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Review Article

Importance of paediatric dry eye screening for timely interventions and treatment: A systematic review

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Abstract

This systematic review assesses the significance of screening, diagnosis, and management of Dry Eye Disease (DED) in children. Increased screen time and environmental exposure make pediatric DED a common entity that goes unnoticed because symptoms are not typical and children are asymptomatic. A search of literature was performed on PubMed, Scopus, Web of Science, and the Cochrane Library for the years 2000-2025, adhering to PRISMA guidelines. Around twenty-nine studies with 8,520 children were incorporated in the current review and discovered that instruments such as the modified Ocular Surface Disease Index (OSDI SPEED, non-invasive tear film tests, and tear break-up time (TBUT) are useful in diagnosis but not validated in children. Early treatment methods, such as artificial tears, behavioral changes, and warm compresses, were demonstrated to improve tear film stability, decrease symptoms, and increase visual function. The review highlights the need for systematic screening and prompt management of pediatric DED to avoid chronic ocular surface disease. A standardized, age-specific screening instrument should be used in clinical and school environments to facilitate early diagnosis and enhance long-term outcomes in children with DED.

Keywords: Dry eye syndrome, Pediatrics, Child, Surveys and questionnaires, Diagnostic techniques, Artificial tears.

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1. Introduction

Paediatric dry eye was underestimated in the past, as it has been associated primarily with adults, particularly the elderly but currently is a recognized condition that can easily impact the child's quality of life, overall health, and academic performance. Growing evidence suggests that with the increased use of digital devices children are also at risk of dry eye as dry eye condition is directly related to the use of digital devices. Early diagnosis and treatment of dry eye is very important in children to avoid long-term complications. Timely dry eye screening in children is very important for timely intervention that can minimize discomfort and prevent progression thereby improving visual function.[1-4]

Pediatric dry eye conditions usually manifest differently from adult dry eye conditions as children are less symptomatic and unable to present more suitable signs and symptoms some children may be unable to complain about the discomfort or could be oblivious to what normal eye discomfort feels like, hence the need for an intense partner or caregiver assessment.[5] A deficient approach towards the nerve and tension-predominant pediatric dry eye algorithm highlights the need for early symptom evaluation that ensures that the least restrictive changes are made at the onset of the condition. Such changes may include limited screen time, the use of artificial tear substitutes, or other activities that will help stabilize the tear film and restore the health of the eye surface. With the required treatment started within time, the chances of suffering from chronic eye surface disease as well as its complications stand to be brought down.[6,7]

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1.1. Pediatric dry eye

Dry eye condition in children is also known as pediatric dry eye. It was mentioned in articles that were published by the American Academy of Ophthalmology (AAO) and the National Institutes of Health (NIH) that earlier dry eye in children was neglected because of the lack of evidence-based data. Still, tear film and ocular surface changes in children are increasingly being reported, leading to a shift in perspective regarding the prevalence and significance of pediatric dry eye screening. With the easy availability of laptops, TV screens, and cell phones, youngsters may easily access video games these days. Video Display Terminal Syndrome is aggravated in today's time by the fact that almost all children in today's culture can play these games,[8] that is why it is essential to notice signs in kids like frequent blinking or eye rubbing, especially when doing homework or watching TV. It's important to pay attention to these signs and get care if necessary because they could indicate several health problems or other conditions. Nowadays alterations in entertainment and way of life could be risk factors for children's dry eye condition. Pediatric DED is a problem for the economy and public health. Consequently, it's critical to give pediatric DED clinical consideration, for this reason, it is essential to detect pediatric dry eye disease at an early age and modify lifestyle factors to avoid it. Pediatric dry eye can be prevented by receiving a diagnosis as soon as possible and implementing healthy lifestyle and leisure modifications for kids. This guarantees that children will have a more pleasant and healthy vision as they grow.[9-11]

1.1.1. How paediatric dry eye differs from adult's dry eye condition

Similarly in adults, several conditions such as inflammation, medical conditions, allergies, etc contribute to pediatric dry eye. Most of the signs and symptoms of pediatric dry eyes are similar to adults but still, there is a big difference between pediatric and adult dry eyes: children's dry eyes are frequently misdiagnosed and treated improperly as the pediatric population is usually less symptomatic. This might cause long-term difficulties and complications with vision and hamper their quality of life. Adult and adolescent dry eye diseases share many commonalities, but they can differ significantly in a few important respects like children represent their symptoms with activities like frequent blinking, eye rubbing, loss of interest, etc (40–43). ocular condition in which a child does not produce quality tears or a sufficient amount of tears usually appears as ocular congestion and reflex watering.[10,12-14]

