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ORIGINAL ARTICLE

STATUS OF OCULAR HEALTH AND VISUAL FUNCTION AMONG TAILORS IN SIDDHARTHANAGAR MUNICIPALITY, RUPANDEHI- A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: *Visual impairment from age related eye conditions is significant global and national health challenges, with high prevalence therefore likely to have a negative impact on their ability to perform optimally which affects their productivity. Hence the main objective of the study is to assess the ocular health and visual functions among tailors in Siddharthanagar municipality.*

Materials and methods: *In a cross-sectional descriptive study, 197 tailoring community participants were involved in the research of Siddharthanagar municipality from 27th Kartik to 30th Kartik, 2079. A structured questionnaire was used to collect data on Ocular Health and Visual Function among Tailors.*

Results: *Total of 197 participants were involved in the research among them 61.4% were male and 38.6% were female. Immature cataract (14.97%) followed by meibomitis (9.0%) were the most prevalent form of ocular disorders. Normal visual acuity was present in 66.0% of participants whereas 17.76% were hypermetropic, and 16.64% were myopic. Color vision was normal in 94.41% whereas 4.06% had a red-green deficiency and 1.52 % were not applicable for the test. Contrast sensitivity was normal in 89.98%, 8.12 % had a significant loss, 0.5% had severe loss of contrast and 1.52% were not applicable for the test. The visual field was normal in 98.48% of participants. Increased level of near point of convergence was noticed in 44.67% and 26.90% had decreased amount of near point of convergence. Accommodative insufficiency was noticed in 9.13% among patients below 40 years of age. Schirmer test revealed 32.48 % had dry eyes.*

Conclusion: *Regular time interval examining ocular health and visual function in tailors and notifying them about the importance of proper use of spectacle plays a notable role in the acknowledgement of ocular risk factors and its early elimination, improvement of their work productivity and quality of life.*

Keywords: *Cataract, Meibomitis, Myopic, Tailoring community, Visual Acuity*

INTRODUCTION

Tailoring is one of those professions where extensive visual attention is required and their work is mainly concentrated at near and intermediate distance. Visual impairment from age related eye conditions and presbyopia are therefore likely to have a negative impact on their ability to perform optimally which affects their productivity.[1] Assessment of ocular health and visual function can help tailors to be conscious about the state of their ocular condition and its impact on their work. It helps to rule out any unnoticed ocular problems which may further lead to permanent loss of vision. Excessive near work has been acknowledged as an important factor for increasing eye health problem such as blurring of vision, eye irritation, burning sensation, eye fatigue and headache.

According to WHO, "Ocular health is a complete physical mental and social well-being in respect to eye and not merely an absence of disease or infirmity." As ocular health is affected by socio-economics, lifestyle and environmental factors in special occupational groups, it is likely to have different associated factors in developing countries, such as Nepal, compared to other developed

countries. With increasing demand of clothing following urbanization and modernization, tailoring profession has become one of the expanding businesses in this municipality. A 2008 survey revealed that uncorrected presbyopia was prevalent in approximately 517 million people worldwide.[2] Prevalence of presbyopia was estimated to be 1.09 billion.[3] The burden of presbyopia had approximately doubled in 2015 in comparison to 2008. Globally, 1.1 billion people above 35 years of age were estimated to be living with pre-presbyopia causing significant productivity loss in the working age group.[4]

This study was done to rule out the near vision problem, seek possible risk factors and prevent tailors from further complications and minimize the burden of near vision and reduce ocular morbidity and add new information to the further research references. Hence, the goal of study was to assess the ocular symptoms and visual functions among tailors in Siddharthanagar municipality, Rupandehi.

The study was conducted because no previous study had been done yet in this area to find out the status of ocular health and visual function among the tailors and as there is lack of sufficient information regarding their socio-demographic profile, visual and ocular health condition and associated risk factors among tailors of Siddharthanagar municipality. Poor eye health condition and delay in work ability due to uncorrected presbyopia was seen in tailors during observation.

