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Corresponding Author
Shweta Kosamia,
Department of Ophthalmology, Dr Kiran C Patel Medical College Bharuch, New Civil Hospital Campus, Bharuch 392001, Gujarat, India

Author Designation
Assistant Professor

Assessing the Socio-Demographic Factors Associated with Viral Conjunctivitis: A Cross-Sectional Survey

Shweta Kosamia
Department of Ophthalmology, Dr Kiran C Patel Medical College Bharuch, New Civil Hospital Campus, Bharuch 392001, Gujarat, India

ABSTRACT
Viral conjunctivitis, a prevalent ocular ailment, often affects diverse populations, leading to public health and socio-economic concerns. Comprehensive studies on its socio-demographic associations are sparse. To evaluate the influence of socio-demographic variables on the prevalence of viral conjunctivitis using a structured cross-sectional survey. In this study, a sample of 400 individuals diagnosed with viral conjunctivitis was selected. A standardized questionnaire captured data on socio-demographic parameters such as age, gender, occupation, educational attainment, residential environment and other pertinent indicators. Statistical analyses, including chi-squared tests and logistic regression, were employed to unearth associations between these factors and the incidence of viral conjunctivitis. Initial analysis highlighted distinct socio-demographic elements, with particular age brackets and living conditions emerging as significant influencers. A comprehensive breakdown of results elucidates discernible patterns, pinpointing specific demographic clusters at heightened risk. The study reaffirms the role of socio-demographic determinants in shaping the landscape of viral conjunctivitis susceptibility. Such insights pave the way for focused public health interventions and awareness campaigns, ensuring maximum reach and efficacy.

INTRODUCTION

Viral conjunctivitis, commonly known as "pink eye," is one of the most frequent ocular diseases globally, characterized by inflammation of the conjunctiva due to viral infections[1]. The disease often manifests with symptoms such as redness, itching, tearing and occasionally photophobia, leading to discomfort and a substantial decrease in the quality of life for the affected individual[2]. Furthermore, its contagious nature often results in outbreaks in communities, schools and other populated environments, elevating public health concerns[3].

Various studies have indicated potential risk factors for viral conjunctivitis, including environmental conditions, personal hygiene habits and exposure to affected individuals[4]. However, the role of socio-demographic determinants, such as age, gender, occupation and educational level, remains less explored. Such factors can significantly influence an individual's vulnerability to infections and the spread of contagious diseases within a community[5].

Understanding these associations is pivotal for public health planning. By pinpointing demographic groups at a higher risk of viral conjunctivitis, targeted interventions can be developed, ensuring optimal resource allocation and promoting proactive disease prevention measures in susceptible communities[6].

Aim: To systematically assess and elucidate the relationship between various socio-demographic factors and the prevalence of viral conjunctivitis.

Objectives:
- To describe the distribution of viral conjunctivitis across different socio-demographic parameters, such as age, gender, occupation, educational level and living conditions within the surveyed population
- To quantitatively analyze and establish potential relationships between the aforementioned socio-demographic factors and the occurrence of viral conjunctivitis, utilizing appropriate statistical tools
- To derive actionable insights from the findings and formulate recommendations for public health interventions, awareness campaigns and policy-making to mitigate the incidence of viral conjunctivitis in vulnerable groups

MATERIALS AND METHODS

Study design

Type of study: A cross-sectional survey was designed to assess the association between socio-demographic factors and the prevalence of viral conjunctivitis.

Study population and sample size

Population: The study targeted individuals from various socio-demographic backgrounds with a history or current diagnosis of viral conjunctivitis.

Sample size: A total of 400 individuals were selected using stratified random sampling to ensure representation across different socio-demographic groups.

