methodology.

INTERVENTION PROTOCOL AND DATA COLLECTION PROCEDURE

The main study was conducted between **October 6, 2025 and October 14, 2025**.

- Baseline knowledge was evaluated on Day 1 by administering the 20item questionnaire in a supervised classroom setting.
- Immediately following baseline data collection, participants attended a structured 45minute Video Assisted Teaching program supplemented by flashcards and charts. The audiovisual module illustrated the biomechanics of sitting, workstation, ergonomic, screen position and correct demonstration of 9 targeted exercises.
- Exactly 7 days after the intervention, a post test was administered using a identical structured questionnaire to quantify post intervention knowledge gains.

ETHICAL CONSIDERATION

Formal administrative and ethical permissions were secured from the Institution Ethics, committee of Vibrant Nursing college Masma Surat and the principal of Mahdev Shastri Vidhyalay. Prior to data collection students were briefed on the study scope, voluntary nature and confidentiality assurances and written informed consent was acquired.

STATISTICAL ANALYSIS

Data were coded and analyzed using descriptive statistics (frequencies, percentages, mean standard deviation) and inferential statistics (paired t-test) to evaluate the significance of pre- to- posttest differences at a significance level of $p<0.05$

ANALYSISANDINTERPRETATIONOFDATA

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SR NO	SOCIODEMOGRAPHIC VARIABLE	FREQUENCY	PERCENTAGE
1.	Age		
	13-14years	8	13.33%
	15-16years	23	38.33%
	17-18years	21	35.00%
	Above18 years	8	13.33%

Table 1: Frequency and Percentage Distribution of Participants by Standard of Education

SR NO	STANDARDOFEDUCATION	FREQUENCY	PERCENTAGE
2.	Class11	32	53.33%
	Class12	28	46.67%

Table 2: Frequency and Percentage Distribution of Education of Mother

SR NO	EDUCATION OF MOTHER	FREQUENCY	PERCENTAGE
3.	Illiterate	9	15.00%
	Primary	15	25.00%
	Secondary and Higher secondary	22	36.67%
	Graduate and above	14	23.33%

Table 3: Frequency and Percentage Distribution of Family Income

SR NO	FAMILYINCOME	FREQUENCY	PERCENTAGE
4.	Below10,000	12	20.00%
	10,001-15,000	18	30.005%
	15,001-20,000	16	26.67%
	Above20,000	14	23.33%

Table 4: Frequency and Percentage Distribution of Participants by Residential Area

SR NO	RESIDENTIALAREA	FREQUENCY	PERCENTAG
5.	Rural	25	41.67%
	Urban	35	58.33%

Section 2: This Section Deals With Effectiveness of the Video-Assisted Teaching Program on Ergonomic Exercises and Their Uses

Level of Knowledge	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Inadequate Knowledge	38	63.33%	2	3.33%
Moderate Knowledge	18	30.00%	12	20.00%
Adequate Knowledge	4	6.67%	46	76.67%
Total	60	100%	60	100%

Section 3: This Section Deals with Mean and Standard Deviation of the Video-Assisted Teaching Program Among Higher Secondary School Students

Table 5: Mean and Standard Deviation of Video-Assisted Teaching Among Higher Secondary School Students.

SR NO.	TEST	EXPERIMENTALGROUP	
		MEAN	STANDARDDEVIATION
1.	Pre-test	9.50	1.844
2.	Post-test	14.60	1.735

Galley Proof

Section 4: Comparison of Pre-Test and Post-Test Knowledge Scores Regarding Ergonomic Exercises and Their Uses Among Higher Secondary School Students

TEST	SAMPLE	MEAN	MEAN DIFFERENCE	Calculated paired "t" test value	Table paired "t" test value	Level of significance
PRE-TEST	60	9.50	5.10	19.61	2.000	0.05
POST-TEST	60	14.60				

Table 6: Comparison of Pre-Test and Post-Test Knowledge Scores Regarding Ergonomic Exercises and Their Uses Among Higher Secondary School Students

MAJORFINDINGS

The major findings of the study are presented according to the objectives of the study.

Findings related to demographic variables

- In the age, majority (38.33%) of the students were in the 16–18year age group.
- In the education of mother, majority (36.67%) were in the secondary and higher secondary education group.
- In the standard of education, Class 11 majority students were 53.33% (32 students).
- The largest group (30.005%) had family income between ₹10,001–₹15,000 per month.
- In the residential area, majority of the students (58.33%) came from urban areas.