MATERIALS AND METHODS

Ethical approval (Ref:29/022/023) for the study was received from the research committee, Lumbini Eye Institute, Bhairahawa, Nepal. Permission to enrol participants for the study was also received from the Siddharthanagar Municipality, Bhairahawa, Rupandehi, Nepal. Simple random sampling (lottery method) was used to select individuals among 80 tailoring shops and boutiques of Siddharthanagar municipality. Altogether 197 individuals participated in our study. The population were of age 16 to 75 years. Non-professionals and those with a history of any intraocular surgery were not included in our study.

A semi-structured questionnaire was used to interview study participants. Initially, the questionnaire was developed in the English language and translated into Nepali for the study purpose. The content validity of the questionnaire was established through the literature review and consulting with experts (ophthalmologists, optometrists and research advisors).

Questionnaire included socio demographic and clinical questions whereas Clinical examination of visual acuity, anterior and posterior segment of eye, near point of convergence and accommodation, level of dryness, colour vision, contrast sensitivity and visual field was performed.

Data were collected through interview and clinical examination including visual acuity measurement, assessment of anterior and posterior segment of eye, objective and subjective refraction, Schirmer's test, color vision test, contrast sensitivity examination, visual field analysis, assessment of near point of convergence accommodation, Municipality records, articles and journals.

Simple Random sampling technique (lottery method) was used for sampling; here we used municipality records for selection of tailor shop in Siddharthanagar municipality. All the tailors present in selected tailor shop were included in our study.

Formula used for sample size calculation is as follows:[5]

(Sample size) $n= N/(1+Ne^2)$

where,

(Estimated population of tailors) N= 300

(At 95% confidence interval) e=0.05

$n = 300/ (1+300*0.05^2) =171.428$

so, n =172

Non response rate = 10% i.e., total sample size = 172+17= 189

Data were collected from 197 participants in our study.

Data analysis

Interim analysis of data was performed during the study. Statistical Package for Social Sciences (SPSS) version 16 software was used to enter the data in the computer. Statistical analysis was done using relevant statistical tests.

RESULTS

Table1. Distribution of Age of Participants

Age group	Frequency	Percent
15-25	39	19.8
26-35	49	24.9
36-45	57	28.9
46-55	33	16.8
56-65	14	7.1
above 65	5	2.5
Total	197	100.0

Table 1 shows maximum participants were of age group 36-45 (28.9%) followed by 26-35 (24.9%) and minimum participants were of age group above 65 years (2.5%).

Gender of Participants

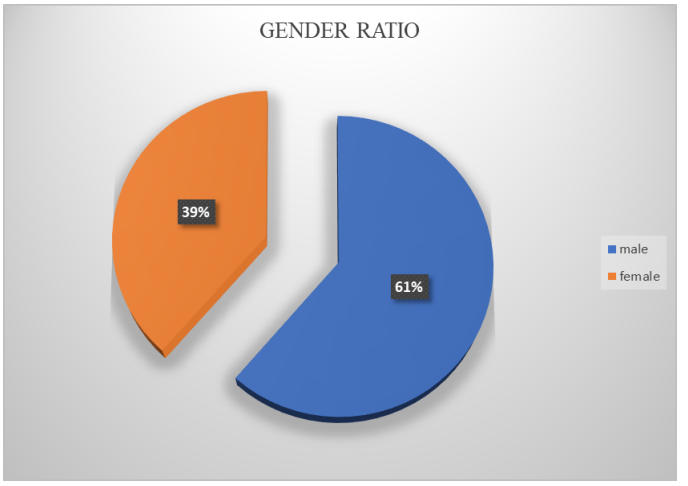

Figure 1: Distribution of Gender of Participants

Male: female ratio was 1.6:1.

Table 2: Distribution of Symptoms Experienced by the Participants

Symptoms	Frequency	Percentage
Blurred vision	56	28.4
Eye fatigue	6	3.0
Headache	14	7.1
Redness	1	0.5
Watery eyes	11	5.6
Eye irritation	2	1.0
Burning eyes	5	2.5
Multiple symptoms	68	34.5
Total	163	82.7
Asymptomatic	34	17.3
Total	197	100.0

Table 2 shows that, symptoms of blur vision were experienced by 28.4% participants, 3.0% had eye fatigue,7.1% had headache, 0.5% had redness, 5.6% had watery eye, 1.0% eye irritation, 2.5% had burning eyes and 34.5% were present with multiple symptom and 17.3 % were asymptomatic.

