e-ISSN 3050-9629
p-ISSN 2795-3212

10.5281/zenodo.17927097 Volume 8, Issue 2 (July-December 2025) Manuscript ID: #02157

Patients' Awareness Regarding Eye Care at Community Vision Center in Bangladesh

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Abstract

Background: Visual impairment is a critical public health challenge, with significant burdens in Bangladesh exacerbated by an urban-rural disparity in eye care resources. The establishment of Community Vision Centers (CVCs) aims to decentralize and improve access to primary eye care. However, the success of this initiative is contingent on patients' awareness and health-seeking behavior. This study assessed the level and determinants of eye care awareness among patients utilizing CVCs in Bangladesh.

Methods: A cross-sectional study was conducted from September 2023 to October 2024 at two CVCs in the Dhaka and Rangpur divisions. Using a multi-stage sampling technique, 165 patients were selected. Data were collected via a validated, interviewer-administered semi-structured questionnaire. Awareness was assessed using a 10-item Likert scale and categorized into low, moderate, and high levels. Data analysis was performed using SPSS version 26, employing descriptive statistics, t-tests, ANOVA, and correlation analyses.

Results: The mean age of participants was 41.61 (±15.64) years, with a majority being female (55.8%), rural residents (68.5%), and having moderate income. Overall, 54.5% of patients had high awareness and 45.5% had moderate awareness; no patients had low awareness. However, critical knowledge gaps were identified: 78.2% had no prior knowledge of eye care, 64.8% were unaware of the CVC before their visit, and 62.4% were unaware that diabetes and hypertension increase eye disease risk. Awareness was significantly higher

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among younger, more educated, urban, and higher-income patients ($p<0.05$). Prior knowledge of eye care and information about the CVC were also strong predictors of higher awareness scores ($p<0.001$).

Conclusion: While aggregate awareness levels were moderate to high, significant socio-economic disparities and specific knowledge deficits persist. The CVC model is well-received but requires integrated, targeted public health education campaigns focused on vulnerable populations to address awareness gaps and maximize utilization.

Keywords:

Patient Awareness, Eye Care, Community Vision Center, Health Knowledge, Bangladesh.

***How to cite*:** Hasan, M., Khatun, R., Parvin, R., Happy, N., Yeasmin, M. M., Siddika, N., & Akter, H. (2025). Patients' Awareness Regarding Eye Care at Community Vision Center in Bangladesh. *GPH-International Journal of Health Sciences and Nursing*, 8(2), 78-95. https://doi.org/10.5281/zenodo.17927097

Introduction:

Vision is the most essential sense for human beings, exerting a profound influence on an individual's quality of life, economic productivity, and overall health and development. The global burden of visual impairment is staggering, with an estimated 36 million people blind and approximately 250 million more living with moderate to severe visual impairment. A further billion people suffer from near vision impairment, a condition largely addressable through the provision of reading glasses (Hussain et al., 2022). This widespread prevalence underscores vision loss as a critical public health challenge with significant implications for sustainable development.

The maintenance of healthy vision is dependent on access to quality eye care, which the United Nations recognizes as a vital component of the human health system (Das, et al., 2023). Eye care encompasses a comprehensive framework aimed at preventing, treating, and managing a spectrum of eye conditions and diseases to preserve good vision and ocular health. This framework includes promoting eye health through education and awareness campaigns (Janakiraman et al., 2023), delivering primary eye care services at the community level (Wolvaardt & Shukla, 2021), and providing specialized secondary and tertiary care (Sen & Honavar, 2022). The ultimate goal is to prevent avoidable blindness and visual impairment by addressing common conditions such as cataracts, glaucoma, and diabetic retinopathy (Das B. N., 2022), thereby ensuring equitable access to high-quality, affordable eye care for all. The centrality of eye health to global development is highlighted by its interconnection with at least seven of the seventeen Sustainable Development Goals (Das et al., 2023).

