

Brief Comments on Optometry and Eye Care

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Submitted: 2024, Jun 15; Accepted: 2024, Jul 18; Published: 2024, Aug 12

Citation: Aggarwala, K. (2024). Brief Comments on Optometry and Eye Care, *Int J Clin Med Edu Res*, 3(5), 01-03.

Abstract

When there were many opticians and doctors of ophthalmology already, why in the world was the profession of optometry created? Formalization of the professional curriculum for the training and licensure of optometrists began at Ohio State University in the “heartland” of America (my father arrived on BOAC in year 1955). Back then, did the Founding Members of the American Optometric Association create optometry to service wealthy home-owners in Los Angeles or did they want to help immigrant labor in Brooklyn? Was the mandated curriculum adopted by the Association for Schools and Colleges of Optometry tailored for the typical machine shop drill press worker suffering fatigue at 3pm on Thursday, or was it designed to address the visual corporate strategy slide-show on a Tuesday at 9am? Today, I take this opportunity to present a few comments about eye care and its dispensation to the lay public, not limited to optometry.

1. From Nineteenth Century Europe

By the year 1863, a man named Ernst Abbe joined the faculty at University of Jena, as a physics instructor, and soon he was to meet Carl Zeiss, forming a real company founded upon research into optics applications for clinic, factory, forest, and farm. Same year 1863 in England, was born the ophthalmologist, Dr. Edridge-Green, who conducted vision research studies using color glass and neutral and he pioneered the lantern test which he began to manufacture in the year 1891.

The doctor had hoped his instrument would be adopted by the British Board of Trade, and that his many years of development efforts would be rewarded with money [1]. The traders Board however, refused to adopt his invention, deployed instead the Holmgren Wool Test, but also in year 1913, the Board launched their own lantern test for color vision. The First World War started together with the profession of optometry, and the automobile developed by Henry Ford had become popular on city streets, the year was 1914.

2. Opticianry Business

The selling of lenses that are fitted into a frame that is supported aesthetically at the nose and the ear lobes is known today as “optical dispensing” and professional vendors are called opticians. Lens corrective at the cornea is a contact lens.

3. Lens Power and Lens Shape

The power and shape of lenses for near vision tasks is always

“more plus” and the lens surface curvature always “more convex” than the distance vision seeing lenses of that same person at the same moment in time. Uniform lens power makes a spherical lens, without a preference to be oriented and rotated a certain way for the conjugates of externally viewed target to meet and rest upon luminance and color detection and discrimination nerve cells in the central region of the macula.

4. Optical Math of Astigmatism and Geometry of Vision

Aside from the cosine-squared function of graphical trigonometry, much of the optical geometry involved for optical lens dispensation had been described under principles of Euclidean geometry from the Greek, taken to interpretation and advancement by Islamic scholars during the Dark Ages of Europe, later then translated back to Latin for further development by persons of the region of Silesia, present-day Czech Republic and Poland of northern Europe. Visual perspective was born from optical geometry, and also was begun the revolution known to mankind as the Renaissance of Europe.

5. Optical Business Versus Optical Research

But today, perhaps the post-Michelangelo Italian business-conference venue of Milan, might be much more famous for “Optical Fashion Designer Labels” than the quaint Silesian city of Wroclaw had been, for “Optical Physiology Research Design,” in the days of the highly industrious Jan Evangelista Purkinje, born 1787, exactly 200 years prior to the 1987 explosion of stock trading industrial world markets, represented equally well in the eastern city of Hong Kong as in Tokyo, as in the western city of

London and the New York, metropolis.

6. Is Your Optician a Doctor?

From the 1970's onward, there appears to have been a tendency by professional groups of members, to promote the licensure of opticians to conduct tests for eye refraction, with a net result being a prescription of lens power as Rx sphere component and Rx cylinder component, but this tendency has been more successful in England and in the rest of Europe, as compared to America.

7. The Optometrist is a Doctor but is Not A Surgeon, Per Se

Therefore today, in the year 2024, American owners of optical retail establishments, whether billion-dollar nation-wide franchise operations, or whether "mom and pop" small business retail shop owners, almost always tend to have a doctor of optometry at the optical establishment, and are required to have such person by State laws, even if that doctor is part time only 3 half-days and one full day during any typical week.

