Original Article

Knowledge, Attitude and Practice of Optometrists about Myopia Management

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ABSTRACT

Aim: To investigate the knowledge, attitude and practice of Pakistani optometrists about myopia management.

Study Design: A cross-sectional study.

Duration and Settings of the Study: From October 2023 to December 2023. Survey from optometrists serving both urban and rural areas of Pakistan.

Methods: After the approval of the ethical review board, a web questionnaire was distributed to optometrists working in rural and urban areas of Pakistan. A total sample size of 94 optometrists was calculated using a 95% confidence interval and the non-probability purposive sampling technique. The data was entered in Excel and then analyzed by using Statistical Package for Social Sciences (SPSS Version 25.00). Chi-square and NPAR (non-parametric) tests were used to know the significance ($p<0.05$) of the study.

Results: The responses were collected from 94 optometrists working in rural and urban areas of Pakistan. Most of the optometrists were aware (92.6%) at myopia progression. Of the optometrists, 29.8% had one to five years of experience, while 27.7% had less than one year of experience. The perceived effectiveness of myopia management between urban and rural practitioners is insignificant (p-value =0.555). Most participants were practicing in the private sector (54.3%). Single-vision spectacles were mostly used both in urban and rural areas with an insignificant p value (p-value>0.05). The majority of them were using under correction as a myopia controlling strategy (p-value = 0.009).

Conclusion: The optometrists in both rural and urban areas of Pakistan are somewhat aware of management therapies for myopia but their practice patterns need further interventions.

Keywords: Optometrists; Myopia; Knowledge; Refractive Error; Atropine; Spectacles.

INTRODUCTION

Myopia is a refractive state of the eye in which a person cannot see distant objects clearly. Myopia is becoming an alarming situation in this present era, and it is expected that global myopic prevalence may increase to 50% by 2050.[1] This increasing prevalence of myopia is a triggering factor to stimulate the optometrists to perform a significant role in their domain. The World Council of Optometry (WCO) is eager to control myopia progression by opting for different standards for mitigation, measurement and management of myopia. WCO is guiding optometrists to get more knowledge and also do more practice to implement myopia controlling approaches.[2]

Optometrists' knowledge about the mechanism of myopia development, several risk factors, currently used strategies to control myopia, and also updated research on myopia, and optometrists' attitude towards myopia is by identification of existing barriers in the field to implement efficacious strategies.[3] They are also practicing different strategies in their clinical practice, which is analyzed by their prescription giving patterns, their recommendation of myopia-controlling strategies, and the practical

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implementation level ofthese interventions.[4]

Myopia is also the cause of sight-threatening issues like glaucoma, myopic degeneration, and retinal detachment.[5] Myopia management is done by introducing myopia controlling strategies including spectacles (single vision, bifocals and progressives), contact lenses (single vision, standard multifocal, special myopia controlling soft contact lenses), Rigid Gas Permeable (RGP), orthokeratology, pharmaceutical e.g. atropine is a noble and effective intervention and adjunctive therapy. Other methods like under-, full- or over correction, and lifestyle modifications like reduced screen time, increased time spent outdoors and a healthy diet are essential in prevention of myopia development.[6] Several studies are conducted to manage myopia progression by different interventions. But optometrist still lack knowledge to implement effective strategies in their practice and they are still prescribing single-vision spectacles. Contact lenses are also very effective.[7]

Optometrists are facing barriers in the implementation of these strategies due to deficiency in their knowledge about these interventions, their mode of action, the duration of the therapy, the rebound effect and patient selection skills for the specific intervention.The purpose of this study is to address these deficiencies and to make a more effective approach to managing myopia.

METHOD

This cross-sectional survey was approved by the study and ethical review board. Informed consent had been taken from each participant of the study. A cross-sectional survey was conducted on optometrists serving in both urban and rural areas of Pakistan. Non-probability purposive sampling was used to ensure inclusion of optometrists from different practices and experience levels. The study was designed in a tertiary care hospital. The questionnaire was adapted from previous research and distributed online via Google Forms.[8] Questionnaire included questions such as how active their clinic is in the area of myopia control (rated on a 10-point scale from “1-Not at all” to “10-Fully”). A sample size of 94 was calculated with the WHO sample size calculator by taking a 95% confidence level, 0.10 absolute precision and 0.42 population pproportion.[9] A total of 94 responses were collected from optometrists. The data was entered in Excel and then analyzed by using the Statistical Package for Social Sciences (SPSS Version 25.00). The study was conducted from September 2023 to December 2023. Chi-square and NAPAR tests were used to know the significance (p-value0.05) of the study.

