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## RESEARCH ARTICLE

### PREVAILING TRENDS IN EYE CARE SECTOR EVOKE FOR REGULATING PRIMARY EYE CARE SERVICES

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#### ABSTRACT

**Objective:** This study intends to highlight major factors leading to continuous acclivity observe in prevalence of eye disorder.

**Method:** Two small surveys conducted deploying two separate questionnaires based on descriptive research to encompass and contrast conspectus of 200 individuals against expert opinion of 20 ophthalmologists highlighting major factors leading to escalated trends in prevalence of eye disorder. Data was collected employing random sampling in one and half month from 1<sup>st</sup>May to 15<sup>th</sup> June of 2014. SPSS-16 software is utilized to analyze respondents' responses and drawing interpretations accordingly.

**Result:** Individuals survey reveals increase in existence or exposure to factors likely to influence visual acuity, such as positive family history, frequent exposure to digital devices, sunlight, involvement in close work activities, low Vitamin A intake and few hours' sleep. In contrast less incorporation of preventive care such as self-impose precautious measures and regular uptake of eyesight test. The gap between the need for preventive care against the actual employment indicate individuals' reluctance towards conservation of ocular health.

According to ophthalmologist lack of eye health awareness, unaffordability considerably while less concerns for health, fear, inaccessibility slightly restrain individuals from eye health care.

**Conclusion:** People's lack of eye care awareness, low concerns towards ocular health, fear in diagnosis or treatment of eye disease, unaffordability and inaccessibility barricades individuals from exercising preventive care. These barriers in accordance with certain rise in use or exposure to contributing factors has led to continuous acclivity observed in prevalence of eye disorder

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## INTRODUCTION

Eyes are precious gift of God, enables an individual to see and interpret things around (Ted, 2014). Good ocular health enables vision acuity without sufferance from any discomfort or use of assistive devices (Hurrell and Donohoe, 2012). Eyesight the most sensitive sense of all other senses, easily influence by no of factors result poor ocular health or vision in-acuity (Ted, 2014). Vision in-acuity if not managed or cured, likely to hampered quality living, impede routine activities, educational performances and professional progress (Sadiq and Khokhar, 2012). In Pakistan prevalence of eye disorders or poor eye health status has been observed in all ages and regions. According to article 480 individuals daily, 14, 000 monthly and 168000 annually are exposed to eye diseases (Anon, 2015). This study intends to explore the individual approach towards preservation of natural vision in contrast to frequent exposure to attributing factors, highlighting major barriers that restraint individuals from eye health care and suggesting means that can be incorporated to reinforce preventive eye care.

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## MATERIALS AND METHODS

This study incorporates both qualitative and quantitative data extracted from primary and secondary data sources. Two small surveys conducted deploying two separate questionnaires based on descriptive research. The former survey encompasses people general approach towards eye health, contrast daily activities likely to jeopardize eye health against employment of necessary requisites ensures preservation of natural vision and ocular health. The next following survey incorporate expert opinion of ophthalmologist highlighting barriers restraining individuals from exercising preventive eye care. Also evaluate efficacy of propose initiative intend to reinforce preventive care likely to halt exacerbated trends in prevalence of eye disorder. Two hundred individuals 100 males and females falling in three age groups (40 less than 20yrs, 130 between 20 to 40yrs and 30 older than 40yrs) were asked to select appropriate response of fixed alternative questions. Twenty ophthalmologists of government, semi-government and private organizations were asked to rate each statement between 1 to 5, 1 interpreted as considerably low, 2 slightly low, 3 slightly high, 4 considerably high and 5 definitely high.

