JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

"A STUDY TO ASSESS THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE REGARDING OCULAR EXERCISES ON VISUAL STRAINING AS AN IMPACT OF PROLONGED USAGE OF DIGITAL SCREENING AMONG TEENAGERS IN SELECTED SCHOOL AT DELHI"

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ABSTRACT

A study conducted to assess the Effectiveness of Planned Teaching Programme in terms of Knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening among teenagers in selected school at Delhi. The objectives of the study were to assess the pre-test level of knowledge of Teenagers on Ocular Exercises on Visual Straining, to develop and administer Planned Teaching Programme on Ocular Exercises on Visual Straining, to assess the post-test level of knowledge of Teenagers on Ocular Exercises on Visual Straining, to compare the pre-test and post-test level of knowledge of Teenagers regarding Ocular Exercises on Visual Straining, to evaluate the effectiveness of Planned Teaching Programme on Ocular Exercises on Visual Straining among Teenagers by comparison between pre-test and post-test knowledge levels, Pre-experimental one group Pre-test Post-test only research design was used to accomplish the stated objectives in the study. A total of 30 Teenagers were selected for the study using convenient sampling technique. Self-structured knowledge questionnaire was used as the data collection tool and Planned Teaching Programme was conducted after the pre-test. The data analysis was done using descriptive and inferential statistics. The pre-test study results showed that The maximum number of Teenagers i.e., 10(33.3%) had poor pre-test knowledge, 19 (63.3%) having moderate pre-test knowledge, whereas least i.e., 1(33.3%) were having poor pre-test knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening. After the administration of Planned Teaching Programme, majority of the Teenagers i.e., 23(76.6%) were having good post-test knowledge, 20(6%) Teenagers had average post-test knowledge and least i.e., 6(20%) had poor post-test knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening. Mean pre-test knowledge scores of the sample was lower than the mean post-test knowledge score with a mean difference of 3.04. Hence, the study results concluded that the Planned Teaching Programme was effective in increasing the knowledge of the Teenagers regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening.

KEY WORDS: Planned Teaching Programme; Ocular Exercises; Visual Straining; Digital Screen Use; Teenagers; Knowledge Assessment; Digital Eye Strain

INTRODUCTION

In today's digital age, the widespread use of electronic screens among teenagers has become ubiquitous, profoundly influencing their daily lives and routines. The prolonged exposure to digital screens, including computers, tablets, and smartphones, has raised concerns about its impact on ocular health, particularly in terms of visual straining. Visual strain refers to discomfort or fatigue experienced by the eyes due to prolonged use of digital devices, often exacerbated by poor ergonomics and inadequate breaks.

Delhi, being a metropolitan city characterized by a high prevalence of digital technology usage among adolescents, provides an ideal setting for this study. The outcomes of this research are expected to contribute valuable insights into the efficacy of educational interventions in promoting ocular health awareness among teenagers facing the challenges posed by extensive digital screen exposure. Ultimately, the findings of this study aim to inform educational and public health strategies aimed at mitigating the adverse effects of digital technology on ocular health among adolescents.

NEED OF THE STUDY

The study aims to address a critical issue concerning teenagers' visual health in the digital age, specifically focusing on the impact of prolonged digital screen usage on ocular health. With the increasing prevalence of digital devices in educational settings and leisure activities, teenagers are increasingly exposed to prolonged periods of screen time, which has been linked to visual strain and related issues. The study's focus on ocular exercises as a potential intervention is crucial, as these exercises have the potential to mitigate the negative effects of excessive screen time on eye health.

Delhi, being a densely populated urban area, presents a pertinent context for this study due to its high concentration of schools and widespread use of digital devices among teenagers. Understanding teenagers' knowledge regarding ocular exercises and visual strain is essential for designing effective educational interventions. The planned teaching program will play a pivotal role in enhancing teenagers' awareness and understanding of ocular exercises, empowering them with practical strategies to alleviate visual strain associated with digital screen usage.

Furthermore, the study's findings could have broader implications for educational policy and healthcare practices, potentially influencing guidelines on screen time recommendations for teenagers. By bridging the gap between theoretical knowledge and practical application of ocular exercises, this study seeks to empower teenagers with the necessary tools to maintain optimal visual health in an increasingly digital world. Ultimately, the research aims to contribute to the well-being and academic success of teenagers by addressing a significant public health concern related to digital screen usage.

PROBLEM STATEMENT

A Study to Assess the Effectiveness of Planned Teaching Programme on knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening among Teenagers in Selected School at Delhi.

OBJECTIVES

a. To assess the pre-test level of knowledge, regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening among teenagers.

b. To develop and administer a Planned Teaching Programme regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening.

c. To assess the post-test level of knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening.

d. To compare the pre-test and post-test of knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening among Teenagers.

e. To evaluate the effectiveness of Planned Teaching Programme regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening among Teenagers by comparison between pre-test and post-test knowledge levels.

