The Journal of the Association of Schools and Colleges of Optometry

OPTOMETRIC EDUCATION

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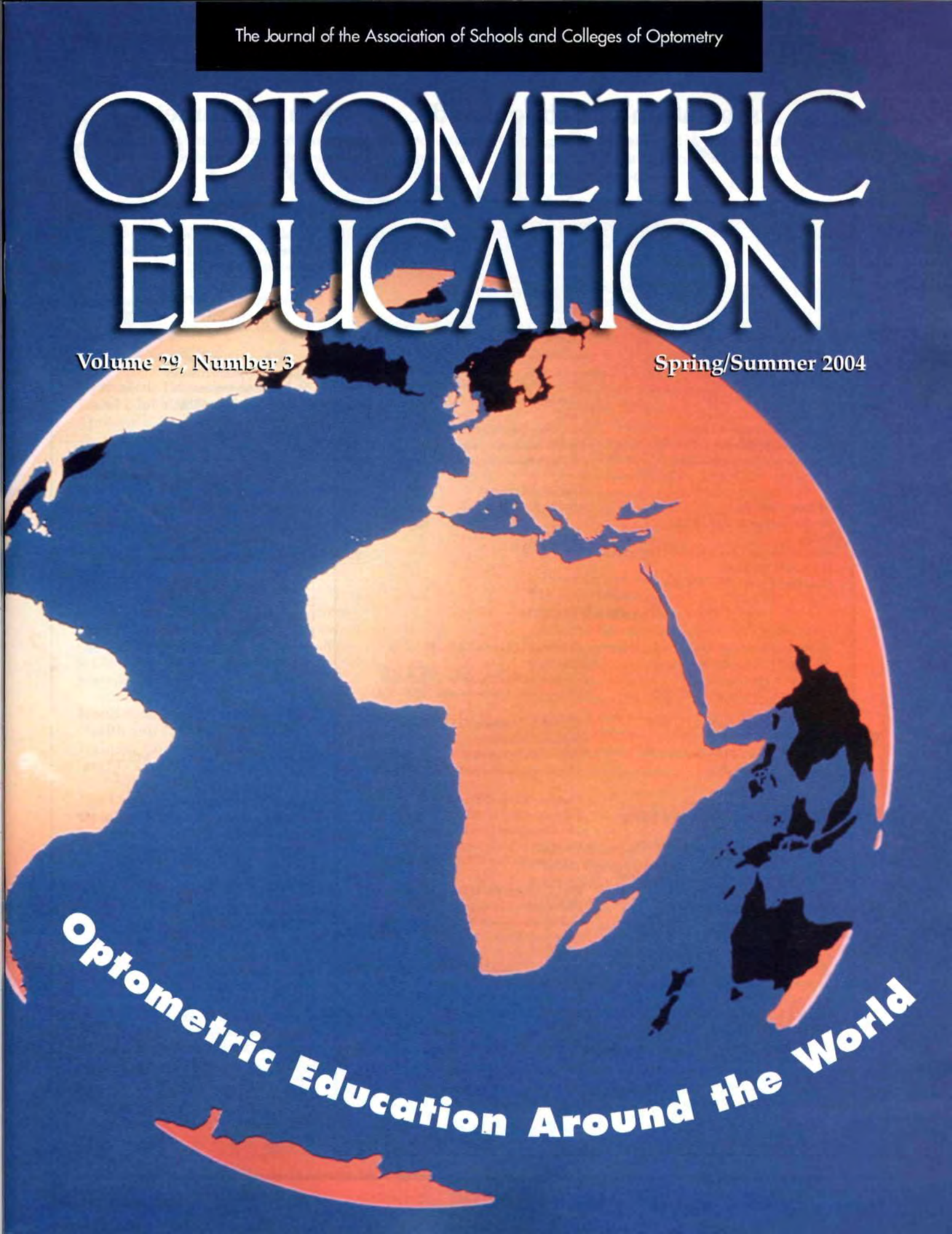

Optometric Education Around the World

Association of Schools and Colleges of Optometry

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DEPARTMENTS

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Guest

EDITORAL

Global Perspectives on the Development of Optometric Education

Anthony F. Di Stefano, O.D., M.P.H., F.A.A.O.

Optometry's growth in North America over the last 100 years has been driven by the increasing needs of the public for quality, cost-effective, and accessible eye and vision care. Underpinning optometry's expanding scope of practice and its responsiveness to society's need for ophthalmic services and products has been the continuous and dramatic improvement in optometric education.

Notwithstanding the significant improvements in access to vision and eye care in the United States, *Healthy People 2010* recently underscored the gaps and disparities that still exist in our own society. Nevertheless, the challenges in the United States are dwarfed by the staggering dimensions of the disparities internationally. The World Health Organization (WHO) recently concluded that inadequate and unfairly distributed resources worldwide threaten to potentially double the prevalence of blindness by 2020. These disparities are compounded when "blindness" is defined in terms of a handicapping visual condition, such as uncorrected refractive error or low vision, which preclude effective functioning in the community. The resultant loss of productivity in both developed and developing countries is immeasurable. WHO's *VISION 2020* campaign is aimed at attacking these challenges globally and eliminating avoidable blindness by the year 2020.

Given the disparities in resources between developed and developing countries, it is not surprising that optometric education lags far behind in many countries. Global disparities in access to vision and eye care are usually accompanied by disparities in optometric education. Certainly, the growth of the profession of optometry in these underserved countries is a function of the social, political and economic context in which it functions. However, the one lesson that optometry has consistently learned worldwide, with very few exceptions, is that advancements in education must precede any meaningful change in professional development and legal recognition.

Education provides the power of knowledge and skill; education allows practitioners to be more responsive to public health needs; education confers strategic leverage for change; education rewards the individual with personal and professional satisfaction; education enables an expansion in the economic base of practice; and education grants political credibility to grow as a profession.

This issue of **Optometric Education** presents a global perspective on the development of optometric education. It features articles that underscore the significant variability in optometric education and the challenges that this poses to a harmonized global model for optometric training.

The lead article places the evolution of optometric education within the context of globalization and the emerging external forces, which will impact such issues as international standards for accreditation, assessment and pedagogy. The article introduces the World Council of Optometry (WCO) and its fellowship program as an example of new strategies designed to strengthen and expand optometric education infrastructure worldwide. It also presents the European region as an example of the significant diversity in educational levels, even within a developed region. Each of the following articles is authored by a WCO Fellow with firsthand insight into the challenges and opportunities facing each country or region.

Ghana is presented as an example of a developing country that recently evolved through a four-year Bachelor of Science Program to a six-year Doctor of Optometry Program offered at both the University of the Cape Coast and the Kwame Nkrumah University of Science and Technology. Japan is profiled as an example of a developed country in which optometry is not legally recognized and in which the practitioners have taken the initiative to institute an optometric "self-certification" system to standardize educational, experience and competency levels.

In Nepal, a Bachelor of Optometry Program has been established within the Tribhuvan University Institute of Medicine, which trains optometrists alongside postgraduate ophthalmology residents. It serves as an example of an interdisciplinary initiative that is grounded in respect and cooperation between optometry and ophthalmology and that promotes community-based strategies to address the severe access problems in Nepal.

India, a country with no legal recognition of Optometry, has severe variability in optometric education. The article highlights the recent formation of the Indian Association of Schools and Colleges of Optometry (IASCO) as a crucial step in harmonizing optometric education in India prior to legislative efforts for the legal recognition of optometry. Lastly, an overview of optometric education in Latin America is presented. Our regional neighbor to the South, Latin America is poised for significant improvements in optometric education. Notwithstanding the significant variability in educational levels from country to country, the recent formation of the Latin American Association of Optometric Education and Faculty (ALDEFO) promises to be an historical step in the advancement of optometric education in this region.

We are grateful to Bausch & Lomb for its invaluable support of this special issue on international optometric education. This issue of **Optometric Education** is designed to not only inform the reader, but more importantly to serve as a call to North American optometrists and optometric educators to support the growth of optometry internationally. Our shared values and commitment to improving vision and eye care globally demands a greater commitment to strengthening optometric education worldwide.

Dr. Di Stefano is executive director of the World Council of Optometry. He is also vice president and dean for academic affairs at the Pennsylvania College of Optometry.

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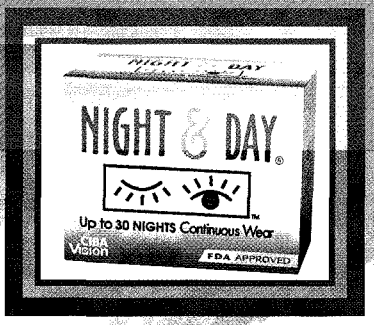

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REFERENCED NOTES: 1 Data on file. CIBA Vision. 2 Harvitt D, Bonanno J. Re-evaluation of the oxygen diffusion model for predicting minimum contact lens Dk/t values needed to avoid corneal anoxia. *Optometry and Vision Science.* 1999; 76(10):712-719. 3 Keay L, et al. Bacterial Populations on 30-night Extended Wear Silicone Hydrogel Lenses. *CLAO Journal.* 2001; 27(1): 30-34. 4 Schafer J, Barr J, Mack C. A characterization of dryness symptoms with silicone hydrogel contact lenses. *Optometry and Vision Science.* 2003; 80(12S):187. 5 Dillehay S, Long B, et al. Patient experience and management in HDk silicone hydrogel soft contact lenses. *Optometry and Vision Science.* 2003; 80(12S):186.

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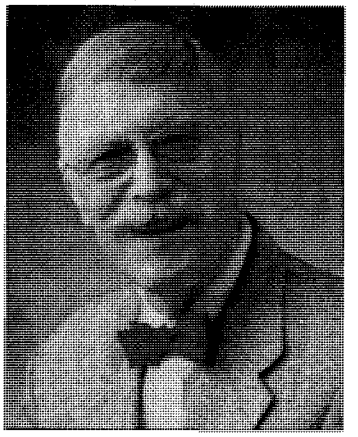
MEMORIAL

John J. Crozier, O.D., F.A.A.O.*

1926 - 2004



Optometry lost one of its finest recently when Dr. John J. Crozier passed away. John wasn't just a great optometrist or a respected optometric educator. Most importantly, he was a fine human being. He was kind, he was gentle, and he devoted his life to his profession and the college he so faithfully served.

Although we were both born and raised in Philadelphia and our paths probably crossed many times, I didn't get to know John until I accepted a position at the Pennsylvania College of Optometry in the mid 1960's. We both attended the same high school although I was a few years behind him. We both graduated from PCO although, again, he graduated some years before me. I also started practicing in the Kensington section of Philadelphia where John practiced. We had a lot in common and during my time at PCO we often reminisced about the good old days at Northeast High and "K and A" (Kensington and Allegheny Avenues, a notorious neighborhood intersection).

