One Health Journal of Nepal

Original Article Open Access

Patterns of Service Utilization of Selected Primary Eye Care Centers in Eastern Nepal: A Mixed Method Exploration

Rajiv Ranjan Karn[1], Sudhir Kumar Thakur[1] , Kumar Prithu[2], Md Rafique[2], Lisasha Poudel[3], Asmita Adhikari[4], Archana Pokhrel[3], Apekshya Bohara[3], Poonam Subedi[4], Pratiksha Paudel[4], Pragya Sharma[4], Vaskar Sapkota[4], Archana Shrestha[3,4]

[1]Lahan Eye & Ear Care System, Biratnagar Eye Hospital, Biratnagar, Nepal

[2]Biratnagar Eye Hospital, Biratnagar, Nepal

[3]Institute for Implementation Science and Health, Bhaktapur, Nepal

[4]Department of Public Health and Community Programs, Kathmandu University School of Medical Science, Dhulikhel,Nepal

ABSTRACT

Introduction: Primary Eye Care Centers (PECCs) have been established with the purpose of delivering easily accessible eye care services within the reach of the community. The objective of this study was to assess the services offered by selected PECCs in Eastern Nepal that are being utilized by the target population.

Methods: A mixed method study was conducted to assess the service utilization of PECCs in eastern Nepal. A total of 163 client exit interviews were conducted to assess client satisfaction towards PECCs and 69 in depth interviews (IDIs) to explore factors influencing performance of PECCs. Frequency and percentage were calculated for quantitative data whereas thematic analysis for qualitative.

Results: Out of 163 participants, 87.1% were satisfied with the overall services of the PECC. General eye and ear treatment services were provided, and most of the community people used the primary eye care services. Major challenges faced by healthcare providers as well as consumers were lack of modern equipment, lack of advanced services, congested space, lack of insurance services, poor transportation facilities, high cost of glasses, preference for private service providers, and lack of coordination with the local municipal government. However, the services have been proven to be affordable and easily accessible to most of the community people which helped in early diagnosis and treatment.

Conclusions: The service utilization at PECCs was optimal. The majority of the participants seemed satisfied with the services, there's a significant amount of prospect for improvement. Physical infrastructure, instruments, and frequent screening camps or outreach programs could be highly beneficial to enhance the effectiveness of these centers.

Keywords: *Community; Perception; Primary Eye Care Center; Satisfaction; Service Utilization.*

INTRODUCTION

Globally, over 2.2 billion people suffer from vision impairment, with 1 billion experiencing moderate to severe impairment or blindness.[1] In Nepal, age-related cataracts cause blindness for 130,000 individuals and low vision for 230,000 people.[2] The utilization of eye care services is influenced by psychological, social, and economic factors, particularly in disadvantaged areas.[3] Access to care depends on availability, accessibility, accommodation, cost, and acceptability.[4] Primary eye care aims to provide basic eye care services to those who need eye care in remote areas depending on the population. The Nepal Netra Jyoti Sangh (NNJS) and

***Correspondence:** rajiv2061@gmail.com
Rajiv Ranjan Karn, Biratnagar Eye Hospital, Lahan Eye & Ear Care System, NNJS. ORCHID: 0000-0001-7802-3497

Nepal Eye Program are the leading Non-governmental Organization (NGO) that coordinate eye-related programs in Nepal, working with hospitals, eye care centers, the government, and NGOs. However, the service utilization of PECCs is not well-studied. Hence, we aimed to assess the extent to which the services offered by selected PECCs in Eastern Nepal are being utilized by the target population.

METHODS

Study design: A mixed method study was conducted.

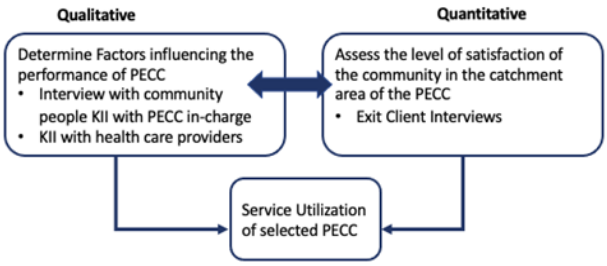

Figure 1: A concurrent mixed method study

Study Setting: Eight Primary Eye Care Centers (PECCs) located at three districts- Morang, Sunsari, and Illam were selected for the study. Study duration was from Dec 2021 to May 2022.

