Musculoskeletal symptoms, skin disorders and visual impairment among fishermen in the Divisional Secretariat Division of Kalpitiya

S R A P Harshani[1], H T C S Abeysena[2]

(Index words: blindness, fishermen, musculoskeletal disorders, skin disorders, vision)

Abstract

Introduction To describe musculoskeletal symptoms, skin disorders and visual impairment among fishermen in the Divisional Secretariat Division of Kalpitiya.

Methods This was a community based descriptive cross sectional study conducted from August to October 2011. The sample consisted of 465 fishermen with ≥ 6 months experience in fishing selected using the cluster sampling technique. An interviewer administered questionnaire and a record sheet were used for data collection. Prevalence of the above conditions with 95% confidence Intervals (CI) were calculated. Chi square test was applied for the investigation of the factors associated with the above conditions.

Results The prevalence of musculoskeletal symptoms was 61% (95% CI: 56.6%-65.4%). The commonest symptom was back pain (37.6%). The prevalence of skin disorders was 24% (95% CI: 20.1-27.8) and visual symptoms were 38.9% (95% CI: 34.5%-43.3%). The prevalence of visual impairment of either eye was 24.3% (95% CI: 20.3%-28.3%) low vision of either eye 22.4% (95% CI: 18.6%-26.2%) and blindness of either eye was 1.9% (95% CI: 1.1-2.7). The prevalence of visual impairment of better eye was 16% (95% CI: 12.7-19.3), low vision of better eye 15% (95% CI: 12-18.3) and blindness of better eye were 0.9% (95% CI: 0.05-1.75). The prevalence of musculoskeletal symptoms, skin disorders or visual impairment did not vary according to service duration in the fishing industry, number of days spent in the boat for a trip or type of boat.

[1]*Postgraduate Institute of Medicine, University of Colombo and* [2]*Faculty of Medicine, University of Kelaniya, Sri Lanka.*
Correspondence: HTCSA, *e-mail: <chrishantha-abeysena@kln.ac.lk>. Received 2 March and revised version accepted 25 July 2015.*

Conclusions Prevalence of musculoskeletal and skin disorders and visual impairment were relatively higher among the fishermen.

Introduction

Fishing is one of the major traditional occupations worldwide. Fishing community is unique as they spend their life both in the sea and land. They have their own way of life and cultural values. It is an occupation which pass from generation to generation. No special occupational qualifications or medical examination is necessary to engage in this profession. Accidents and illnesses in the fishing industry are costly. Fishermen have to bear pain and loss of income without any compensation and sometimes even loose their lives during the course of work.

One study reported that standardized incidence ratio for musculoskeletal disorders among fishermen and seamen was significantly higher compared to Danish workforce as a reference population [1]. Another study from USA reported that musculoskeletal symptoms causing work interference in the last 12 months were 38.5% among fishermen and low back symptoms were the most common cause of work impairment [2]. The main reasons for musculoskeletal symptoms may be the prolonged working hours and lifting heavy weights in incorrect postures. Though the fishing methods have advanced with modern technology, improved facilities in the vessel, motorization and computer technology, musculoskeletal problems are still high among fishermen.

One study reported that the prevalence of the skin diseases including carcinoma was higher among fishermen in North Carolina [3]. Another study compared skin diseases among the fishermen with the out-patient clinic attendees and found a significantly higher percentage among the former population [4]. A study conducted in India found that the prevalence of visual impairment was 30% and blindness was 7.1% among the fishing community [5]. Another study in India reported that the prevalence of visual impairment was 54.5%, low vision was 24.6% and blindness was 7.4% [6]. The visual defects were nearly five times higher in fishermen than those engaged in non-fishing occupations [6].