Random sample technique was employed in consideration with avoidance of overlapping, availability was given priority. Data was collected in one and half month from 1<sup>st</sup> May to 15<sup>th</sup> June of 2014. SPSS-16 software incorporated to analyze the respondents' responses and drawing interpretations accordingly. Unequal proportion of individual in 3 age group is limitation for this study. Whereas due to time and constraints of other resources, a very small sample size of 200 individuals including students and faculty members of the Dow Institute of Health Management and 20 ophthalmologist of Services Hospital, Liaquat National Hospital and Hashmanis is utilized. This restricts the generalization of this study

**RESULTS**

Our eyes are daily expose to numerous factors for several hours likely to increase susceptibility to eye disorders. People based on their risk index were segmented as at low, moderate or high risk (Thomas, 2005). Most common prevalence of eye disorders in individual family, frequently exposure to contributing factors, slightly fulfill requisites for nourishments characterizes high risk i.e. increase susceptibility to ocular disease, less common prevalence of eye disorders in individual family, moderate exposure to contributing factors, moderately fulfill requisites characterizes moderate risk and uncommon prevalence of eye disorders in individual family, rarely expose to contributing factors, highly fulfill requisites characterizes low risk NIH (2013) (Brozenand Kulkarni, 2013) TVC (2013) *Lack of sleep effects* (2014)

From **Error! Reference source not found.** we deduce most subject possess positive family history with at least one to two members with eye disorders, exhibit 4 to 6 hrs. daily exposure to digital devices, 4 to 6 hrs. daily involvement in close work activities (reading, writing, etc), moderately expose to sunlight, intakes vitamin A less than required quantity and able to manage 7hrs. sleep per day. (2300 IU for females and 3000IU for males) NIH (2013). These results suggest most of us likely to jeopardize our eye health by frequently or moderately exposed to risk factors.

To further explore our findings we incorporated people's attitude towards preventive care i.e. employing protective measures in routine life. Preventive measures such as exhibiting appropriate distance, position and breaks using digital gadgets, employing protective eye wears and protective screens, managing diet rich in vit a and quality hour sleep enables good ocular health and conservation of visual acuity NIH (2013) TVC (2012) *Lack of sleep effects* (2014).

Despite increase susceptibility to eye disorders due to extended exposure to contributing factor, only 15.5% (31) of people adopt preventive measures in their daily life frequently, 36% (72) moderately and 48.5% (97) rarely to reduce susceptibility to eye disorders. In addition to adopt self-impose preventive measures we cater individual responses against regular uptake of eyesight test. Usually it is more acquired by the people at elevated or adequate risk, its consumption likely to increase with age and females being more conscious towards health issues are more incline in its acquisition, (Thomas, 2005), our finding reflects the similar trends test analyzed in terms of age and gender presented in **Error! Reference source not found.**

**Table 2. Consumption pattern of eye care services**

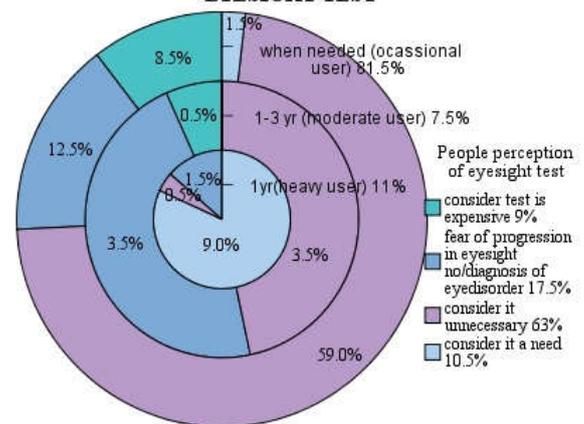
How frequent subject visit for eye test	Age of subject				Gender		
	<20	20-40	>40	Total	males	females	Total
1yr (heavy user)	0	1	4	5	3	2	5
	0	5	2	7	1	6	7
	2	6	2	10	5	5	10
Total	2	12	8	22	9	13	22
	5%	9%	27%	11%	9%	13%	11%
1-3 yr (moderate user)		1	1	2	1	1	2
		5	1	6	2	4	6
		7	0	7	3	4	7
Total	0	13	2	15	6	9	15
	0%	10%	7%	8%	6%	9%	8%
when needed (occasional user)	10	30	9	49	30	19	49
	24	54	10	88	42	46	88
	4	21	1	26	13	13	26
Total	38	105	20	163	85	78	163
	95%	81%	67%	82%	85%	78%	82%
G Total	40	130	30	200	100	100	200

Consumption of eyesight test on regular basis facilitate pupation of progression in eye sight number also enable early diagnosis and determination of chronic systemic diseases such as diabetes, hypertension and high blood pressure (Heiting and Palombi, 2014). Eye care professional recommends comprehensive eyesight examination at least once a year *Ocular health* (2015).