Figure 2: Map of Nepal with selected PECCs

The ethical approval was taken from the Institutional Review Committee (IRC) of Biratnagar Eye Hospital. Informed consent was obtained from the respondents before the interview.

Study population and sample size

Study population included all patients visiting to PECCs, nearby community people and health worker working at PECCs.

For quantitative study, a total of 163 exit clients were interviewed conveniently to assess the level of satisfaction with PECCs services. The sample size was calculated using Cochran's formula with the prevalence of Patients' satisfaction with eye care services attending the Eye Out Patient Department (75.5%)[6], 7% absolute error, 5% level of significance, and 10% non-response rate.[5]

Qualitative study population: A total of 69 In-depth interviews (with 15 health service providers and 54 adult community people) were purposely selected. We recruited those health service providers who had provided its services for at least one year in PECCs, representing both genders and various years of experience. We selected the community people residing near the PECCs within a 15-minute walk, representing both genders at different locations. The 69 interviews were enough to reach the meaningful saturation, based on the research reported previously. [7]

Quantitative data collection and analysis: Face to face interviews were conducted among exit clients using semi-structured questionnaires. Pre-testing of the tool was done with 10% sample size. The questionnaire included general information, PECCs characteristics, and client satisfaction level. The data were entered and exported to SPSS 24.

Qualitative data collection and analysis: Trained qualitative interviewers interviewed the participants in Nepali language, using a pre-tested semi-structured interview guide. For community people, two data collectors visited the household and interviewed an adult member. We used an iterative process by discussing each interview shortly after completion and making suggestions for future interviews, with subsequent interviews probing more deeply into themes emerging in earlier interviews. Data were recorded, transcribed and then translated into english for the reach of a broader audience and underwent a rapid analysis process. Individual transcript summaries were created using an MS Excel template, reviewed, and adjusted based on team input. A matrix in MS Excel organized 69 interview summaries into broad themes and sub-themes, supported by relevant quotes. The analytic team refined these themes, sub-themes, and quotes through in-person meetings. The summaries that were consistent and of good quality were then consolidated.

RESULTS

Results from quantitative analysis

Demographic characteristics of the clients

The majority of the respondents were female (57.7%). The mean age and standard deviation of the respondents was 43.4 ± 19.7 years. One-fifth of participants (22.1%) had no formal education and the majority (34.4%) were involved in agriculture. Janjati was the predominant ethnic group. (Table 1)

Table 1. Demographic Characteristics (n=163)

Characteristics	n(%)
Age (Mean ± SD)	(43.4 ± 19.7)
Gender	
Male	69 (42.3)
Female	94 (57.7)
Ethnicity	
Brahmin/ Chhetri	46 (28.2)
Terai/ Madhesi	34 (20.9)
Dalit	11 (6.7)
Newar	6 (3.7)
Janajati	48 (29.4)
Muslim	11 (6.7)
Other	7 (4.3)
Level of education	
Illiterate	36 (22.1)
Can read and write	28 (17.2)
Primary level	28 (17.2)
Secondary level	37 (22.7)
Higher secondary level	21 (12.9)
Bachelor	10 (6.1)
Post Graduate	3 (1.8)
Occupation	
Agriculture	56 (34.4)
Business	24 (14.7)
Civil service	12 (7.4)
Student	12 (7.4)
Unemployed	7 (4.3)
Daily wage labor	5 (3.1)
Construction related work	3 (1.8)
Home-maker	16 (9.8)
Others	28 (17.2)

The level of satisfaction with health services in the PECCs:

The majority of the respondents came to PECCs with problems like eye aches (29.4%) followed by allergy (22%), blurry vision (20.9%), and others. The source of information about PECCs was family/friends (38.0%). The majority of the respondents visited the respective PECCs more than one time (62.0%). About 5% of the participants found traveling to PECCs and locating the PECCs building difficult. Regarding the cost of eye care (7.4%) said it was expensive. (Table 2)

Table 2. General Perception towards PECCs (n=163)