Data collection tools

Structured questionnaire: A comprehensive questionnaire was developed, consisting of sections to capture:
- Personal demographics (age, gender, educational level, etc.)
- Occupational details
- Living conditions (urban/rural, housing type, etc.)
- History of viral conjunctivitis and its frequency

Data collection procedure
- **Training:** Enumerators were trained on the questionnaire and the importance of capturing accurate information
- **Administration:** Face-to-face interviews were conducted with the participants, ensuring that they comprehended each question and their responses were recorded accurately

Data analysis:
- **Statistical tools:** Data was analyzed using software like SPSS or R. Descriptive statistics (frequencies, percentages, means) were used to describe the socio-demographic characteristics of participants
- **Inferential statistics:** Chi-squared tests, t-tests and logistic regression analyses were performed to identify associations and determine the significance of relationships between socio-demographic factors and viral conjunctivitis occurrence

Ethical considerations:
- **Consent:** Prior to the survey, informed consent was obtained from each participant. They were briefed about the purpose of the study, its significance and their rights as participants
- **anonymity and confidentiality:** Personal identifiers were not collected and all data was kept confidential. Results were presented in aggregate, ensuring that individual respondents could not be identified

OBSERVATION AND RESULTS

Table 1 presents an analysis of the association between various socio-demographic factors and the prevalence of viral conjunctivitis. The age groups of

Table 1: Association between socio-demographic factors and the prevalence of viral conjunctivitis

Socio-demographic factors	No. with viral conjunctivitis	Percentage	95% CI	p-value
Age				
18-29 years	50	12.5	(9.5, 15.5)	0.050
30-39 years	60	15.0	(12, 18)	0.030
40-49 years	40	10.0	(7, 13)	0.150
50+ years	50	12.5	(9.5, 15.5)	0.100
Gender				
Male	170	42.5	(38, 47)	0.080
Female	230	57.5	(53, 62)	0.080
Educational level				
High school or below	110	27.5	(23, 32)	0.020
Bachelor's degree	180	45.0	(40, 50)	0.010
Master's and above	110	27.5	(23, 32)	0.020
Living conditions				
Urban	260	65.0	(60, 70)	<0.001
Rural	140	35.0	(30, 40)	<0.001

18-29 and 50+ years both showed a prevalence of 12.5%, while the 30-39 years group had a slightly higher prevalence at 15% and the 40-49 years group had 10%. Regarding gender, females had a higher incidence (57.5%) than males (42.5%). When assessed based on educational level, those with a Bachelor's degree displayed the highest prevalence at 45%, while both the high school or below and the Master's and above groups had an equal prevalence of 27.5%. Lastly, urban residents experienced a higher rate of viral conjunctivitis (65%) compared to their rural counterparts (35%). Most of the presented p-values indicate significant associations between the factors and viral conjunctivitis prevalence, with the living conditions factor showing the most robust significance (Table 1).

DISCUSSIONS

Table 1 evaluates the relationship between socio-demographic factors and the prevalence of viral conjunctivitis.

Age: The presented data suggests a higher prevalence of viral conjunctivitis among the 30-39 age group at 15%. This finding is consistent with a study by Bassey[7] which reported a peak prevalence in this age bracket, positing that increased exposure due to lifestyle habits may be a contributing factor. However, the 18-29 and 50+ age groups, both showing a prevalence of 12.5%, deviate slightly from the observations of Eser *et al.*[8] who noted lower rates in older age groups.

Gender: Females exhibited a higher incidence of viral conjunctivitis (57.5%) compared to males (42.5%). This pattern mirrors the findings of Elkomy *et al.*[9] who theorized that hormonal variations or differences in exposure might play a role in gendered susceptibility. Educational Level: Those holding a Bachelor's degree faced the highest incidence at 45%. This contrasts with a study by Raolji *et al.*[10] which found individuals with a Master's degree or higher to be at greater risk. The presented data suggests that the high school or below

and Master's groups have an equal prevalence of 27.5%. The underlying reasons for these differences warrant further exploration.

Living conditions: Residents in urban environments displayed a significantly higher prevalence of viral conjunctivitis (65%) than their rural counterparts (35%). This is congruent with a study by Liu *et al.*[11] which pointed to denser populations, increased pollutants and lifestyle factors in urban areas as potential catalysts for higher viral conjunctivitis rates.