Most memorials document the many accomplishments of the deceased, but I will leave that to other memorial writers, of whom there will undoubtedly be many. For me the accomplishment of greatest significance was the rock-solid advice he often provided to so many of us. After I left PCO in 1978, I usually only saw John at national meetings or PCO alumni functions. I could always count on a wide smile, a hearty greeting and sincere inquiry about my wife, my family and the progress of my career. He always made me feel like a member of his family.

And so we say goodbye to "Dr. John." His passing leaves an empty space that will be impossible to fill.

Lester E. Janoff, O.D., M.S., Ed.
Editor

**Dr. Crozier was emeritus vice president and dean for student affairs at the Pennsylvania College of Optometry. In 1974 he was a consultant to the Association of Schools and Colleges of Optometry and established ASCO's first office in Washington, D.C.*

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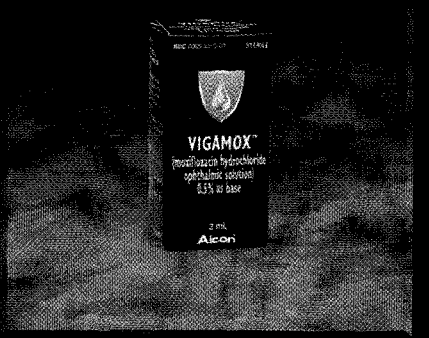

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INDUSTRY NEWS

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Vistakon Welcomes New Professional Affairs Team

As Vistakon's Dr. Stan Yamane retired in April after twelve years as vice president of professional relations, he introduced "The Next Generation" of Vistakon leadership. Dr. J. Patrick Cummings was chosen as the new vice president of professional affairs. Dr. Cummings has been in a private group practice in Wyoming since 1977 and has been active in the American Optometric Association, most recently serving as president. The new director of academic affairs is Dr. Cristina M. Schnider. Dr. Schnider has 20 years experience in optometry including clinical practice, clinical and didactic teaching, academic and industry research management. She will fill the position left vacant by the death of Dr. George Mertz. Dr. Derrick L. Artis has joined the Professional Affairs Division as director, professional affairs. He will be responsible for managing Vistakon's Professional Affairs Speaker Bureau and other programs developed for practicing Eye Care Professionals.

Vistakon Opens Vision Care Institute

Vistakon, Division of Johnson & Johnson Vision Care, Inc., introduced The Vision Care Institute to enhance the technical training of students and practitioners and to serve as a resource for the most current information in the field of vision care.

"The mission of The Vision Care Institute is to help prepare students for their careers as ECPs," according to Howard B. Purcell, O.D., director of the institute. "Putting participants in real world scenarios and guiding them through the technical and communication skills process will benefit the new ECP as well as their patients."

In its first year, The Vision Care Institute will work in tandem with optometry schools and colleges to give fourth year students hands-on, patient-focused experiences using the latest professional products, with a focus on Acuvue Brand Contact Lenses.

CIBA Expands 2004 Marketing Program

Ciba Vision, the eyecare unit of Novartis, has so much confidence in its Night & Day silicone-hydrogel contact lenses it is now offering to refund consumers' purchase price if they're not satisfied with the contact lenses. The move is part of a two-pronged effort by the company to attract new wearers of contact lenses while reducing the number of consumers who drop out of the CL marketplace. Last year 3.3 million new consumers began wearing CLs, according to Andrea Saia, president of CIBA Vision's global lens business, but another 2.6 million people became "dropouts." The total universe of CL wearers in 2004 was 34.3 million, Saia noted.

The money-back Platinum Guarantee is part of a stepped-up marketing program for Ciba's contact lens line in 2004. The company is increasing its investment in direct-to-consumer advertising by more than 60 percent this year after a similar 60 % increase last year over 2002 according to Jeff Cohen, vice president, North America marketing.

Hoya Agreement Will Facilitate Direct Ordering

Hoya Vision Care and VisionWeb have entered into an agreement to allow direct ordering of Rx- and ophthalmic-lens products through VisionWeb's electronic ordering platform. Under their agreement, ECPs will be able to order their prescription lenses electronically from any of the 16 Hoya laboratories, transmitting Rx orders directly to Hoya via www.visionweb.com Hoya also announced an e-commerce partnership with Eyefinity, the optical industry's most widely used Internet portal to market Hoya's lens products and to develop an integrated laboratory Rx ordering program for Hoya customers. Under the agreement, Hoya's advanced lens materials, coatings and progressive lenses will be featured on eBuy, Eyefinity's online order center.

"This agreement represents a great step forward in ease, speed and accuracy for the eye care practitioners ordering Hoya lenses," said

(Continued on page 89)

BAUSCH & LOMB

Bausch & Lomb is proud to sponsor this issue of ASCO's journal on international optometric education. Celebrating its 150th anniversary in 2003, Bausch & Lomb employs approximately 11,500 people worldwide and its products are available in more than 100 countries, making Bausch and Lomb one of the best-known and most respected healthcare brands in the world. Its focus is clearly stated in its mission, "Perfecting Vision, Enhancing Life."

As a company with a strong global presence, Bausch & Lomb has fostered numerous international projects. Most recently the company donated a million dollar gift and became the first corporate patron of Vision 2020/the Right to Sight – a global effort to eradicate avoidable and treatable blindness by the year 2020.

Bausch & Lomb also recently launched its Visionaries Recognition Program to identify and honor individual eye care professionals – or 'Visionaries' – whose life's work has been committed to perfecting vision and enhancing life. These 'Visionaries' will be individuals who have demonstrated excellence and innovation in clinical care or research, scholarship, leadership in advancing eye care, and participation in volunteer or philanthropic activities that enhance life. The nominations have closed and the winners will be announced in June 2004.

In addition, Bausch & Lomb has long supported the International Contact Lens Educators, an association dedicated to raising the standard of contact lens education and promoting the safe use of contact lenses worldwide.

Bausch & Lomb is also pleased to support a number of ASCO's programs, including its Corporate Contributors Program and the annual meeting of its clinic directors/administrators' special interest group.

We salute Dr. Tony DiStefano for his coordination of this special issue of Optometric Education that expands our horizons to the needs and challenges of the wider world.

Dennis Bassett
Professional Relations and
Business Development
Bausch & Lomb, Inc.

Optometric Education in The Era of Globalization

Anthony F. Di Stefano, O.D., M.P.H.

Abstract

The growth of optometric education worldwide is increasingly influenced by external forces such as the World Trade Organization (WTO) and its General Agreement on Trade in Services (GATS). The subsequent demand for a harmonized approach to setting, monitoring and evaluating international educational standards will challenge the profession. The wide variability in the scope of practice and education across countries and regions will call for coordinated leadership to address future challenges and opportunities. The World Council of Optometry (WCO) has developed several strategies to address the growing need for the improvement in optometric education, especially within developing and emerging societies.

Key Words: Globalization, education, accreditation, competency-based education, and the World Council of Optometry

Dr. Di Stefano is executive director of the World Council of Optometry. He is also vice president and dean for academic affairs at the Pennsylvania College of Optometry.

Introduction

Globalization is permeating every aspect of the complex economic, social and political fabric that covers the planet. The global marketplace is witnessing a transformation of historical proportions. Advances in information technology, mass marketing, capital flow across borders, international mobility of labor, have all set the stage for the "globalization of the professions."[1]

The increasing international trade in education and training has been fueled by bilateral and multilateral agreements among countries. Such agreements have been dwarfed by the emergence of the World Trade Organization (WTO) and its General Agreement on Trade in Services (GATS), which have increasingly necessitated the development of common educational standards and the mutual recognition of professionals to practice their discipline.

These dynamics present both challenges and opportunities for optometry and its educational and training programs. The immediacy of globalization impacting optometry was underscored in December 2002 when the World Council of Optometry (WCO) received a formal inquiry from the WTO Director of Trade in Services.[a] The communiqué asked for consultation on how our "international professional services association"(WCO) viewed the applicability of the WTO *Disciplines on Domestic Regulation in the Accountancy Sector* to the profession of optometry. Similar letters were sent to global associations representing medicine, dentistry, nursing and other health professions. Globalization has now gone beyond the information technology, accounting and construction sectors; globalization is knocking at the door of the health professions.[2,3,4]

But how does a young profession with significant variability in legal recognition, educational levels and scope of practice respond to the challenge of global standards? Can curricula be harmonized across countries and regions? Are there national or regional models that can serve to stimulate global convergence? Will accreditation, certification and assessment systems that function within an individual country be transportable to the international level?

What will be the roles of national, regional and world optometric bodies in responding to these challenges?

Over the past ten years, the World Council of Optometry has anticipated the global trends in optometry and the significant challenges that they will pose for the harmonization of optometric practice and education. Notwithstanding the variability in scope of practice among states and provinces in North America, our region has relatively uniform standards of education and clinical practice. As will be quite evident in the following articles, other regions are characterized by significant variability. The European Region, which is presented in this article as an example of this variability, is also an excellent example of regional strategies designed to harmonize optometric education and practice.

European Optometry and Optometric Education

The state of optometric education worldwide is in a dynamic state of change. Each region has its own history and variability. The European Council of Optometry and Optics (ECOO), the longest standing regional optometric body, has published extensive national comparisons, which underscore this variability. ECOO is the confederation of the

leading professional bodies representing optometrists and opticians in twenty-three countries of Europe.

