STM JOURNALS

Recent Trends in
Infectious Diseases

Volume 1, Issue 1, 2024
January—June
DOI (Journals): 10.37591/RTID

https://journals.stmjournals.com/rtid

Research RTID

Effectiveness of Sensitization Program on Knowledge of School Children Regarding Refractive Errors

Gaurav Kohli[1,*], Manu Kohli[2], Harmanpreet Kaur[3]

Abstract

The human eyes are portals of absorbing divine knowledge from the surrounding world. These two precious pearls need to take proper care throughout to taste life. The eye care starts right from birth onward and becomes keenly required in children's school age as they use these gifts for intense learning. The neglected care in the initial years may trouble them with various visual disorders and disturb their studies too. Well-structured sensitization programs in these building years can work as a guide to improve eye health among school children. ***Aim:*** *To compare the impact of the Sensitization program on school children's knowledge in the control and experimental groups.* ***Setting:*** *Data collection was carried out in two private schools (1 control group and 1 experimental group) in the district of Ludhiana, Punjab.* ***Design:*** *Quasi-experimental design opted.* ***Method and Material:*** *The sample size was calculated with power analysis, and the final sample size with 10% attrition was 102 (51 in Control and 51 in experimental). The non-proportionate stratified sampling was conducted to select the subjects from the 5th, 6th, and 7th standards. The tool consists of section-I demographic characteristics and a section-II Knowledge questionnaire. The reliability of the knowledge questionnaire was calculated with KR20 was 0.81, and the validity of the questionnaire and intervention was established with expert opinions from community health, medical surgical nursing, and optometrists of the private hospitals.* ***Statistics Utilized:*** *Inferential and descriptive statistics.* ***Result:*** *indicates that the post-test knowledge score of the experimental group improved remarkably to good and excellent levels (76.5, 23.5) compared to the control group, where knowledge retained to the level of average and good 35.3, 64.7. There was a significant difference between the Posttest knowledge score of the control and experimental groups. The demographic characteristics had no significant relationship with the knowledge of school-age children regarding refractive errors.* ***Conclusion:*** *The vision of school children is an essential concern of today's lifestyle, especially when they indulge in books, laptops, and mobiles. The sensitization packages for refractive errors are required to equip the children with a better knowledge to cope with upcoming threats of refractive errors at school age.*

Keywords: Impaired vision, visual impairment, visual disorders, school age, eye problems

***Author for Correspondence**
Gaurav Kohli
E-mail: gaurav.kohli@chitkara.edu.in

[1]Professor, M.Sc. Nursing & PhD Scholar, Chitkara School of Health Sciences, Chitkara University, Punjab, India
[1,2]Centre for Evidence Based Practice in Health Care, Chitkara School of Health Sciences, Chitkara University, Punjab, India
[2]Associate Professor, M.Sc. Nursing & PhD Scholar, Chitkara School of Health Sciences, Chitkara University, Punjab, India
[3]PG Student, GHG College of Nursing, Raikot, Punjab, India

Received Date: November 18, 2023
Accepted Date: December 02, 2023
Published Date: December 21, 2023

Citation: Gaurav Kohli, Manu Kohli, Harmanpreet Kaur. Effectiveness of Sensitization Program on Knowledge of School Children Regarding Refractive Errors. Recent Trends in Infectious Diseases. 2024; 1(1): 13–20p.

INTRODUCTION

The eyes are the camera of the human body, so we say life is nothing without capturing this colorful world around us. We all know that human learning starts right after birth and visual senses play a vital role in observing everything personally and closely. Children's growth (physical, social and mental) can be affected by defective vision; that's why preservation of vision is essential. According to most of the facts, learning only occurs through the eyes. The younger segment, especially school children, is the target population to cultivate good health habits, which further help them improve their self-care abilities. The awareness initiatives help

them to realize the importance of eye health and motivate them to incorporate knowledge into self-care practices [1].