**Consumption pattern of eye care services**

In addition to self-imposed precautious measures only 11% (22) individual are heavy user uptake eye sight test regularly, 7.5% (15) moderate user uptake eyesight test in 1 to 3yrs., 81.5% (163) occasional user uptake eyesight test only when need occurs (**Error! Reference source not found.**). It's quite evident that individual s eyes are frequently expose to factors influence visual acuity but less measures are incorporated for conservation of ocular health. The gap between the need for preventive care against the actual employment indicate that individuals are not exercising primary eye health care to the extent they should do so.

**FREQUENCY OF CONSUMPTION & PERCEPTION OF EYESIGHT TEST**



Considering the importance of eyesight test we move one step forward to encompass people perception towards its regular uptake, 10.5%(21) of individuals perceive eyesight test a need, 9%(18) consider it expensive, 17.5%(35) fear for diagnosing progression in eye sight no or an eye disorder and 63%(126) possess careless attitude, thinks what the need if they don't experience or encounter any problem consider it unnecessary (**Error! Reference source not found.**). **Error! Reference source not found.** signifies that awareness can play substantial role in influencing individual in decision making regarding consumption of health care services.

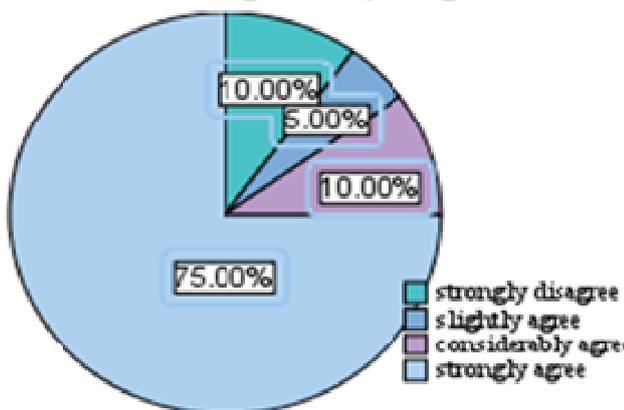
Prevalence of eye disorder in subject family		Daily exposure to digital devices	Daily involvement in reading, writing activities	Daily exposure to sunlight	Vitamin A concentration in daily diet	Average sleep per day						
	Percent	Percent	Percent	Percent	Percent	Percent						
Low Risk	uncommon	28	<=3hrs	41.5	<=3hrs	33	occasionally	23	greater than	20	>=7hrs	45
Moderate Risk	less common	51	4-6hrs	35	4-6 hrs	40	moderately	45	equal to	30	5-6hrs	43
High Risk	most common	22	>=7hrs	23.5	>=7hrs	28	frequently	33	less than	50	<=5 hrs	12
Total		100	Total	100	Total	100	Total	100	Total	100	Total	100

People aware of significance of eyesight test, considering it a need are mostly the heavy user of eye care services and people less aware, considering it unnecessary are mostly occasional user. The following next survey presents the opinion of ophthalmologist highlighting barrier restraining individual from incorporating preventive care. According to most ophthalmologist despite availability of resources such as health insurance policy, non-government organization and Government hospital assisting people in acquisition of eye care services, people seem to be reluctant in its utilization. Since people surrounded by economic, political and societal fluctuations that less considerations are given to health issues. The reason that people are less incline in pursuing primary eye care are directly bumping for secondary or tertiary care. 35% ophthalmologist definitely, 40% considerably and 15% slightly agrees that people possess low awareness about eye health; its sensitivity is often neglected and taken for granted. According to them low concern towards preservation of natural vision is slight barrier restraint individuals from eye health care. While fear in diagnosing of eye disorder or progression in vision loss and inaccessibility slightly, unaffordability considerably thwart individuals in acquisition of quality care. (Error! Reference source not found.)