According to ECOO, the term "optometrist" refers to those professionals who examine patients' eyes and sell corrective spectacles; and the term "optician" refers to those who make and sell spectacles only. Opticians, who examine patients' eyes and perform refraction, are increasingly known either as optometrists or sometimes optician-optometrists.[5] Consequently, the professions of optometry and optics are intertwined in Europe. They are legally practiced in all European countries except the Czech Republic, Greece, and Slovenia. Seven countries have legal recognition for "optician-optometrists"; seven countries have legal recognition of "optometrists"; and in five countries, optometrists have "de-facto" recognition. This latter category refers to countries in which the law is silent, or is unclear on the matter, or is not applied consistently, for example in France and Italy.[6]

Significant changes are currently occurring in the scope of optometric practice in Europe. For example, the 1999 Crown Report on the *Review of Prescribing, Supply and Administration of Medicines* in the United Kingdom will provide an increasing range of health professions, including optometrists, with therapeutic prescribing privileges.[7] More recently, both the Netherlands and Norway were granted legal authority to utilize diagnostic pharmaceutical agents.[8,9]

Given the variability in the legal status and scope of optometric practice in Europe, it is not surprising that there is significant variability in the levels of optometric education. According to ECOO, European optometrists are trained increasingly at universities and institutes of an equivalent level. Such courses generally last three or four years. This is the case in Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom (**Table 1**). In other countries, optometrists are typically trained at a technical school after high school. Such courses can last from two to three years and include a period of apprenticeship with an optical firm.[10]

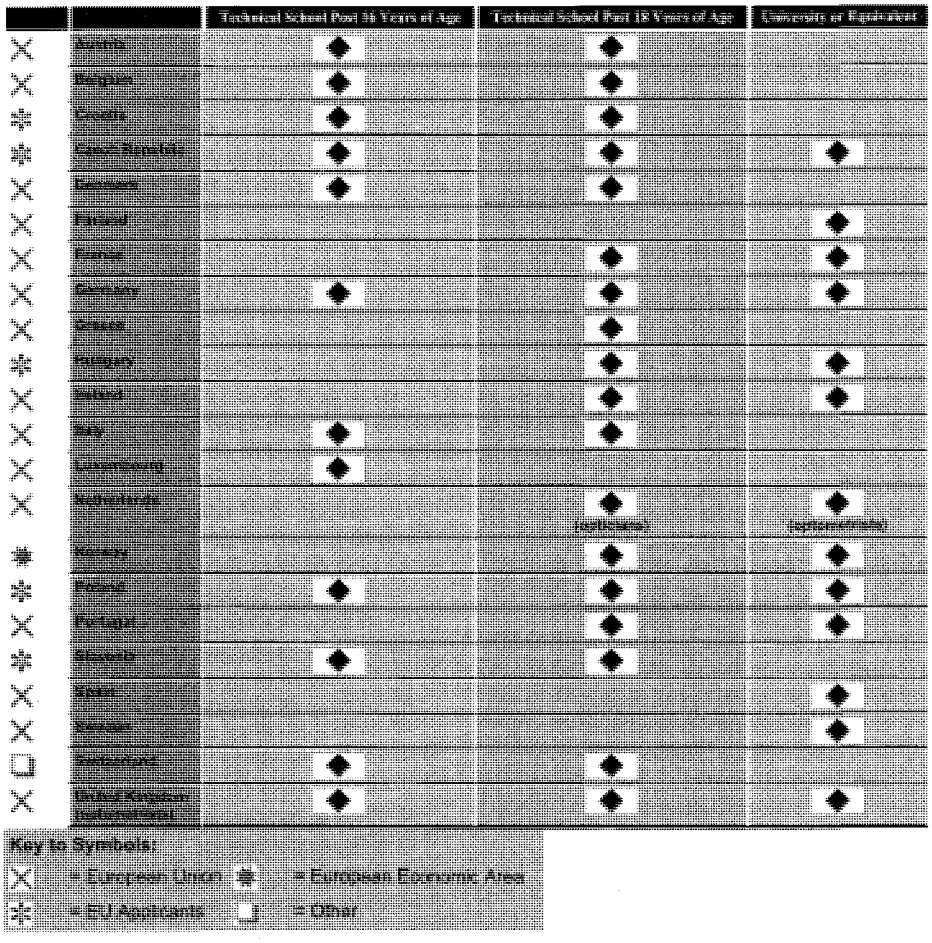
Significant changes in the European Union over the past several years have provided external pressures for the greater harmonization in higher education across Europe. These forces included: (1) the creation of the European Credit Transfer System (ECTS) by the European Commission to compare student workload across countries; (2) the call of the Sorbonne Declaration of 1998 for a common architecture such as the Anglo-Saxon BA, MA and PhD paradigm as a potential tool for increasing commonality; and (3) the stimulus of the Bologna Declaration of 1999 for the convergence of a "European space of higher education" in order to facilitate the movement of students across borders.[11]

These catalysts for European harmonization in education contributed to the development of the European Diploma in Optometry. The forces for European standardization of optometric education and training had begun. The European Diploma is managed by ECOO. Its goal is to provide a standardized assessment of knowledge and skills necessary for the practice of optometry in Europe. The diploma examination consists of three parts:

1. Visual perception and optical technology
2. Management of visual problems
3. General health and ocular abnormality

Successful candidates for the European Diploma must pass a written multiple-choice question examination and a practical (patient care) examination of all three parts. Completion of the written portion of the examination is a prerequisite for sitting for the corresponding patient care examination.[12] The successful implementation of the European Diploma will play an important role in harmonizing optometric education, and eventually, the scope of practice in Europe.

Table 1 Training of optometrists and opticians in Europe



World Council of Optometry Initiatives

The World Council of Optometry has long recognized that the continued professional development of optometry worldwide will depend on the improvement and harmonization of international optometric education. The variability in European optometric education is mirrored in most of

the other regions. Approximately 15 years ago, the International Optometric and Optical League (IOOL) — now the World Council of Optometry (WCO) — recognized the need to establish a clear and concise concept of optometry as the foundation for the harmonization of the profession worldwide.

In 1992 the IOOL organized the Paris "Think Tank." Optometric leaders from around the world met to develop a common concept of optometry that would unify the organization's purpose worldwide.[13] The following concept of optometry was formally adopted at the 1993 General Delegates Meeting of the IOOL in Venice Italy:

Optometry is a healthcare profession that is autonomous, educated, and regulated (licensed/registered), and optometrists are the primary healthcare practitioners of the eye and visual system who provide comprehensive eye and vision care, which includes refraction and dispensing, detection/diagnosis and management of disease in the eye, and the rehabilitation of conditions of the visual system.[14]

This concept now forms the foundation for describing optometry's role and responsibilities in patient care. It forms the basis for optometric education and provides a platform for promoting legislation that achieves this concept.

Today, the World Council of Optometry is the voice of optometry worldwide. Its mission is to "facilitate the enhancement and development of eye and vision care worldwide. It is the worldwide organization for the professionals working in the field of optometry, their associations and institutions."[15] Its objectives are:

1. To plan strategically to achieve the enhancement and development of primary eye and vision care by optometrists worldwide.
2. To promote high standards of education and practice by optometrists worldwide.
3. To unite and coordinate optometry worldwide.
4. To generally support aid programs directed at the provision of eye and vision care to societies in need.
5. To cooperate with any other organization concerned with the promotion and development of primary eye and vision care or the prevention of blindness.
6. To promote the advancement of the science of optometry for the benefit of mankind.

WCO is governed by a 21-person Governing Board, which is organized to provide equal representation from six international regions: Asia Pacific, Africa, Europe, Latin America, Middle East/Mediterranean, and North America. Figure 1, *World Council of Optometry International Regions*, displays the geographic distribution of the regions. The WCO is comprised of 53 associate/country members (voting) and 25 affiliate members (non-voting).

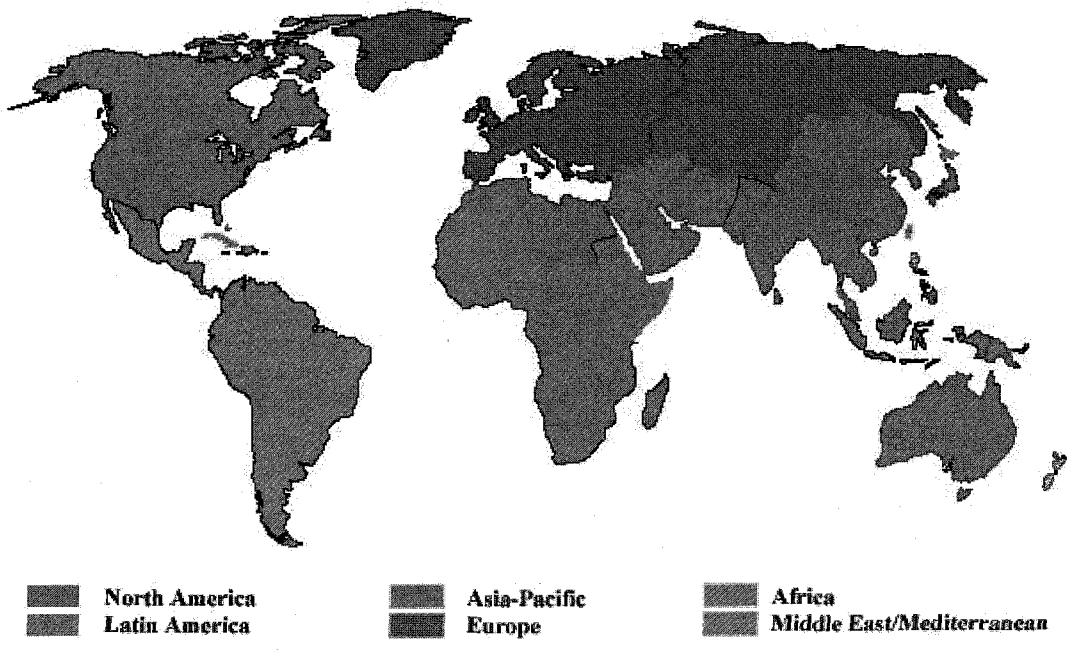
The Education Committee of the WCO is entrusted with the responsibility of advancing optometric education worldwide. Over several decades, WCO has provided direct and indirect support to developing programs. Currently, WCO utilizes two principle strategies in improve optometric education: (1) international conferences on optometric education; and (2) the WCO Fellowship Program.

The WCO has sponsored a series of *World Conferences on Optometric Education (WCOE)*. On a periodic basis, these conferences bring educators from around the world together to share recent advancements and address future needs in optometric education.

The first WCOE conference was held in Houston, Texas, in 1990. This

Figure 1

World Council of Optometry International Regions



inaugural meeting served as a template for future meetings. Faculty interaction, sharing of experiences and needs, and developing inter-institutional networks are essential ingredients of the conferences. The second session of the WCOE was held in Hong Kong in 1993, and the third session was in Cologne, Germany, in 1998.

In February 2002, the fourth session of the WCOE was held in Atlanta, Georgia. The conference was hosted by SECO International and provided participants an opportunity to take advantage of the SECO continuing education programs after the completion of the WCOE conference. That year, almost 250 educators from 41 countries attended the conference. Over 50 presentations and posters were presented. The main themes included cooperative programs, faculty development, educational technology, and curriculum development. The presentations were complemented with discussion groups and hands-on clinical workshops. The session concluded with recommendations for follow-up action and future conferences.

Each of these four WCOE sessions has played a very important role in strengthening new optometric educational programs by creating a unique opportunity for colleagues to interact, network, and share knowledge and resources. The next WCOE is scheduled for Milan, Italy, in May 2006.

The second key educational strategy of the WCO is the WCO Fellowship Program. The program was launched in 2000 and is designed to foster an exchange of knowledge and expertise, and to encourage international partnerships of all kinds in the furtherance of the WCO mission. As a result, the program provides a basis for establishing lasting ties among individuals, institutions, and organizations that are committed to improving vision and eye care globally.

Fellowships are granted to candidates with a commitment to service in both the public and private sectors, specifically in optometric education, patient care and community service, and organizational development. Fellowships are open to educators, students, practitioners and organizational leaders. The fellowship program aims to work deliberately to build human networks that are dedicated to the vision and eye care needs of the world. WCO fellowships can range from one month to two years in duration. Examples include a fellowship in:

1. ***Specific programs of didactic or clinical education*** for which an optometric educator travels to a country in need.
2. ***Educational administration*** **and** ***faculty and curricular development.***
3. ***Optometric community service*** designed to bring necessary care to needy populations while building local self-sufficiency.
4. ***Instructional technology and information systems*** designed to foster the sharing of optometric knowledge using new electronic systems such as the Internet, telemedicine, teleconferencing, etc.