RESULTS

The percentage of female optometrists participating in this study was more than male optometrists (60.6% vs 39.4%). Most of the participants were from Punjab (60.6%). Maximum participation of the optometrists was of those with experience of 1-5 years (29.8%), followed by participants with less than 1 year of experience (27.7%). Most participants were practicing in a private (54.3%) sector followed by participants from public sector (37.2%). Participants working in urban (74.5%) areas were three times more than in rural areas (25.5%).

Table 1: Response of optometrists awareness about myopia progression

Questions	P values
How aware are you about the increasing frequency of pediatric myopia in your clinical practice?	0.00
What is the minimum level of myopia progression per year you consider essential for myopia control?	0.473
Do you use undercorrection as strategic plan to slow myopia progression?	0.009

The results showed that the optometrists working in Pakistan were aware of increasing myopia prevalence (p-value < 0.05). However, the minimum level of myopia progression per year was not considered because this progression was not obvious (p value>0.05). Under correction was used as a strategy to manage myopia by optometrists (p value<0.05)

Table 2: Response of optometrists about barrier to myopia management

If you have only ever fitted single-vision spectacles/contact lenses for a myopia patient, what has stopped you from prescribing an alternative method to use?	Urban		Rural	
	Frequency	Percentage	Frequency	Percentage
I don't think they are any more effective	13	18.5	4	16.6
The outcome is not predictable	8	11.4	3	12.5
Cost to the patient makes it uneconomic	20	28.5	6	25
Additional chair time	1	1.4	0	0.0
Inadequate information/knowledge	5	7.1	6	25
Benefit/risk ratio	10	14.2	1	4.1
Concern about rebound axial elongation	2	2.8	0	0.0
Other	11	15.7	4	16.6

Optometrists faced barriers in selecting effective strategies to manage myopia due to cost-effectiveness (28.5%) more in urban areas. In rural areas, cost effectiveness (25%) and inadequate knowledge about the strategy (25%) were both equally blamed factors (p-value =0.36)

Finding from this study showed that 20.8% optometrists from rural areas and 18.1% optometrists from urban areas thought their clinical practice level in management of myopia was best(p=0.59)

Table 3: Responses of optometrists about clinical practice and myopia progression

		Urban n=66		Rural n=24	
	Response	Frequency	Percentage	Frequency	Percentage
How effective would you think your clinical practice is in the area of myopia management?	1	5	7.5	3	8.33
	2	1	1.5	0	0.0
	3	4	6.0	1	4.1
	4	7	10.6	1	4.1
	5	8	12.1	4	16.6
	6	4	6.0	4	16.6
	7	12	18.1	5	20.8
	8	12	18.1	5	20.8
	9	6	9.09	0	0.0
	10	7	10.6	1	4.1

The effectiveness of single-vision spectacles for myopia management was considered intermediate by 4.24% of optometrists in urban areas and 3.92% optometrists considered that single-vision spectacles are less effective in management of myopia.

Specific myopia control contact lenses were considered most effective both in urban (5.01%) and rural (5.04%) areas. Increased time spent outdoors was the most effective strategy considered by 5.61% of optometrists in urban and 5.11% in rural areas.

DISCUSSION

This study showed adaptations of myopia management interventions among optometrists (by location of their working environment in Pakistan) and to check that if optometrists were following guidelines provided by the WCO or not. But the current study did not rely on WCO guidelines. Optometrists were not using those guidelines, which were considered effective in myopia management.[10]

The optometrists play the prime role in the

management of myopia in their country, both in rural and urban areas. They were very concerned about the increasing prevalence of myopia, which was at an exponential rate. They knew that its prevalence could exceed 50%, as a recent study showed that optometrists were concerned about the boom of myopia, so they should follow a myopia control approach to cope with this.[11]

Optometrists are frequently using single-vision spectacles both in urban and rural areas. Single-vision spectacles were the simplest and easiest mode considered by optometrists. They usually prescribed spectacles although several other options were also available. But the trend of myopia management with spectacles was already set. Although several researches were done, most of those were using single vision spectacles.[12]