### DISCUSSION

Many studies have been presented all around the world highlighting the trends, opportunities, challenges prevailing in the health care sector and proposed strategies for health care reform accordingly. In Pakistan, a lot of governments, NGOs have been striving against the poor health status of the population and the deplorable condition of health care sector but no substantial outcome have been obtained yet and circumstance remain deteriorative. Eye care is one among other sub sector of health care industry confronts no of challenges and visual in-acuity one among other responsible for poor health status of population .Eye care subsector of health sector incorporates all the products and services use to preserve, manage or enable an individual visual acuity. According to international council of Ophthalmology in Pakistan there are total 1,860 ophthalmologists with work ratio of 11 ophthalmologists per million ICO (2014).

Need for regular eyesight test



In accordance to current scenario to reinforce preventive care proposition was put forward to regulate mandatory eyesight test in on annual basis in work places, communities, organization etc .75% of ophthalmologist strongly endorse such initiatives while 10% have rate it slightly low, 5% moderately high and 10% considerably high. Such initiative can turn out to be major facilitator in acquisition of eye care services and may result promising outcome in eye care (Figure 2).

	~Lack of patient awareness	~Patient fear	~Lack of concern	~In accessibility	~Un affordability
Definitely low	0	30	0	20	5
Slightly low	10	10	25	20	15
Slightly high	15	20	30	25	10
Considerably high	40	15	30	20	35
Definitely high	35	25	15	15	35
Total	100	100	100	100	100

Existing trends in eye care sector reveal continuous acclivity observed in prevalence of eye disorders, number of studies has come forward to frame the accurate picture communicating the need for eye care services at different ages and different regions of Pakistan. Refractive errors, age-related macular degeneration, glaucoma, cataract, diabetic retinopathy, strabismus, amblyopiamost commonly prevailing vision problems found in young, adults and old. Absence of appropriate address to eye disorders is the leading cause for blindness and visual impairment DH: IHNY(2012)

In Pakistan according to number of sources 125,388 children are blind and 4 million children sufferance of refractive error while cataract (53%), corneal scarring (14%), untreated refractive error (12%) and glaucoma (7%) are the main causes of blindness TFHF (2013). According to the survey estimated prevalence of blindness in Pakistan found to be 0.9%, high in men than in women.

Highest prevalence of blindness reported in Punjab and Baluchistan, followed by Sindh and least observed in NWFP (Jadoon *et al.*, 2006).

Age, inheritance, vitamin A deficiency, extended exposure to ultraviolet light, excessive use of digital gadgets, diabetes, etc. likely to exhibit positive correlation with ophthalmic disease TVC (2012) *What Is Vitamin A Deficiency?* (2014) (Ali *et al.*, 2007; Riad *et al.*, 2003). Individuals with positive family history of ophthalmic disease are regarded more vulnerable be its victim (Ali *et al.*, 2007). Vitamin A have significant role in an individual vision it help protect against night blindness and dry eyes deficiency results increase susceptibility to blindness *What Is Vitamin A Deficiency?* (2014) (Recommended Dietary Allowance of vitamin A intake in daily diet is 3,000 IU for men and 2,333 IU for women) NIH (2013). Chronic solar toxicity results of prolonged exposures to UV radiation associated to several ocular surface disorders (Brozen and Kulkarni, 2013) Daily exposure todigital devices for two or more hours such as television, computer, tablet, cell phone or involvement in close work and work in dim result in eye discomfort, dry eyes, blurred vision, irritation, eye fatigue, etc TVC (2012); Ali *et al.*, 2007).

