ORIGINAL RESEARCH PAPER

Volume-7 | Issue-5 | May-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A CROSS SECTIONAL STUDY OF VISUAL IMPAIRMENT AMONG THE FISHERMEN OF NORTH CHENNAI

Community Medicine

Gopal Muthukrishnan Asst. Professor, Dept of Community Medicine, Kanyakumari Govt. Medical College

Christa Kingston* Asst. Professor, Dept of Community Medicine, Kanyakumari Govt. Medical College *Corresponding Author

SureshBalan Kumarasamy Pillai Uma Assoc. Professor, Dept of Community Medicine, Kanyakumari Govt. Medical College

ABSTRACT

Introduction: The fishermen communities are a marginalised group involved in a hazardous occupation susceptible to visual impairment due to the excess ultraviolet radiation from both direct and reflected sunlight. The study aims to estimate the prevalence of visual impairment and its associated risk factors in fishermen.

Materials and methods: Community-based, cross sectional study was conducted among 519 fishermen of North Chennai, exclusively involved in offshore fishing. A pretested questionnaire and Snellen chart was used to obtain response. The data was entered in MS excel. The prevalence of visual impairment with 95% CI and Chi square test for association was calculated.

Results: The mean (SD) age was 44 (10) years. Seventy nine percent belong to poor socioeconomic status. The prevalence of visual impairment was 20.8% (95%CI, 20-21.6%). The participants age, illiteracy, mechanised boat, duration of sunlight exposure, normal BMI showed significant association with visual impairment ($p<0.05$).

Conclusion: The prevalence of visual impairment in fishermen of North Chennai was relatively high. There is a need for period eye screening and Behaviour change communication.

KEYWORDS

Offshore, fishermen, visual impairment.

INTRODUCTION

Fishing is a hazardous occupation. The fishermen communities are one of the marginalised group worldwide.[1]The nature of work itself makes the fishermen prone for various health hazards. The fishermen population are susceptible to visual impairment due to the nature of job, excess ultraviolet radiation due to constant exposure to direct and reflected sunlight and the lack of self care.[2]According to census 2011, out of the 14.9 million males with disability, nearly 18% was due to visual impairment.[3]A large number people in the fishing occupation are exposed to risk factors, which generally go unnoticed. The current study was undertaken with the intention to identify the following objectives: a) to estimate the prevalence of visual impairment in fishermen of North Chennai, b) to estimate the prevalence of associated risk factors among the study population.

MATERIALS AND METHODS

A community based cross-sectional study was conducted among fishermen of North Chennai coastal area who did offshore fishing between April and June 2014. The offshore fishermen were at the highest risk for hazards. The inclusion criteria were all fishermen who were involved in offshore fishing and gave consent for the study. The exclusion criteria were all fishermen who were sick and not available during the time of study. The sample size was calculated based on a study done by Marmamula et al.

on Andhra Pradesh fishermen, which showed a visual impairment prevalence of 30%. [4]A total of 519 fishermen in all were selected from the sixteen fishing village using the multistage cluster sampling technique. After obtaining prior institutional ethics committee approval, permission from the President, Chennai District Fishermen Cooperative Federation and informed consent of the participants, an interviewer administered pretested semi-structured questionnaire that included identification data, socio-demographic profile and details of fishing activities was administered. The visual acuity of the participant was tested using the Snellen Chart. At a distance of 6 meter and with good natural light, the participants were asked to read the number in the chart and the visual acuity was expressed in fraction. Visual impairment was defined as visual acuity <6/18 in either eye.

The anthropometry and the blood pressure measurements of the participants were also taken. Data entry was made in excel sheet and analysis was done with SPSS 16 trial version. The prevalence of visual impairment with 95% confidence intervals was calculated. The statistical tool used in the study was Chi square test and Logistic Regression analysis. A $p<0.05$ was considered as statistically significant.

RESULTS

The present study was conducted among 519 fishermen belonging to the coastal areas of Chennai, which represented 1.65% of the total fishermen population of the entire Chennai coastal district.The majority of the participants belonged to middle age with a mean (SD) of 44 (10) years. The majority (92.48%) were married. Nearly one third (30.83%) of the study population had no formal education and were living in rented houses. According to modified Kuppuswamy's socioeconomic status scale, 79% of the population belonged to upper lower socioeconomic status. Unfortunately 78.60% of the fishermen had no social security cover of their own. Ten percent of the total participants used their own boat. About 77% of the total fishermen used mechanised boat for fishing.