1.1.2. Prevalence of paediatric dry eye

Still, there is a lack of reliable data about the prevalence of pediatric dry eye and a lack of consensus regarding the diagnosis. A study showed the prevalence of dry eye disease in children with diabetes was substantially greater (28.95%) than in normal children (5.00%), as summary of studies on the prevalence of DED shown in **Table 1**. Another study that was conducted during COVID-19 with 3327 participants from 46 Indian schools concluded that during the COVID-19 lockout, teachers' and students' cumulative screen time increased significantly. These results also show a threefold rise in the number of people who spend six hours or more in front of a device. Another research estimated the global prevalence of dry eye illness to be 11.59% but did not include data on pediatric dry eye. However, a cross-section study that was conducted in a myopia outpatient clinic prevalence of dry eye among the 214 children studied was 15.9%, another study that was conducted in tertiary eye care in Jammu concluded 11.03% prevalence of Dry Eye Disease in children.[1,2,9,15-18]

Table 1: Summary of studies on the prevalence of DED in pediatric age groups

Authors	Country	Age (Mean)	Race	Risk factor	Prevalence of Risk factor	Prevalence in controls	Method
Uchino et al[1]	Japan	15-18	Asian	Hard contact lens (HCL), Soft contact lens (SCL)	M: 8.3% +SCL 9.1% +HCL, F: 13.5% +SCL 7.4% +HCL (clinically diagnosed)	M: 37.1% +SCL 27.3% +HCL, F: 37.5% +SCL 37% +HCL (severe symptoms)	Questionnaire data and clinical ophthalmologic testing

Table 1 Continued…

Zhang et al[4]	China	Senior high school students	Asian	Inadequate refractive correction, Frequent self-administered topical medication, Poor sleep quality	40.3% Inadequate refractive correction, 24.8% Frequent self-administered topical medication, 26.6% Poor sleep quality	23.30%	Questionnaire data and clinical ophthalmologic testing
Moon et al[19]	Korea	9-11	Asian	Use of smartphone	71%	9.70%	Questionnaire data and clinical ophthalmologic testing
Moon et al [18]	Korea	10-11	Asian	Use of smartphone	96.70%	6.6% [4% in 7- to 9-year-old children; 9.1% in 10- to 12-year-old children]	Questionnaire data and clinical ophthalmologic testing
Chen et al[3]	China	4-11	Asian	Seasonal allergic conjunctivitis (SAC), Perennial allergic conjunctivitis (PAC)	97.5% -SAC and PAC	27%	Tear film breakup time
Wang et al[8]	New Zealand	5-18	Asian - Caucasian	Race	No statistically significant differences	20% Asian, 8% Caucasian	Questionnaire data and clinical ophthalmologic testing
Tityal et al[38]	India	< 20	Indian	N/A	N/A	7.84%	Questionnaire data and clinical ophthalmologic testing

1.1.3. Risk factors associated with pediatric dry eyes

Screen time (ST) has been found to have a substantial link with various academic and health outcomes in research, including a study involving 7,419 primary school students in Tokyo, Japan. Longer ST is linked to decreased physical activity, obesity, and worse performance in school. Additionally, the timing of ST is associated with an increased risk of dry eyes, and therefore worse academic performance, especially immediately before bed. The sum of these factors indicates that the ST time has a stronger effect on dryness and most responsible risk factor for dry eye. On the other hand, Pediatric dry eye is less common due to a lack of accurate data on its prevalence and disagreement over diagnosis.[15,19-23]

1.2. Untreated paediatric dry eye complications

If we are careless in diagnosing, preventing, and treating dry eye disease in children, it can lead to many serious complications, side effects, and dangers, including the possibility of visual impairment, wounds, and corneal damage. This condition does not only affect a child's physical well-being; In any case, it also affects people's daily lives as it causes discomfort and makes studying and reading more difficult. Furthermore, the consequences for social functioning are far-reaching, highlighting the importance of early detection and treatment.[24]