Today, the World Council of Optometry is the voice of optometry worldwide. Its mission is to "facilitate the enhancement and development of eye and vision care worldwide. It is the worldwide organization for the professionals working in the field of optometry, their associations and institutions."

5. ***Professional development*** that addresses the need to build organizational, scholarly and institutional capacity.

The placement of WCO Fellows is based on the needs of the host country and the special expertise of the Fellow. Each fellowship requires a pre-approved program plan with specific action plan and program evaluation strategies. To date, Fellows have been placed in India, Nepal, South Africa, Ghana, Mali, Brazil, Bahamas, Vanuatu, Poland, Ecuador, Colombia and Lebanon. The Fellowship Program plays a pivotal role in linking the advancement of educational programs with building the capacity of the host country to support a practitioner base to meet the public health needs of the country.

More recently, the WCO, in association with the Association of Regulatory Boards of Optometry (ARBO) appointed a joint Committee to develop an internationally acceptable, global competency-based model of optometry. Such a model would build on the WCO Concept of Optometry and allow objective comparisons of optometric scope of practice between states and countries. This *Global Competency-Based Model of Scope of Practice in Optometry* will provide a rational framework for addressing the challenges of increased practitioner mobility across international borders. The Committee will present its final report and recommendations at the June 2004 World Congress on Optometric Globalization (WCOG) in Orlando, Florida.

Future Directions

The future of optometric education globally will be determined by how well the profession positions itself for the global forces impacting all sectors of the optometric enterprise. Optometric education, regulation, standards for products and services, and the industry itself are inextricably interwoven. Progressive change will depend on how well these individual components fit together into an integrated whole. The June 2004 Orlando World Congress on Optometric Globalization will provide a common stage for exploring these interrelationships. It will be an environmental scan of the profession in the era of globalization. It will help to frame the questions and the strategies for the continued growth of optometric education and practice. Some of the key questions to be addressed include:

1. Will international quality assurance standards be established to take into account both the diversity of educational levels presently existing, and the need for attainable quality improvement strategies?
2. Will a universal system for educational equivalency be established in order to facilitate comparisons

among programs and ensure public health safety when practitioners move across borders?
3. Is there a need for a world system for optometric accreditation that integrates the disparate systems and policies that exist between countries and regions?
4. What is the relationship between institutional and program accreditation, and individual competence assessments as required by some licensing and registration boards (quality assurance versus competence assurance)? Are both needed to ensure public health safety?
5. Will we bridge the disparity gap between developed and developing optometric educational programs through effective strategies of resource sharing?
6. Will the increasing growth of transnational educational providers be a catalyst for educational improvement and capacity-building within emerging countries with new optometric educational initiatives?
7. How can information technology and new strategies such as telehealth, distance learning and the Internet be used to address the resource disparities in international optometric education, while still assuring the quality of education?
8. How can we improve the quality of optometric education in developing countries and not increase the risk of "brain drain"?

Coordinated leadership at international, regional and country levels will be necessary to address these questions effectively. There will be no simple solutions, only opportunities for sustained growth and improvement.

Summary

The increasing need for quality eye and vision care worldwide creates an historic opportunity for the profession of optometry to continue its growth and responsiveness to community needs. The improvement of optometric education will be the foundation for this continuous growth. Over the next decades, external forces such as the World Trade Organization and the General Agreement on Trade in Services will hasten the demand for a harmonized approach to setting, monitoring and evaluating international educational standards.

The wide disparity in educational resources and the wide variability in educational programs will be formidable challenges for world optometry. The World Council of Optometry, in cooperation with national, regional and international strategic partners, must continue its efforts to respond to these challenges. The WCO Fellowship Program is just one example of targeted initiatives aimed at improving optometric education and organizational capacity, especially in developing and emerging societies. This special issue of ***Optometric Education*** highlights some of WCO's early fellowship projects. Their impact will ultimately be measured by how well they contribute to sustainable changes in each host country and institution.

Lastly, the future of international optometric education offers exciting and challenging opportunities. The many strategic questions raised by globalization forces external to the profession will demand continued coordinated leadership at all levels of the profession.

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The Emergence of University Optometric Education in Ghana.

John W. Randall, O.D., M.P.H.
David B. Kumah, B.Sc., P.G.Dip.Optom.

Abstract

University-based optometric education began at Kwame Nkrumah University of Science and Technology in Ghana in 1991. In order to meet the VISION 2020 goals of eliminating avoidable blindness in a developing nation such as Ghana, optometric education and practice must be improved and increased.

A second optometry school at the University of Cape Coast was established in 2002. Training has evolved from a two-year Postgraduate Diploma in Optometry to a four-year Bachelor of Science in Optometry to a six-year Doctor of Optometry degree. Improvements in curricula, equipment, and faculty have been made.

Further improvements are needed in facilities, faculty, equipment, teaching materials, and clinical training. Ghanaian optometric educational institutions are poised to greatly advance the quantity and quality of eye care for the people of Ghana and West Africa.

Key Words: VISION 2020, Prevention of Blindness, Refractive Error and Low Vision, Eye Care Workforce

Introduction

Ghana is one of the few countries in Africa with University-based Optometry education and a significant number of optometric practitioners. But the eye care needs of the populace dwarf the ability to train professionals and deliver eye care even now. Ghanaian optometrists are making great efforts and the profession is poised to make great improvements in the quantity and quality of training of optometrists and eye care practice by the year 2020. The following experience introduced Dr. Randall to the state of eye care in Ghana as he arrived to begin his fellowship:

In early 2001, I pulled up to the traffic light in Accra, the capitol city of Ghana. Several people approached cars to sell food and other items, wash windows, or beg. The young boy spotted my nice car and skin color quickly and ignored several other cars to come directly to my window to beg. His adult relative followed, gripping his shoulder. I could tell by the in-turned eyelashes that the cause of the man's blindness was probably trachoma.

Neither one of them really looked at me while asking for money. I paid little attention at first but then gave the standard greeting. 'How are you?' The boy raised his face to gaze at me and responded the standard 'I am fine, thank you.' I extended my right hand across my body, out the window, and motioned. The boy helped the man to reach and shake my hand. The man lifted his head and looked at me with scarred, sightless eyes. I fumbled for a few coins and gave them to him with as much respect as I could in the hot street. The light turned and we sped off through the traffic to our destination. How I wished his blindness could have been prevented and the boy could be in school.

Dr. Randall is an assistant professor at Pacific University College of Optometry and served as World Council of Optometry Fellow at Kwame Nkrumah University of Science and Technology in Kumasi, Ghana from 2001 to 2003. Mr. Kumah is a lecturer in the Department of Optometry and Vision Science at Kwame Nkrumah University of Science and Technology and a private practitioner in optometry in Kumasi, Ghana.

Socioeconomic and Cultural Context for Optometric Education and Practice

There are over 700 million people in Sub-Saharan Africa. Those countries with the greatest number of optometrists are South Africa with over 2,000 practitioners, Nigeria with about 1,000 practitioners, and Tanzania with over 300 practitioners. Ghana is next with over 50 practicing optometrists.[1] Other Sub-Saharan African countries have fewer than ten optometrists each.

Ghana became the first independent African country in 1957. It is similar to the State of Oregon in size. The land varies from coastal plains in the south to tropical rain forest to semi-arid savannah in the north. There are over twenty different languages and an equally large number of tribal groups. Christian, Muslim, and traditional Animist beliefs are all common. The two largest cities are Accra, the capitol with over two million people and Kumasi, the seat of the Asante throne and culture with over one million people.

Public Health Context

The population of Ghana is over 20 million and may be over 25 million by the year 2020[2]. Good statistics on the causes of blindness and visual impair-

ment are lacking. Cataract is believed to be the leading cause of blindness. Uncorrected refractive error is common and there is little awareness of low vision rehabilitation.[3] Trachoma is endemic to some areas of the country and efforts to eradicate it are being made by public health agencies and non-governmental organizations (NGOs).

River blindness has been greatly reduced due to the Onchocerciasis Control Project and similar efforts but still remains a problem in some areas[4]. Glaucoma is often advanced when discovered. There is little awareness of eye safety to prevent ocular trauma and impairment. There are few facilities able to manufacture glasses from a doctor's prescription. An eye examination may only cost three dollars but glasses will cost from $20 to $150. Per capita income is approximately $300 per year.[5]

Most health care professionals are concentrated in Accra and a few other cities. Smaller towns, cities, and rural areas often have little or no eye care personnel. University-based training is available in medicine, nursing, dentistry, pharmacy, public health, medical technology, and optometry. Specialty training is available in several disciplines including ophthalmology.

Table I summarizes the number of providers of eye and vision care. There are 46 ophthalmologists in Ghana[6]. About two residents complete training each year. There are also approximately 200 ophthalmic nurses.[6] Twenty to thirty are trained yearly. The number of ophthalmologists and ophthalmic nurses has been fairly static due primarily to emigration. There are 52 optometrists.[1] This has slowly increased from fewer than ten in 1990 before the establishment of the optometry program at Kwame Nkrumah University of Science and Technology (KNUST). There is no law regulating the practice of optometry so that scope of practice varies widely.

Table I. Year 2002 Ghana Eye Care Workforce

Provider Type	Number	Ratio to Population
Ophthalmologist	46	1:434,783
Optometrist	52	1:384,615
Ophthalmic Nurse	200	1:100,000

Note: Population estimated at 20 million people.[2]

Table II. Mode of Practice, KNUST Graduates[1]

Mode of Practice	Number of Graduates
Government, Military, or Mission Hospital	16
KNUST faculty, Ghana Education Service, and Optical Technicians Faculty, Graduate Students	8
Private Practice	17
Out of country	4

Table III. Practice location, KNUST Graduates[1]

Practice Location	Number of Graduates
Accra Area	20
Kumasi	8
Other Regional Centers	10
Rural	3
Out of Country	4

Evolution of Optometry and Optometric Education in Ghana — Historical Context

Many of the eye care personnel who were in Ghana before independence soon left. There were very few foreign trained native or expatriate optometrists in the 1980's[7]. Francis K. Morny, a British trained optometrist and orthoptist, started Premier College of Optometry in 1990. It was a one-year private course of study. Many lecturers came from the then University of Science and Technology in Kumasi (UST).