About 40 per cent of the participants made daily fishing trips to sea and the rest of the population stayed in sea ranging between 2 to 15 days per fishing trip. Only 11.60% of the population used any form of Personal Protective Equipments against sunlight exposure. About thirty four percent (34.30%) and 71.68 percent of the study sample were smokers and alcoholic respectively, with nearly 60% of them had the habit for more than 10 years. Daily consumption of fruits and vegetables was seen only in one third of populations. Nearly 14 % and 5% of the study subjects never consumed fruits and vegetables respectively.

The prevalence of visual impairment in either eye was 20.8%(95%CI,20-21.6). Ten per cent of the population were aware of their hypertension. About 16 per cent (15.99%) and 38.73 per cent of the individuals were overweight and obese respectively. Bivariate analysis showed a statistically significant association of age with visual impairment. About fifty percent (50.75%) of the sample population above the age of 55 years had visual impairment. The participants with no formal education and belonging to poor socioeconomic class had significant association with visual impairment ($p<0.05$). A significant association was found between type of boat and visual impairment. The unmechanised boat users had higher prevalence of visual impairment (30.55%) in comparison to mechanised boat users (18.11%), which was statistically significant.

The duration of sunlight exposure (≥4 hrs) on the participants had a significant association with visual impairment (Table 3). The study did not find any significant association of food intake, smoking, alcohol consumption, high blood pressure with visual impairment in the participants.

The sample population with normal BMI showed significantly higher (27.23%) association with visual impairment compared to overweight. Logisitic regression analysis showed that every unit increase in age in middle aged individual, there was 2.1 log odds increase in acquiring visual loss and every unit increase in age in old aged individual, there was 3.4 log odds increase in acquiring visual loss.

DISCUSSION

The present study was a community based study conducted to estimate the prevalence of visual impairment and the distribution of associated risk factors in fishermen. The study showed that the majority (79%) of the participant belonged to upper lower socioeconomic class which was similar to the study done by Palivela et al. 2011 in the coastal region of Visakhapatnam, Andhra Pradesh.[5] Amutha et al. 2012 in the study on the socioeconomic development of the fishermen of Tuticorin pointed out that there was a dramatic reduction of traditional fishing (artisanal) from 37% in 2010 to 8% in 2012.[6] The findings were consistent with the present study.

The total prevalence of currently smoking tobacco in the population was found to be 34.30% which was nearly fifty percent lesser than the study done by Amit Bhondve et al. 2011 in Mumbai fishermen group. The prevalence of alcohol consumption in the present study was 71.68%, which was nearly the same as the study done by AmitBhondve et al. 2011 which had found the prevalence to be 63.4%.[7]The prevalence of overweight and obesity in the fishermen population in the current study was 15.99% and 38.73% respectively which was less than the findings in the study by Pougnet et al. 2013 that reported a prevalence of 60.9%.[8]

Visual impairment is a global public health issue. The overall prevalence of visual impairment was 20.8 %(95%CI, 20-21.6). which was found to be less than the study done by **Srinivas Marmamula** et al. 2011 which showed the prevalence of visual impairment in South Indian fishing community to be 30% (95% CI, 27.6-32.2).[4] The prevalence of visual impairment in old age was 50.75% in this study which was higher than the finding in the study done by Patil et al. 2014 in the Konkan coast of India among subjects aged more than 50 years that showed a prevalence of 33.8% (30.5%-36.8%).[9]The present study showed a significantly higher prevalence of visual impairment among illiterate (31.87%) which was similar to a study done by Gurung et al.[10] on general population of Nepal that showed illiteracy to be significantly associated with visual loss.

This study also showed that fishermen who used mechanised boats had more prevalence of visual impairment. There was also significant association of duration of fishing trips and presence of visual impairment. The duration of sun exposure of more than 4 hours had increased prevalence of visual loss in study population which was found to be statistically significant. This was consistent with the study done by Burke et al.[11]who reported that the risk of skin and eye damage was very high due to sun exposure which was significantly higher at sea than on land because of the unhindered reflection of sunlight.

Wilson GA et al. found that smoking is a major cause of untreatable visual impairment.[12]In the present study the association of smoking with visual loss was not found to be significant. Participants belonging to lower socioeconomic status had more chance of having visual problem probably due to their hazardous nature of fishing, nutrition deficiency and lack of early screening initiative.

SUMMARY

The prevalence of visual impairment in fishermen of Chennai district was relatively high. The hazardous nature of job, poor socioeconomic status, use of mechanised boat, prolonged exposure to sunlight are associated with visual impairment in this study. There is a need for periodic vision screening of study population and to create health awareness and behaviour change in the participants.