1.3. Dry eye screening in the pediatric age group

The frequency of dry eyes in children is increasing day by day, and it can be considered important to anticipate long-term problems. Doing stimulating activity can reduce discomfort in short-term conditions, and reduce the chance of future complications. There is a need to be more careful and choose preventive measures to prevent the increasing problem of dry eyes in children. As previous studies suggested globally 5% to 30% of children have dry eyes and this should be taken very seriously. This increasing number is strongly related to the fact that youth do not play as much outdoor sports and use screens more day to day. Due to the complex relationship existing between advanced lifestyles

and eye health, it is important to use observation, testing, and procedures for protection, screening, and intervention. The increasing problem of dry eyes in children requires complete knowledge and understanding of the associated causes as well as taking clear steps. The pediatric age group is very sensitive and most of the available clinical tests are invasive whereas non-invasive tools are very expensive and cannot be easily used in epidemiological settings. Till now available dry eye screening questionnaires were not designed while considering pediatric dry eye as this condition was less prevalent many years ago when the pediatric age group was not within the reach of VDT.[25-29]

2. Materials and Methods

This systematic review was designed and carried out following the PRISMA 2020 guidelines, which are the gold standard for reporting this type of research. Search across several major databases: PubMed, Scopus, Web of Science, and the Cochrane Library. A combination of keywords connected by Boolean operators (like AND and OR) was used (**Figure 1**). The following Keywords, inclusion and exclusion criteria (**Table 2**) were used: "Pediatric dry eye" OR "child dry eye disease" combined these with: "screening" OR "early detection" Then added: "intervention" OR "treatment" OR "management" And finally, included: "outcomes" OR "quality of life" studies published in English between January 2000 and March 2025 were selected.

Table 2: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Children aged 0–18 years	Adults (>18 years)
Studies on screening, diagnosis, or treatment of DED	Non-diagnostic studies or unrelated ocular disorders
RCTs, cohort studies, cross-sectional studies, systematic reviews	Case reports, commentaries, editorials
English language	Non-English articles without translation

The included study designs were randomized controlled trials, cohort studies, cross-sectional studies, and systematic reviews. The initial screening was done by the two reviewers and data extraction, and any discrepancies were resolved through discussion. The quality of the included studies was evaluated using appropriate assessment tools: the Cochrane Risk of Bias tool for randomized controlled trials, the Newcastle-Ottawa Scale for observational studies, and AMSTAR 2 for systematic review studies, and systematic reviews.