The burden of eye disease is a global concern, though its manifestations vary by region. In high-income countries like the United States, conditions such as dry eye disease are highly prevalent, affecting an estimated 6.8% of the adult population, with higher rates among women and the elderly (Farrand et al., 2017). Similarly, in Africa, a systematic review found a pooled dry eye disease prevalence of 42.0% (Akowuah et al., 2020). In Bangladesh, the

epidemiological profile is dominated by issues like refractive error, allergic conjunctivitis, cataracts, and overall visual impairment. Nationally, the age-adjusted prevalence of low vision and blindness is 12.1% and 1.0%, respectively, with blindness disproportionately affecting those aged 55 years and older (Shakoor, et al., 2022). While the national Cataract Surgical Rate (CSR) is estimated at 2,600 per million populations per year, evidence suggests a rate of at least 3,000 is required to effectively control cataract-induced blindness, indicating a persistent service gap (Hussain, et al., 2022).

A primary driver of this gap in Bangladesh is the inequitable distribution of eye care resources. The majority of ophthalmologists are concentrated in urban areas, leaving the 63% of the population residing in rural regions severely underserved (Amanullah et al., 2020). This urban-rural disparity necessitates vigorous and scalable solutions to expand access. In response, the Government of Bangladesh has initiated a plan to establish Community Vision Centers (CVCs) within Upazila Health Complexes, adopting a model inspired by the Aravind Eye Care System. These centers, situated at the third administrative tier serving populations of 100,000-200,000, are envisioned to form a network across all 500 Upazilas, bringing essential primary eye care closer to rural communities (Amanullah et al., 2020). The World Health Organization (2022) emphasizes that health promotion and education are fundamental components that should be integrated at all levels of the health system, with a focus on simple and efficient teaching and counselling at the primary and community care level.

The establishment of CVCs represents a significant step towards decentralizing eye care. However, the ultimate success of such initiatives is not solely dependent on the availability of infrastructure and services, but also on the awareness and health-seeking behaviour of the target population. Patients' awareness regarding eye health, common conditions, and the availability of local services is a prerequisite for them to utilize these facilities effectively. There is a recognized paucity of research specifically investigating patients' awareness regarding eye care within the context of these newly established Community Vision Centers in Bangladesh. Understanding this level of awareness is essential for identifying critical gaps in knowledge, attitudes, and practices, which can hinder the centers' effectiveness and impact.

Therefore, this study, titled "Patients' Awareness Regarding Eye Care at Community Vision Center in Bangladesh," sought to fill this knowledge gap. By assessing the awareness levels among patients, this research is expected generate evidence that can inform nursing practices, guide the development of targeted health education campaigns, and support policy development for eye care delivery at the community level. Ultimately, this study aimed to contribute to ensuring that every individual in Bangladesh can access the eye care they need for a healthier future.

Methodology:

A cross-sectional study design was employed to assess patients' awareness regarding eye care at community vision centers in Bangladesh. The study was conducted at two sites: The Community Vision Center (CVC) at Parbatipur Upazila Health Complex in Dinajpur (within the Rangpur division) and the CVC at Dohar Upazila Health Complex in Dhaka (within the

Dhaka division). The data collection period spanned from September 2023 to October 2024. The study participants were patients of both genders who received eye care services at the selected CVCs during the study period. The inclusion criteria stipulated that participants must be 18 years or older, have attended the CVC for eye care, and be willing to provide informed consent to participate.

A multi-stage sampling technique was utilized to select the study participants. In the first stage, two administrative divisions (Rangpur and Dhaka) were randomly selected from the eight divisions in Bangladesh that host the 200 functional CVCs (as of December 2023). In the second stage, one CVC was randomly selected from each of these two divisions, resulting in the selection of the CVCs at Parbatipur and Dohar Upazila Health Complexes. In the final stage, a total of 165 patients were conveniently selected based on their availability at the two chosen CVCs during the data collection period. The sample size was calculated using the formula for estimating a single population proportion: $n = z^2pq/d^2$. With a 95% confidence level ($z = 1.96$), an anticipated proportion (p) of 50% (due to the absence of prior studies), a q of (1-p) = 0.50, and an allowable error (d) of 8%, the initial sample size was calculated to be 150. To account for potential attrition, the sample size was increased by 10%, resulting in a final sample size of 165.