Distribution of Participants by History of Spectacle Uses during Tailoring

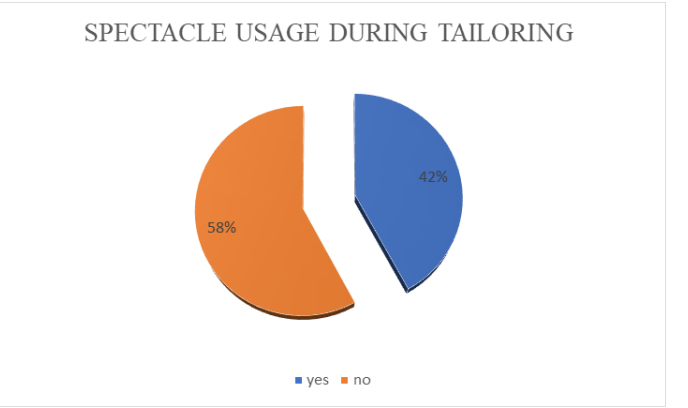

Figure 2 shows 42.1% were using glasses whereas 57.9% had never used glasses while performing near work.

Table 3: Distribution by Places of Prescription of Current Spectacles

Place	Percentage	Frequency
Eye clinic	5.6	11
Optical shop	8.6	17
Eye hospital	27.9	55
Total	**42.1**	**83**

Table 3 shows glasses were bought from eye hospital by 27.9%, eye clinic by 5.6% and optical shop by 8.6% respectively among all the participants.

The figure 3 shows that 196 participants have normal visual acuity and 1 participant has moderate visual impairment. (according to WHO)

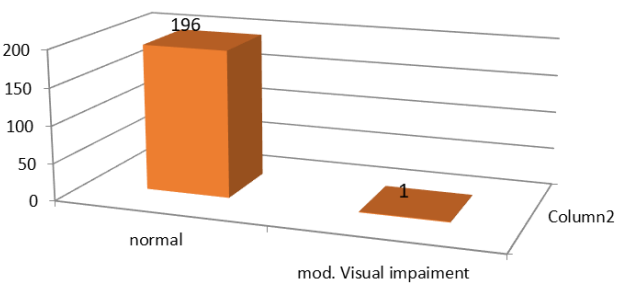

Figure 3: Distribution of Best Corrected Visual Acuity of Participants

Table 4: Distribution by pattern of refractive error

Refractive error	Frequency	Percentage
Hypermetropia	35	17.76%
Myopia	32	16.24%
Normal	130	66%
Total	197	100%

Table 4 shows that 66% of all the participants were found to be emmetropic and 34% were found to be ametropic which consisted of 17.76% participants with hypermetropia and 16.24% with myopia respectively.

Table 5: Distribution of Participants by Diagnosis of Anterior Segment Diseases

		Frequency	%
Anterior Segments	Normal	286	72.58%
	Immature Cataract	59	14.97%
	Mature Cataract	1	0.25%
	Blepharitis	12	3.04%
	Corneal Scar	1	0.25%
	Meibomitis	9	2.28%
	Pterygium	4	1.01%
	Pingecula	13	3.29%
	Alternate XT	8	2.03%
	Chalazion	1	0.25%

The table 5 shows that,72.58% eyes were diagnosed normal, 14.97% had immature cataract, 0.25% had mature cataract, 3.04% had blepharitis in both eyes, 0.25% had corneal scar, 9.0% had meibomitis, 1.01% had pterygium, 3.29% had pinguecula, 0.25% had chalazion and 2.03% had alternate exotropia.