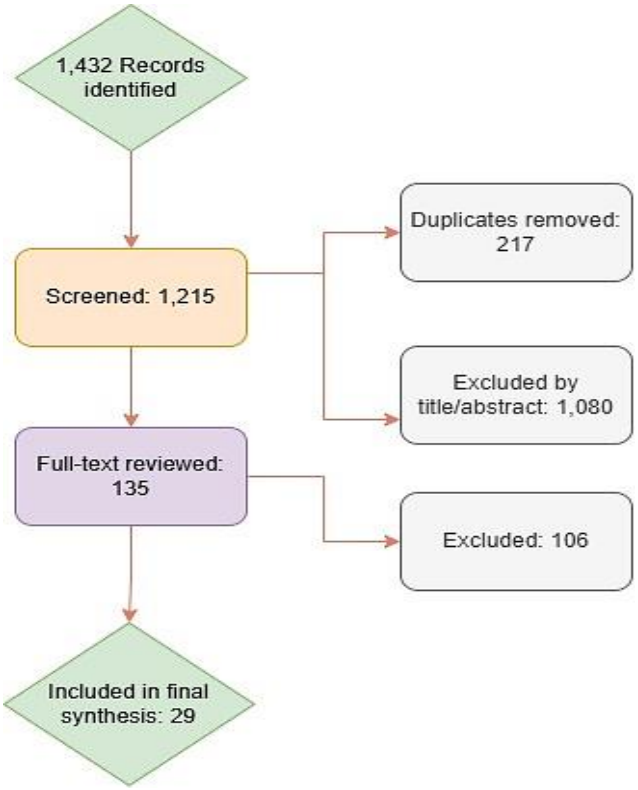

Figure 1: PRISMA flow chart

3. Results

A total 29 different studies involving 8,520 kids and teens aged 3 to 18 were reviewed. It turns out that anywhere from 6% to 23% of these children had dry eye disease (DED). The big culprits behind this seemed to be too much screen time (more than 4 hours a day), allergies, environmental issues like dry air and pollution, and certain medical conditions like juvenile idiopathic arthritis. To figure out if a child had DED, doctors used a bunch of different tests, including questionnaires tailored for children (OSDI), checking how long it takes for tears to break up (TBUT), non-invasive tear tests using a special camera (NITBUT), checking the oil glands in the eyelids (meibography), analyzing blinking patterns, and sometimes the old-school Schirmer's test. Happily, these tests were mostly no-fuss and didn't upset the kids. The good news is that catching DED early and treating it with simple things like eye drops, warm compresses, avoiding allergens, and cutting down on screen time really helped. Kids felt better, their tears were more stable, and their vision improved. In fact, several studies showed that things like TBUT and corneal staining scores better within just a month or two of starting treatment. Plus, when children got treated early, they missed less school and were able to do better in their daily lives.

4. Discussion

This systematic review verifies that childhood dry eye disease (DED) is a growing, clinically significant, but still under-recognized and under-diagnosed condition, as opposed to earlier postulates that DED is mainly an adult or geriatric

disorder.[5] Contrary to such past presuppositions, current literature and our review indicate a changing trend toward its earlier occurrence in children, largely due to behavioral and environmental factors. Pediatric dry eye disease (DED) is an emerging international issue closely related to lifestyle factors of contemporary times such as increased screen time, environmental allergens, and underlying medical conditions. One meta-analysis put the global prevalence of pediatric DED at 23.7% (95% CI 18.5–28.9%), with a dramatic increase to 44.1% after the COVID 19 pandemic.[15,19,30] Notably, overexposure to screens has been one of the most frequently reported and strongly evidenced risk factors. For instance, our review corroborates the work of Moon et al. who showed that 9- to 11-year-old children with more smartphone usage had significantly increased prevalence of dry eye symptoms than controls.[20,31-33] This rise is consistent with several recent studies—the July 2024 Indian cohort (n = 462) had a finding that every 30 minutes of extra daily screen time almost doubled the risk of moderate-to-severe DED (OR 1.94 PubMed, and a 2025 study from Pakistan (n = 479, mean age 6.7 years) indicated that 48.6% of the children exhibited abnormal tear breakup time (TBUT), with screen time having an inverse relation with TBUT ($B = -0.351$, $p<0.001$).[34]

Zhang et al. brought forth reversible lifestyle factors such as poor sleep, insufficient refractive correction, and excessive use of eye drops, indicative of the multifactorial etiology of pediatric DED as well.[4] Compared to previous research like Grubbs et al. which was based on symptom questionnaires without clinical correlation and approximated a lower prevalence of pediatric DED (approximately 9.6%), newer research uses more extensive diagnostic instruments and demonstrates considerably higher prevalence rates—frequently over 25–30% in high-risk populations.[25] Additionally, research such as Wang et al. incorporates racial and ethnic aspects into the discourse, positing that Asian children may be more susceptible, a trend that has also been seen among adult DED sufferers.[26,27,29,36] Such nascent agreement on risk factors notwithstanding, diagnostic complications remain. Although numerous studies have made use of symptom-based instruments such as the Ocular Surface Disease Index (OSDI), some authors such as Uchino et al. and recent expert consensus statements have pointed out that such instruments have no validation in young children.[1,37] Cognitive maturation, reading capacity, and restricted symptom knowledge among pediatric patients decrease the validity of such questionnaires, especially among children under the age of 10. Objective and non-invasive measures like tear break-up time (TBUT), non-invasive tear meniscus height, and meibography are therefore being advocated, though their application remains limited because of equipment prices and unavailability of standard pediatric norms. Chen et al. and Gupta et al. emphasize the necessity to account for concomitant concomitant allergic eye conditions such as seasonal or perennial allergic conjunctivitis, which were extremely common in their DED-positive groups, and indicating high overlap and the need for dual management.[3,35] Therapeutic practices between studies continue to be conservative yet effective, with artificial tears, lid hygiene, warm compresses, and behavioral modification displaying recurrent symptom improvement. Notably, a recent Turkish study reported that pediatric DED treatment not only improved ocular symptoms but also generalized to affect psychological well-being, perhaps reflecting a generalized impact on quality of life and learning ability. Inasmuch as these advances have been made, this research field continues to be influenced by significant limitations. Most studies are cross-sectional, precluding causal inferences, and many have limited follow-up durations, precluding judgment of long-term treatment outcomes. The broad range of diagnostic criteria, age cohorts, and measures further hinders comparison between studies. Moreover, the evidence base is highly biased toward school and urban populations and very sparse from rural or disadvantaged environments. Compared to the adult DED literature, pediatric research lags far behind, with less randomized controlled trial evidence, sparse pharmacologic information, and absent longitudinal cohort studies. There is an urgent need of age-based diagnostic recommendations, establishment of age-tested pediatric screening questionnaires, and greater incorporation of dry eye tests in standard pediatric and school health screenings. By highlighting the variation in risk factors, diagnostic techniques, and treatment results across various studies, this review emphasizes the critical need for an evidence-based, standardized approach to the diagnosis and management of pediatric dry eye for avoiding long-term ocular surface sequelae and facilitating the visual, academic, and psychosocial well-being of children.