In Sri Lanka, the fisheries sector plays a significant role in the economy of the country, contributing to 1.8% of the gross domestic product and 2.5% of the total export earnings. This sector provides direct employment to around 2.6 million people [7]. Despite the dangerous nature of fishing, very few studies has been conducted on health of fishermen around the world. There are many differences among fishermen in different countries and within the same country [8]. There are no published data on health problems of fishermen in Sri Lanka. Therefore the objective of this study was to describe musculoskeletal symptoms, skin disorders and visual impairment among fishermen in the Divisional Secretariat Division of Kalpitiya.

Methods

This was a community-based, descriptive, cross sectional study conducted in the Divisional Secretariat Division of Kalpitiya in Puttalam District from August to October 2011. The study population consisted of 465 fishermen with more than 6 months experience in fishing. An exclusion criterion was fishermen who were living in fishing villages with less than 100 fishing households.

Sample size was calculated assuming a prevalence of visual impairment among fishermen of 50%, precision 5% at significance level of 5%. The design effect of 1.2 was considered as the differences of fishermen between fishing villages. The sample size was 465. Participants were selected using cluster sampling. Fishing villages in the Division with more than 100 fishing householders were taken as clusters and five clusters were selected by simple random sampling. From each cluster 93 eligible fishermen were selected. If there were more than one eligible fisherman in the same household, the most experienced fisherman was selected for the study. If the selected fisherman was not available, the data collection team visited the household following day. A pre-tested interviewer administered questionnaire was administered and a record sheet was used for recording visual acuity. The questionnaire consisted of simple, closed ended questions. Content validity of the questionnaire was assessed. Questionnaire was prepared in English and translated into Sinhala and Tamil by two translators. Retranslation of these two versions again into English was done by another two translators to assess the accuracy of translation. The necessary alterations were made in the Sinhala and Tamil versions accordingly. Two interviewers were trained in data collection at household level. The principal investigator assessed the visual acuity.

Visual acuity was assessed using Snellen's chart. Visual impairment was defined as visual acuity <6/18 in either eye low vision as visual acuity of 6/24 to 3/60 in either eye and blindness of either eye as visual acuity < 3/60 in either eye. Visual impairment, low vision and blindness of the better eye were defined according to WHO guidelines [9]. Visual impairment was defined as visual acuity of < 6/ 18 in the better eye. Low vision was defined as visual acuity of 6/24 to 3/60 in the better eye and blindness was defined as visual acuity less than 3/60 in the better eye. Short sightedness was defined as difficulty in seeing long distance and long sightedness as difficulty in seeing near objects. Irritable symptoms of eyes included itching, discharges and redness of the eyes. Musculoskeletal symptoms included pain >3 days per week with duration of >2 weeks in knee joint or shoulder joint or wrist joint or back. Skin disorders were defined as presence of dermatitis (skin rashes with itching, redness, oozing

and swelling) or callosities (raised thickened skin over an area of prick injury) or infection (wound with or without a discharge).

Prevalence of musculoskeletal symptoms, skin disorders and visual impairment was calculated with 95% confidence interval (CI). Chi square test was used for categorised variables. Multiple logistic regression was used where necessary and results were expressed with odds ratio (OR) and 95% CI. Approval was obtained from the Ethics Review Committee of the Faculty of Medicine, University of Colombo. Informed written consent was obtained from the participants. Those who needed treatment were referred to the relevant clinics.

Results

A total of 465 fishermen, all males, participated and the response rate was 100%. A majority (n= 371, 80%) had >10 years duration of service as a fisherman. Most of them (n=245, 52.2%) worked on single day motor boats and a few (n=25, 5.4%) in multi day boats. The mean age of the study participants was 38.2 (SD 19) years. One hundred and forty (30%) were in the age group of 25 to 35 years. Two hundred and seventy two (88%) were educated above grade 6. Two hundred and eighty six (62%) were Sinhalese, 372 (80%) were Catholics and 379 (85.4%) were married. Monthly income was less than SLR 10,000 (US $ 800) per month in 221 (47.5%) participants.