A semi-structured, interviewer-administered questionnaire was used as the primary data collection instrument. The questionnaire was developed based on an extensive review of relevant literature, with significant insights drawn from studies by Sutradhar et al. (2019) and Shwetha et al. (2021), and was tailored to address the specific objectives of this study. The instrument was validated by three experts from Bangladesh Medical University (BMU) and subsequently translated into Bangla to ensure clarity and cultural appropriateness for the participants.The questionnaire consisted of three parts where Part I collected socio-demographic characteristics of the participants, including eight items such as age, gender, education level, occupation, and monthly family income. Part II comprised nine items gathering information related to the participants' eye care-seeking behaviour and their knowledge of the CVC, including sources of information, current eye problems, and satisfaction with services and part III assessed awareness regarding eye care using ten statements rated on a 3-point Likert scale (1=Don't Know, 2=Disagree, 3=Agree). The total awareness score (range: 10-30) was calculated by summing all items. Following the methodology of Aljeezan et al. (2022), participants were categorized into three levels of awareness: low (score < 50% of total, i.e., <15), moderate (score 50-75%, i.e., 15-22.5), and high (score >75%, i.e., >22.5).

Upon completion of data collection, all questionnaires were checked, verified, and edited for consistency and accuracy. The data were then entered into and analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the socio-demographic characteristics and the levels of awareness. Inferential statistics, such as independent t-tests, ANOVA, and correlation analyses, were employed to examine the relationships between socio-demographic characteristics and eye care awareness scores.

Prior to commencement, ethical approval was obtained from the Institutional Review Board (IRB) of BMU (Bangladesh Medical University), formerly known as BSMMU (Bangabandhu Sheikh Mujib Medical University) Bangabandhu Sheikh Mujib Medical University (BSMMU). Official permission was also secured from the Upazila Health and Family Planning Officers of the respective health complexes. Ethical considerations were rigorously upheld throughout the study. First, the principle of informed consent was paramount. The researcher introduced themselves to each potential participant, explained the study's objectives, benefits, and potential risks, and clarified that participation was entirely voluntary. Written informed consent was obtained from every individual who agreed to participate, and a witness signature was also collected to formalize the agreement. Second, stringent measures were implemented to protect participant confidentiality and anonymity. All data were collected through private, face-to-face interviews to ensure privacy. Any identifying information was omitted from the data collection form, and participants were referred to only by a unique code number in all records and during data analysis, ensuring that their responses could not be traced back to them. Finally, the study adhered to the principles of beneficence and non-maleficence. Participants were informed of their right to withdraw from the study at any point without any negative consequences to the medical care they received at the vision center. The interview process was conducted respectfully, and the researcher was prepared to provide basic, accurate information about eye care if questions arose, ensuring the interaction was beneficial and posed no harm to the participants.

Results:

This section presents the participants' socio- demographic characteristics, and their statements related to the information on eye care and community vision center, and the awareness. In addition, the level of awareness among patients on eye care is also highlighted in this section. Furthermore, the relationship between patients' socio-demographic characteristics and eye care awareness, as well as the association among eye care information, community vision center and eye care awareness, is illustrated in detail.

Table 1: Distribution of socio-demographic characteristics of the patients' (n=165)

Variables	Frequency (n)	Percentage (%)	M±SD
Age (in years)			
≤ 20 years	15	9.1	
21 to 40 years	69	41.8	41.61 ± 15.64
41 to 60 years	62	37.6	
> 60 years	19	11.5	
Gender			
Male	73	44.2	
Female	92	55.8	

Religion			
Muslim	161	97.6	
Hindu	4	2.4	
Marital status			
Unmarried	28	17.0	
Married	130	78.8	
Widowed	7	4.2	
Education			
Primary	53	32.1	
Secondary	35	21.2	
Higher Secondary	55	33.3	
Graduate and above	22	13.3	
Occupation			
Service	24	14.5	
Homemaker	69	41.8	
Business	46	27.9	
Students	26	15.8	
Living area			
Rural	113	68.5	
Urban	52	31.5	
Family income (In Bangladeshi Taka)			
≤ 15000 taka	22	13.3	30812 ± 14141
15001 to 30000 taka	82	49.7	
30001 to 45000 taka	38	23.0	
> 45000 taka	23	13.9	

The socio-demographic profile of the 165 patients in the table 1 reveals a predominantly middle-aged, female, rural, and Muslim population with moderate levels of education and income. The average age of the respondents was 41.61 years (±15.64), with the largest cohorts being young and middle-aged adults (21-40 years: 41.8%; 41-60 years: 37.6%). A slight majority of the participants were female (55.8%), and an overwhelming majority were Muslim (97.6%) and married (78.8%). Geographically, most patients resided in rural areas (68.5%), aligning with the community vision center's purpose. Educational attainment was varied, with the highest proportion having a primary (32.1%) or higher secondary (33.3%) education. Reflecting this, occupations were predominantly homemaking (41.8%) and business (27.9%). The average monthly family income was 30,812 Taka (±14,141), with nearly half of all families (49.7%) earning between 15,001 and 30,000 Taka, suggesting a sample largely from a lower-middle to middle-income socioeconomic background.