Dr. Morny was instrumental in the start of the Optometry Program in the Department of Physics at UST in 1991. A two-year Postgraduate Diploma in Optometry (P.G.Dip.) was offered. Vision Aid Overseas, a British optometric NGO, assisted by providing equipment, used spectacles, books, journals, and by organizing outreaches/eye camps with faculty, students, and visiting expatriate optometrists. Rotary Club International assisted by providing a minivan, used spectacles, and by sponsoring outreaches/eye camps. WorldVision International provided books, equipment, used spectacles, and sponsored outreaches/eye camps. The Voluntary Services Overseas of the British Council provided books and sponsored volunteer Isabel J. Brown to lecture from 1993 to 1995[8].

Applicants to the Diploma program were required to hold a science or nursing Bachelors degree. The course required 72 semester hours for graduation. The program is designed to prepare graduates to perform basic optometric practice including comprehensive eye examination, refraction, ocular disease recognition and referral, and limited ocular disease treatment required for the public's health. To date there have been 45 graduates of this program. The last P.G.Dip. students will graduate in 2004. The diploma will not be offered after that time. Nearly all the past graduates are still in the country and practicing optometry because the P.G.Dip. is not recognized in most other countries. Twenty-four graduates work in some educational or public health capacity (Table II). Most of these

optometrists also maintain some part-time private practice also.[1] Twenty-eight graduates practice in the metropolitan areas of Accra and Kumasi, ten graduates practice in other regional centers, and only three practice in rural locations (Table III).[1]

Optometric education is provided in government universities. KNUST is the second largest university in Ghana with about 13,000 students. KNUST also offers programs in medicine, pharmacy, community health, and medical technology. Students are admitted directly from high school into these programs. Education in health care professions varies from four to six years in duration. The government pays most students' tuition. The student must pay for books, equipment, fees, room and board. A small number of Ghanaian students with lower grades or test scores are admitted but must pay tuition. There are small numbers of foreign students from other African countries. These students must pay tuition. University graduates are required to perform a year of National Service. Efforts are being made to require optometry graduates to perform this service in government or mission hospitals as an internship.

In 2001 KNUST admitted the first students to the new four-year B. S. in Optometry degree program. The first class will graduate in 2005 with 18 possible graduates. The subsequent classes are projected to be 39 in 2006 and 34 in 2007.

The Bachelor's degree includes basic science instruction and didactic and clinical optometry instruction. The program is designed to prepare graduates to perform basic optometric practice including comprehensive eye examination, refraction, ocular disease recognition, referral, and limited ocular disease treatment required for the public's health. More instruction is provided in areas such as low vision, contact lenses, ocular disease diagnosis and management, vision therapy, and clinical instruction. The course requires 155 semester hours for graduation. The faculty desires to limit admissions to approximately 20 per year because of a shortage of books, equipment, facilities, and faculty but the administration encourages the admission of larger numbers.

KNUST students attend patients in a campus-based optometric clinic. Anyone can attend but most patients are university students, faculty, and family members. Students also attend ophthalmology and optometry clinics at Komfo Anokye Teaching Hospital. All students attend several (4-8) outreach clinics per year at schools, clinics, hospitals, missions, and other community sites. Most outreach clinics last from one to three days. Typically 100 to 200 patients are seen each day. With the greatly increased numbers of optometry students, opportunities for clinical experience need to increase.

The University of Cape Coast (UCC) admitted five students to a new, six-year combined B.Sc. in Vision Science/Doctor of Optometry course in 2002. UCC is the third largest government supported university. Optometry is the first health care professional program offered by the University. All students in this program are expected to complete the full six years for the O.D. degree.

UCC students receive a B.Sc. in Vision Science at four years but are not prepared for clinical practice yet. Almost all clinical instruction and practice will be conducted in the last two postgraduate years. The entire curriculum totals 205 semester hours (130 undergraduate, 75 postgraduate). It includes vision science, comprehensive eye examination, refraction, ocular disease diagnosis and treatment, low vision, contact lens, and vision therapy. Almost all needed books, equipment, facilities, faculty, and clinical arrangements remain to be developed. The first optometrists joined the faculty in 2003.

Future Development

Faculty development has been a prime goal of KNUST and the World Council of Optometry. In 1999 there were only three optometrists (P.G.Dip.), one ophthalmologist, and other supporting science faculty at KNUST. By 2005 KNUST expects to have two optometrists with Ph.D., two to three optometrists with M.Sc., two optometrists (P.G.Dip.), two ophthalmologists, and two B.Sc.Optom. graduate assistants on staff. Efforts are being made to require B. Sc. graduates to perform one year of internship or national service in a government or mission hospital.

KNUST hopes to start a two-year O.D. program by 2006, which would establish greater harmonization of degrees and education between the two Ghanaian optometry programs. Applicants will be required to have an appropriate Bachelors (optometry or vision science) degree and possible internship. This course requires 75 semester hours for graduation. The B. Sc.Optom. degree at KNUST is considered sufficient minimum preparation for general optometric practice. Admission to the O.D. program may not be offered to all Bachelor's graduates. It is intended that O.D. graduates will be prepared for careers as future optometric faculty, researchers, administrators, and low vision, contact lens, vision therapy, and ocular disease consultants.

Projected Impact on Eye Care Needs

Optometric workforce goals of *VISION 2020 —The Right to Sight* at country, region, and international levels vary from one optometrist per 125,000 to one optometrist per 50,000 people.[9] Present workforce needs for Ghana are projected to be 160 to 400 optometrists. If the population increases to 26 million, workforce needs will be 208 to 520 optometrists (Table IV).

The future number of optometrists could vary greatly. What seems certain is that with KNUST producing much larger numbers of optometrists in the new B.Sc.Optom. Program and the new Optometry Program at UCC, the minimum goal of 208 optometrists in the year 2020 will be met. Table V shows the numbers of recent graduates, present optometry students, pro-

Table IV. Year 2020 Ghana Eye Care Workforce Needs[9]

Provider Type	Population Ratio Goal	Provider Goal
Ophthalmologist	1:250,000	104
Optometrist	1:125,000 to 1:50,000	208 to 520
Ophthalmic Nurse	1:50,000	520

Notes: Year 2020 population estimated at 26 million people.[2] Country, region, and international optometric workforce goals vary.

Table V. Projected Ghana Optometric Workforce Years 2002 to 2020

Year	KNUST Graduates	UCC Graduates	Attrition	Optometrists
2002				48
2003	7	0	-1	54
2004	6	0	-1	59
2005	17	0	-1	75
2006	39	0	-1	113
2007	34	0	-2	145
2008	35	5	-3	182
2009	35	10	-4	223
2010	35	15	-4	269
2011	30	20	-5	314
2012	30	20	-6	358
2013	30	20	-7	401
2014	30	20	-8	443
2015	30	20	-9	484
2016	30	20	-10	524
2017	30	20	-10	564
2018	30	20	-11	603
2019	30	20	-12	641
2020	30	20	-13	678

Notes: Future numbers of graduates are estimates. Attrition is estimated at 2% per year from all causes.

jected optometry graduates and attrition through the year 2020. The number of future KNUST graduates could vary widely, from 25 to 45 per year. It is difficult to estimate the number of future UCC graduates because of how new the school is. Officials at UCC have stated they wish to graduate 20 to 25 optometrists per year. A minimum of 10 and maximum of 25 UCC graduates may be a reasonable number.

Attrition of optometrists has not been significant in the past because optometry has been a small, new, and young profession in Ghana. It will be more significant in the future. Attrition is estimated at 2% per year in the table. This may overestimate attrition due to death or disability because of the young age of the large numbers of future graduates. Attrition due to change in occupation or emigration is more difficult to predict. Almost no Ghanaian optometrists have changed occupation or emigrated to another country in the past. With improvements in Ghanaian optometric education, emigration may be more frequent.

The assumption that the number of optometric graduates will not increase in the years from 2010 to 2020 may be conservative. If the new optometric educational programs are successful, there may be more graduates. Reaching the most optimistic goals for optometric workforce may be possible by the year 2020. Even if optometric workforce goals are met, there may be difficulties if there is geographic maldistribution of optometrists (mostly in cities), inadequate involvement of optometry in public health activities, inadequate numbers of other eye care professionals such as ophthalmologists, ophthalmic nurses, and dispensing opticians, high cost of eye care and glasses, or limited access to appropriate drugs.

KNUST is recruiting students from other West African countries. It is hoped that they will return to their homelands, support *VISION 2020* efforts, and strengthen the optometric profession.

Role of World Council of Optometry Fellowship

John W. Randall, O.D., M.P.H. served as WCO Fellow and Senior Lecturer in optometry at KNUST from August 2001 to July 2003. Margaret O'Neill, an Australian optometrist, also performed a WCO Fellowship from January to March 2002. The WCO Fellowships increased the prestige and visibility of the optometry program within KNUST, the university community at large, Ghana Health Service, other government Ministries, and NGOs. Dr. Randall participated in the internal development of the KNUST optometry faculty. The Fellowships exposed other faculty and professionals to the potential impact of a strong optometric profession on eye health within Ghana. Many people were benefited directly through internal and outreach clinics supervised by the Fellow. Drs. Randall and O'Neill advocated for future optometric education and practice within the University, Ministries, NGOs, the West Africa Region *VISION 2020* program, African Council of Optometry, and the International Agency for the Prevention of Blindness.

Conclusions

Access to eye care is not available to the vast majority of people in Africa. Ghana is fortunate to have a developing optometric profession and university based optometric education. Consequently, access to eye examination, correction of refractive error, diagnosis, treatment, and referral of eye disease should improve significantly during the coming decades.

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North American Center For Visual Health and Development Offers Training Courses for Educators

Janet L. Leasher, O.D., M.P.H.

In 2003, for the first time in its history, the United Nations Educational, Scientific and Cultural Organization (UNESCO) developed a Chair for Vision and Development and awarded that chair, or professorship, to the Polytechnic University of Catalonia School of Optics and Optometry at Terrassa, near Barcelona. The purpose of the UNESCO Chair of Visual Health and Development is to conduct research and implement programs that support visual health in developing countries in a way that is directly related to the level of development in a country or region.

The UNESCO program recognizes that vision is one of the first steps in the literacy process and is essential for technological advances and their applications in development efforts. This belief is based on the premise that the enhancement of visual health in a region or country will improve a developing country's quality of life and its level of development. Visual health is a broad concept that not only deals with the disciplines of optics, optometry and ophthalmology, but with many other medical and social fields as well. Although the headquarters for the UNESCO Chair of Visual Health and Development is based in Barcelona, there will be regional centers in North America, Central America, South America, Eastern Europe, Africa and Asia. Nova Southeastern University College of Optometry in Fort Lauderdale, Florida houses the center in North America, which was inaugurated in February 2004.

The first project of the North American center included a training course for professors from 16 optometry schools in the US and Canada in which each attendee was trained to teach a 20-hour course in visual health and development. This course is an elective course, designed to sensitize future eye care practitioners on the political and socioeconomic aspects affecting international development and cooperation and the visual health situation in developing countries. The outcome of such a course is to produce practitioners in developed countries who are sensitive to the situation in developing countries. These practitioners should also be appropriately trained in correct development cooperation in order to bring about sustainable improvement in global visual health.