Poor quality sleep results in blurry vision, heavy eyelids, wrinkled skin and dark circle underneath eyes. *Lack of sleep effects* (2014) Diabetes among others emerges as one of factor requisite of special care of vision, mild rise in glucose may affect individual eyesight (Anon, 2008) No of contributing factors existing in Pakistan, likely to influence eye health status of population include high risk factor associated with prolong UV exposure with UV index ranges between 7 to +11 WHO (2002) Weather online (2014). Vitamin A deficiency with overall prevalence of 12.5 %, 10.9% in urban and 13.5% in rural population, (Siddiqi and Iqbal, 2008) 6.9 million people victims of diabetes and figure likely to escalate to 11.5 million by 2025 in absence of any appropriate interventions, (Anon, 2008) continuous growth in sales of digital devices indicate its excess consumption and exposure *Eye care in Pakistan* (2013) On the other hand in addition to excess exposure to contributing factor peoples possess careless attitude towards eyesight, insufficient knowledge about preventive eye care and demand led by symptoms for eye care serviceshas led to escalated trends in prevalence of eye disorders (Hurrell and Donohoe, 2012; Alexander, 2008). Literating people, building awareness and recognition for the significance eye health is the first step towards eye care reform.

According to eye care professionals people need to be encouraged to adopt some precautions/preventive measures in routine life such as exhibiting appropriate distance, position and breaks while using digital gadgets, employing protective eye wears during exposure to hazardous rays, manage good nutrition and quality sleep, regularly visiting eye care provider. Such measures may enable preservation of natural vision and help maintain visual acuity NIH (2013) (Brozen and Kulkarni, 2013) TVC (2012) *Lack of sleep effects* (2014). Increase prevalence of eye disorders over the period of time dictate the need for strengthening the primary eye care services all over the country. Implementation of such interventions including creating eye health awareness among masses, convincing people in adopting preventive measures in routine life and

regulating mandatory eye exam on annual basis can result in promising outcomes in eye care sector. Efforts exerted in achievement of output in sub health care sector define by specialties such ophthalmology will directly translate into accomplishment of desired outcome in health care sector.

## Conclusion

People's lack of eye care awareness, low concerns towards ocular health, fear in diagnosis or treatment of eye disease, unaffordability and inaccessibility barricades individuals from exercising preventive care. These barriers in accordance with certain rise in use or exposure to contributing factors responsible for deteriorated eye health status of population hasled to continuous acclivity observed in prevalence of eye disorder.

Inconsideration with existing trend in eye care sector such initiative of educating people on eye health, convincing them in adopting preventive measures in routine life, regulating mandatory eye examination on annual basis throughout the country may halt the upward slope observe in prevalence of eye disorder, enhance eye health status and enable preservation of natural vision. Hence improve the productivity of individuals in social, educational and professional life.

## REFERENCES

- Alexander, R.L., Miller, N.A., Cotch, M.F. and Janiszewski, R. 2008. Factors that influence the receipt of eye care. *Am. J. Health Behav.*, 32:547-56.
- Ali, A., Ahmad, I. and Ayub, S. 2007. Prevalence of undetected refractive errors among school children. *BIOMEDICA* 23.
- Anon.480 people develop eye disorders in Pakistan every day. The News 2013. Available at: <http://www.thenews.com.pk/Todays-News-6-177893-480-people-develop-eye-disorders-in-Pakistan-every-day>. [Accessed on 18 May 2015]
- Anon. WHO ranks Pakistan 7th on diabetes prevalence list. The Nation, 2008. Available at: <http://nation.com.pk/karachi/15-Nov-2008/WHO-ranks-Pakistan-7th-on-diabetes-prevalence-list> [Accessed on 8 February 2014].
- Brozen, R. and Kulkarni, R. 2013. Ultraviolet Keratitis. Medscape,. Available at: <http://emedicine.medscape.com/article/799025-overview> [Accessed 8 February 2014].
- Cleveland clinic. Ocular Health. Available At: <Http://My.Clevelandclinic.Org/Services/Cole-Eye/Diseases-Conditions/Hic-Ocular-Health>[Accessed On 18 May 2014]
- Department of Health: information for a healthy New York. Types of Vision Problems. 2012 Available at : [https://www.health.ny.gov/diseases/conditions/vision\\_and\\_eye\\_health/types\\_of\\_vision\\_problems.htm](https://www.health.ny.gov/diseases/conditions/vision_and_eye_health/types_of_vision_problems.htm)[Accessed 8 February 2014]
- Euromonitor international .Eye care in Pakistan. 2013. Available at: <http://www.euromonitor.com/eye-care-in-pakistan/report>. [Accessed on 8 February 2014].
- Eye smart American academy of ophthalmology. What Is Vitamin A Deficiency? Available at: <http://www.geteyesmart.org/eyesmart/diseases/vitamin-a-deficiency.cfm> [Accessed 8 February 2014]