Eye related problems	n(%)
Source of Information about the PECC	
Family/Friends	62 (38.0)
Near PECCs Residential area	52 (31.9)
Radio/Tv	8 (4.9)
Others	43 (28.2)
Frequency of PECCs visits	
More than one visit	101 (62.0)
First time	62 (38.0)
Ease to travel to PECCs	
Yes	154 (94.5)
No	9 (5.5)
Cost of Eye care	
Average	106 (65.0)
Cheap	45 (27.6)
Expensive	12 (7.4)

About 46% of the participants were very satisfied with the transport convenience to the location of PECCs as well as the ease in identifying the building. About 77.3% were satisfied with the working hours of PECCs while 8.6% were dissatisfied. About 21.4% were dissatisfied with the waiting room facilities. The satisfaction level towards the ophthalmic assistant was quite good in regards to the amount of time spent, information and guidance received, and overall behavior. About 11.0% were very satisfied with the cost of spectacles. About 26% were very satisfied with the quality of PECCs services compared to other providers. About 8.6% of the respondents were dissatisfied with the affordability of PECCs services. More than two-thirds of the respondents (87.1%) were satisfied with the overall services. (Table 3)

Table 3. Assessment of Client Satisfaction (n=163)

Satisfaction	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Not applicable
Transport Convenience to the location of PECCs	75(46.0)	68(41.7)	11(6.7)	5(3.1)	4(2.5)	0(0)
Ease in identifying the PECCs building	84(51.5)	62(38.0)	10(6.1)	4(2.5)	3(1.8)	0(0)
Working hours of the PECCs	52(31.9)	74(45.4)	23(14.1)	12(7.4)	2(1.2)	0(0)
Waiting room facility of the PECCs	29(17.8)	69(42.3)	30(18.4)	24(14.7)	11(6.7)	0(0)
Amount of time spent with Ophthalmic Assistant (OA)	70(42.9)	89(54.6)	3 (1.8)	0(0)	1(0.6)	0(0)
Receiving information and guidance from OA	86(52.8)	70(42.9)	5(3.1)	1(0.6)	1(0.6)	0(0)
Overall behavior of the OA	85(52.1)	74(45.4)	3(1.8)	0 (0)	1(0.6)	0(0)
Importance (value) of the PECCs facility	88(54.0)	67(41.1)	5(3.1)	3(1.8)	0(0)	0(0)
Cost of spectacles	18(11.0)	32(19.6)	16(9.8)	10(6.1)	6(3.7)	81(49.7)
Quality of PECCs services compared to other providers	42(25.8)	79(48.5)	32(19.6)	5(3.1)	1(0.6)	4(2.5)
Spectacles dispensing time as compared to similar ophthalmic/ optometry/optician facility	35(21.5)	32(19.6)	10(6.1)	4(2.5)	0(0)	82(50.3)
Affordability of PECCs services as compared to similar Ophthalmic/ optometry/optician services	61(37.4)	60(36.8)	26(16.0)	9(5.5)	5(3.1)	2(1.2)
Overall services of PECCs	66(40.5)	76(46.6)	16(9.8)	3(1.8)	1(0.6)	0(0)

Results from qualitative analysis

Enabling factors of service utilization

Service Delivery:

Healthcare providers reported the availability of general eye and ear examinations in most primary eye care centers. Surgical camps, school screening programs and some door-to-door camps for persons with disability and elderly people were also conducted. Most community members reported having an eye treatment center in their community, and the majority received eye care services from their respective centers.

"There was a school-based camp conducted once, I don't know who organized it but they were here for eye check-ups and I also received the service"- ***Community Letang-5, Agriculture, primary level, 51 years, F***

"We implement a number of outreach initiatives, including door-to-door campaigns in various villages. These efforts are designed to reach individuals who face obstacles in accessing services at the organization's facility, particularly those residing in remote or challenging geographic areas."-***Fikkal HCP-2, Optical Helper, M***

Case Management and Treatment:

Healthcare professionals reported conducting a comprehensive medical history review prior to conducting examinations offering counseling to patients and providing the best available treatment options. However, complex cases were referred to hospitals while providing follow-up services to the referred patients to the best of their ability.

"After data entry in the reception and initial examination, we get the idea of whether we can handle the case or not... if we can provide the available treatment...if not then we refer such cases to Biratnagar Eye Hospital. As far as possible, we try to provide follow-up services to those referred cases." - ***Mangalbare HCP-1, PECC in charge, M***

Good governance:

Healthcare professionals reported that they are supervised and monitored regularly by concerned authorities to update about all aspects of service provision. Proper recording and reporting systems were in place in most of the PECCs, with data management. Systematic financing was in place with funds managed by Biratnagar Eye Hospital.