Table 2: Distribution of information related to eye care and community vision center (CVC) of the patients' (n=165)

Variables	Frequency (n)	Percentage (%)	M±SD
Knowledge on Eye Care			
Yes	36	21.8	1.78±0.414
No	129	78.2	
Information on CVC			
Yes	58	35.2	1.65±0.479
No	107	64.8	
Source of information on CVC (n=58)			
Television	17	10.3	5.62±13.70
Newspaper	16	9.7	
Social Media	3	1.8	
Doctor Nurse	1	0.6	
Relatives/Friends Others	4	2.4	
	15	9.1	
	2	1.2	
Current eye problem			
Cataract Refractive	7	4.2	19.7±31.40
error Conjunctivitis	67	40.6	
Watering from eye	25	15.2	
Others	28	17	
	38	23	
Treatment for current eye problem			
Doctor	70	42.4	1.63±0.587
Nurse	86	52.1	
Medicine seller	9	5.5	
Advice to visit CVC for treatment			
Doctor	6	3.6	3.79±1.00
Nurse	13	7.9	
Health Worker	29	17.6	
Relatives	79	47.9	
Self	38	23.0	
Frequency of visit to CVC			
One time	72	43.6	1.67±0.691
Two times	78	47.3	
Three times	12	7.3	
> three times	3	1.8	
Satisfaction on CVC service			
Yes	158	95.8	1.04±0.202
No	7	4.2	
Further improvement of CVC			
Yes	61	37	1.63±0.484
No	104	63	

The data presented in Table 2 reveals critical insights into patient awareness and engagement with the Community Vision Centre (CVC). A significant knowledge gap is evident, as the

vast majority of patients (78.2%) reported having no prior knowledge of eye care, and most (64.8%) had no prior information about the CVC itself before their visit. Among those who were informed (n=58), television (10.3%) and newspapers (9.7%) were the most common sources, though a substantial portion also learned through relatives or friends (9.1%). The most frequently reported eye problems were refractive errors (40.6%) and conjunctivitis/watering (32.2% combined). Patients primarily sought initial treatment from nurses (52.1%) and doctors (42.4%), and the decision to visit the CVC was most often made on their own initiative (23.0%) or on the advice of relatives (47.9%), rather than formal healthcare providers. While visits were typically one-time (43.6%) or two-time (47.3) events, satisfaction with the CVC's services was remarkably high (95.8%). Despite this high satisfaction, a notable proportion of patients (37.0%) still believed further improvements to the centre were necessary.

Table 3: Distribution of eye care awareness among the patients' (n=165)

Statements	**Don't know**	**Disagree**	**Agree**	**M±SD**
	n (%)	**n (%)**	**n (%)**	
1. Health care services related to the care of the eye are called Eye Care.	81 (49.1)	0 (0)	84 (50.9)	2.02±1.00
2. Eye Care is important for every person.	4 (2.4)	1 (0.6)	160 (97)	2.95±0.317
3. Regular eye check-up is necessary for good eye health.	8 (4.8)	0 (0)	157 (95.2)	2.90±0.431
4. Lack of knowledge is a barrier of seeking Eye Care.	58 (35.2)	32 (19.4)	75 (45.5)	2.10±0.895
5. Lack of awareness is a barrier of seeking Eye Care.	33 (20)	59 (35.8)	73 (44.2)	2.24±0.766
6. Financial inability is a major cause hamper to get Eye Care services.	1 (0.6)	61 (37.0)	103 (62.4)	2.62±0.500
7. Cultural or social taboos inhibit us to seek eye care.	121 (73.3)	37 (22.4)	7 (4.2)	1.31±0.548
8. Lack of time is a barrier of seeking Eye Care.	0 (0)	88 (53.3)	77 (46.7)	2.47±0.500

