

HOLISTIC OPTOMETRY: AN OVERVIEW

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ABSTRACT

It is possible that any optometrist who regards a patient as more than "just a pair of eyeballs" is practicing holistic optometry. Bio-chemical evidence exists which supports numerous unconventional methods of preventing and treating different ocular anomalies. The main thrust of this dissertation is to provide optometry in general with a better understanding of the holistic mode of practice, and to offer possible ways in which it can be implemented into the profession of optometry in the 1980's.

HOLISTIC OPTOMETRY: AN OVERVIEW

Holistic optometry. What actually comes to mind when this subject is brought up? Some think of nutrition - eating correctly and taking supplemental vitamins and herbs to enhance current visual status or to actually heal ocular degenerations. Others think of iridology and its contentions and implications concerning the entire body. Preventive optometric care comes into play as another aspect of the "whole" philosophy of primary health care. This may include visual therapy and the behavioral model of optometry as well as myopia reduction through biofeedback and the effect of stress on the eyes. Still another may surmise that it deals with the light spectrum and how different parts of it affect the eye as well as the rest of the body. In fact, however, each of these is a part of holistic optometry, and perhaps optometrists are presently more "holistic" than was previously thought. This paper takes a more intense look at the relationship optometry has with holism.

THE BASICS OF HOLISM

In order to understand holism, or organicism, several theses¹ must be understood.

- 1) Studying an organism's parts in isolation (the analytic approach) proves inadequate when applied to certain cases (ie. a biological organism).
- 2) The whole has an existence other than as the mere sum of its parts.
- 3) The whole determines the nature of its parts.
- 4) The parts cannot be understood if considered apart from the whole.
- 5) The parts are dynamically interrelated or interdependent.

It can clearly be seen that the concept of holism is derived from the word "whole". The holistic approach, which takes into account everything that

makes up an organism, exists within the entire health care community. "Holistic medicine stresses the psychosocial aspects of the healing process and focuses on the maintenance of health rather than the treatment of disease....From the holistic perspective, disease is a consequence of mental, emotional, and social, as opposed to primarily physical factors, and treatment emphasizes alternative approaches such as acupuncture, biofeedback, hypnosis, nutritional therapy, and other unconventional techniques."²

In relating the holistic viewpoint to the eye care profession, it is evident that optometrists are currently practicing this methodology to some degree "...by tailoring treatment and advice to individual patients rather than managing all cases of a given type indentially."³ It is also true that "primary care is ambulatory in that no inpatient care is provided at this level. The preventive, protective, and less expensive aspects of care are stressed at this level so that the necessity of referral to the more expensive secondary and tertiary levels are minimized. In this regard, optometry serves as the first line of defense against visual impairments. Primary care stresses a caring philosophy and the humanistic aspects of health care.... Practitioners must care for the whole person rather than a specific case type."⁴ This suggests that if the body, as a complete entity, does not function at ideal levels of performance, there is bound to be a detrimental impact on the visual apparatus. The optometrist should be concerned with decreased levels of performance, but the question remains as to how much concern one should have.

Before further discussing the aspects of holistic optometry, it should be pointed out that certain individuals feel very strongly about the legitimacy of holism. Dr. Joseph Sasaki, a retired optometrist living in Ann Arbor, Michigan, explained that his approach is that of syn-holism, or the Zen

Principal (as known to the Japanese), which comes from Ch'an of Chinese meaning "whole, one, all, or complete." He brings the spiritual realm into the picture by saying that, as pointed out by Herbert Spencer,⁵ to be whole, man cannot separate himself from heaven and earth, and therefore requires a "continuing integral relationship to maintain a true dynamic equilibrium." Dr. Sasaki's approach involves the effect of oxygen demand on the body, one's culture, nutrition, genetic-hereditary background, race or nationality, and takes into account varying forms of existing hypoxia.