At the end of the Train the Trainers course, the participants resolved to work together to improve access to eye care throughout the world. **Essilor International** provided support for the course.

Concurrently, the UNESCO Chair in Visual Health and Development is creating an observatory of visual health care, starting with Central and North America, which looks at the interplay of access to visual health services and materials and international development indicators on poverty, education, culture, technology, environment and health.

For further information, contact Dr. Janet Leasher at leasher@nsu.nova.edu at the North American center, or Anna Rius or Laura Guisasola at the Barcelona headquarters at unesco.vision@upc.es

Dr. Leasher is the director of community outreach, the North American regional coordinator for the UNESCO Chair in Visual Health and Development, and assistant professor at the Nova Southeastern University College of Optometry.

The Development of Standards for Optometric Practitioners In Japan

R. Norman Bailey, O.D., M.B.A., M.P.H., F.A.A.O.
Mitsuhisa Hayashi, O.D.

Abstract

Japanese refracting opticians (optometrists) have struggled for over three-quarters of a century to obtain government recognition and the subsequent licensing/regulation that would set standards of education and practice for the independent delivery of competent optometric services. The objections of organized medicine and the lack of consensus among the various constituencies of opticians were the major factors in the failure of optometry to achieve government acknowledgement. Recent history has seen a convergence of purpose among representative groups of refracting opticians, which is leading toward the implementation of a self-certification system and the development of common standards for the delivery of vision care to Japanese citizens.

Key Words: Japan, optometry, opticians, standards, certification World Council of Optometry

Dr. Bailey is a WCO Fellow and a member of the Standards, Legal and Regulatory Committee of the World Council of Optometry. He is a clinical professor at the University of Houston College of Optometry. Dr. Hayashi is a member of the faculty at the Tokyo Optometric College.

Introduction

Refracting opticians in Japan have been struggling to gain government recognition as an independent health profession since the 1920s. Yet, no such recognition currently exists. These efforts are similar to those of refracting opticians (optometrists) in the United States during the early years of the 20th century. Government recognition would allow for the establishment of nationwide standards for the education and training of those who practice optometry in Japan. The diversity of opinions among refracting opticians and the objections of ophthalmology have played major roles in defeating these efforts by Japanese refracting opticians.

Currently, opticians include those who refract as well as those who dispense, or who work only as sales clerks in the optical stores. It has been estimated that there are approximately 40,000 opticians, including sales clerks, working in approximately 20,000 optical shops. There are no reliable numbers to differentiate those who refract from those who dispense. Of the total number of opticians, there are only about 10,000 who have graduated from one of the formal optometry schools. In addition, there are approximately 15 internationally trained optometrists in Japan.[1]

There are two professional "optometric" organizations representing Japanese refracting opticians in the World Council of Optometry (WCO) — the Japan Optometric Association (JOA) and the All Japan Optometric & Optical Association (AJOOA).

The Japan Optometric Association developed from within the Kikuchi College of Optometry, which was organized in 1979. This organization strives "to facilitate the enhancement and development of eye and vision care in Japan"; and, as of December 2002, there were 1,359 members. The JOA encourages its members and other interested vision care providers to enhance professional competence through participating in JOA sponsored continuing education courses.[2]

As of March 31, 2003, the All Japan Optometric and Optical Association had a membership that included 7,853 refracting opticians. This organization was structured so that its 7,853 refracting opticians belonged to another Japanese professional organization that has also used the Japan Optometric Association (JOA) name for approximately forty years. However, this organization has typically used the AJOOA name to represent this group of refracting opticians in an effort to reduce confusion on the international level between the two JOA organizations.[1]

The AJOOA has established a self-certification system, known as the AJOOA Self-certification System for Refracting Opticians, to upgrade the practice of refracting opticians/optometrists. Over 7,000 refracting opticians have registered for this program.[1] This new self-certification program offers Japanese opticians/optometrists an opportunity to advance their knowledge and skills in a standardized approach.

Background

Japan has been reported to have the longest life expectancy and among the lowest infant mortality rates in the world. The government's mandated universal health care insurance system that emphasizes preventive care has been the major explanation for Japan's health-status success. A large percentage of the nation's hospitals and provider clinics are privately owned although they may not be investor-owned, for profit institutions. Patients are allowed to select their health care providers. Access to

care is sufficient, except in some rural areas.[3]

Eye and vision care delivery in Japan is supplied by a mixture of physicians and refracting opticians/optometrists. About forty million people, or one of every three individuals, wear either spectacles or contact lenses. About 70% of university students are estimated to be myopic. Professional eye and vision care is under the jurisdiction of the medical profession while spectacles, including refracting for dispensing purposes, may be legally provided by optical shops. Only medical practitioners, however, may legally write a spectacle prescription for dispensing by others. Since the government does not provide eyewear, patients purchase spectacles and contact lenses from private providers.[4]

It has been estimated that about 70% of those needing refractive care go directly to the optical shops for their eye care and are served by opticians rather than medical practitioners. Refractions are provided by refracting opticians for the purpose of dispensing eyewear or contact lenses. The refracting opticians do not customarily charge for refractive services.[e] The optician provided refractions do not result in a written prescription that is given to the customer, the designation used for these consumers of optician services.

Current Status of Optometric Education

Continuous efforts, through the upgrading of basic and continuing educational programs, have been made over the years to improve the knowledge and practices of the refracting opticians/optometrists. However, these efforts have not been consistent among the various groups representing opticians/optometrists. The recommendations of the various professional organizations and schools are now converging toward common standards. It is believed that upgrading the education and training of refracting opticians/optometrists to a given standard will produce a cadre of qualified refracting opticians/optometrists. and will eventually lead to a licensed and regulated profession of optometry in Japan.

Even though ophthalmology may be providing a high level of medical eye care, high quality functional eye care and related services by licensed optometrists is needed. These optometrists should be educated and trained to recognize asymptomatic eye pathologies in the 70 percent of the refractive patient population seeking their services. Gaining this latter skill would allow a timely referral to medical eye care practitioners for diagnosis and treatment of medical eye problems.

There are four optometry schools in Japan. The Kikuchi College of Optometry in Nagoya, established in 1978, has a four-year post-high school optometry course. The Tokyo Optometric College in Tokyo, established in 2000 by combining the Nihon Optometric Academy and the Waseda College of Ophthalmic Optics, expanded to a three-year post-high school program in 2001. The World Optical College in Okayama, and the Nihon Gankyo Gijyutsu Senmon Gakko in Osaka have three-year post-high school optometry programs. At one time, several of these schools had only two-year programs.

With only about 10,000 of the approximately 40,000 opticians having graduated from one of the formal optometric education programs, it can be seen that there is a significant need to upgrade the education and training of many providing refractive and other vision care services.

AJOOA Self-Certification System for Refracting Opticians

In the absence of a licensed optometric profession in Japan, there are no national standards for the education and training of refracting opticians/optometrists. The professional role for optometry must be elucidated through agreement on the necessary knowledge and skills required to adequately provide quality optometric eye and vision care services to the public.

Both the Japan Optometric Association (JOA) and the All Japan Optometric and Optical Association (AJOOA) acknowledge the need to upgrade refracting opticians with common standards prior to seeking government licensing in the future. In response to this striking need, the AJOOA has initiated a self-certification program for which the majority of its members have registered. The AJOOA, as a public-service organization, has been designated as the Certifying Board in this certification system. Its goal is to protect the public interest and to assure fairness in the certifying system. An advisory committee, including representatives from the consumer, scholastic, and journalistic fields, works with the Certifying Board in this effort. The AJOOA plans to promote the existence of the certification program with the public, thus increasing the marketing value of the individual refracting optician/optometrist who obtains this acknowledgement of competence.

The AJOOA Self-Certification System for Refracting Opticians is a voluntary program aimed at increasing professional competency. It has two separate categories; one for refracting opticians/optometrists who have com-

Table 1: Classifications of the AJOOA Self-Certification System for Refracting Opticians

Academic Course (S, SS, SSS)	General Course (A, AA, AAA)
Class S Graduation from 2-year professional school plus one year of professional experience.	Class A Five years of professional experiences after high-school graduation with passing of exam for Class A.
Class SS Graduation from 3- or 4-year professional school plus one year of professional experience.	Class AA Two years of professional experiences after registering for Class A with passing of exam for Class AA.
Class SSS 1. Graduation from U.S. optometry school or equivalent. 2. Passing exam for Class SSS. Both with one year of professional experience	Class AAA One year of professional experience after registering for Class AA with passing of exam for Class AAA.

pleted an optometry (ophthalmic optical) school curriculum successfully, and one for those opticians who did not complete formal education at an optometry school. Table 1 summarizes the classification of refracting opticians in this self-certification system.

The vertical career ladder provides a structured approach to differentiating two classes of refracting opticians. The "S" levels of certification are for optometry school graduates and comprise the "Academic Course." The "A" levels of certification are for the non-optometry-school graduates and comprise the "General Course." Each course is divided into three levels or classes — S, SS, and SSS — for the Academic Course; and A, AA, and AAA for the General Course. The level or class of certification for which an optician is eligible to register depends on the individual's education and length of professional experience.

The Class S level of certification is for graduates from two-year optometry schools, and the Class SS level of certification is for those graduating from three- and four-year optometry schools. In addition to graduation from an optometry school, both the S and the SS classes require one year of professional experience prior to registration at these levels of certification. A Class S certification may be upgraded to the level of Class SS by taking the required hours of continuing education and acquiring the necessary years of experience by 2007. If a Class S certification is not upgraded to a Class SS by 2007, then a Class SS qualifying examination must be passed. This latter point is a definite incentive for completing the required continuing education. The AJOOA considers the Class SS level of certification to be the eventual standard, and only those who will have graduated from an optometry school with three or more years of professional education will be eligible.

In order to qualify for the Class SSS level of certification, the optometrist must be a graduate from an optometry school outside of Japan that offers the O.D. degree or similar high training as in the U.S., Canada, Australia, and the U.K. and have at least one year of practice experience; or they must pass a special examination for the Class SSS level. In the future, these foreign educated and trained optometrists may also be required to take the SSS level examination, should the advisory committee so decide. The SSS examinations are based on the examinations that have been administered by the Japan Optometric Association over the last 10 to 15 years for those graduates from the Kikuchi College of Optometry seeking the "JOA-certified optometrist" level. These examinations are said to be based on the National Board of Examiners in Optometry examinations administered in the United States. The examinations consist of the following seven subject areas:

- Theoretical Optics (Geometric and Physical Optics)
- Ocular Anatomy
- Ophthalmic Optics
- Visual Science I including Refraction, Accommodation, Basic Binocular Vision, and Contact Lenses
- Visual Science II including Case Analysis, Advanced Binocular Vision, Strabismus, Amblyopia, and Low vision
- Physiological Optics including Neuro-anatomy
- Ophthalmology

The pass rate on these examinations has been quite low. It has been suggested that the low pass rate is related to the post-high school, four-year Kikuchi College of Optometry program being somewhat shorter than the required seven to eight years of post-high school education needed to obtain the Doctor of Optometry degree in the U.S. Since the AJOOA certification system was introduced in 2001, however, the AJOOA and the Affiliation of the Japanese Optometric Schools have decided to establish an examination committee for both the SS and SSS levels. This committee will establish basic guidelines for the 2004 examinations; however, the changes from the current SSS examinations are expected to be minor because the current SSS level is considered to be the level closest to the international level, especially when compared to the level of optometric education in the U.S.