The prevalence of musculoskeletal symptoms was 61% (Table1). The most common type of musculoskeletal symptom was back pain (37.6%) followed by knee joint pain (12.3%), shoulder joint pain (7.7%) and wrist joint pain (3.4%). Prevalence of the skin disorders was 24% (Table1). Common type of skin disorders were dermatitis (10.3%), callosities (7%) and infections (6.5%). Skin disorders were commoner in legs (13%) followed by arms (7%). Prevalence of visual symptoms was 39% (Table 1) and 27% were short sighted, 10% were long sighted and 0.2% had tearing and itching of eyes. The prevalence of visual impairment of either eye was 24.5% low vision of either eye 22.4% and blindness of either eye were 1.9%. The prevalence of visual impairment of better eye was 16%, low vision of better eye 15% and blindness of better eye was 0.9%.

The prevalence of musculoskeletal symptoms or skin disorders was not significantly different in those aged ≤ 35 vs >35 years. Time spent in the boat for a trip, single day (≤ 1day or more) vs other type of the boat and duration of service (≤10 years or more). Bivariate analysis showed a statistically significant association between visual impairment of either eye and age and duration of service (Table 2). Multiple logistic regression showed that age >35 years had statistically significant association with visual impairment of either eye (Table 3).

Table 1. Prevalence of musculoskeletal symptoms, skin disorders and visual defects

	Prevalence	95% CI
Musculoskeletal symptoms	61%	56.6 - 65.4
Skin disorders	24	20.1 - 27.9
Visual symptoms	39%	34.5 - 43.3
Visual impairment of either eye	24.3%	20.3 - 28.3
Low vision of either eye	22.4%	18.6 - 26.2
Blindness of either eye	1.9%	1.1 - 2.7
Visual impairment of better eye	16%	12.7 - 19.3
Low vision of better eye	15%	11.9 - 18.3
Blindness of better eye	0.9%	0.05 - 1.8

Table 2. Factors associated with visual impairment of either eye

		Presence of visual impairment of either eye			
		Number	%	χ^2	p value
Age (years)	≤ 35 (n=225)	31	13.8		
	>35 (n=240)	82	34.2	26.2	<0.001
Duration of boat trip	≤ 1 day (n=438)	103	23.5		
	> 1 day (n=27)	10	37	2.5	0.11
Type of boat					
Single day motor boat	(n=245)	56	22.8		
Other boats	(n=220)	57	26	0.59	0.44
Service duration					
≤ 10 years	(n=94)	15	16		
> 10 years	(n=371)	98	26.4	4.5	0.03

Table 3. Factors associated with visual impairment of either eye

Variable	β coefficient	SE	OR	95% CI	p value
Age > 35 years	1.15	0.25	3.2	1.9 - 5.2	< 0.001
Duration of service >10 years	0.14	0.33	1.15	0.6 - 2.2	0.67
Number of days spent in the boat for a trip	0.75	0.43	2.1	0.9 - 4.9	0.08

Discussion

The prevalence of musculoskeletal symptoms among fisherman was 61% and back pain was the commonest symptom (45.5%). Prevalence of skin disorders was 24% and a majority of fishermen had dermatitis 10.3% followed by callosities (7.1%) and infections (6.5%). Prevalence of visual symptoms was 39% and according to the WHO definition the prevalence of visual impairment was 16% low vision 15% and blindness was 0.9%. The prevalence of visual impairment was 24.3% low vision 22.4% and blindness of either eye was 1.9%.

A study carried out among fishermen in North Carolina showed that the prevalence of musculoskeletal symptoms causing work interference in the last 12 months was 38.5% [2]. The difference in prevalence compared to the present study may be due to advanced technology used for fishing in North Carolina resulting in low prevalence of musculoskeletal symptoms. This is the prevalence of symptoms of which interference with work.

