

Original Research Article

Awareness, knowledge, and barriers to vision therapy services among eye care practitioners

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ABSTRACT

Background: Vision therapy (VT) is recognized as an effective treatment for various binocular and accommodative disorders. However, the awareness and integration of VT among eye care professionals (ECPs) remain limited. The aim of this study was to evaluate the awareness and understanding of vision therapy among eye care professionals, specifically optometrists and ophthalmologists, in India.

Methods: Cross-sectional research conducted from June to November 2024, comprising Indian optometrists and ophthalmologists. A validated 19-item questionnaire was created through expert consultation and pilot testing. It was disseminated both online and in person, accompanied by reminders for non-respondents. SPSS v29 assessed awareness, knowledge, and barriers employing Cronbach's alpha and Kruskal-Wallis tests ($p < 0.05$).

Results: 251 practitioners across six Indian states, revealed that 36.9% reported vergence problems and 27.2% identified sensory motor anomalies as predominant binocular vision concerns. Barriers were the substantial expense of vision therapy kits (47.41%) and patient apathy (97.6%). The Kruskal-Wallis test indicated that educational quality substantially influenced knowledge and awareness ($p < 0.01$).

Conclusions: Public health efforts aimed at teaching eye care practitioners on vision therapy can enhance referral practices, hence improving health outcomes for patients. Moreover, augmenting practitioners' comprehension of vision therapy would enable them to advocate proficiently for these services, tackling the current obstacles encountered by patients.

Keywords: Awareness, Behavioural optometry, Knowledge, Vision therapy

INTRODUCTION

The involvement of eye care practitioners in advocating for vision therapy services is becoming progressively significant to public health as knowledge of visual impairments expands. Vision therapy, or behavioral optometry, was founded by Arthur Marten Skeffington as a specialist field within optometry aimed at treating visual problems by unconventional approaches, differing from regular optometric or orthoptic training.¹ The aim of vision therapy is to improve visual processing, tracking, and perception by promoting the coordinated utilization

of both eyes. Despite the lack of specificity in several vision rehabilitation procedures, advocates assert that visual defects may contribute to various learning difficulties in children.² Despite ongoing debate, there is scientific support for vision therapy's role in improving certain visual perceptual skills.³⁻⁴ The increasing frequency of non-strabismic binocular vision disorders (NSBVD) in India poses substantial concerns for public health and education. The BAND research, performed among schoolchildren in rural and urban Tamil Nadu, underscores the necessity of addressing these concerns to improve educational achievements.⁵ In the Indian population, the most prevalent binocular vision anomalies

are fusional vergence dysfunction with accommodative infacility (40.38%), convergence insufficiency with accommodative infacility (24.36%), and isolated fusional vergence dysfunction (7.05%), highlighting the necessity for targeted interventions.⁶ Subsequent study from North-East India indicates a significant incidence of NSBVD among individuals with asthenopia, especially among the age ranges of 10-20 years (69.35%), 21-30 years (67.35%), and 31-40 years (50.00%).⁷ Amblyopia, like NSBVD, constitutes a considerable public health concern in India. Research conducted in eastern India revealed that 11.4% of children aged 5 to 10 years were diagnosed with amblyopia, mostly refractive amblyopia (58.4%), highlighting the necessity of early vision screening and remedial measures.⁸ Research from Kamrup district, Assam, indicated a 1.75% prevalence of amblyopia in children aged 6 months to 16 years, underscoring the necessity for timely identification and intervention to avert visual impairment.⁹ Notwithstanding the acknowledged advantages of vision therapy, it encounters barriers in adoption and believability. Spanish optometrists see vision therapy as scientifically valid, however it suffers from a deficiency in recognition and prestige, particularly among ophthalmologists, who hold a more different view.¹⁰ Furthermore, the domain of behavioral optometry is hindered by an absence of controlled clinical studies, raising apprehensions about the scientific legitimacy of several behavioral management methodologies.¹¹ This scepticism restricts the incorporation of behavioral optometry into conventional optometric practice, highlighting the necessity for robust data to validate its effectiveness. Information about eye care practitioners' knowledge and comprehension of vision therapy services is crucial for improving binocular vision and vision therapy treatment, particularly in developing countries where published data is few. The aim of this study is to develop, validate, and disseminate a questionnaire to evaluate the awareness and understanding of vision therapy among eye care practitioners in India. The World Health Organization's World Report on Vision (2019) indicates that over 2.7 billion individuals worldwide suffer from vision impairment, a considerable number of which might be prevented with prompt treatments such as vision rehabilitation.¹²

This study will identify the limitations of understanding vision therapy and suggest methods to improve the acceptance and effectiveness of vision therapy services in clinical environments.