Opticians who have not completed formal education and training at an optometry school have been encouraged to register for the self-certification program. The 'A' levels of certification are reserved for this class of opticians. Many opticians, with at least five years of on-the-job training and experience after their high-school education or one year of on-the-job training and experience after college graduation, had taken an entry-level examination for more than two decades. Most qualifying for the "A" level are college graduates with one year of experience. Those opticians who previously passed the prescribed entry-level examination were registered at the Class A level of certification in April 2001 when the current self-certification program was initiated. This group of opticians represents the majority of current Class A certifications. Since April 2001, all opticians passing the Class A (entry-level) examination have been registered at the Class A level. Once registered at the Class A level, opticians are expected to complete required continuing education and on-the-job professional experience in order to progress upward through the "A" levels of certification.

Initially, the requirements to progress through the "A" levels were more demanding; on-the-job training experience, continuing education, and examinations were required for promotion to the AA or AAA certification levels. However, a "special privilege" was subsequently granted to those opticians who passed the entry-level examination, as most of them had been in the optical business for many years. The privilege provided that after achieving a Class A certification through having passed the entry-level examination, these opticians would become eligible for a Class AA certification by completing the required continuing education in three years, and then subsequently promoted to Class AAA certification after successfully completing additional requirements of continuing education during the next three years; no additional examinations would be required for promotion to either of the latter two levels. Initially, this 'special privilege' was to be effective only until 2007. However, the challenge of bringing the majority of refracting opticians without formal optometric training into the self-certification system has required some modifications of the original program.

Those entering the self-certification program by passing the entry-level examination before 2000 were originally expected to complete the progression through the certification classes to the AAA level by 2007. However, for those "special privileged" opticians who passed the Class A examination in the years 2001-2003, the completion date for progression through the classes of self-certification to AAA was extended to 2010 in order to allow adequate time to complete the continuing education and on-the-job experience requirements for progression. That is, upon passing

the Class A certification examination, the optician will be given three years to gain eligibility for promotion to the Class AA certification and another three years for promotion to Class AAA certification through on-the-job training and continuing education courses. Once achieving the Class AAA certification, the optician/optometrist must renew the registration of their certification every three years by completing required continuing education.

Beginning the summer of 2004, all opticians without formal optometric school education, who had not passed an entry-level examination before 2000 nor taken the Class A entry-level examination offered during the summers of 2001-2003, must enter the self-certification program by passing the Class AAA examination.

The standard for all refracting opticians/optometrists will be the Class AAA or Class SS levels of certification by 2007, with the exception as noted above. Initially the plan was for all new registrants for self-certification by 2007 to be graduates of 3- or 4-year optometry schools. However, it is now believed that the Class AAA certification examinations may need to be provided for some years past the original deadline as, among other considerations, the four optometry schools may be unable to meet the expected demand for refracting opticians/optometrists.

The AJOOA considers the Class SS level of certification to be the eventual standard for all Japanese optometrists/refracting opticians. To enhance the value of the certification, the AJOOA plans to inform the public about the certification program through various media.

Summary

As the profession of optometry in Japan improves its professional competence through education and experience, it is expected to be better positioned to achieve government recognition. This process should include the establishment of licensing/registration standards. Once government recognition is obtained, high educational standards can be required of all who seek to practice optometry. This will benefit the Japanese public by ensuring competent optometric eye and vision care services provided by well-educated and trained optometrists.

The challenge is great; however, success will be achieved when there is a consensus among all pertinent groups in Japan. Curricular consensus could be advanced by the Japanese schools and colleges of optometry forming an academic organization similar to that of the Association of Schools and Colleges of Optometry in North America, an effort for unity made by some developing optometry programs in other countries.

Acknowledgements

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Industry News

(Continued from page 73)

Syl Ghirardi, president and COO of Hoya Vision Care. "In combination with our recently introduced uniform nationwide pricing, the eye care professional now has even more compelling reasons to make Hoya their supplier of choice. We are committed to making Hoya synonymous with top quality and prompt dependable delivery." For more information, contact Steven Koufos, Hoya Vision Care.

Renato Cappuccitti has joined **Hoya Vision Care** as director of marketing and sales. With more than 15 years of marketing, sales and vision care experience, Cappuccitti will contribute his technical expertise in ophthalmic lenses and his knowledge as a licensed ophthalmic dispenser and certified contact lens fitter to the Hoya Vision Care, North America team. Cappuccitti brings experience as director of professional and customer development for Vision Systems and from Rodenstock as technical marketing manager.

Essilor Launches Varilux PAL for Small Frames

Essilor of America introduced its first short-corridor progressive lens, Varilux Ellipse. The new lens provides the widest field of vision and the shortest progression fitting height, according to Varilux.

"Varilux Ellipse opens new frontiers to serve the true needs of short corridor PALs. Varilux Ellipse complements the existing range of Varilux products by providing the best progressive lens for small frames, allowing a fitting height as low as 14 mm," said Mike Daley, president of Essilor Lenses. "With its unique technology and trusted quality, Varilux Ellipse is the new standard in performance for small frame wearers."

Alcon Reports Data On Potential New Glaucoma Drug

Three-month data from several Phase III clinical trials on Travatan/Timolol Fixed Combination (TTFC), Alcon's investigational new drug to treat glaucoma, were presented at the American Glaucoma Society's annual meeting in Sarasota, Florida. Alcon has filed a New Drug Application with the U.S. Food and Drug Administration for TTFC, which combines travoprost 0.004% and timolol 0.5% into a once-daily medication.

Stella Robertson, Ph.D., vice president of pharmaceutical products, research and development at Alcon, said, "In these clinical studies TTFC achieved similar IOP reduction as travoprost 0.004% and timolol 0.5% used concomitantly and reduced IOP compared to travoprost 0.004% alone. Importantly, it delivered these results without a medically significant increase in side effects to the patient.

Coopervision Campaign On Contact Lens Comfort

CooperVision recently launched a new nationwide educational campaign, "Contact lens comfort - Get the conversation going," to raise aware-

(Continued on page 103)

Optometric Education In the Himalayan Kingdom of Nepal

Sandra Wang-Harris, O.D., F.A.A.O.

Abstract

In order to meet the manpower needs of Nepal, optometrists play a key role in the delivery of trained health care. Eye care leaders of this small landlocked country are not ignorant of the obvious lack of trained providers in the majority of the country. They have instituted several strategies; one is the production of mid-level professionals-optometrists. The intent of creating the optometrist is to fill the gap in the manpower structure. Optometrists, being well suited for community work, are obvious key players at the district level where 35 out of 75 districts are devoid of basic eye care. The optometry curriculum and training at BPKLCOS reflects the needs of the country. Students learn not only theoretically, but also practically with direct hands on patient care in the community. With plans underway to place optometrists at the district level in established Ministry of Health district hospitals, optometry will play a major role in the implementation of WHO's Vision 2020: The Right to Sight.

Keywords: optometry; low vision; refractive error; Nepal; Vision 2020: The Right to Sight

Background

The Kingdom of Nepal is a landlocked country of 140,800 square kilometers located in South Asia.[1] Nepal is most known for having eight of the world's tallest peaks including Mount Everest. It consists of three major regions: the northern Himalayan or mountain region, the middle hills region or Kathmandu valley region and the southernmost region or terai. These regions vary in altitude from the terai's highest altitude of 300 meters all the way to the Himalayan region of an altitude of 8648 meters.[8]

With a population of over 26 million, Nepal boasts of a people with a wide variety of ethnic backgrounds and cultures. There are over 30 dialects spoken in Nepal with Nepali as the official language. English is also widely spoken in education and government institutions.[1] The teaching medium is in English for university level education.

Nepal is one of the poorest and least developed countries in the world. The economy, which is 80% agriculturally based, cannot sustain its population; 46% live below the poverty line. International monies fund 60% of Nepal's development budget. In recent years, the guerilla-based Maoist insurgency has limited international community aid, foreign investments and efforts in economic development.[1]

Dr. Wang-Harris is a federal optometrist with the U.S. Army and chief optometrist at the Center for Sight in Huntsville, Alabama. She was WCO's Senior Fellow in Nepal for one year.

Nepal's Health Care and Eye Care System

Currently Nepal is divided into 75 districts within 14 zones. The districts are further divided into villages. At the district level, there are currently 67 district hospitals under the Ministry of Health. At the zonal level, there are nine hospitals under the Ministry.[2] In 1991, the government formulated a new National Health Policy geared toward improving the primary health status of the rural population. The primary objective of the National Health Policy is to make available primary health care services at the grassroots level, the village level.[3] Over 10 years later, Nepal has successfully opened thousands of sub health posts. Currently there are 3,179 of these sub health posts, located in the most rural areas of the country.[2]

Eye care in Nepal has seen tremendous change in the last 32 years. In 1971, there were only two ophthalmologists for a population of over 16 million.[4] In 1974, the first eye hospital, Nepal Eye Hospital, was built in the capitol of Nepal, Kathmandu. In 1981, supported by the World Health Organization (WHO), the comprehensive Nepal Blindness Survey was conducted. It revealed the startling truth: Nepal was severely deficient in eye care services with a backlog of blindness causing cataracts that vied for the highest in the world.[5]

As a result of the Nepal Blindness Survey of 1981, a plan of action began that called for systematically building eye centers and eye hospitals. Today in the Kathmandu valley, there are four comprehensive eye care centers along with two departments within medical colleges. Outside the valley there are 15 eye hospitals with another four eye units in medical colleges.[4] With the building of infrastructure, two important manpower training programs began. These programs were the postgraduate residency program in ophthalmology and the ophthalmic assistant training program.[6] Today with 110 ophthalmologists and 174 ophthalmic assistants, Nepal has gained much in

eye care manpower, but still lacks essential human resources in many areas in primary and mid level care.[4,6]

The Birth of Optometry in Nepal

In the mid-1990's the eye care leaders of the BP Koirala Lions Centre for Ophthalmic Studies (BPKLCOS) at the Tribhuvan University Institute of Medicine began to realize the acute shortage of mid-level manpower to fill the gap between ophthalmologists and ophthalmic assistants. The projected need of nearly 700 ophthalmologists in the next 20 years exceeded the production capability of this country.[10] With the foresight of the leadership at the BPKLCOS and help from the University of Auckland, New Zealand, ASIA 2000 Foundation and the World Council of Optometry, the Tribhuvan University Institute of Medicine officially launched the start of its new optometry training program in 1998.[7,13] The establishment of this new level eye care was to produce ophthalmic manpower in the shortest possible time and to allow optometrists to share in the responsibilities of eye care in the nation.[10,11] Tribhuvan University Institute of Medicine's program is not only the first optometry training program in the country, but also the first optometry training program in the entire region of northern India, Bangladesh, and Bhutan.[10]

Curriculum and Training at the BP Koirala Lions Centre for Ophthalmic Studies

On April 10, 1997, the Vice Chancellors of the University of Auckland and Tribhuvan University Institute of Medicine signed a Memorandum of Understanding with the purpose of developing the optometry program in Nepal. After a two-day workshop to develop the optometry curriculum in September 1998, the first class of Nepali optometry students was accepted into the new program for the academic year beginning November 1998.[7] Using the available resources of Tribhuvan University Institute of Medicine, the Bachelor of Optometry (BOptom) degree program is conducted by BPKLCOS alongside the postgraduate ophthalmology residency. The course was then a three-year program.[12]

Currently six students are accepted each year into the BOptom degree program. Eligible candidates must complete successfully 10 years of school, a school leaving examination and a two-year certificate, called a 10+2 with Biology. Candidates fulfilling these criteria may sit for an entrance examination. Candidates with the highest scores on the entrance examination are admitted to the program.[9] Presently, there are 17 students enrolled in the BOptom program.