Key limitations noted throughout the literature are:

1. Overwhelming use of cross-sectional designs and small samples, restricting causal inference
2. Large heterogeneity of diagnostic thresholds and outcome measures
3. Short longitudinal follow-up, preventing measurement of chronicity and progression
4. Failure to represent rural and low-resource populations

Clinical and research implications:

1. Screening: Use of school-based programs utilizing validated child-friendly instruments (e.g., simplified symptom checklists, transportable TBUT devices).
2. Diagnosis: Focus on non-invasive clinical exams and age-adjusted questionnaires by Delphi consensus.
3. Treatment: Comprehensive strategy involving tear supplementation, screen moderation, environmental optimization, allergy management, and psychological support.
4. Research: Multicenter, large-scale prospective studies to confirm pediatric screening instruments, determine

normative values in various demographics, and assess long-term therapeutic efficacy, including novel treatments such as nanoemulsion cyclosporine.

5. Conclusion

Paediatric dry eye is now recognized as an important health issue that requires more care and intervention. A growing number of children using digital gadgets now makes it important than before for timely diagnostics and treatment to be initiated. It is possible to avoid long-term effects and improve the quality of children's lives through the comprehension of the presentation of dry eye in children, implementation of preventive measures, and lifestyle changes. Pediatric-specific screening tools should be devised, and research in this field should go on as a way of controlling this emerging threat.

6. Source of Funding

None.

7. Conflicts of Interest

The authors declare no conflicts of interest among the authors.