It is also important to understand that:

All of these holistic approaches are complimentary to, not a substitute for, orthodox medical (and ocular) treatment. Fundamental to the former system is an acceptance of the premise that a patient's life-style and willingness to participate in the healing (or preventive) process can significantly affect the course of his or her health. Such a premise can actually expand the role of health care professionals beyond purely biomedical concerns into psychological, psychosocial, environmental, and spiritual domains....⁶

It should be mentioned that pure holistic methods may not be able to be used in dealing with every patient, simply due to the fact that not all patients believe in this avenue or have the desire to attempt it. With this in mind, it is possible to look more closely at some specific aspects of holistic optometry.

THE PERTINENCE OF NUTRITION

It has been shown that vitamins, minerals, protein, carbohydrates, and certain herbs have a definite effect on vision. There has been a surge of research in the past twenty-five years to gain more information about the connection between nutrition and vision. A breakdown of the most recent findings is discussed next.

Vitamin A is known by many as the "eye" vitamin. It is also called retinol, and its main function dealing with the eye seems to be to promote adequate rod functioning. This is due to the fact that, along with protein, Vitamin A forms rhodopsin in the rods of the eye. This substance is broken up when the eye is subject to bright lights such as car headlights when driving. With adequate vitamin A, rhodopsin is easily reformed after the rods have been bleached. However, a deficiency in vitamin A causes slow or imperfect regeneration of rhodopsin and, therefore, poor visual adaptation to changing illuminations. Although it is not completely clear, fluorescent lights may contribute to a vitamin A deficiency in the eye since the flicker of fluorescence can be paralleled to the off and on glare of oncoming headlights causing the rods to be bleached continuously.

Since it is oil soluble, vitamin A is able to be stored in the body. However, if there should be a deficiency, ocular symptoms which could be manifest besides nyctalopia are: a dry or inflamed eye, sties on the eyelids, and, if severe enough, keratoconjunctivitis and xerophthalmia.

Good sources of vitamin A are vegetables which contain carotene (such as carrots) since this substance is used by the body in Vitamin A synthesis. The darker or brighter the color of the vegetable, the greater the carotene content. Carotene is released by chewing or cooking since it is stored within the indigestible cell walls. Current thinking is that zinc is needed by vitamin A (as well as other vitamins) as a facilitator and, therefore, should not be neglected in the diet.

The B complex vitamins appear to play an important part in vision. Ocular problems that quite possibly could be due to a deficiency of this complex are watery eyes, chronic eye fatigue, light sensitivity, and scotomas in the visual field. Deficiencies of specific B vitamins and the effects include:

- B₁ (Thiamine) - retrobulbar pain and, if serious enough, extra-ocular muscle paralysis.
- B₂ (Riboflavin) - burning and bloodshot eyes as well as a contribution to cataract formation. (Evidence of this was gathered from a study at the University of Georgia where several volunteers who had cataracts were given 15mg. of B₂ daily and within nine months all lenticular opacities were absorbed. When the B₂ was withdrawn, many of the cataracts reappeared.)
- B₁₂ (Cyanocobalamin) - decomposition of sheaths which protect nerve endings. The optic nerve is one of the first to be affected. This is caused by smoking and results in tobacco amblyopia.
- B₆ and B₁₅, along with B₂, vitamin C, pantothenic acid, and choline - increased intraocular pressure (IOP) according to Dr. Ben C. Lane, a New Jersey optometrist and researcher.

It is also interesting to note that stress and increased amounts of white refined sugar deplete many nutrients, including the B complex, within the body.⁷

Vitamin C is the most stable of vitamins even though it is unable to be stored in the body. Studies have shown that this necessary vitamin, if given in high dosage, may prevent diabetic cataracts, may be effective in the treatment of glaucoma, and may quicken the healing of corneal ulcers.⁸ The healthy crystalline lens is rich in vitamin C, whereas very little has been found in that of corpses with cataracts and/or glaucoma. Vitamin C also helps in keeping capillaries in good condition, therefore, reducing the change of retinal hemorrhages and/or senile macular degeneration (SMD). It is important to note, however, that this vitamin comes in two forms: bioflavonoids and ascorbic acid. Other than the fact that bioflavonoids may prevent diabetic cataracts and can be obtained through rose hips, further information about

its comparison to ascorbic acid as a form of vitamin C is beyond the scope of this paper.