METHODS

Cross-sectional research was done over a five-month period from June, 24 to November, 24, involving optometrists and ophthalmologists from many states in India. The study received approval from the Institutional Review Board of the Noida International Institute of Medical Science (NIIMS/IEC/MAY-24/D-27) and

adhered to the principles set out by the Declaration of Helsinki.

Telephone interviews were performed with independent optometrists in Delhi NCR to develop a questionnaire.

The 19-item questionnaire consists of questions about the following categories: Demographics (n = 6), awareness (n = 6), obstacles (n = 2), knowledge (n = 3), and practice patterns (n = 2). Refer to Annexure 1. Response options were expanded to encompass all remaining questions.

Pilot research was conducted with 30 eye care providers. The questionnaire options were revised in accordance with the findings of the pilot research. Five eye care specialists evaluated the knowledge, awareness, and barrier items using a three-point scale (totally relevant = 1, relevant but not useful = 2, not relevant = 3) to ascertain the content validity of the questionnaire.

To facilitate effective distribution and online completion across India, the validated questionnaire was provided in a web-based manner. All questions in the questionnaire were compulsory to respond, except for those designated as optional.

Certain surveys were disseminated by email to participants, and others were administered in person. Participation in this survey was completely optional. Nine hundred thirty eye care practitioners received an online survey link and a short research introduction via email. Reminder emails were dispatched to people who did not react to the first letter after two and four weeks. The study excluded individuals who failed to complete the questionnaire following the second reminder.

Incorrect replies received a score of 0, but all correct responses were awarded a score of 1. The total scores for awareness, knowledge, and obstacles were calculated using maximum projected values of 3 and 13, respectively. The measures employed to assess awareness and knowledge were good, medium, and substandard. Awareness scores were categorized as follows: Good awareness received a score of 3, while Good, Average, and Poor awareness were assigned scores of 3, 2, and ≤ 1 , respectively. Knowledge domain scores were categorized as follows: >9 for Good, 9 to >5 for Fair, and ≤ 5 for Poor.

Version 29.0 of the Statistical Package for Social Sciences (SPSS) program, SPSS Inc., located in Chicago, Illinois, USA was used for statistical analysis. The internal consistency of the questionnaire was evaluated using Cronbach's alpha. Descriptive statistics were utilized to identify common practice trends. The Kruskal-Wallis test was employed to assess the differences in awareness, knowledge, and obstacles about employment, educational credentials, and years of experience. A p value of less than 0.05 was deemed as statistically significant.

RESULTS

Pilot study

Pilot research was conducted with 30 eye care practitioners in Gautam Buddh Nagar, Uttar Pradesh. The pilot research comprised 10 males (33%) and twenty women (67%). The cohort comprised 8 ophthalmologists and 22 optometrists. Cronbach's alpha was computed using 30 replies from the fully filled questionnaire. The scores obtained for knowledge, awareness, and barrier inquiries were 0.831, 0.617, and 0.721, respectively. There was a unanimous expert consensus that the items effectively assessed the objective, as evidenced by the content validity index of 0.72 for the same questions.

Main study

A total of 251 eye care practitioners completed the surveys, yielding a response rate of 25.35% from 990 solicited individuals. The study involved 25 ophthalmologists and 226 optometrists from six Indian states. Male participants constituted 107 (43%), while female participants comprised 144 (57%). The mean age of practitioners was 27.28 ± 6.03 years. Tables 1 and 2 include data on participants' information and types of practice.

Table 1: Shows the qualifications of the participants of the study.

Qualification	Number of participants (%)
MD	03 (1.1)
DO	12 (4.7)
MS	04 (1.5)
DNB	06 (2.3)
B. Optom	123 (49)
M. Optom	55 (21.9)
Ph.D. In Optometry	02 (0.7)
Diploma In Optometry	46 (18.32)
Total	251 (100)

MD: Doctor of Medicine, DO: Diploma in Ophthalmic Medicine, MS: Master of surgery, DNB: Diplomate of National Board, B.Optom: Bachelor in Optometry, M.Optom: Masters in Optometry, Ph.D. in Optometry: Doctor of Philosophy in Optometry