Table 1 Sociodemographic details of the study population

Parameters	Frequency	Percentage
Age in years		
18-35	124	23.89
36-55	328	63.21
>55	67	12.90
Education		
Illiterate	160	30.83
Literate	359	69.17
Marital status		
Married	480	92.48
Unmarried	39	7.52
Socioeconomic status		
Upper middle	16	3.08
Lower middle	93	17.92
Upper lower	410	79.00
Social security		
Yes	111	21.40
No	408	78.60
Owning house		
Yes	317	61.10
No	202	38.90
Boat ownership		
Own	49	9.44
Others	470	90.56

Table 2 Mean values of physical parameters measured in the study population (N=519)

Physical parameters	Mean	95% CI
Weight (kg)	65.87	64.75-66.99
Height (cm)	165.56	165-166.12
Waist circumference(cm)	87.54	86.48-88.60
Systolic blood pressure(mmHg)	127.40	125.52-129.28
Diastolic blood pressure(mmHg)	84.26	83.04-85.48
BMI	24.00	23.62-24.38

Table 3 Association of Prevalence of Visual Impairment with Sociodemographic parameters and Occupational Risks (N=519)

Duration of sun exposure	Yes	No	Total	*X*2	P value	Inference
≤4hrs	48	133	181	5.49	0.02	significant
>4hrs	60	278	338			
PPE from sun exposure				3.48	0.06	Not significant
Yes	18	42	60			
No	90	369	459			
Years of fishing				29.88	0.00	Significant
1-10	6	74	80			
11-20	19	141	160			
>20	83	196	279			
Type of boat				8.09	0.02	Significant
Unmechanised	33	75	108			
Mechanised	73	330	403			
Both	2	6	8			
Age (yrs)				56.88#	0.00	Significant
18-35	4	120	124			
36-55	70	258	328			
>55	34	33	67			
Education				17.19	0.00	Significant
Illiterate	51	109	160			
Literate	57	302	359			
Socioeconomic				10.34#	0.00	Significant
Upper middle	0	16	16			
Lower middle	10	83	93			
Upper lower	98	312	410			
BMI				10.76	0.00	Significant
Normal	64	171	235			
Overweight	13	70	83			
Obesity	31	170	201			

Hypertension				0.09	0.77	Not significant
Present	49	193	242			
Absent	59	218	277			

 # fischer exact test

REFERENCES

1. 2nd AnnualSurgical Meeting2016 S-81 SHORT REPORT A systematic review of epidemiological literature on the eye health of marginalized fishing populations Khabir Ahmad, 1,2 Anthony B. Zwi, 1 Daniel J. M. Tarantola, 3 Bal Chand2
2. Mahajan B, Gupta M. Textbook of preventive and social medicine. 1sted. New Delhi, India: Jaypee Bros.;1992.
3. Census of India 2011.Data on disability; Office of the Registrar General and Census Commissioner, India New Delhi, Dec 2013.
4. Marmamula S, Narsaiah S, Shekhar K, Khanna R, Rao G. Visual Impairment in the South Indian State of Andhra Pradesh: Andhra Pradesh-Rapid Assessment of Visual Impairment (AP-RAVI) Project. PloS one. 2013;8(7):70120.
5. HepsibahPalivela, GavarasanaSatyanarayana, Jaya Jawahar P, NeeharikaMS. Socio-economic status of fishermen of Lawsons bay, Visakhapatnam, India: Ecology, Environment and Conservation Paper 2011; 17(4); pg 811- 814
6. Amutha, D, Rathi, D. Socio Economic Study Of Vellapatti Village InTuticorin District: Indian Streams Research Journal 2012; 2(9): SS p1
7. Bhondve A, Mahajan H, Sharma B, Kasbe A. Assessment of Addictions among Fishermen in Southern-East Costal Area of Mumbai, India.
8. Pougnet R, Pougnet L, Loddé BL, Canals-Pol ML, Jegaden D, Lucas D. Cardiovascular risk factors in seamen and fishermen: Int Marit Health. 2013;64(3):107-13
9. Patil S, Gogate P, Vora S, Ainapure S, Hingane RN, Kulkarni AN, Shammanna B R. Prevalence, causes of blindness, visual impairment and cataract surgical services in Sindhudurg district on the western coastal strip of India. Indian J Ophthalmol 2014;62:240-5
10. Gurung KB, Pandey S, Shrestha MK, Gurung R and Ruit S. Prevalence Study of Visual Impairment and Blindness in Population of Mountainous Areas of Nepal. J Community Med Health Care. 2017; 2(3): 1015
11. Burke W, Griffith D, Scott C, Howell E. Skin problems related to the occupation of commercial fishing in North Carolina. NC Med J. 2006;67(4):260--5.
12. Wilson GA et al. Smoke gets in your eyes: smoking and visual impairment in New Zealand. N Z Med J 2001 Oct 26;114(1142):471-4