Vitamin D and calcium (which go together, since calcium needs vitamin D for proper absorption) along with chromium seemingly alter the scleral structure by dehydrating it. If this does not happen due to an insufficient amount of vitamin D, calcium, and/or chromium, it is theorized that the eye may stretch and expand due to inherent IOP which further results in axial myopia. Since the D group of vitamins is produced by the ultraviolet irradiation of provitamins (ergosterol and other related sterols) in the skin, moderate exposure to sunlight is the best way to obtain adequate levels. Milk is another supplier of vitamin D and calcium, but even a quart per day would not provide the recommended amount of this vitamin necessary for proper nutrition.

Vitamin E is also believed to help prevent axial myopia since it makes the collagen fibers in the sclera healthy. With a deficiency, these fibers lose their elasticity and are unable to return the eye to its normal shape after near point stress occurs (due to contraction of the ciliary body) or after a periodic increase in IOP. In addition, a vitamin E deficiency may cause corneal edema, cataracts, and retinal problems. Other studies⁹ using vitamin E indicate that:

- it enables new vessel formation which may possibly arrest or reverse an anomaly such as SMD.
- in Italy, patients over age 40 who ingested E reduced their presbyopia to the point where they could read without an add.
- scotomas due to retinal degeneration were reduced.

Besides vitamins and minerals, there are other elements which play a part in ocular functioning. One study looks into the affect of protein on the

development of myopia.¹⁰ Two Indian tribes in Canada were compared and it was found that the tribe which had greater access to fish and game, and therefore a more protein-filled diet, had a lesser prevalence of myopia than the tribe which lacked protein. Dr. Ben C. Lane found in his research that the best overall predictor of increasing myopia is the amount of refined carbohydrate intake as compared with total carbohydrate intake. He feels that nearsightedness is dependent on this factor as well as sustained nearpoint stress.

Of all the herbs which supposedly have a positive effect on the eyes, euphrasia (eye-bright) is the main one for protecting and maintaining the health of the eye. Besides acting as a catalyst to speed up the action of vitamin A and riboflavin in the eyes, it has an astringent and soothing effect on conjunctivitis and will remove cysts which may result. Other herbs which are thought to benefit the eye include golden seal root, bayberry, raspberry leaves, quince, and cayenne. These can be combined and externally used as an eyewash, or ingested in the form of a tea or a tablet. If questioned by a patient, it is good to know that at present several companies produce a tablet (to be taken specifically for the eyes) which contains many of the vitamins and herbs previously mentioned.

The effect of allergies on the visual system in relation to diet has recently been canvassed. Studies point toward a relationship between food sensitivity and contact lens intolerance. When eye sensitivity is related to certain food allergens, it is necessary to remove the offending allergen. It is assumed that a nutritionally balanced diet can increase contact lens comfort as well as improve other optometric findings. The reason for this is:

Most foods to which a patient may be allergic tend to be acid-forming in the body. Studies show that chronic systemic acidity may impede visual function (cause accommodation and convergence

insufficiency, muscle fatigue, slow readers, hyperactivity, acid tears..decrease oxygen flow to brain & eye). When an allergic reaction occurs, the affected cells give off hydrogen ions, causing the body fluids to become more acidic...Chronic accumulation of such fluids in a particular part of the body is edema. This swelling can cause the eye lids to become puffy..and bags or dark circles under the eyes. These may be definite signs of allergy and an indicator of eye and potential contact lens problems.¹¹

Since patients with allergic reactions are usually low in vitamin C (research by William Phillipot, M.D.), the antihistaminic action of this vitamin may enable them to tolerate food they otherwise could not eat.