The study showed vergence abnormalities (36.9%) and sensory motor anomalies (27.2%) as the principal causes of binocular vision anomalies. 38.8% of participants aimed to deliver optimal optical correction as a method of spectacle correction for patients presenting with binocular vision abnormalities. Practitioners contemplated offering vision therapy kits, implementing office and home vision therapy programs, and making referrals to other hospitals or specialized facilities, with respective percentages of 34%, 23.3%, and 9.7%. Lens treatment, prisms, and mirror exercises were the most prescribed vision therapies

among practitioners, accounting for 40% of recommendations. 37.38% of participants characterize vision therapy as an amalgamation of visual skills training, visual efficiency training, and neuroplasticity training. Table 3 encompasses participants' recommendations for enhancing vision therapy services. The primary obstacles to delivering vision therapy services, as seen in Figure 1, are the high costs of vision therapy kits, reported by 47.41% and 39% of practitioners, respectively.

Table 2: Shows the type of practice the participants are currently involved in.

Type of Practice	Number of participants (%)
Government hospital	12 (4.7)
Private hospital	120 (47.8)
Individual practice	65 (25.8)
Optical outlet	33 (13.1)
Academician	15 (5.9)
Others	06 (2.3)
Total	251 (100)

Table 3: Responses for improving the vision therapy services among the practitioners.

Question	Number of participants responded (%)
Creating awareness among practitioners	193 (76.8)
Creating public awareness	210 (83.6)
More training programs	187 (74.5)
Including vision therapy as a part of curriculum	155 (61.7)
Improving the availability of vision therapy services	213 (84.8)
Availability of vision therapy kits at low cost	142 (56.5)

According to practitioners, the most major obstacle to the use of vision therapy services was patients' lack of desire and interest (97.6%) (Figure 2). Although 82.4% of practitioners indicated interest in short-term vision therapy training programs, time limitations and accessibility emerged as significant obstacles.

Figure 3 illustrates participant awareness and knowledge levels. The study indicated that 79.68% of eye care practitioners were aware of vision therapy services and 70.5% were knowledgeable about them.

The Kruskal-Wallis test revealed that educational quality has an impact on knowledge ($p < 0.01, 5$), awareness ($p < 0.001, 5$), and obstacles to low vision therapy. Throughout the subjects' years of experience, these qualities remained consistent. The barriers to providing inadequate vision therapy varied depending on the type of

practice ($p < 0.05$, 4). The Kruskal-Wallis test yielded identical results for optometrists as it did for all other

participants. The appropriate p values are presented in Table 4.

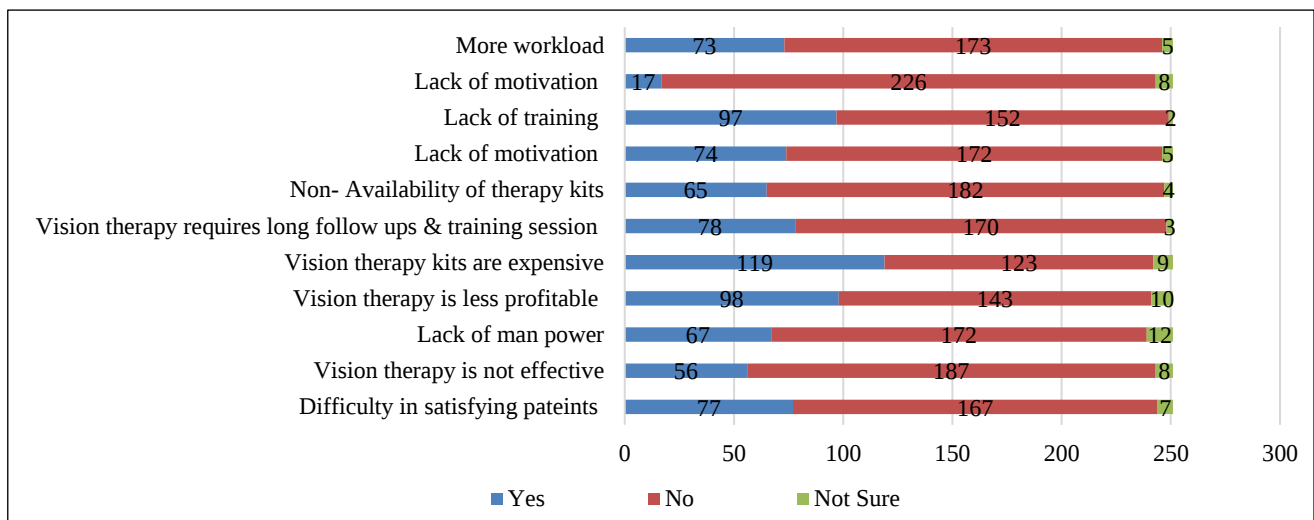


Figure 1: Barriers for the practitioners in providing vision therapy care.