Practitioners suggested that patient selection according to adoptive strategy was the most effective factor to bring positive effects of the treatment. This study reported that in special myopia control soft contact lenses (dual-focus lenses) being considered as the first option (7.4%) but single vision spectacles (4.27%) were considered the second option to manage myopia effectively according to age. Fricke,at al reported that single-vision spectacles were the first opted strategy, then orthokeratology and then dual-focus contact lenses.[13]

Pharmaceuticals were not considered effective in the management of myopia control because practitioners were not choosing this effectively to manage it due to several influential factors. But research-based evidence said that myopia could be managed effectively by using atropine in small doses over a specific duration of time. It can be used also with other therapies to enhance their effectiveness.[14]

Several barriers were faced by optometrists of Pakistan in implementing myopia-controlling strategies like the cost of the option and inadequate knowledge about other effective strategies. That's why they were just giving spectacles and single-vision contact lenses. As the recent studies faced many barriers in opting for noble strategies due to several factors.[15]

Increased time spent outdoors was considered effective by the majority of optometrists in both urban and rural areas in term of reducing of progression of myopia. Indian eye practitioners (86.42%) in different regions also considered time spent outdoors to be the key factor in controlling the progression of myopia.[16]

Different prescription-giving patterns were used by practitioners, like under- over- or full correction, to slow down the progression of myopia. In this study, most of the optometrists were adopting under corrections (51.55%) as a myopia management strategy in both urban and rural areas of Pakistan. A similar study was conducted in Pakistan which showed that most of the practitioners (61%) were managing myopia to stop its progression by giving them under-correction.[17]

To control myopia progression, different levels of progression of myopia per year are considered effective. A level of 0.76-1.00D/year progression of myopia was considered essential for myopia control. Myopia progression was stopped by 3D after applying myopia control approaches. But this also relied on the compliance of the treatment option because its effectiveness to correct myopia was considered an absolute factor.[18]

Although respondents in the study showed themselves clinically effective about myopia progression.But most of them selected single-vision spectacles as the effective mode of treatment; several researches showed the same result. Despite several modalities optometrists were still using single-vision spectacles as the correcting option because these were considered more effective than multifocals.[19]

Myopia-managing intervention adoption was on the basis of several factors. Patient selection and selection of mode according to their affordability were the most important factors, followed by cost-effectiveness (41%), inadequate knowledge (28.5%), and attitude of

practitioner towards strategy (26.8%). But in factors influencing selection of myopia prevention, cost-effectiveness was considered to be the least effective factor.[20]

Responses were not the same as expected from the study, so this was limiting the results of the study due to lack of practice of practitioners, improper examination, and overestimation of management options. Just as the previous study's overestimation of the results was noted.[21]

Optometrists were prescribing single-vision spectacles more due to their cost-effectiveness. But in rural areas there should be access to other modalities by making them cost-effective so that they can correct myopia effectively. Optometrists should work in a collaborative way to update their knowledge about myopia and its interventions and to leave the conventions like the use of single-vision spectacles.[22]

CONCLUSION

Optometrists of urban and rural areas of Pakistan were aware of the increasing burden of myopia and somehow also had knowledge about management modalities of myopia. However, their attitude towards these modalities was although appreciable, but their practice pattern needs more improvement in using myopia progression-controlling interventions.

RECOMMENDATIONS

Optometrists should get up-to-date knowledge about emerging treatment options for myopia management from the latest research or from policy makers. They should work in an interactive and collaborative way with the optometry community, which is spread in different practice areas like the academic, public, or private sectors. Barriers in the implementation of myopia management intervention should be addressed.

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Authors' Contributions:

RJ: Conceptualization and design of the study, drafting, review and final approval of the final manuscript and agrees to be accountable for all aspects of the work.

MAA: Data acquisition, review and approval of the final manuscript and agrees to be accountable for all aspects of the work.

SA: Data analysis, review and final approval of the final manuscript and agrees to be accountable for all aspects of the work.

MM: Data analysis, review and final approval of the final manuscript and agrees to be accountable for all aspects of the work.

AR: Data analysis, review and final approval of the final manuscript and agrees to be accountable for all aspects of the work.

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