The eyes are an essential part of effective conversation and experience. The impact of poor vision directly affects the lives of children in their school years. The beginning of refractive errors or aggravations of existing errors may reach the highest in adolescence and halt the growth spurt. The early detection of these visual errors can help all the students with correction surgery and lenses if required [2]. Impaired vision is an optic error and affects the site of an individual by hindering the light from pouring on the retina. Clients can benefit from early detection and prompt action on these issues.These problems are the second most prominent reason for doctor's consultations in India. Many cases get the possible early treatment, but significant segments are left behind with economic and approach constraints [3].

According to a census, there are 500 million – 2.3 billion people affected by visual errors, out of which 15.3 million affected the population above five years. The children of 6-12 years in their school age in India constitute the total. WHO said almost 118 million students in this age segment are visually impaired [4].

School-age children's vision deficit is one of the significant countable problems in India and has a lasting effect on their lives. According to the retrieved information through various sources, it has been found that a big chunk of people is landing into the problem of vision loss as they are not undergoing correction procedures. These tendencies increase the years of disabilities among young citizens and may compensate for vision loss sometimes. Untreated eye problems may result in various other co-morbidities and increase the social burden [5]. The prevalence of visual errors in Ludhiana has revealed the status of vision among 6-12 years of school children. The aim was to determine the prevalence of this problem among children in school.The selected setting was a school situated in urban Ludhiana. A total sample of 1043 was included in the study and assessed for visual problems. The study showed that myopia was 8.82%, whereas hypermetropia was among 51.7% of children. The existence of myopia and hypermetropia both were in children [6]. According to a study, about 10% of students in every school are affected by visual problems. The reason behind children's visual errors is a lack of awareness. Major factors behind this problem are lack of recognition, poor knowledge, and teacher training deficit of early recognition. Other causes are a lack of regular eye screening camps and inadequate focus on children's health. Few cases are detected at first line for awareness issues, and some patients cannot access treatment because of affordability issues [7].

The body functions of children have started compensating from their childhood onward with the reasons of poor knowledge and diet as well. While working in the community, it was found that parents are not aware of visual problems among school-age children besides being liberal with the kids regarding diet as they are keen to have junk food most of the time. The main segment of this suffering is school age when they are almost dependent upon their parents and teacher. In light of the above-given facts, we decided to proceed in the same research areas as there is a limited number of facts available regarding these variables. Therefore, we came up intending to add to this intrinsic field of research.

Objectives

To assess and compare pre and post-test knowledge of school children regarding refractive errors in control and experimental groups. To find out the association between school children's knowledge regarding refractive errors and demographic characteristics in control and experimental groups.

Hypothesis

H_1- there would be a significant difference in post-interventional knowledge scores of school children regarding refractive errors in the experimental and control groups at a $p<0.05$ level of significance.

SUBJECTS AND METHODS

Study Design and Setting

An experimental/quantitative research design was adopted to accomplish the objectives of the study.The study was conducted in two private schools in Ludhiana, Punjab, India. The matching was done to limit the extraneous variables. The selected schools were private organizations, English medium, co-educational, and affiliated with the same state education board.

Study Participants

The study participants were schoolchildren. The subjects were included based on the inclusion and exclusion criteria of the study. The inclusion criteria were a) studying in 5^{th}, $6^{th,}$ and 7^{th} standard, b) having the ability to understand Punjabi and English c) People who are open to participation. A) Exclusions are those that were not included in the data collection. Participants were selected from schools in Ludhiana, Punjab, India.

Sample and Sampling Design

Power analysis was used to estimate the sample size. Power was 80% with an alpha of 0.05.The calculated sample size was 91 and with 10 % attrition final sample was 102. The sample was divided into 51 subjects in each group (control & experimental groups).

Tools of Data Collection

A structured questionnaire was composed of two parts, as shown below:

- *Tool I-Student's socio-demographic characteristics*
  This tool contained items related to the student's age (in years), Gender, Academic standard, Family income (per month), Mother's qualification, Father's qualification, Mother's profession, Father's profession, and Source of information.
- *Tool II- Structured knowledge questionnaire about refractive errors*
  The tool contained 40 items comprised of 4 domains-definition and causes, symptoms, management, and prevention of refractive errors.