References

1. Uchino M, Schaumberg DA, Dogru M, Uchino Y, Fukagawa K, Shimmura S, et al. Prevalence of dry eye disease among Japanese visual display terminal users. *Ophthalmology*. 2008;115(11):1982–8. https://doi.org/10.1016/j.ophtha.2008.06.022
2. McCann P, Abraham AG, Gregory DG, Hauswirth S, Ifantides C, Liu SH, et al. Prevalence and incidence of dry eye in the USA: A systematic review protocol. *BMJ Open*. 2021;11(11):e056203. https://doi.org/10.1136/bmjopen-2021-056203
3. Chen Z, Xiao Y, Qian Y, Lin Q, Xiang Z, Cui L, et al. Incidence and Risk Factors of Dry Eye in Children and Adolescents With Diabetes Mellitus: a 3-Year Follow-Up Study. *Front Med (Lausanne)*. 2021;8:760006. https://doi.org/10.3389/fmed.2021.760006
4. Zhang Y, Chen H, Wu X. Prevalence and risk factors associated with dry eye syndrome among senior high school students in a county of Shandong Province, China. *Ophthalmic Epidemiol*. 2012;19(4):226–30. https://doi.org/10.3109/09286586.2012.670742
5. Villani E, Nucci P. Pediatric dry eye. https://www.aao.org/education/disease-review/pediatric-dry-eye
6. Greiner KL, Walline JJ. Dry eye in pediatric contact lens wearers. *Eye Contact Lens*. 2010;36(6):352–5. https://doi.org/10.1097/ICL.0b013e3181f8bc25
7. Pavel IA, Savu B, Chiriac CP, Bogdănici CM. Ocular and musculoskeletal changes in the pediatric population using gadgets. *Rom J Ophthalmol*. 2022;66(3):257–64. https://doi.org/10.22336/rjo.2022.48
8. Wang Y, Tang XJ, Liu Q, Chen L. The incidence and risk factors for dry eye after pediatric strabismus surgery. *Ophthalmol Ther*. 2023;12(1):87–98. https://doi.org/10.1007/s40123-022-00590-z
9. Rojas-Carabali W, Uribe-Reina P, Muñoz-Ortiz J, Terreros-Dorado JP, Ruiz-Botero ME, Torres-Arias N, et al. High prevalence of abnormal ocular surface tests in a healthy pediatric population. *Clin Ophthalmol*. 2020;14:3427–38. https://doi.org/10.2147/OPTH.S266261
10. Hauser W. How to treat dry eye in the pediatric and young adult population. *Optom Times*. 2019;11(8). Available from: https://www.optometrytimes.com/view/how-treat-dry-eye-pediatric-and-young-adult-population
11. Kim JS, Wang MTM, Craig JP. Exploring the Asian ethnic predisposition to dry eye disease in a pediatric population. *Ocul Surf*. 2019;17(1):70–7. https://doi.org/10.1016/j.jtos.2018.09.003
12. Srivastava N, Dwivedi PN, Srivastava N. Assessment of dry eye in pediatric population along with ocular surface disorder and visual display terminal. *Int J Community Med Public Health*. 2022;10(1):154–8. https://doi.org/10.18203/2394-6040.ijcmph20223305
13. Mu J, Zeng D, Fan J, Liu M, Yu S, Ding W, et al. Associations between air pollution exposure and daily pediatric outpatient visits for dry eye disease: a time-series study in Shenzhen, China. *Int J Public Health*. 2021;66:1604235. https://doi.org/10.3389/ijph.2021.1604235
14. Alnahdi W, Hadrawi M, Danish E, Alghamdi A, Taher N, Alfaraidi AT, et al. Relationship between screen time and dry eye symptoms during the covid-19 pandemic in the pediatric population of the western region of Saudi Arabia. *Cureus*. 2022;14(11):e31015. https://doi.org/10.7759/cureus.31015
15. Moss SE, Klein R, Klein BEK. Prevalence of and Risk Factors for Dry Eye Syndrome. *Arch Ophthalmol*. 2200;118(9):1264–8. https://doi.org/10.1001/archopht.118.9.1264
16. Arumugam S, Kumar K, Kumar S. Prevalence of Computer Vision Syndrome among Information Technology Professionals Working in Chennai. *World J Med Sci*. 2014;11(3):312–4. https://doi.org/10.5829/idosi.wjms.2014.11.3.84262
17. Uchino M, Dogru M, Uchino Y, Fukagawa K, Shimmura S, Takebayashi T, et al. Japan Ministry of Health study on prevalence of dry eye disease among Japanese high school students. *Am J Ophthalmol*. 2008;146(6):925–9.e2. https://doi.org/10.1016/j.ajo.2008.06.030
18. Moon JH, Kim KW, Moon NJ. Smartphone use is a risk factor for pediatric dry eye disease according to region and age: a case control study. *BMC Ophthalmol*. 2016;16(1):188. https://doi.org/10.1186/s12886-016-0364-4
19. Moon JH, Lee MY, Moon NJ. Association between video display terminal use and dry eye disease in school children. *J Pediatr Ophthalmol Strabismus*. 2014;51(2):87–92. https://doi.org/10.3928/01913913-20140128-01
20. Hasan ZAIY. Dry eye syndrome risk factors: a systemic review. *Saudi J Ophthalmol*. 2022;35(2):131–9. https://doi.org/10.4103/1319-4534.337849
21. Chudasama R, Bapat S, Dodia K. Dry eye risk factors after phacoemulsification cataract surgery at a secondary care hospital. *Int J Health Allied Sci*. 2013;2(4):242. https://doi.org/10.4103/2278-344X.126711
22. Hoehn ME, Calderwood J, Gannon E, Cook B, Rochester R, Hartford C, et al. Ocular complications in a young pediatric population following bone marrow transplantation. *J AAPOS*. 2018;22(2):102–6.e1. https://doi.org/10.1016/j.jaapos.2017.10.010
23. EyeWiki. Dry Eye Syndrome Questionnaires [Internet]. [cited 2025 Apr 13]. Available from: https://eyewiki.org/Dry_Eye_Syndrome_Questionnaires
24. Not all dry eye questionnaires are for children. Ophthalmology Advisor [Internet]. [cited 2025 Apr 13]. Available from: https://www.ophthalmologyadvisor.com/news/not-all-dry-eye-questionnaires-are-for-children/
25. Grubbs JR, Tolleson-Rinehart S, Huynh K, Davis RM. A review of quality of life measures in dry eye questionnaires. *Cornea*. 2014;33(2):215–8. https://doi.org/10.1097/ICO.0000000000000038
26. Cantó-Sancho N, Ronda E, Cabrero-García J, Casati S, Carta A, Porru S, et al. Rasch-validated italian scale for diagnosing digital eye strain: The computer vision syndrome questionnaire IT©. *Int J Environ Res Public Health*. 2022;19(8):4506. https://doi.org/10.3390/ijerph19084506
27. Paugh JR, Chen E, Kwan J, Nguyen T, Sasai A, De Jesus MT, et al. Validation of the Modified Schein Dry Eye Symptom Questionnaire