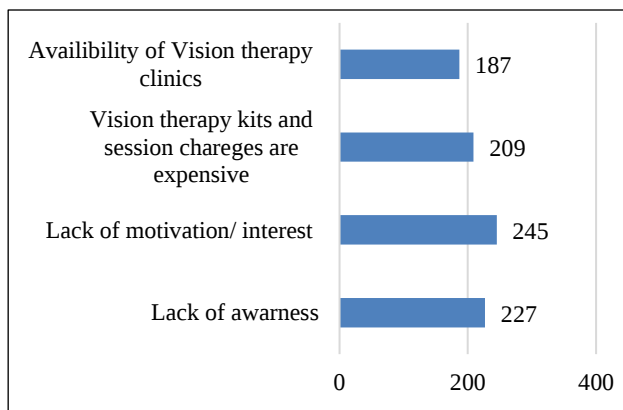


Figure 2: Barriers to the patient for accessing of vision therapy from practitioner's perspective.

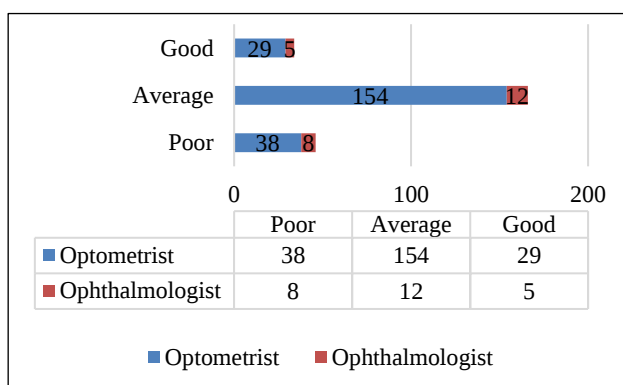


Figure 3: Awareness about vision therapy services among practitioners.

Table 5 illustrates that there is no statistically significant difference ($p > 0.05$) in the parameters of ophthalmologists based on their qualification, experience, or practice style (Table 4&5).

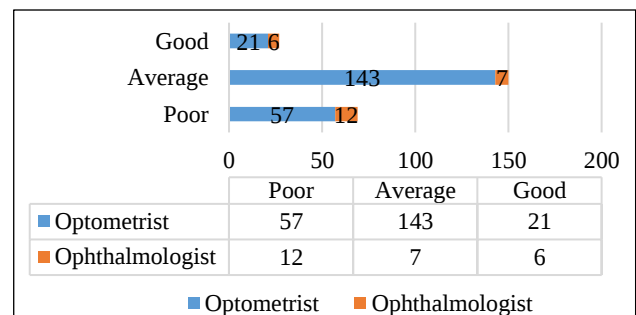


Figure 4: Knowledge about vision therapy services among practitioners.

Table 4: Kruskal-Wallis test values of optometrists against different variables.

Optometrists			
Variable	Qualification (P)*	YOE (P)*	TOP (P)*
Knowledge	0.002	0.21	0.38
Awareness	0.002	0.42	0.03
Barriers	0	0.32	0.04

*Kruskal-Wallis test. YOE: Year of experience, TOP: Type of practice

Table 5: Kruskal-Wallis test values for ophthalmologists.

Ophthalmologists			
Variable	Qualification (P)*	YOE (P)*	TOP (P)*
Knowledge	0.42	0.64	0.06
Awareness	0.31	0.35	0.43
Barrier	0.19	0.77	0.75

*Kruskal-Wallis test. YOE: Year of experience, TOP: Type of practice

DISCUSSION

The study revealed significant differences in the knowledge, understanding, and implementation of vision therapy among eye care practitioners.