MATERIAL AND METHODS

A quantitative approach with a pre-experimental one-group pre-test–post-test design was adopted to assess the effectiveness of a Planned Teaching Programme on ocular exercises for visual strain related to prolonged digital screen use among teenagers. The study population comprised school-going teenagers in Delhi. A total of 30 participants were selected using a non-probability convenient sampling technique.

Baseline knowledge was assessed using a self-structured questionnaire which was followed by a Planned Teaching Programme lasting 30–45 minutes. A post-test was conducted using the same questionnaire to evaluate the effectiveness of the intervention. Demographic data related to age, gender, residence, digital device usage, screen habits, and awareness of ocular exercises were also collected.

RESULT

FINDINGS RELATED TO KNOWLEDGE REGARDING OCULAR EXERCISES ON VISUAL STRAINING AS AN IMPACT OF PROLONGED USAGE OF DIGITAL SCREENING AMONG TEENAGERS

N=30

KNOWLEDGE SCORE	RANGE	PRE-TEST		POST-TEST	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Inadequate Knowledge	0-6	1	3.33%	1	3.33%
Moderate Knowledge	7-12	19	63.3%	6	20%
Adequate Knowledge	13-20	10	33.3%	23	76.6%

Maximum score = 20 Minimum score = 0

EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON THE LEVEL OF TEENAGERS ON OCULAR EXERCISES ON VISUAL STRAINING AS AN IMPACT OF PROLONGED USAGE OF DIGITAL SCREENING.

Group	Score range	Mean	Mean Difference	Median	Standard Deviation
Pre-Test	7-16	11.61	3.04	11	3.58
Post-Test	7-18	14.65		16.5	10.12

Maximum score - 20

Minimum score – 0

Most participants (96.66%) were aged 15–16 years, with 73.33% being male. The majority were Hindu (93.33%) and resided in urban areas (86.66%). Smartphones were the most commonly used digital devices

(83.33%). A large proportion of teenagers (36.60%) used digital screens for more than 3 hours per day. Most participants adjusted screen brightness according to environmental conditions (63.30%) and took breaks from screen use every hour (56.66%).

Awareness and practice of ocular exercises were poor, with 96.66% having no prior knowledge and 80% never practicing ocular exercises.

Pre-test findings revealed that most teenagers had moderate knowledge (63.3%), while 33.3% had poor knowledge regarding ocular exercises. Following the Planned Teaching Programme, a marked improvement was observed, with 76.6% of participants attaining good knowledge in the post-test.

The mean knowledge score increased from 11.61 ± 3.58 in the pre-test to 14.65 ± 10.12 in the post-test, with a mean difference of 3.04, indicating the effectiveness of the Planned Teaching Programme in improving knowledge regarding ocular exercises for visual strain due to prolonged digital screen use.

DISCUSSION

The present study aimed to assess the effectiveness of the Planned Teaching Programme on the knowledge of the Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening. The findings of the present study have been discussed in relation to the observation made by other studies which the investigator reviewed.
The present study found that the pre-test knowledge on knowledge of the Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening among Teenagers showed that the maximum number of Teenagers i.e., 10(33.3%) had poor pre-test knowledge, 19 (63.3%) having moderate pre-test knowledge, whereas least i.e., 1(33.3%) were having poor pre-test knowledge regarding Ocular Exercises on Visual Straining as an impact of prolonged usage of Digital Screening.

These findings were consistent with study **Asimina mataftsi.et.al. (2023)** conducted a systematic review study on Digital eye strain (DES) or computer vision syndrome (CVS) is a phenomenon linked to ever increasing digital screen use globally, affecting a large number of individuals. Recognizing causative and alleviating factors of DES may help establish appropriate policies. We aimed to review factors that aggravate or alleviate DES symptoms in young, i.e., pre-presbyopic (< 40 years old), digital device users. We searched PubMed, Scopus, EMBASE, Cochrane, Trip Database, and grey literature up to 1st July 2021. Among a plethora of studies with heterogeneous diagnostic criteria for DES, we only included those using a validated questionnaire for the diagnosis and evaluating associated factors in young subjects. Relevant data were extracted, risk of bias assessment of the included studies and GRADE evaluation of each outcome were performed. Ten studies were included (five interventional, five observational) involving 2365 participants. Evidence coming from studies with moderate risk of bias suggested that blue-blocking filters do not appear to prevent DES (2 studies, 130 participants), while use of screens for > 4-5 h/day (2 studies, 461 participants) and poor ergonomic parameters during screen use (1 study, 200 participants) are associated with higher DES symptoms' score. GRADE evaluation for the outcomes of blue-blocking filters and duration of screen use showed low to moderate quality of evidence. It appears advisable to optimize ergonomic parameters and restrict screen use duration, for minimizing DES symptoms. Health professionals and policy makers may consider recommending such practices for digital screen users at work or leisure. There is no evidence for use of blue- blocking filters.[1]
These findings were consistent with study **Kirandeep Kaur.et.al. (2022)** conducted a comprehensive review study on Digital eye strain (DES) is an entity encompassing visual and ocular symptoms arising due to the prolonged use of digital electronic devices. It is characterized by dry eyes, itching, foreign body sensation, watering, blurring of vision, and headache. Non-ocular symptoms associated with eye strain include stiff neck, general fatigue, headache, and backache. A variable prevalence ranging from 5 to 65% has been reported in the pre-COVID-19 era. With lockdown restrictions during the pandemic, outdoor activities were restricted for all age groups, and digital learning became the norm for almost 2 years. While the DES prevalence amongst children alone rose to 50-60%, the symptoms expanded to include recent onset esotropia and vergence abnormalities as part of the DES spectrum. New-onset myopia and increased progression of existing myopia became one of the most significant ocular health complications. Management options for DES include following correct ergonomics like reducing average daily screen time, frequent blinking, improving lighting, minimizing glare, taking regular breaks from the screen,