9. Diabetes Mellitus and Hypertension increases the risk of eye disease.	103 (62.4)	0 (0)	62 (37.6)	1.75±0.972
10. Wearing sunglass is beneficial for eye health.	32 (19.4)	2 (1.2)	131 (79.4)	2.60±0.795
Total				**22.96**

The data in Table 3 reveals a population with a strong appreciation for the importance of eye care in principle, but a concerning lack of specific knowledge about its practices and barriers. While an overwhelming majority agreed that eye care is important for everyone (97%) and that regular check-ups are necessary (95.2%), fundamental gaps in understanding are evident. Nearly half (49.1%) were unaware of the term "eye care," and a significant knowledge deficit exists regarding systemic health links, as most patients (62.4%) did not know that Diabetes and Hypertension increase the risk of eye disease. Perceptions of barriers were mixed; financial inability was recognized as a major hampering factor by most (62.4%), and lack of time was also seen as a barrier by a sizable portion (46.7%). However, there was no clear consensus on the roles of knowledge and awareness as barriers, and cultural taboos were largely dismissed (73.3% were unaware of this as a factor). The total mean awareness score of 22.96 out of a possible 30 points suggests a moderate overall level of awareness, but this aggregate score masks critical deficiencies in key educational areas essential for preventive health and understanding risk factors.

Table 4: Distribution of level of awareness among the patients' (n=165)

Variables	n (%)	M±SD
Level of awareness Moderate awareness		
High awareness	75 (45.5)	
	90 (54.5)	2.55 ± 0.499

Score less than 50% = Low awareness, 50% -75%= Moderate awareness and more than 75%= High awareness.

Based on the scoring criteria provided in the table 4, the distribution of awareness levels reveals a predominantly positive outcome among the patients surveyed. More than half of the participants (54.5%, n=90) were categorized as having a high awareness of eye care, while the remaining 45.5% (n=75) demonstrated a moderate level of awareness. Crucially, no patients fell into the "low awareness" category, as the lowest score recorded was still above the 50% threshold. This indicates that while there is room for improvement, the foundational knowledge among this patient population is strong. The mean awareness score of 2.55 ± 0.499 on a scale that likely ranged from 1 to 3 further confirms that the average patient's understanding is well above the midpoint, aligning with the finding that the majority possess high awareness. This suggests that educational efforts at the Community Vision Centers are reaching patients effectively, though targeted strategies could be beneficial to move those with moderate awareness into the high awareness group.

Figure 1: Relationship between age and eye care awareness of the patients' (n=165)