"Recording is done manually, we record all the data about cases, their age-sex distribution, medicine distribution, glasses sales. Reporting is done by Incharge daily and monthly to Biratnagar."-***Illam HCP-1, Optical helper, M***

"Authorities from Nepal Netra Jyoti Sangh and Biratnagar Eye Hospital visit us for supervision at times, they inquire about how things are in the center"-***Urlabari HCP-2, Optical technician, M***

B. Barriers in service delivery and utilization

Lack of Human resources

Healthcare providers noted that an increase in patient flow necessitated the hiring of additional personnel for field work and data management. They reported inadequate training since the onset of COVID-19 and expressed its need. Community members echoed these concerns, citing understaffing and poor management of patient flow and services, long wait times.

"As years pass by, a lot of new technologies are introduced, we have evolved a lot in technology…accordingly if we could get training, although the hospital does it usually they have not been able to do it since COVID…if the hospital could gradually upgrade and provide training accordingly, we could deliver services more confidently"-***Fikkal HCP-2, Optical helper, M***

Poor Infrastructure and Equipment:

Healthcare providers highlighted the importance and need of advanced equipment such as Noncontact tonometer, Auto refractometer, Autoclaves, and Digital Lensometer to enhance the quality of services offered. Community members also advocated for improvement of physical infrastructure, including building renovations, service area expansions, and dedicated facilities for eye centers.

"There is a single room only for the services and the modern equipment is not available here"-***Community Inarwa-1, Business, plus two, 45 years, M***

Long Distance

According to healthcare providers, individuals, particularly the elderly and people with disability, face transportation difficulties in accessing ECC services mainly from remote areas.

"It's a bit challenging for people of rural areas to get our services due to limited transportation facility"- ***Fikkal HCP-1, PECC in charge, M***

Incorporation of insurance services

Community people stressed the need for health facilities to incorporate insurance schemes in the eye care centers as well.

"The main thing is an insurance scheme, if it is incorporated in the services of eye care center, it would be better, especially for elderly people who can't go far for services"-***Community Letang-2, Business, secondary, 56years, M***

Inadequate promotion and advertisement

A considerable number of health care providers noted the inadequate activities of promotions, such as public announcement about health camps, and school health programs, to disseminate information about eye care facilities. The majority of community people remained unaware of any programs or initiatives organized by eye centers.

"Publicity should be done through miking about the services, call for treatment of eye problem and to give information about the health camps"-***Community Illam-2, business, illiterate, 74 years, M***

DISCUSSION

This study shows that most clients are satisfied with PECCs services, although there is room for improvement highlighting the need to improve physical infrastructure, upgrade instruments, and organize more frequent screening camps to enhance the effectiveness of these centers.

In our study, more than two-thirds of the respondents (87.1%) were satisfied with the overall services of these PECCs. A study conducted to assess patient satisfaction levels towards eye services at a tertiary care hospital in western Nepal showed a high 98% level of satisfaction.[8] Studies on patient satisfaction with eye care treatments in India,[9] Ghana,[10] and Uganda[11] revealed an overall satisfaction of 78%, 90%, and 79%, respectively. The disparity in satisfaction levels may be due to a variety of factors such as types of health facilities and services delivered, variances in the study population, sociocultural differences, and variations in people's awareness levels.

A nationwide assessment of eye care service utilization in primary health care facilities and health posts indicated no meaningful availabiltity of eye care treatments available in PHC and HP. The VISION 2020 program's mid-term evaluation in 2011 indicated that eye care services were not linked with primary health care, nor was the mode of collaboration with NGOs and the commercial sector adequately defined.[12] This demonstrates that primary health care is deficient in terms of delivering eye services to the general public, whereas primary eye care centers in this study have good accessibility to providing eye care services.

Previous studies noted the lack of essential equipment in Nepal's primary healthcare centers.[13,14] Some providers and community people mentioned the desire for modern instruments in PECCs. According to PECC guidelines,

full-time Ophthalmic Assistants or Optometrist should provide basic eye care and referrals, with most providers indicating sufficient skilled human resources. However, some highlighted the need for additional field workers and computer operators for data entry. Challenges mentioned included difficulties managing patient flow and services during high demand, as reported by both providers and community members.