One final nutritional application of holistic optometry is concerned with IOP reduction. Virno et al.,¹² in 1967 reported a pronounced reduction of IOP in glaucomatous eyes after patients ingested high doses of vitamin C. It was also found that for the suspected ocular hypertensive patients, topical, as well as systemic, use may decrease IOP. "One proposed mechanism is a depolymerizing effect on mucopolysaccharides in the trabecular meshwork. Virno's theory is that the normal, relatively high, level of ascorbate in the aqueous humor maintains the potency of the outflow channels. Consequently, it seems it is important to have an adequate supply of ascorbate or ascorbic acid in the diet."¹³ This is another way in which vitamin therapy can have a positive affect on patients.

AN OUNCE OF PREVENTION...

The ultimate goal of preventive optometric care is to prevent the initial development of visual problems. This is not always possible, though, since patients will many times come to the optometrist after a problem has already

begun to develop. In optometry there is more of a tendency toward early detection of problems rather than true prevention. Optometric Preventive Health Care¹⁴ offers a systematic approach of preventive vision care to assist practitioners in utilizing this type of care in their practice. In this manual, six major visual conditions are discussed in terms of preventive care and treatment. These are myopia, hyperopia, astigmatism, presbyopia, amblyopia ex anopsia, and strabismus. To be concise, only a few examples in this area will be given.

First, it must be stressed that, as with all holistic procedures, the patient understands what will take place and that a commitment is made. Taking myopia into consideration, a patient with "functional" myopia, as opposed to "genetic" myopia, will have a far greater success rate in terms of results using preventive and/or stabilization techniques. Some preventive guidelines include:

- slightly under-correcting the minus sphere, but insuring adequate vision so the patient doesn't need to strain for clear distance vision.
- using low plus single vision spectacles or bifocals set low (if higher myopia) for all near activities.
- putting the patient on accommodative-convergence training.
- focusing on a distant object every so often when reading.

"There is now considerable evidence that myopia is not always an inherited condition. That is myopia is frequently found in youngsters demonstrating no traceable hereditary factors. Some investigators theorize that an individual may more likely inherit a susceptibility to myopia but development of the condition and the rate of progression may relate to visual habits, nutrition and environmental factors."¹⁵ Early warning signs of myopia can be momentary

distance blur after prolonged nearpoint viewing, distance blur at night, squinting to see better, and variable vision (unstable focus).

Preventive and treatment measures exist for conditions other than myopia. For instance, plus lenses at near assist hyperopes above +0.75 D. Presbyopes can benefit from the lowest possible nearpoint plus correction if another set of glasses with a slightly stronger power for near is also incorporated for occasional use under visually demanding conditions. These patients may also experience convergence insufficiency, and therefore, training may improve overall nearpoint skills. Once again, goals vary depending on each particular patient's needs. This is true of all visual conditions including the case of amblyopia ex anopsia, in which the two basic treatment goals are 1) to improve the visual acuity of the amblyopic eye and 2) to improve binocularity, fusion and stereopsis.

In talking about non-optical conditions, SMD may be caused from reduced circulation due to atherosclerosis.¹⁶ A preventive measure in this case might be increased circulation via improved physical fitness since it has been shown that a sedentary life is one of the major contributing causes of atherosclerosis. Here again, vitamin C promotes an increase in nutrients to extremities such as the macular area of the retina by increasing vascular circulation primarily in the capillaries.

Prevention of cataracts (discussed earlier in terms of nutrition) by way of pharmacological therapy is being investigated by doctors from the University of Minnesota.¹⁷ It was discovered that the enzyme gamma glutamylcystein synthetase plays an essential role in protecting the lens against degeneration, and its concentration decreases markedly with age and is absent in the eyes of many cataract patients. Another causative factor has been shown to be the ultra-violet components of sunlight. This will be discussed more thoroughly later.

One final area of prevention deals with learning disabilities. "Refined carbohydrates and chemical additives contribute to a poor learning performance. High levels of copper, lead, mercury, cadmium, aluminum, and nickel are all too common in learning disabled children compared to normal children. Diagnosis and remediation are tremendously important... (in those who are affected)."¹⁸ This is just another way in which prevention can be instilled into an optometric practice. It is up to the individual optometrist to further pursue this avenue.