Findings related to effectiveness of video-assisted teaching on improving knowledge regarding ergonomic exercises and its uses among higher secondary school students in selected schools of Olpad Taluka, Surat, Gujarat

- In the post-test, out of 60 higher secondary school students in the experimental group:
- In the post-test, 46 students (76.67%) had adequate knowledge regarding ergonomic exercises and its uses among higher secondary school students in selected schools of Olpad Taluka, Surat, Gujarat.

CONFLIC OF INTREST

The author declare that they have no conflict of interest related to the study or its publications.

IMPLICATIONS

The present quasi-experimental study clearly demonstrated that structured video-assisted teaching was highly effective in improving the knowledge of higher secondary school students regarding ergonomic exercises and their uses. The mean pre-test knowledge score in the experimental group was 9.50, which increased to 14.60 in the post-test, yielding a mean difference of 5.10. The calculated paired t value of 19.61 was far greater than the table value of 2.000 at the 0.05 level of significance (df = 59), indicating that the gain in knowledge was statistically highly significant ($p < 0.001$).

These findings have important implications for nursing practice, nursing education, nursing administration, and nursing research.

NURSING PRACTICE

- School health nurses and community health nurses can use video-assisted teaching as an effective method to create awareness about ergonomic exercises.
- Community health nurses and school health nurses can confidently adopt video-assisted teaching as a standard, evidence-based he

NURSING EDUCATION

- Nursing curriculum should include topics on ergonomic exercises and modern teaching methods like video assisted teaching.
- The success of video-assisted teaching in this study strongly supports the inclusion of "Development and Utilization of Video Modules" as a compulsory practical component in B.Sc. Nursing, P.B. B.Sc. Nursing, and M.Sc. Nursing (Community Health Nursing & Child Health Nursing) curricula.

NURSINGA DMINISTRATION

- Nurse administrators can organize in-service education programmes and workshops on the use of video-assisted teaching for health education.
- Nursing administrators in the Directorate of Nursing Services, School Health Programmes, and District Health Systems should develop policy guidelines for the mandatory inclusion of "Ergonomic Exercise Education" through video modules in all higher secondary schools at least once a year.

NURSING RESEARCH

- The study can be replicated on larger sample and different settings. The present study opens avenues for multicentric studies with larger sample sizes across urban,rural, and tribal schools to establish generalizability.
- Future researchers can conduct experimental studies to assess the effectiveness of video-assisted teaching on actual practice/ Behavior change (e.g., frequency of performing ergonomic exercises at home) and long-term outcomes (reduction in musculoskeletal complaints after 6–12 months).

DISCUSSION

The purpose of the discussion is to interpret and describe the significance of the researcher's findings in light of what was already known about the research problem being investigated and to explain any new understanding or insights that emerged as a result of the researcher's study of the problem. The aim of the present study is to assess the effectiveness of video assisted teaching on knowledge regarding ergonomic exercises and its uses among higher secondary school students at selected schools of Olpad Taluka, Surat, Gujarat. 20 knowledge questionnaires were used to evaluate the knowledge of ergonomic exercises and its uses. The responses were Analysed by using descriptive statistics (Mean, Median, Standard deviation, Frequency, Percentage) and inferential statistics (Paired t test, Chi square). Discussion on the findings was arranged on the basis of objectives of the study.

CONCLUSION

The findings of the present study concluded that the video assisted teaching was highly effective in improving the knowledge regarding ergonomic exercises and its uses among higher secondary school students. The calculated paired "t" value (19.61) was much higher than the table value (2.000) at 0.05 level of significance which clearly indicates significant gain in knowledge score after administration of video assisted teaching. By translating these findings into practice, education, administration, and further research, nurses can play a pivotal role in preventing the rising epidemic of musculoskeletal disorders among the digital-generation youth, thereby contributing substantially to the nation's goal of healthy and productive adolescence.

RECOMMENDATIONS

On the basis of the findings of the study, it is recommended that

- A similar study can be replicated on a larger sample for wider generalization.
- A comparative study can be conducted between rural and urbans school students.
- A study can be conducted to assess the practice of ergonomic exercises among students.

An experimental study can be conducted with a control group.

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