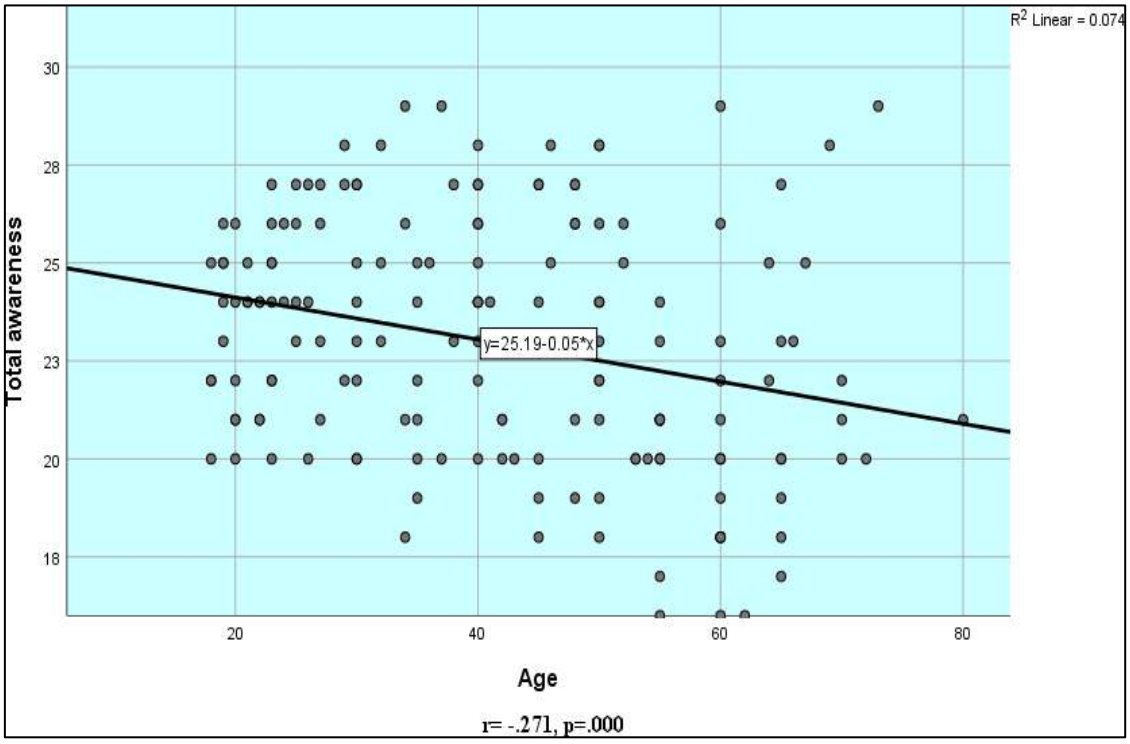

Figure 1 presents the relationship between age and eye care awareness among the study participants (n = 165). A statistically significant negative correlation was observed between age and awareness score ($r = –0.271$, $p < 0.001$). The regression analysis demonstrated a modest decline in awareness with increasing age, as indicated by the regression equation ($y = 25.19 – 0.05x$). The coefficient of determination ($R^2 = 0.074$) suggests that age accounts for approximately 7.4% of the variance in awareness levels. This finding implies that while age is inversely associated with awareness, the strength of the relationship is weak, and other contributing factors are likely to influence awareness more substantially.

Table 5: Relationship between socio-demographic characteristics and eye care awareness of patients' (n=165)

Variables	M±SD	F/t	P
Gender			
Male	23.03 ± 3.03	0.257	.798
Female	22.90 ± 3.17		
Religion			
Muslim	23.00 ± 3.08	1.1	.266
Hindu	21.25 ± 3.86		
Marital status			
Unmarried Married	23.25 ± 2.14		
Widowed	23.05 ± 3.26	3.142	.046
	20.14 ± 1.95		

Education Primary Secondary Higher secondary Graduate and above	 20.68 ± 2.65 23.23 ± 2.95 23.93 ± 2.26 25.59 ± 2.70	23.627	.000
Occupation Service Homemaker Business Students	 25.58 ± 2.26 22.52 ± 3.25 21.96 ± 2.89 23.46 ± 2.28	9.225	.000
Living area Rural Urban	 22.03 ± 2.87 24.98 ± 2.61	6.326	.000
Monthly family income ≤ 15000 taka 15001 to 30000 taka 30001 to 45000 taka > 45000 taka	 20.50±2.55 22.43±2.93 24.13±2.50 25.26±2.84	14.225	.000

The analysis of the relationship between socio-demographic characteristics and eye care awareness, as presented in Table 5, reveals several significant associations while other factors show no statistical link. Notably, variables such as gender (p=.798) and religion (p=.266) demonstrated no significant relationship with awareness scores, indicating that mean awareness levels were statistically similar between males and females and between Muslim and Hindu patients. However, several other factors were strongly predictive of awareness levels. Marital status was significant (p=.046), with widowed patients showing notably lower mean awareness scores (20.14 ± 1.95) compared to unmarried and married groups. The most powerful relationships were observed with education, occupation, living area, and income. Awareness scores showed a clear positive gradient with educational attainment; patients with a graduate-level education or above had the highest mean score (25.59 ± 2.70), which was significantly higher than those with only a primary education (20.68 ± 2.65) (p=.000). Similarly, occupation was a significant factor (p=.000), with individuals in service jobs scoring highest (25.58 ± 2.26), while homemakers and businesspeople scored lower. A stark urban-rural divide was evident, with urban dwellers possessing significantly higher awareness (24.98 ± 2.61) than their rural counterparts (22.03 ± 2.87) (p=.000). Finally, a strong positive correlation was found with monthly family income (p=.000), where awareness scores increased consistently with each higher income bracket, from the lowest (20.50 ± 2.55) to the highest (25.26 ± 2.84). In summary, higher socioeconomic status—encompassing education, income, urban residence, and professional occupation—is a key determinant of higher eye care awareness among patients.