The knowledge score refers to the obtained score on a structured questionnaire, and the criterion measure was classified as ≥77% (excellent), 52-75% (good), 27-50% (Average), and ≤ 25% poor. In addition, the content was validated by 9 experts in various fields, and the content validity index (CVI) of the tool was 0.84.

Intervention

Sensitization program comprised 2 hours of interactive sessions between the researchers and subjects. It consists of 3 phases.

1. *Phase 1:* Preparation was made to create awareness among the students regarding refractive errors. Prior permissions were obtained from the school management through the proper channel. The researcher selected the subjects who fulfilled the criteria. The researcher introduced own-self and explained the purpose of the studyThe first test was conducted using a calculated structured questionnaire.. 45 minutes was given to each subject to fill out the pre-test.
2. *Phase 2:* Implementing the sensitization program: A sensitization program was delivered to the subjects selected in the intervention group on Day 1 after the pretest. First, the researcher sensitizes the students through the interactive session focusing on the definition, causes, signs & symptoms, management, and prevention of refractive errors. The session was delivered in the local language (Punjabi) for 2 hours. Audio-visual aids (videos, LCD, flashcards, pamphlets) were used during the program. A video on do's and don'ts in eye care was also shown to the students.
3. *Phase 3:* Outcome assessment: Post-test was conducted to evaluate the effect of the sensitization program on the 7^{th} day to measure the degree of retention span of knowledge of the students. The sensitization program was delivered to the waitlist control group after the outcome assessment of both groups.

The Plan is as follows:

On Day 1, both the Control Group and Experimental Group underwent a Pretest. However, the Experimental Group additionally participated in a Sensitization program, which consisted of a lecture and a video.

From Day 2 to Day 6, there was no intervention for either group, but the Experimental Group received reading material during this period.

Both groups were tested after day 7 to assess the effect of treatments.

Reliability and Validity

The reliability of the knowledge questionnaire was calculated with KR20 was 0.81, and the validity of the questionnaire and intervention was established with nine expert opinions from community health, medical surgical nursing, and optometrists of the private hospitals. Furthermore, the validity of the intervention was confirmed by the opinions of 3 optometrists from private hospitals. In addition, the tool's content validity index (CVI) was 0.84.

Pilot Study

The pilot study was conducted in two private schools in Ludhiana to measure the tool's applicability and estimate the time needed for the study. 10% of the total subjects (6 control + 6 experimental) were included in the pilot project. The study's feasibility was ensured, and the main research study proceeded with necessary changes (Figure 1).

Ethical Clearance

An institutional research ethics committee (GHGCN/MED/EC/989) provided ethical approval outlining the aims and design of the study.Furthermore, informed written permission was taken from the school administrations after explaining the purpose of the study.

Statistical Analysis

Analysis and interpretations were carried out according to the laid down objectives of the study. All data analyzes were performed using SPSS version 16.00. The cutoff point for statistical significance was set at $p<0.05$. t-test and ANOVA were used to measure the difference between the participants in both groups as the data was normally distributed.