Hegde et al conducted a study that indicated a reasonable awareness and a favorable attitude towards digital screen-based binocular vision therapy among eye care practitioners in Karnataka. Nevertheless, the findings underscored the necessity for more focused training and resources to improve practitioners' comprehension and use of digital vision therapy procedures.¹³

The preliminary research revealed robust internal consistency for knowledge and barrier inquiries; however, a lower Cronbach's alpha for awareness (0.297) suggests inconsistency in the understanding of visual treatment services. The primary study, involving 251 practitioners, identified vergence abnormalities (36.9%) and sensory motor anomalies (27.2%) as the predominant causes of binocular vision disorders. Research by Hussaindeen et al showed same findings, concluding that vergence abnormalities, such as convergence insufficiency and convergence excess, are prevalent non-strabismic binocular vision diseases within the Tamil Nadu population. This underscores the necessity for thorough binocular vision evaluations during standard eye examinations to precisely detect and address such abnormalities. Timely detection and suitable treatments are crucial to avert related symptoms and enhance visual comfort and performance.⁵

Notwithstanding the acknowledged significance of vision therapy, many obstacles hinder its extensive implementation. The main obstacles highlighted are the exorbitant costs of eye rehabilitation kits (47.41%) and patient indifference (97.6%), underscoring the necessity for innovative finance strategies and enhanced patient engagement methods.⁵ Our investigation indicated that the primary method for addressing binocular vision abnormalities was the provision of adequate spectacle correction, a fundamental treatment endorsed by Scheiman et al.¹⁴

The majority of practitioners said that evaluations of patients with binocular vision problems occur when both sensory and motor parameters are compromised. This observation aligns with the conclusions of Evans BJ, who underscored the significance of assessing impacted binocular vision characteristics.¹⁵ Concerning prevalent binocular vision abnormalities, most respondents indicated ocular vergence anomalies, a conclusion supported by research conducted by Jang et al.¹⁶⁻¹⁷

Regarding vision therapy, most participants said that it is a cumulative process including the training of visual skills, visual efficiency, and neuroplasticity, consistent with the assertions of Piñero et al.¹⁸ The most often given vision therapy kits by practitioners comprised additional

lens therapy, prism exercises, and mirror exercises, corroborating the findings of Inagaki et al.¹⁹⁻²⁰

The Kruskal-Wallis test findings indicated that educational quality strongly affects practitioners' knowledge ($p < 0.01$) and awareness ($p < 0.001$), with these attributes being consistent throughout varying experience levels. Obstacles to the delivery of vision therapy differed according to practice type ($p < 0.05$), indicating that interventions may require customization for each setting. A notable percentage of practitioners (82.4%) indicated a desire for short-term training programs to improve their abilities. This interest reflects the findings of Judy Jose, who indicated that most of her participants endorsed the implementation and involvement in short courses on low vision awareness programs.²¹

Few studies have documented practitioners' awareness of vision therapy; however, research by Piñero DP and colleagues indicates that vision therapy is extensively employed in Spain for the treatment of non-strabismic binocular vision abnormalities, accommodative anomalies, and oculomotor dysfunctions. Nevertheless, practice patterns differ markedly, underscoring the necessity for established procedures and continuous professional development to improve efficacy and uniformity.¹⁰ A research by Hegde et al revealed that while eye care practitioners in Karnataka are cognizant of digital screen-based binocular vision therapy, its implementation remains constrained. The principal obstacles are insufficient training, elevated expenses, and ambiguity over its efficacy, underscoring the necessity for education and readily available resources.¹³ This study is a groundbreaking initiative to assess eye care practitioners' awareness, knowledge, and understanding of vision therapy services. It offers critical insights on their understanding, views, and preparedness to embrace vision therapy, highlighting significant obstacles and prospects for professional advancement.

This research possesses few limitations. The dependence on self-reported data may lead to response bias, as individuals may exaggerate or downplay their knowledge and habits. The study's cross-sectional approach collects data at one specific moment, restricting the capacity to evaluate changes in awareness and implementation over time. Third, the sample, while varied, may not comprehensively reflect all eye care practitioners in India, especially those in rural regions with restricted access to training. Ultimately, the validation of the questionnaire revealed a lower Cronbach's alpha for awareness, indicating possible inconsistencies in replies that might affect the reliability of the findings.

CONCLUSION

The findings highlight the necessity of focused educational initiatives and strategic resource distribution to enhance vision therapy services, hence resulting in improved patient outcomes and progress in clinical

practice. This study demonstrates that although several ECPs recognize VT, their thorough comprehension and practical implementation are constrained. Targeted educational initiatives can bridge these gaps, facilitating the incorporation of VT into standard eye care and so enhancing patient outcomes. Subsequent investigations need to concentrate on the enduring effects of VT recommendations on patient contentment and ocular wellness. Public health initiatives focusing on educating eye care practitioners about vision therapy can facilitate better referral practices, ultimately leading to improved health outcomes for patients. Furthermore, enhancing practitioners' understanding of vision therapy will empower them to advocate effectively for these services, addressing the existing barriers faced by patients.

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