Table 6: Relationship between information related to eye care & community vision center (CVC) and eye care awareness among the patients' (n=165)

Variables	M±SD	F/t	P
Knowledge on Eye Care			
Yes	24.69 ± 2.68	3.968	.000
No	22.47 ± 3.05		
Information on CVC			
Yes	24.90 ± 2.31	7.15	.000
No	21.91 ± 2.97		
Current eye problem			
Cataract Refractive	19.29 ± 2.21		
error Conjunctivitis	22.61 ± 3.28		
Watering from eye	2.04 ± 2.52	3.803	.006
Others	23.82 ± 2.99		
	23.55 ± 2.85		
Treatment for current eye problem			
Doctor	23.56 ± 3.20		
Nurse	22.67 ± 2.96	3.569	.030
Medicine seller	21.00 ± 2.64		
Advice to visit CVC for treatment			
Doctor	21.67 ± 3.72		
Nurse	24.38 ± 2.78		
Health worker	22.07 ± 2.57	1.885	.116
Relatives	22.89 ± 3.04		
Self	23.50 ± 3.43		
Frequency of visit to CVC			
One time	23.22 ± 2.88		
Two times	22.82 ± 3.34	0.531	.662
Three times	22.67 ± 2.80		
> three times	21.33 ± 3.51		
Satisfaction on CVC service			
Yes	22.94 ± 3.09	0.410	.683
No	23.43 ± 3.35		
Further improvement of CVC			
Yes	24.52 ± 2.87	5.378	.000
No	22.04 ± 2.85		

The analysis in Table 6 demonstrates a clear and significant relationship between access to information, the nature of an eye condition, and a patient's level of eye care awareness. Crucially, patients who had prior knowledge on eye care and those who had received information on the CVC before their visit exhibited significantly higher mean awareness scores (24.69 and 24.90 respectively) compared to those who did not (p=.000 for both). This underscores that pre-existing information is a powerful driver of overall awareness. The type of current eye problem was also a significant factor (p=.006), with patients presenting for

cataracts showing markedly lower awareness (19.29), while those with other conditions like watering from the eye scored higher. Furthermore, the source of treatment for the current eye problem mattered (p=.030); those who first consulted a doctor had higher awareness than those who visited a medicine seller. Interestingly, the source of advice to visit the CVC, the frequency of visits, and overall satisfaction with CVC services showed no significant relationship with awareness levels (p>.05). However, a telling finding was that patients who believed the CVC required further improvement had a significantly higher mean awareness score (24.52) than those who did not (22.04) (p=.000). This suggests that more knowledgeable patients are also more critical and have higher expectations for the quality of services, acting as a valuable source of feedback for improving community eye care initiatives.

Discussion:

This study sought to examine the awareness of patients regarding eye care at Community Vision Centers (CVCs) in Bangladesh. The findings reveal a complex landscape where a generally high aggregate awareness score coexists with significant knowledge gaps, heavily influenced by socio-economic determinants. The discussion interprets these key findings in relation to the study's objectives and the existing body of literature.

The socio-demographic profile of the study participants, with a mean age of 41.61 years and a majority being female, Muslim, married, rural areas' inhabitants and monthly income of 15-30,000 BDT is consistent with the patient demographics reported in other studies conducted in Bangladesh and the wider region (Sutradhar et al., 2019; Shakoor et al., 2022, Hasan et al., 2023). This similarity suggests the sample is representative of the population utilizing primary eye care services in similar low-resource settings. A critical finding was the significant negative correlation between age and awareness ($r = -0.271$, $p = 0.000$), indicating that older patients possessed lower levels of eye care knowledge. This aligns with international studies, such as one in Germany, which have also identified knowledge gaps among older populations regarding eye health (Terheyden et al., 2024). This underscores the need for age-specific educational interventions that are accessible and comprehensible to older adults.

The analysis revealed that gender and religion were not significant predictors of awareness. However, other socio-economic factors demonstrated a powerful influence. There was a highly significant relationship between awareness and education level ($F = 23.627$, $p = 0.000$), occupation ($F = 9.225$, $p = 0.000$), monthly family income ($F = 14.225$, $p = 0.000$), and living area ($t = -6.326$, $p = 0.000$). Patients with graduate-level education, those employed in service professions, urban residents, and those with higher incomes consistently demonstrated superior awareness. This pattern is strongly supported by global evidence from India, Saudi Arabia, and Pakistan (Gupta et al., 2022; Fallatah, 2018; Ain et al., 2021). These factors are deeply interlinked, as higher education often leads to better employment opportunities and income, facilitating access to information and health resources typically more concentrated in urban areas. This creates a socio-economic gradient in health knowledge, where disadvantaged groups are left further behind.