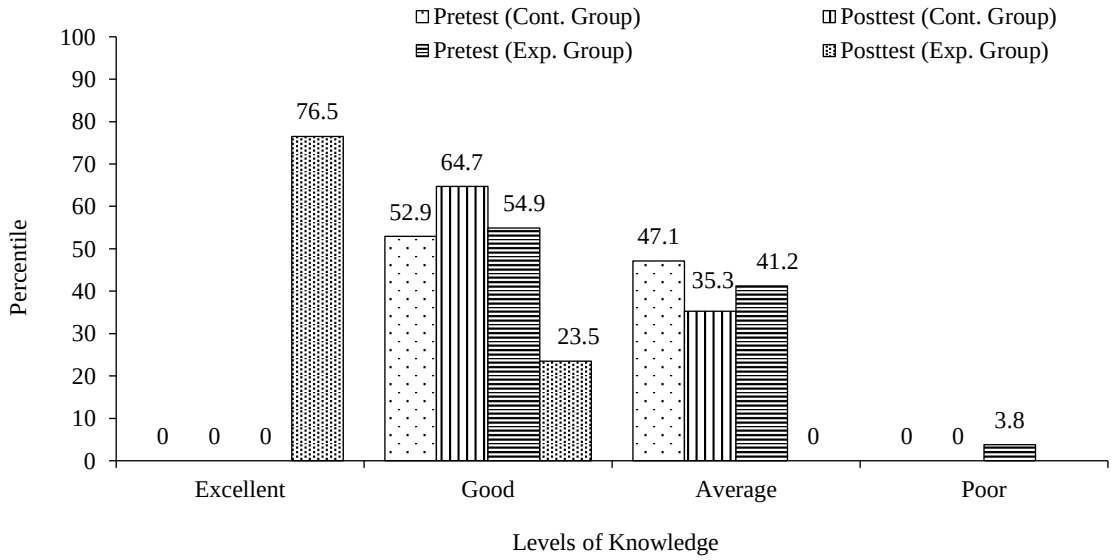

Figure 1. School children's knowledge regarding refractive errors in the waitlist control & intervention group.

RESULTS

The data were distributed according to the demographic characteristics, i.e., Age (in years), Gender, Academic standard, Family income (per month), Mother's qualification, Father's qualification, Mother's profession, Father's profession, and Source of information. The data were found to be normally distributed after calculation with Kolmogorov Simonov and Shapiro-Wilk test in SPSS software.

Table 1. Demographic characteristics of the experimental and control group.

Variable	Control group (n=51)		Experimental Group (n=51)		df	χ^2/ adjusted χ^2	p-value
	f	%	*f*	%			
1. Age (in years)							
9-10	23	45	25	49	1	0.157	0.691
11-12	28	55	26	51			
2. Sex							
Male	27	53	27	53	1	0.000	0.842
Female	24	47	24	47			
3. Academic Standard							
6th	17	33	17	33	2	0.000	1
7th	17	33	17	33			
8th	17	33	17	33			
4. Family Income (Rs /per month							
5000-10,000	0	0	1	2			
10,001- 15,000	6	12	3	6	3	3.45	0.326
15,001 – 20,000	12	24	18	35			
20,001 & above	33	65	29	57			
5. Mother's Education							
Illiterate	0	0	0	0			
1st - 9th Standard	7	14	5	10	2	0.386	0.824
10th - 12th Standard	13	25	14	27			
Graduation and above	31	61	32	63			
6. Father's Education							
Illiterate	0	0	0	0			
1st - 9th Standard	2	4	4	8	2	0.750	0.687
10th - 12th Standard	25	49	23	45			
Graduation and above	24	47	24	47			
7. Mother's occupation							
Laborer	0	0	0	0			
Employee	20	39	20	39	2	0.272	0.878
Businesswoman	11	22	13	25			
Homemaker	20	39	18	35			
8. Father's Occupation							
Unemployed	0	0	0	0			
Laborer	3	6	2	4	2	1.981	0.371
Serviceman	29	57	23	45			
Businessman	19	37	26	51			
9. Mass media Exposure							
Printed Media	12	24	17	33			
Electronic Media	11	22	11	22	3	1.353	0.716
Health Personnel	22	43	18	35			
Any others	6	12	5	10			

Table 1 the chi-square test was applied to assess the homogeneity in both the groups and adjusted chi-square where individual values were less than five. The Calculated chi-square values indicated no significant difference in the groups according to demographic characteristics. Hence the baseline value in control and experimental groups were the same.

Table 2 shows a significant post-test mean knowledge scores difference between the control and the experimental group, followed by no significant mean difference in the control and experimental groups' pretest knowledge scores. It indicates that school children's knowledge in the experimental group increased remarkably compared to the control groupFurthermore, they showed a highly significant group difference between pretest and posttest.In contrast, the pre-posttest difference of the control group was also effective at p-0.05, which indicates the pretest effect on the school children of the control group.