Table 6: Distribution of Participants by diagnosis of posterior segment diseases

		Freq.	%
Posterior Segment	Normal	379	96.19%
	No View	5	1.26%
	Hypertensive Retinopathy	2	0.50%
	Retinal Detachment	1	0.25%
	Disc Suspect	4	1.01%
	Myopic Fundus	2	0.50%
	Pale Disc	1	0.25%

Table 6 shows that among 394 eyes, 96.19% eyes were found to be normal, 1.2% could not be viewed, 0.50% had hypertensive retinopathy, 0.25% had retinal detachment, 1.01% was disc suspect, 0.5% had myopic fundus, 0.25% had pale disc.

Table 7: Distribution of Participants by near point of convergence and amplitude of accommodation

		FREQUENCY	PERCENTAGE
NPC	INCREASED	88	44.67%
	NORMAL	56	27.91%
	REDUCED	53	26.90%
AA	WNL	96	90.86%
	AI	10	9.13%

Table 7 shows that, near point of convergence were normal in 56 individuals. On the other hand, 88 individuals were found to be present with increased level of NPC and 53 were present with decreased NPC. Among 197 participants, only 106 participants were eligible for measurement of amplitude of accommodation. Among them, 96 participants were normal and10 participants had reduced level of amplitude of accommodation.

Figure 4 explains that colour vision was normal in 94.41%, 4.06% of participants had red-green deficiency and 1.52% were not applicable for the test.

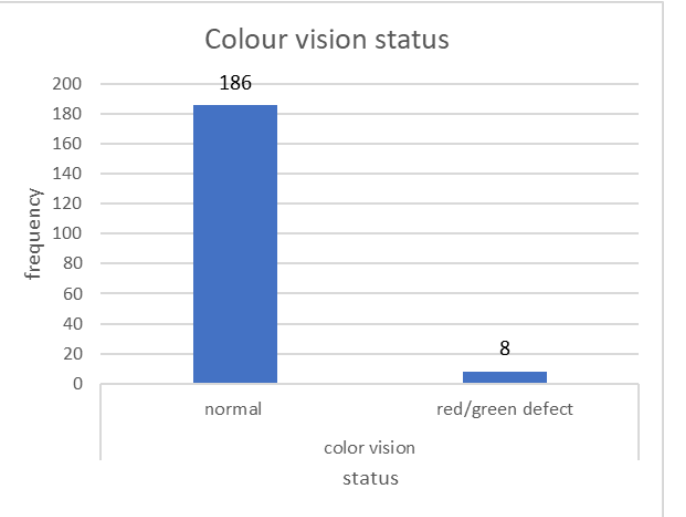

Figure 4: Distribution of Colour Vision of Participants

Figure 5 shows that contrast sensitivity was normal in 177 participants, 19 of them had significant loss, 1 participant had severe loss of contrast.

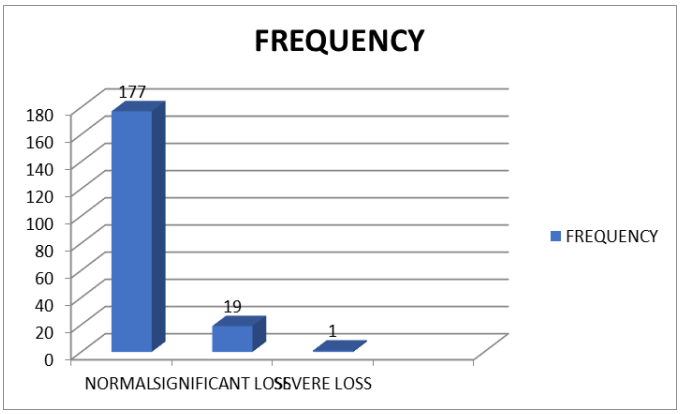

Figure 5: Distribution of Contrast sensitivity of Participants

Figure 6 shows that out of total participants, 67.51% were normal and 32.48% had dry eyes.