BIOFEEDBACK - ROUTE TO ANS CONTROL

The definition of biofeedback, as stated in Taber's Cyclopedic Medical Dictionary, begins with "a training program designed to develop the individual's ability to control his autonomic nervous system (ANS)." Julius Segal, involved with the National Institute of Mental Health, writes:

Although researchers in the field are rightly cautious, they regard biofeedback as an avenue for returning to a more holistic kind of medicine in which the patient is taught to acquire more responsibility over his own health....Researchers see their techniques as related to other, older approaches such as meditation, yoga....Such approaches share an emphasis on providing the patient with a new perception of himself and his body by teaching him techniques he can use for himself. Biofeedback shifts some of the responsibility for health onto the patient. More important, perhaps, it encourages attention to the relationship between health and life patterns--and away from the expectation of an instant pharmaceutical cure (1975).

Regarding optometry, biofeedback has been used to achieve control over vergence, version, and torsional movements, nystagmus, amblyopia, strabismus,

accommodation, and blepharospasm.²⁰ More recently, this method has been successful in reducing functional myopia by teaching patients to gain voluntary control of their accommodation.²¹

UV LIGHT - WHO'S RIGHT?

When confronted with the question regarding the status of ultraviolet (UV) light, there appears to be controversy about its effects; but perhaps there is more continuity in the research than there seems to be. John Ott, author of Light, Radiation and You, believes that full spectrum light is essential for good health and that persons who submit themselves to artificial fluorescent light may promote a decreased level of performance, or, more seriously, may have a higher chance of acquiring cancer. Others claim that sunlight aids in the healing process, has a positive affect on systemic problems, and is good for one's overall health, well being, and physical appearance.²² Those who agree suggest the use of full spectrum lighting indoors (which mimics the sun) as well as full spectrum lenses which allow as much of the natural spectrum to pass through as possible.

Recent research, somewhat contradictory to that which was previously discussed, indicates that the crystalline lens absorbs longer UV radiation, or UVA, which equals the UV between about 315 and 400 nm. Those who are more susceptible to ultraviolet light (ie. those living near the equator as opposed to those closer to the poles) tend to acquire senile "brunescant" cataracts earlier in life.²³ What similar research has also found is that SMD and cystoid macular edema (CME) have a higher prevalence in aphakic eyes.²⁴ It appears that although sunlight is beneficial to one's health, an excess may be detrimental in certain ways. Even though some progress has been made in this area, more concrete evidence is necessary before clinicians can rely on its implications with greater confidence.

CLOSING WORDS

In summary, it is possible that holistic aspects are actually being incorporated into every optometrist's daily routine. The mere fact that a case history is taken which includes systemic problems and their medications, allergies, occupation and hobbies indicates that more is thought about and dealt with during an exam than just the eyes. "Body, emotions, mind, will and spirit are elements of the human system which is an ever-evolving dynamic process."²⁵ To be a fully effective primary care practitioner, an entire personality sketch of a patient is necessary including stress levels and diet--even their attitude and outlook on life. It is of the utmost importance, then, that the patient provide the doctor with honest information so as to make possible an accurate diagnosis. If a specific treatment is prescribed, it should, if at all possible, deal mainly with the cause as opposed to the symptom. Communication is important in that the doctor should discuss the treatment thoroughly with the patient to ensure complete understanding and agreement. It is then up to the patient to follow the treatment program diligently and learn as much about his condition as possible. Included in the doctor's responsibility is sound referral counseling and studied reasonable opinions on new or controversial theories and clinical procedures. Of course, holistic practitioners must not ignore the significant contributions offered by conventional medicine. Considering all of the investigative research, clinical knowledge, and the parallel with conventional health care, holistic methodology should be recognized as a valid and ethical mode of practice of which all optometrists should be aware.

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