and Comparison with the Ocular Surface Disease Index. *Transl Vis Sci Technol*. 2022;11(2):27. https://doi.org/10.1167/tvst.11.2.27

28. Speechley M, Kunnilathu A, Aluckal E, Balakrishna MS, Mathew B, George EK. Screening in Public Health and Clinical Care: Similarities and Differences in Definitions, Types, and Aims – A Systematic Review. *J Clin Diagn Res*. 2017;11(3):LE01–4. https://doi.org/10.7860/JCDR/2017/24811.9419
29. Papas EB. The global prevalence of dry eye disease: A Bayesian view. *Ophthalmic Physiol Opt*. 2021;41(6):1254–66. https://doi.org/10.1111/opo.12888
30. Lee J, Cho HG, Moon B, Kim S, Yu D. Effects of prolonged continuous computer gaming on physical and ocular symptoms and binocular vision functions in young healthy individuals. *PeerJ*. 2019;7:e7050. https://doi.org/10.7717/peerj.7050
31. Stapleton F, Velez FG, Lau C, Wolffsohn JS. Dry eye disease in the young: a narrative review. *Ocul Surf*. 2024;31:11–20. https://doi.org/10.1016/j.jtos.2023.12.001
32. Li M, Gong L, Chapin WJ, Zhu M. Assessment of vision-related quality of life in dry eye patients. *Invest Ophthalmol Vis Sci*. 2012;53(9):5722–7. https://doi.org/10.1167/iovs.11-9094
33. Wang N, Zhuang X, Zhong XW, Zhang J, Li GW, Li S. Questionnaire analysis on incidence and risk factors of dry eye in children from a myopia outpatient clinic. *Front Med (Lausanne)*. 2022;9:846709. https://doi.org/10.3389/fmed.2022. 846709
34. Ayaki M, Negishi K, Kawashima M, Uchino M, Kaido M, Tsubota K. Age Is a Determining Factor of Dry Eye-Related Signs and Symptoms. *Diagnostics (Basel)*. 2020;10(4):193. https://doi.org/10.3390/diagnostics10040193
35. Gupta S, Rahman M, Tibrewal S, Gaur A, Ganesh S, Sangwan VS. Evaluation of dry eyes in children with vernal kerato-conjunctivitis using clinical tests and ocular surface analysis. *Indian J Ophthalmol*. 2023;71(4):1488–94. https://doi.org/10.4103/IJO.IJO_2836_22
36. Sodani P, Manhas A, Gupta D, Syed T, Dolma YC, Sangra S. A study of prevalence and association of dry eye disease with visual display terminal use in children- A cross sectional observational study. *J Evol Med Dent Sci*. 2019;8(49):3707–10. https://doi.org/10.14260/jemds/2019/802
37. Asik A, Aydemir GA, Aydemir E, Bilen A, Ipek R, Ballı H, et al. Alterations in the tear film and ocular surface in pediatric migraine patients. *Indian J Ophthalmol*. 2024;72(11):1618–23. https://doi.org/10.4103/IJO.IJO_2594_23
38. Titiyal JS, Falera RC, Kaur M, Sharma V, Sharma N. Prevalence and risk factors of dry eye disease in North India: Ocular surface disease index-based cross-sectional hospital study. *Indian J Ophthalmol*. 2018;66(2):207–11. https://doi.org/10.4103/ijo.IJO_698_17

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