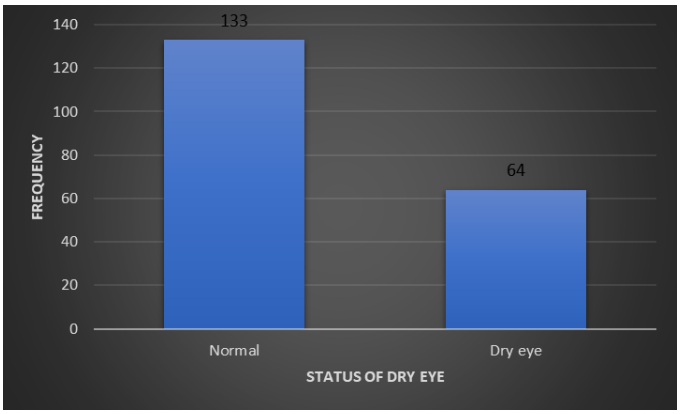

Figure 6: Distribution of level of dry eye

DISCUSSION

Tailoring is one of those profession that requires an abundant number of visual demands. As per our knowledge, this study comes just second among the studies which is concerned with the status of ocular health and visual function in tailors of Nepal. Where, this is presumably the first study done in tailors of Siddharthanagar municipality, Rupandehi so as to assess the ocular and visual problems.

Tailors were found to experience various ocular symptoms and face different types of ocular and visual disorders. These issues may be caused due to requirement of extensive visual attention and improper working environment.

A predesigned questionnaire was distributed among 77 tailors aged between 12-60 years. This study showed the prevalence rate of 5.1% for visual Impairment. According to study, 64.9% did not consider tailoring as hazardous to vision and 19.5% didn't have proper illumination at their workplace to prevent visual impairment. This study concluded that welding and tailoring are also associated with visual impairment due to inadequate knowledge among affected population.[6]

Among 197 participants, Majority (82.7%) of them were present with ocular symptoms on performing near tasks where 34.5% were present with multiple symptom and blurring vision (28.4%) was most prevalent. Relatable outcomes were suggested by a study conducted in Lucknow district of India where tailors also had vision related problems. The common vision related problems were problem seeing near objects, blurred vision, running eyes, irritation in eyes, problem in concentrating, problem in seeing for objects. Similarly, A study done in Mumbai found that the symptoms related to visual, ocular surface, photophobia, and musculoskeletal were significantly higher for the jewelry workers than the workers of IT enabled organization.[7]

The prevalence of dry eye in our study was 32.48% of total participants. In a study carried out among workers of industrial area of Egypt, Dry eye was diagnosed in 60.4% using schiermer's test and 51.2% by tear breakup time test respectively. The study showed that dry eye was one of the common ocular findings. However, the prevalence of dry eye is comparatively lower in our study. This difference may have occurred due to the difference in occupational hazards involved, as marble workers are more prone to dust, physical and chemical exposure than tailors.[8]

Out of all types of refractive error, Hypermetropia was prevalent in 17.76% participants and Myopia was prevalent in 16.24% participants. Insignificant amount of astigmatism was present in our study population and hence spherical equivalent (spherical power + ½ of cylindrical power) was done to convert astigmatic power into either hypermetropia or myopia. Although, there was minor difference, Hypermetropia was slightly more prevalent among all types of refractive error in our study. The pattern of refractive error found in our study is similar to the study done in sewing professionals of garment factories in Kathmandu Valley where Hypermetropia (44.6%) was the most prevalent refractive error. They assumed that lag of accommodation associated with

prolonged and longer duration of near work could be the reason for greater prevalence of hypermetropia in their study.[9]

Amplitude of accommodation was measured in only106 individuals among all the participants due to the age factor where 9.13% had reduced level of amplitude of accommodation. Increased level of NPC was present in 44.67% individuals in our study. A study done in a populous city of Iran showed that there was a keen change in level of NPC between the ages of developing presbyopia and Mean NPC constantly increased with age and changed from 6.95 cm in the 10 to 19 years age group to 13.06 cm in the 70 years and older group. From their study, they suggested that age related increase in NPC is mainly caused by decreased accommodative effort together with reduced accommodative amplitude which finally leads to deterioration of the accommodative component of the total convergence response.[10]

CONCLUSIONS

In conclusion, regular time interval examining ocular health and visual function in tailors and notifying them about the importance of proper use of spectacle plays a notable role in the acknowledgement of ocular risk factors and its early elimination, improvement of their work productivity and quality of life.

FUNDING: Not any

CONFLICT OF INTEREST: No

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