- Heiting, G., Palombi, J. Why Are Eye Exams Important? All About Vision, 2014. Available at:<http://www.allaboutvision.com/eye-exam/importance.htm> [Accessed 8 February 2014]
- Hurrell, D.L., Donohoe, S. 2012. The barriers and enablers that affect access to primary and secondary eye care services. Shared Intelligence. Report no: RNIB/CEP/IR/Glasgow/01.
- International Council of Ophthalmology. Number of ophthalmologists in practice and training worldwide. 2012. Available at: <http://www.icoph.org/ophthalmologists-worldwide.html> [Accessed on 2 February 2014]
- Jadoon, M.Z., Dineen, B., Bourne, R.R.A., Shah, S.P., Khan, M.D., Johnson, G.J. and *et al.* Prevalence of blindness and visual impairment in Pakistan: the Pakistan national blindness and visual impairment survey. *Invest Ophthalmic Vis Sci* 2006;47:4749-55.
- National Institutes of Health. Vitamin A . 2013 Available at: <http://ods.od.nih.gov/factsheets/VitaminA-HealthProfessional/> [Accessed 8 February 2014]
- New Health Guide. Lack of sleep effects. Available at: <http://www.newhealthguide.org/Lack-Of-Sleep-Effects.html> [Accessed 8 February 2014]
- Riad, S.F., Dart, J.K. and Cooling, R.J. 2003. Primary care and ophthalmology in the United Kingdom. *Br. J. Ophthalmol*, 87: 493-9
- Sadiq, M.A. and Khokhar, M.M. 2012. Types of Refractive Errors In Young Adults Seeking Recruitment In Army In Gilgit. *Pakistan armed force medical journal*, 2012;1
- Siddiqi, N. and Iqbal, R. 2008. Maternal postpartum vitamin A supplementation programme: Is there a need in Pakistan? *JPMA*, 58:265-6.
- Ted, M.M. Anatomy, Physiology and Pathology of human eye. Available at [http://www.tedmontgomery.com/the\\_eye/](http://www.tedmontgomery.com/the_eye/) [Accessed on 8 Feb 2014]
- The Fred hollow foundation. Facts and figures [Internet]: Human Development Report. 2013. Available at: <http://www.hollowsorgau/our-work/where-we-work-country/Pakistan>. [Accessed 5 June 2014]
- The vision council. Screens, phones, tablets and more: keeping your eyes safe in a digital age. 2013. Available at: <http://www.thevisioncouncil.org/sites/default/files/VCDigitalEyeStrainReportFINAL2012.pdf> [Accessed 8 February 2014]
- Thomas, R.K. 2005. Marketing Health services .2nd ed. America :Association of University Programs in Health Administration.[Accessed 8 February 2014]
- Weather online. Pakistan. 2014. Available at: <http://www.weatheronlinecouk/Pakistan/Lahore/UVindex.htm>. [Accessed 2 August 2014]
- WHO. 2002. Global solar u v index. Report no: WHO/SDE/OEH/02.2.

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