changing focus to distance object intermittently, and following the 20-20-20 rule to reduce eye strain. Innovations in this field include high-resolution screens, inbuilt antireflective coating, matte-finished glass, edge-to-edge displays, and image smoothening graphic effects. Further explorations should focus on recommendations for digital screen optimization, novel spectacle lens technologies, and inbuilt filters to optimize visual comfort. A paradigm shift is required in our understanding of looking at DES from an etiological perspective, so that customized solutions can be explored accordingly. The aim of this review article is to understand the pathophysiology of varied manifestations, predisposing risk factors, varied management options, along with changing patterns of DES prevalence post COVID-19. [2]

These findings were consistent with study conducted by **Teresa Hirzle .et.al. (2020)**. The results revealed Display-based interfaces pose high demands on users' eyes that can cause severe vision and eye problems, also known as digital eye strain (DES). Although these problems can become even more severe if the eyes are actively used for interaction, prior work on gaze-based interfaces has largely neglected these risks. We offer the first comprehensive account of DES in gaze-based interactive systems that is specifically geared to gaze interaction designers. Through an extensive survey of more than 400 papers published over the last 46 years, we first discuss the current role of DES in interactive systems. One key finding is that DES is only rarely considered when evaluating novel gaze interfaces and neglected in discussions of usability. We identify the main causes and solutions to DES and derive recommendations for interaction designers on how to guide future research on evaluating and alleviating DES. [3]

CONCLUSION

The study aimed to assess the effectiveness of a Planned Teaching Programme on teenagers' knowledge regarding ocular exercises for visual strain caused by prolonged digital screen use. Findings revealed that most teenagers had poor to average knowledge prior to the intervention. Following the Planned Teaching Programme, a significant improvement in knowledge was observed. The mean post-test knowledge score was higher than the pre-test score, with a mean difference of 3.04, indicating the effectiveness of the intervention.

IMPLICATIONS

Nursing Practice:
Nurses should educate patients attending outpatient departments about ocular exercises to prevent and manage visual strain associated with prolonged digital screen use. Awareness programmes focusing on ocular exercises and lifestyle modifications can be organized, supported by planned educational interventions following appropriate surveys.

Nursing Education:
Nurse educators should encourage projects and continuing nursing education programmes on ocular exercises for visual strain. Educational modules can be utilized to train students and nurses, and professional development activities such as conferences, workshops, and seminars should be conducted to update knowledge on visual strain management.

Nursing Administration:
Nursing administrators should promote research activities related to ocular exercises and visual strain prevention. They can facilitate awareness programmes, conferences, and workshops, and collaborate with government and private sectors to improve public awareness. Nursing councils may develop guidelines or checklists to enhance the quality of life of individuals experiencing visual strain.

Nursing Research:
Findings from this study support the implementation of evidence-based practices for preventing visual strain and serve as a reference for future research. The study may motivate further investigations and contribute to the expansion of scientific nursing knowledge in this area.

LIMITATIONS

The present study was conducted with a limited sample of 30 teenagers in a single setting; therefore, the findings cannot be generalized broadly.

RECOMMENDATIONS

The study may be replicated with a larger sample size in different settings. Similar studies can be conducted to assess the knowledge, skills, and practices of teenagers regarding ocular exercises related to visual strain caused by prolonged digital screen use. Comparative studies may evaluate differences in knowledge between teenagers who have attended ergonomic training programmes and those who have not. Longitudinal and experimental studies can be undertaken to identify and measure the effectiveness of ocular exercises in reducing visual strain. Further research may also assess the effectiveness of various teaching methods in improving teenagers' knowledge regarding prevention of digital eye strain.

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