Challenges in transportation affecting eye service utilization were found among African Americans[15], and in hospital in India[16]. A hospital based study in western Nepal showed long distance and associated increased cost were barriers of seeking eye care treatment in hilly districts[8]. Our study also revealed distance and poor road condition as barriers for people with special needs and those from remote area. These findings align with previous research in Low and Middle-Income Countries (LMICs) regarding obstacles to healthcare service utilization.[14,17,18] Health service providers suggested prompting many PECCs to establish outreach clinics and conduct eye camps in rural areas. Similar initiatives in Nigeria[19] have addressed distance barriers in rural eye care. Nepal's eye care system includes static eye care posts and "eye camps" to reach remote regions due to geographical factors.[20] Participants emphasized the importance of community and school eye camps, especially for the underprivileged, with effective advertising. Outreach clinics, preferred over outpatient clinics, have high customer satisfaction.[21,22]

Both practitioners and community members mentioned the importance of implementing an insurance policy in eye care centers for accessible and affordable services, aligning with research by Jennifer Ebeigbe et al.[23] suggesting the operationalization of the National Health Insurance Scheme at the community level.

Community interviews revealed awareness of local eye treatment centers, with some preferring hospitals. Knowledge about community-level eye camps was present, obtained through public announcement, pamphlets, signboards, friends/family, or health authorities. People mostly sought eye center services when experiencing eye or ear problems. Similar patterns were found in Ethiopian research[24] focusing on elderly individuals, indicating higher service utilization among those with a history of eye issues. South Korean[25] and Pakistani[26] studies also reported comparable findings. Community members identified accessibility, cost-effectiveness, and positive behavior of healthcare professionals as key facilitators for utilizing eye services. The study emphasized that the intensity of seeking eye health treatments is influenced by the difficulties faced in accessing them, which varies based on individual characteristics, location, and the nature of problem.[19] The identified barriers to accessing eye health services included congested space, crowding, long waiting times, lack of required equipment, unavailability of advanced services, lack of insurance coverage, limited staffs and healthcare workers, and high costs of spectacles. A study in Mozambique[27] echoed these findings, with crowding identified as the primary barrier, followed by financial difficulties, self-medication, traditional treatments, and purchasing eyeglasses on the street.

This study is the first mixed-method research of its kind in our setting, providing valuable insights into the utilization of PECCs services and the factors influencing its performance. By incorporating diverse perspectives from both community members and healthcare providers, we were able to gather comprehensive data. However, there are some limitations too. Firstly, the use of self-reported methods for needs assessment and eye care utilization might be a drawback of this study. Secondly, in qualitative interviews, participant characteristics have not been explored and their potential impact on service utilization has not been analyzed.

CONCLUSIONS

Most clients are satisfied with PECCs services, although there is room for improvement. The improvement of physical infrastructure, instruments, and frequent screening camps or outreach programs could be highly beneficial to enhance the effectiveness of these centers.

Acknowledgment:

Our sincere thanks goes to the Institute of Implementation Science and Research team and 2nd batch of Kathmandu University MSc. Public Health students for their support in data collection. We are also grateful for the community people and health workers who have given their time for the study.

CONFLICT OF INTEREST

None

FUNDING

This study was funded with the authors' own contributions.

REFERENCES

1. World Health Organization; Blindness and vision impairment: WHO Factsheet. World Heal Organ [Internet]. 2021;11(2018). Available from: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment
2. Nepal Netra Jyoti Sangh. National Society for Comprehensive Eye Care Annual Report.
3. Ntsoane MD, Oduntan OA. A review of factors influencing the utilization of eye care services. African Vis Eye Heal. 2010;69(4).
4. Penchansky R, Thomas JW. The concept of access: Definition and relationship to consumer satisfaction. Med Care. 1981;19(2).
5. Onyeka AC, Izunobi CH, Iwueze IS. Estimation of Population Ratio in Post-Stratified Sampling Using Variable Transformation. Open

J Stat. 2015;05(01).