Hence the H_1 is accepted, which says that there would be a significant difference in post-interventional knowledge scores of school children regarding refractive errors in the experimental and control groups at a $p<0.05$ level of significance.

Table 3 displays the calculated F & t values of all demographic variables, i.e., Age (in years), Gender, Academic standard, Family income (per month), Mother's qualification, Father's qualification, Mother's profession, Father's profession, and Source of information found non-significant at $p\leq0.05$. Hence it is proved that demographic variables had no significant relationship with pre-test & post-test knowledge of school-age children regarding refractive errors in the control group.

Table 2. Comparison of pre and post-test school children's knowledge in the control and experimental groups (N=102).

Knowledge Score									
Group		***Pre-test***		***Post-test***					
	n	*Mean*	*SD*	*Mean*	*SD*	*Mean Difference*	*df*	*t*	*P -Value*
Control Group	51	19.88	3.609	21.80	3.904	1.92	100	2.579	0.005
Experimental Group	51	19.80	3.595	32.53	3.331	12.73	100	18.555	0.00001
Mean Difference		0.08		10.73					
df		100		100					
t		0.112		14.93					
p-value		0.455		0.00001					

Maximum Score=40
Minimum Score=0

Table 3. Relationship of knowledge with demographic variables in the control group (N=102).

S. N.	**Variables**	**Pre-test**			**Post-test**		
		df	***F/t (*)***	***P-value***	***df***	***F/t***	***P-value***
1	Age (in years) *	49	0.131	*0.448*	49	1.195	*0.118*
2	Gender *	49	2.088	*0.208*	49	1.086	*0.141*
3	Academic standard	2/48	0.267	*0.766*	2/48	2.781	*0.071*
4	Family Income (per Month)	3/47	0.669	*0.516*	3/47	0.311	*0.734*
5	Mother's qualification	3/47	0.367	*0.694*	3/47	1.350	*0.268*
6	Father's qualification	3/47	0.619	*0.542*	3/47	1.921	*0.156*
7	Mother's profession	3/47	0.498	*0.610*	3/47	0.325	*0.724*
8	Father's profession	3/47	1.007	*0.372*	3/47	0.553	*0.578*
9	Source of information	3/47	0.602	*0.616*	3/47	0.408	*0.747*

Table 4. Relationship of knowledge with demographic variables in the Experimental group (N=102).

S. N.	Variables	*Pre-test*			*Post-test*		
		df	**F/t (*)**	***P-value***	**df**	**F/t**	***P-value***
1	Age (in years) *	49	0.378	0.353	49	0.269	0.394
2	Gender*	49	1.210	0.115	49	0.791	0.216
3	Academic standard	2/48	0.222	0.801	2/48	1.790	0.172
4	Family Income (per Month)	3/47	1.480	0.237	3/47	0.768	0.469
5	Mother's qualification	3/47	2.254	0.115	3/47	1.147	0.325
6	Father's qualification	3/47	2.282	0.112	3/47	0.048	0.953
7	Mother's profession	3/47	1.046	0.358	3/47	1.189	0.312
8	Father's profession	3/47	1.410	0.253	3/47	1.197	0.310
9	Source of information	3/47	0.408	0.747	3/47	0.635	0.595

Table 4 shows the calculated F & t values of demographic variables, i.e., Age (in years), Gender, Academic standard, Family income (per month), Mother's qualification, Father's qualification, Mother's profession, Father's profession, and Source of information found no significant at $p<0.05$. Hence it is proved that demographic variables had not any significant relationship with pre-test & post-test knowledge of schoolchildren regarding refractive errors in the experimental group.