Perhaps the most striking finding was the profound lack of basic knowledge, with 78.2% of patients reporting no prior understanding of "eye care" and 64.8% having no information about the CVC itself before their visit. This aligns with a study by Hossain et al. (2020), who attributed high rates of eye disease in rural Bangladesh to a lack of knowledge. This finding, however, contrasts with studies from other contexts, such as Jan et al. (2022), highlighting the unique challenges in the Bangladeshi community setting. The most common sources of information for those who were aware were television and newspapers, pointing to the vital role of mass media in public health campaigns. Furthermore, the finding that most patients first sought treatment from a nurse (52.1%) rather than a doctor (42.4%) is novel and can be explained by the strategic deployment of ophthalmic nurses within the CVC model to address the shortage of ophthalmologists in rural areas (Amanullah et al., 2020; Adeyemo et al., 2020). This demonstrates a successful adaptation of eye care delivery to local constraints.

Despite the knowledge gaps, the study outcomes are encouraging. The high rate of patient satisfaction (95.8%) with CVC services is a strong indicator of the model's acceptability and effectiveness, corroborating findings from other studies in the region (Ferdausi & Thowai; Kovai et al., 2010). This high satisfaction likely contributes to the finding that 54.5% of patients had high overall awareness and 45.5% had moderate awareness, with none scoring in the "low" category. This suggests that the CVC environment itself may be an effective platform for patient education during consultations. The level of awareness on specific issues, while varying, shows a solid foundation upon which to build, as seen in studies from Gambia and Saudi Arabia (Fanneh et al., 2022; Abuallut, 2022). However, the fact that 37% of patients believed further improvements were needed, a sentiment held more strongly by those with higher awareness, provides valuable feedback for continuous quality improvement, moving beyond mere satisfaction to address the expectations of more knowledgeable patients.

Limitations:

A notable limitation of this study stems from its selected research sites. The data were collected from Community Vision Centers (CVCs) situated within Upazila Health Complexes (UHCs), which are located in semi-urban or rural administrative hubs known as upazilas. While these areas have urban characteristics, they are distinct from major metropolitan centers like Dhaka or Chittagong. Consequently, the patient population sampled may not accurately represent the behaviors, awareness levels, or socio-economic profiles of a true urban demographic, potentially limiting the applicability of the findings to fully urbanized settings.

Furthermore, the study's scope was confined to just two CVCs, each located in a different administrative division. Although this approach provides valuable initial insights, the sample size and geographic coverage are insufficient to capture the vast cultural, economic, and infrastructural diversity found across all eight divisions of Bangladesh. Therefore, the results should not be generalized to represent the entire national population without further, more extensive research.

Finally, practical constraints also impacted the study's depth and breadth. Limitations in funding restricted the ability to employ a larger research team, utilize more advanced data collection tools, or expand the number of study sites. Concurrently, a constrained timeframe limited the duration for patient recruitment and data collection, which may have affected the comprehensiveness of the data gathered. These resource limitations inevitably shape the scale and, to some extent, the findings of the research.

Conclusion:

The CVCs in Bangladesh are serving a predominantly rural, middle-aged population with high satisfaction rates and are successfully fostering a moderate to high level of eye care awareness among their patients. However, significant disparities persist. Awareness is not uniform but is strongly stratified along socio-economic lines, with education, income, occupation, and urban residence being key determinants. A critical challenge remains the widespread lack of foundational knowledge about eye care and the existence of CVCs before a patient's visit. Therefore, the future success of this community-based model depends not only on maintaining high-quality clinical services but also on implementing targeted, multi-channel public health education campaigns designed to reach the most vulnerable and socio-economically disadvantaged groups.

Acknowledgment: We extend our sincere gratitude to the BMU (Bangladesh Medical University) IRB, formerly known as BSMMU (Bangabandhu Sheikh Mujib Medical University) for their ethical approval and to the officers and staff at the Dohar and Parbatipur Community Vision Centers for their cooperation and access. We also thank our colleagues and data collectors for their invaluable support and knowledge. Most importantly, we are deeply indebted to the 165 patients whose voluntary participation made this study possible.

Conflict of Interest: None

Funding: No external agency funded this study.

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