Another study done in North Carolina found that the prevalence of eczema was 37% and fungal infections 30% [3]. However, the above findings were not based on a representative sample. Another study showed that skin diseases were more common among fishermen compared to an out-patient control group [4]. Skin problems of fishermen may be associated with frequent, prolonged sun exposure, and contact with sea water which results in continuous wetness and contact with marine organisms. Exposure to environmental conditions, especially the extremes of temperature and humidity are also associated with skin lesions. Equipment can cause damage to the skin which can act as an entry point for various infectious organisms [3].

In India the prevalence of visual impairment is 54.5%, low vision is 24.6% and blindness is 7.4% among fishermen aged >50 years [6]. Another study from India shows that prevalence of visual impairment is 30% and blindness is 2.7% [5]. Rate of blindness was similar in both studies. In Sri Lanka the prevalence of visual impairment was 5.9% and blindness was 1.1% in the Kandy district among non-fishermen aged >40 years [10]. This is less than that reported in our study. Exposure to extreme temperatures, wind and glare cause visual problems [11]. Burke recommends that fishermen protect their eyes with sunglasses [3]. Effective sunglasses block both UVA and UVB radiation, and polarized glasses block reflected light [9]. We also found that prevalence of visual impairment of either eye were higher among those aged ≥35 years even after controlling for confounding variables.

In summary prevalence of musculoskeletal conditions, skin disorders and visual impairment were relatively higher among fishermen. Service duration in the fishing industry, number of days spent per boat trip and type of boat were not associated with the above conditions. We recommend educating fisherman about prevention of medical conditions and conducting regular medical examination in fishermen.

Conflicts of interest

There are no conflicts of interest.

References

1. Kaerlev L, Jensen A, Nielsen PS, *et al*. Hospital contacts for injuries and musculoskeletal diseases among seamen and fishermen. *BMC Musculoskelet Disord* 2008; **9**: 8 doi:10.1186/1471-2474-9-8.

2. Lipscomb HJ, Loomis D, McDonald MA, *et al*. Musculoskeletal symptoms among commercial fisheries in North Carolina. *Appl Ergon* 2004; **35**: 417-26.

3. Burke W, Griffith DC, Scott CM, *Howell ER*. Skin Problems Related to the Occupation of Commercial Fishing in North Carolina. *N C Med J* 2006; **67**: 260-5.

4. Hamdi KI, Al Malikey MA. Frequency of skin diseases among sea fishermen in Basrah. *The Int J Dermatol* 2009; **7**: doi; 10.5580/16f6.

5. Marmaula S, Madala RS, Rao GN. Rapid assessment of visual impairment (RAVI) in marine fishing communities in South India – study protocol and main findings. *BMC Ophthalmol* 2011; **11**(26): doi; 10.1186/ 1471-2415-11-26.

6. Rotti SB, Jainsankar TJ. Distribution of certain diseases among fishermen in Pondicherry: a comparative study. Jawaharlal Institute of Post Graduate Medical Education and Research, Pondicherry Available from https:// www.yumpu.com/en/document/view/8642112/ (accessed on 10th September 2011).

7. Ministry of Fisheries and Aquatic Resources Development, 2013. Available from http://www.fisheries.gov.lk/ content.php?cnid=ststc

8. Lawrie. T, Matheson C, Ritchie L, et al. The health and life

Papers

style of Scottish fishermen: a need for health promotion. *Health Educ Res* 2004; **19**: 373-9.

9. World Health Organisation. International Classification of Disease and Related Health Problems 10th Version, World Health Organization, Geneva, 2007.

10. Edussuriya K, Senanayake S, Senaratne T, *et al*. The prevalence and causes of visual impairment in central Sri Lanka. *Opthalmol* 2009; **116**: 52-6.

11. European Agency for Safety and Health at Work. Help for Small and Medium Enterprises-Fisheries Sector. Available from http://osha.europa.eu/en/sub/sme/products/fisheries/index.htm (accessed on 10th September 2011).