DISCUSSION

The study inferred the effective improvement in the knowledge among students regarding refractive errors after the sensitization program. Based on the present study's findings, the school children in the experimental group gained more knowledge regarding refractive errors after intervention in the experimental group. The post-test mean difference in knowledge score of school children regarding refractive errors was found significant at ($p<0.00001$). A.K. SR supported the study's findings [8]. The current study revealed that 82.5% of students were unaware of refractive errors and about the available treatment. Further compared to other studies, Jawahar P. et al. [9] investigated the knowledge regarding visual errors and found that the control group had not shown any significant changes in the posttest. In contrast, the experimental group showed a remarkable difference after the intervention. The above-supported findings show improved knowledge regarding refractive errors because of a well-structured sensitization program. The training of community health nurses must include the competencies in their training program to infuse at the initial level of training [11]. In the present study, the sociodemographic profile of the students was not associated with the knowledge of school children regarding refractive errors. According to Sreelatha M et al., demographic variables, i.e., age, class standard, qualification of father and mother, and the professional status of parents, had not any significant relationship with the knowledge of school going on refractive [10]. Kannan U, Rajendiran A, Yeraballi D, Shanmugavel K, supported the study's findings by revealing that the family income and the source of information had not any significant relationship with knowledge and attitude toward refractive corrections [12]. The awareness of school children can be improved by including the outline of refractive errors and their prevention in regular course work.

CONCLUSION

The literature review revealed that refractive errors are common among children. Nurses as educators play a crucial role in preventing refractive errors by creating awareness among students, teachers, and parents. The core competencies of community nurses must include the set of assessments for eye disorders so that they can contribute at the root level. The study provides a reasonable basis for enhancing the student's knowledge regarding refractive errors following the sensitization program. In addition, this program can be utilized in the community to improve the understanding of caregivers and teachers regarding refractive errors and their associated risk factors to decrease morbidity among the students.

REFERENCES

1. Louis. St. School-Aged Vision and Visual Skills Needed for School Success. American Optometric Association 2014; 33(800): 567-578.
2. Dona L., Wong. Wong's nursing care of infants and children. 8th ed. India: Elsevier; 2007
3. Sethi S, Kartha GP. Prevalence of refractive errors in school children (12-17 years) of Ahmedabad City. Indian journal of community medicine. 2000 Oct 1;25(4):181.
4. Rahim R. Refractive error in children in an urban population. British journal of ophthalmology.2008; 93(1):4-10.
5. Udom OD, Uduak CE. Prevention and Management of Refractive Error Blindness in Nigeria: The Role of Private Optometrists. Clinical and Experimental Ophthalmology. 2007; 22(43): 221-230.
6. Yekta A, Fotouhi A, Hashemi H, Dehghani C, Ostadimoghaddam H, Heravian J, Derakhshan A, Yekta R, Behnia M, Khabazkhoob M. Prevalence of refractive errors among schoolchildren in Shiraz, Iran. Clinical & experimental ophthalmology. 2010 Apr;38(3):242-8.
7. Jyothi A. Children's Refractive Error and Eye Ailment Management. Indian Journal of Community Medicine December 2011;79(2): 156-163.
8. Moghaddam Ranjbar AK S, Pourmazar R. Awareness and attitude toward refractive error correction methods: a population based study in Mashhad, 2013.
9. Jawahar p, Antony j, k sunny, k Krishan Kumar. Effectiveness of Planned Teaching Programme on Knowledge Regarding Childhood Refractive Errors among Teachers. J Healthcare Nurs Res [Internet]. 2019 [cited 2020Mar15];1. Available from: https://www.pubtexto.com/journals/journal-of-healthcare-and-nursing-research
10. Sreelatha M, Leela K, Rani PS. A Study to Assess the Knowledge on Refractive Errors and Related Risk Factors of School Children in Selected Government Schools, Tirupati. A Study to Assess the Knowledge on Refractive Errors and Related Risk Factors of School Children in Selected Government Schools, Tirupati. 2019Sep;8(5):66–74.
11. Kannan U, Rajendiran A, Yeraballi D, Shanmugavel K, John NA, Rene S. Refractive error and associated risk factors in 6-12 years schoolchildren. National Journal of Physiology, Pharmacy and Pharmacology. 2016;6(6):554.
12. Kohli G, Gupta N, Kohli M, Saini P. Importance of Core Competencies Assessment Scales for Community Health Nurses in India. ECS Transactions. 2022 Apr 24;107(1):3329.