8. Innovators of Ancient India, Iraq, Egypt and Turkey

From the original devotional "Samhita" works written on tree bark papyrus by the Vedic Hindus: the physician author known today as "Charaka" and the surgeon author, named "Sushruta," discovered by archaeology there happens to be undisputed evidence that South Asia: Reference to India, Pakistan, Nepal, and perhaps Burma and Bhutan, hosted ophthalmology innovations many centuries earlier in time than did any region of the western part of Eurasia, the 3 major exceptions being Anatolia, of modern nation state Turkey; and Alexandria, of the modern day country of Egypt, and undoubtedly, Babylon, of the Islamic nation Iraq.

9. My Personal Journey

Where I was born I do not know, but my passport says New Delhi. I have no baby pictures of my early months with my mother, so I might have been adopted. My father came to Columbus Ohio on a BOAC plane, the year was 1955, and he was twenty. I was born 22 years later, 5 weeks after Egypt and Jordan jointly agreed on a ceasefire against the 1967 Israeli occupation of peninsular Sinai bordering the Red Sea. It was nearing my 4th celebration of Christmas decorated tree at home and reindeer Rudolf and the singing of carols at school, that war broke out between India and Pakistan. Loud sirens screamed in Delhi with frequent blackouts. Above the optical quality glass dome midline, the automobile headlamps had been painted black to prevent detection by F-86 air force fighter jet pilots of the enemy in the sky above. Just about one week preceding that Christmas Eve in 1971, the nation of Pakistan had surrendered the largest number of servicemen to India since World War II.

10. Post-Cataract Optical Lens Implants

Today, optical etching on polymer technology has advanced so much that a modern day intra-ocular lens [IOL] that is surgically inserted behind the cornea as a permanent passive implant, can have optical corrective stratagem not just for viewing distant highway signs when driving an automobile, but also for up close near [2] reading, and writing, and video gaming and the dashboard of my car.

11. Intelligent Design Versus Incremental Evolution

Either upon a large 17 inch screen display at 12 to 15 inches viewing distance, or upon a 3 by 5 hand-held or stand-mounted display of a cell phone or electronic tablet, at 9 to 11 inches from the facial plane / anterior segment of the watery human eye, this marvel of intelligent design that has defeated Darwin's evolutionary theory of incremental progress by random mutations in the chromatin network of the nucleus of animal cell bodies of non-depolarizing structural fibers and of gradually and rapidly conducting magneto-electric neuronal dendrites and their chemical synapses toward perceptive inference that my sentence construction sensibility has gone awry.

12. Refractive Surgery Concerns

Then of course there is surgery upon the cornea, known as the practice and profession of "refractive surgery," where often times the lay public comes to such ophthalmologists for the convenience of not having to wear spectacles. Understandably, it would be unethical to perform elective [3] refractive surgery on persons of age 17 years or younger, as also upon persons that are diagnosed with any serious chronic inflammatory disease known to become worse over time locally at the eyeball and local collagen [4] supports from systemic physiology.

13. Doctor Numbers for Ophthalmology in the United States

Whereas the state of California has many eye doctors, today we have on average [5] in America, very close to about 6 eye MD's for 100,000 ordinary citizens. Perhaps one third of such eye doctors might be duty-beyond outside of the eye clinic: such as academic publishing and corporate consulting. Does this make for effective and personalized care of a patient who suffers a genuine chronic problem of non-local bodily origination? The answer is a most clear and certain No!

14. Is Telemedicine the Best Option?

So, pray what might be the cost-effective best solution? Is it telemedicine? Another emphatic and resounding, No!

Acknowledgments

I wrote down these paragraphs today, not as an explanation of the established gospel truth, but rather, as my professional interpretation, reflecting upon knowledge gained during my MS 1993 and PhD 1996 educational experience alongside students of the Doctor of Optometry program in Gramercy Park, New York, mentored by Dr. Philip B. Kruger, who had almost retired from scientific research when we met for a few weeks in the year 2009.

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