6. Rizyal A. Patients' satisfaction with eye care services at Nepal Medical College. Nepal Med Coll J. 2012;14(3):172–5.
7. Kovai V, Rao G, Holden B, Sannapaneni K, Bhattacharya S, Khanna R. Comparison of patient satisfaction with services of vision centers in rural areas of Andhra Pradesh, India. Indian J Ophthalmol. 2010;58(5).
8. Thapa SK, Thapa H, Upadhyay HP. Patient satisfaction towards eye care services at tertiary eye hospital in western Nepal. 2021;11(December).
9. Khandekar R, Devi S, Sachan R, Sudhan A, Deveragonda S, Jain B, et al. Patient satisfaction regarding eye care services at tertiary hospital of central India. Oman J Ophthalmol. 2011;4(2).
10. Baba I. Experiences in quality assurance at Bawku Hospital Eye Department, Ghana. Community eye Heal. 2004;17(50).
11. Whitworth J, Pickering H, Mulwanyi F, Ruberantwari A, Dolin P, Johnson G. Determinants of attendance and patient satisfaction at eye clinics in south-western Uganda. Health Policy Plan. 1999;14(1).
12. Gurung R, Oli RU. Primary eye care in Nepal: current situation and recommendations for integration. Community Eye Heal J. 2021;34(113).
13. Burn H, Puri L, Roshan A, Singh SK, Burton MJ. Primary Eye Care in Eastern Nepal. Ophthalmic Epidemiol. 2020;27(3).
14. Gnyawali S, Bhattarai D, Upadhyay MP. Utilization of primary eye health services by people from a rural community of Nepal. Nepal J Ophthalmol. 2012;4(1).
15. Owsley C, McGwin G, Scilley K, Girkin CA, Phillips JM, Searcey K. Perceived barriers to care and attitudes about vision and eye care: Focus groups with older African Americans and eye care providers. Investig Ophthalmol Vis Sci. 2006;47(7).
16. Dhaliwal U, Gupta S. Barriers to the uptake of cataract surgery in patients presenting to a hospital. Indian J Ophthalmol. 2007;55(2).
17. Ngugi AK, Agoi F, Mahoney MR, Lakhani A, Mang'ong'o D, Nderitu E, et al. Utilization of health services in a resource-limited rural area in Kenya: prevalence and associated household-level factors. Ann Glob Heal. 2016;82(3).
18. Olusanya BA, Ashaye AO, Owoaje ET, Baiyeroju AM, Ajayi BG. Determinants of utilization of eye care services in a rural adult population of a developing country. Middle East Afr J Ophthalmol. 2016;23(1):96–103.
19. Okoye R. S, Bell L, Papadopoulos I. Barriers to Accessing Good Eye Care Services in Nigeria: A Focus on Anambra State. J Niger Optom Assoc [Internet]. 2018;20(1). Available from: https://www.ajol.info/index.php/jnoa/article/view/166282
20. Nowak R, Grzybowski A. Outcome of an outreach microsurgical project in rural Nepal. Saudi J Ophthalmol. 2013;27(1).
21. Bowling A, Stramer K, Dickinson E, Windsor J, Bond M. Evaluation of specialists' outreach clinics in general practice in England: Process and acceptability to patients, specialists, and general practitioners. J Epidemiol Community Health. 1997;51(1).
22. Bhat N, Singh A, Asawa K, Tak M, Kahlon H, Gambhir R, et al. Assessment of satisfaction levels of patients during dental outreach programs in rural part of Udaipur, India. Niger Postgrad Med J. 2016;23(4).
23. Ebeigbe JA, Ovenseri-Ogbomo GO. Barriers to utilization of eye care services in rural communities in Edo State, Nigeria. Borno Med J. 2014;11(2).
24. Morka ED, Yibekal BT, Tegegne MM. Eye care service utilization and associated factors among older adults in Hawassa city, South Ethiopia. PLoS One. 2020;15(4).
25. Park YS, Heo H, Ye BJ, Suh YW, Kim SH, Park SH, et al. Prevalence and Factors Associated with the Use of Eye Care Services in South Korea: Korea National Health and Nutrition Examination Survey 2010-2012. Korean J Ophthalmol. 2017;31(1).
26. Ahmad K, Zwi AB, Tarantola DJM, Azam SI. Eye care service use and its determinants in marginalized communities in Pakistan: The karachi marine fishing communities eye and general health survey. Ophthalmic Epidemiol. 2015;22(6).