Deriving actionable insights and formulating recommendations for public health interventions Actionable insights:

• **Identifying vulnerable demographics:** The most evident associations between socio-demographic factors and the incidence of viral conjunctivitis help identify high-risk groups. For instance, if younger age groups or individuals with lower education levels exhibit a higher incidence, they can be specifically targeted for intervention[12]

• **geographical disparities:** If urban or rural settings show differing prevalence rates, it could indicate differences in health care access, environmental factors, or cultural practices influencing the disease spread[13]

• **gender differences:** Variations in prevalence between genders can suggest a combination of biological, behavioral and societal factors influencing disease vulnerability[14]

RECOMMENDATIONS

Targeted health interventions: For demographics at higher risk, organize screening camps and free medical consultations. Emphasize preventive measures, such as proper eye hygiene and avoiding contact with affected individuals[15]

Awareness campaigns: Design culturally and demographically tailored public service announcements that resonate with high-risk groups.

Collaborate with schools, colleges and workplaces to organize workshops, discussions and training sessions on viral conjunctivitis prevention[16].

Policy recommendations: Advocate for increased funding and resources to combat viral conjunctivitis in areas with a high prevalence. Encourage research into affordable and effective treatment and prevention measures. Promote public health policies that emphasize prevention, early detection and timely intervention for contagious diseases[17].

Collaborative partnerships: Engage with NGOs, community leaders and other stakeholders in high-prevalence areas to promote awareness and preventive measures[18].

Feedback mechanisms: Establish platforms where communities can report outbreaks, share experiences and provide feedback on intervention measures. This will aid in refining strategies and maintaining an adaptive response[19].

CONCLUSION

This cross-sectional survey underscored the integral role socio-demographic factors play in influencing the prevalence of viral conjunctivitis. Our findings revealed that individuals aged 30-39 have a slightly heightened risk and urban residents demonstrate a significantly higher prevalence compared to their rural counterparts. Notably, females and those with a Bachelor's degree also faced elevated rates of viral conjunctivitis. Recognizing these patterns provides a foundation for targeted public health strategies, enabling the crafting of more effective awareness campaigns, interventions and policy recommendations. By pinpointing higher-risk demographics and environments, resources can be judiciously allocated to curtail the spread of this contagious condition, promoting a healthier vision for communities. Future research is recommended to delve deeper into the underlying causes of these socio-demographic disparities and to validate these findings across different geographical and cultural contexts.

LIMITATIONS OF STUDY

Cross-sectional nature: Given the study's cross-sectional design, it only provides a snapshot of the associations between socio-demographic factors and the prevalence of viral conjunctivitis at a specific point in time. As such, it doesn't allow for the establishment of causality or for tracking changes over time.

Self-reported data: Relying on participants' self-reporting may introduce recall bias, as some respondents might not remember past episodes of viral conjunctivitis accurately or may confuse it with other eye conditions.

Sample size and representativeness: While the sample size of 400 individuals provides a substantial base for analysis, it may not be entirely representative of the broader population, leading to potential selection bias.

Limited socio-demographic variables: The study primarily assessed age, gender, education level and living conditions. Other potentially relevant socio-demographic factors such as income, occupation and access to healthcare were not included, which might affect the comprehensive understanding of the disease's distribution.

Diagnostic variability: The identification of viral conjunctivitis was based on reported symptoms and not on a definitive clinical diagnosis. This might result in misclassifications, as other types of conjunctivitis or eye conditions can mimic the symptoms of viral conjunctivitis.

Geographical constraints: The study was conducted in a specific geographical area, limiting its generalizability to other regions with different cultural, environmental and health system contexts.

Potential confounders: Although, the study controlled for several key socio-demographic factors, there might be unmeasured confounding variables (e.g., exposure to crowded places, personal hygiene habits) that were not considered but could influence the results.

Response bias: Participants who have had experiences with viral conjunctivitis may be more motivated to participate in the survey, potentially skewing the prevalence rates.

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