Description of the Existing Curriculum

In the fall of 2002, the BOptom degree was officially changed from the three-year program to the four-year program currently used. There are four phases (see Figure 1). Each phases is currently of one-year duration and all four phases stress direct community patient care through hospital outpatient visits, community outreach and satellite clinics. Direct patient care is such an important learning activity at the BPKLCOS that from the first day of matriculation, all BOptom students are required to be in clinics with patients. Classes and clinics are taught using a combination of ophthalmology faculty and optometry faculty.

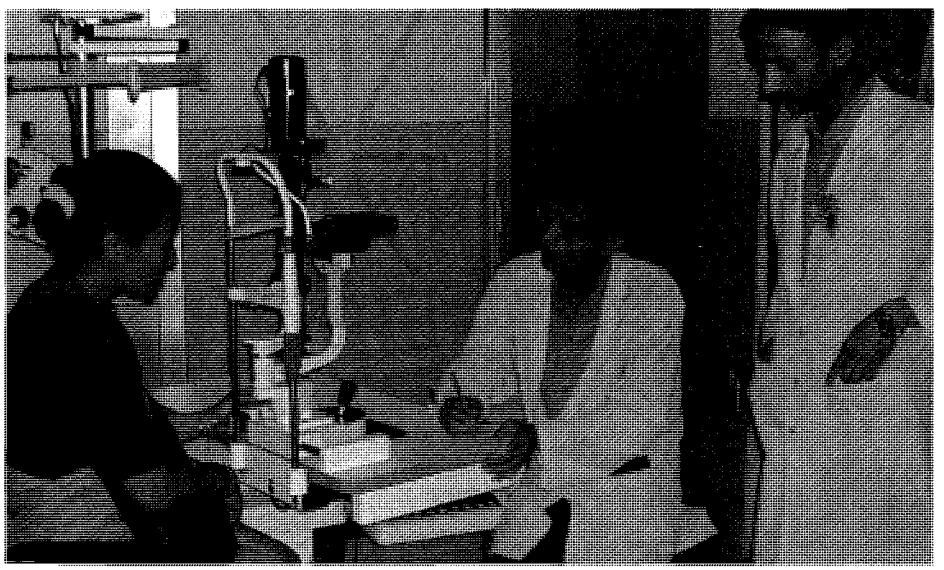


Figure 1: Course Outline of the Four Phases Bachelor of Optometry Program BP Koirala Centre for Ophthalmic Studies [9]

Phase I	
1	-Basic concepts of Basic Sciences
2-	-Basic concepts of optics and visual science
3	-Organ Systems
4-	Ocular Systems
5	-Visual Science
6	-Optometric Science
7	-Introduction to community health
8	-Foundation Courses
Phase II	
1	-Ocular diseases
2	-Optometry I
3	-Optometry II
4	-Ophthalmic Optics I
5	-Advanced Visual Science
6	-Binocular vision I
7	-Contact Lens I
8	-Low vision I
Phase III	
1	-Ophthalmic Optics II
2	-Contact lens II & ocular prosthesis
3	-Binocular vision II
4	-Pediatric Optometry
5	-Low vision II
6	-Geriatric Optometry
7-	Community Optometry
8	-Practical Paper
Phase IV	
1	-Applied Community optometry
2	-Optometry Project
3	-Clinical Optometry practice
4	-Practical Paper

Phase I

This phase incorporates the basics of visual and optical science, as well as a foundation in physiology, anatomy and an introduction to community health.

Phase II

In this phase, the student is exposed to optometric techniques and practices that are relevant to specialized eye care such as low vision, contact lenses and binocular vision. They further build on the foundation of patient care with extended hours of clinical duty as well as community outreach clinics.

Phase III

The third year student in this phase expounds on techniques and knowledge learned from phase II. Further specialization and coursework leads the student to detailed knowledge of binocular vision treatment and management, low vision treatment and management and contact lenses for disease applications. Pediatrics and geriatrics is formally taught during this phase as well as community health in preparation for the final phase. It is during phase III that the student begins his preliminary work on a research project in optometry.

Phase IV

It is during this final year that the B. of Optometry student applies their knowledge of community health and research to the optometry project. The student prepares and executes community mapping, networks with community leaders and prepares and implements eye care programs. This field training permits the student to fully utilize skills outside of the university hospital setting. Students successfully passing the final practical paper and presentation of the research project are awarded the B. of Optometry degree from the Institute of Medicine.

Community ophthalmic services are an integral daily part of the optometry student's training. At present, optometry students from BPKLCOS accompany a team of ophthalmologists, residents and technicians to satellite clinics throughout the Kathmandu valley throughout the week. At these satellite clinics, hundreds of patients are seen and, if further care is needed, the patients are referred to BPKLCOS in Kathmandu. With community field postings and hospital outpatient clinic postings, optometry students average approximately 35 hours per week seeing patients in a clinical setting.

Optometry's Role in Vision 2020: The Right to Sight in Nepal

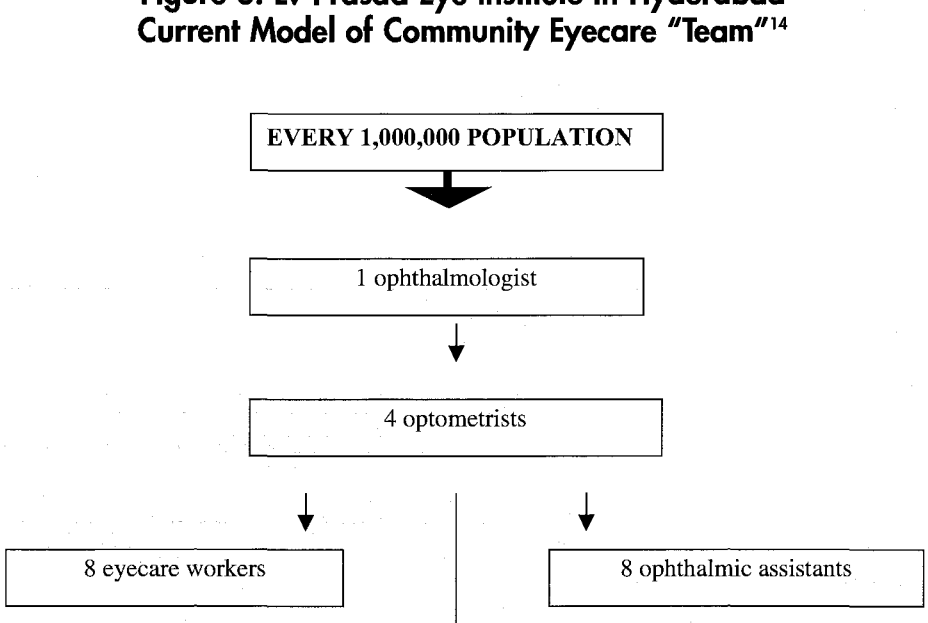
Since the humble beginnings of eye care services in Nepal 32 years ago, this country has developed a good infrastructure of eye hospitals and clinics through the help of the WHO and many international organizations dedicated to the eradication of blindness. However, due to the rough terrain and remote geographic locations of Nepal's population, millions of people still go without basic eye care. Currently out of 75 districts in Nepal, eye care is available in only 40 of these districts.[8]

Eye care leaders of Nepal are not ignorant of the obvious lack of trained providers in the majority of the country. They have instituted several strategies; one strategy is the production of mid-level professionals — optometrists. The intent of creating the position of optometrist is to fill the gap in the manpower structure. Optometrists, being well suited for community work, are obvious key players at the district level where 35 out of 75 districts are devoid of basic eye care.[8] The second strategy is to plan and conduct mobile eye camps to go to the districts that need the most care.[4] Key to any cost-effective eye care system is the provision of services like refractive care, supply of spectacles and detection and treatment of minor problems and referral of serious problems at the community level.[14] Current political tensions in Nepal have made it very difficult to implement these mobile eye camps where the people need them most—the remotest areas of Nepal.

Figure 2: Current Status and Projected Need of Optometrists in Nepal[6]

Present Status	Projected Need In 5 Years	Produced In 5 Years
12	41	29

Figure 3: Lv Prasad Eye Institute in Hyderabad Current Model of Community Eyecare "Team"[14]



Nonetheless, optometrists play an important role within the eye care team in these mobile eye camps.

With the determination to continue the fight against blindness, the health-care leaders of Nepal launched WHO's global initiative Vision 2020: The Right to Sight in November 1999.[4] This initiative is paving the way in health care reforms and key decisions impacting the future of Nepal's trained optometrists.

Today, Nepal is in the process of formulating a National Eye Care Policy with the Ministry of Health. Because optometry is a relatively new player, optometry services in past policies were not fully realized in the planning of manpower resources. As stated under the Strategic Plan for 2002-2019, some of the leading causes of blindness in Nepal are refractive error, amblyopia, and low vision. A survey of the Mechi zone in Nepal found 22% of children with refractive error with 92% uncorrected at presentation.[15] Optometrists play key roles in eradicating these causes as well as prevention and diagnosis of other emerging causes of blindness such as diabetic retinopathy and glaucoma.

Elimination of childhood blindness, one of the causes of disease burden in Nepal, is another priority under the National Plan of Action for VISION 2020.[8] A recent study by Nepal et al further proves the high rate of childhood blindness in the Kathmandu valley. This study showed 11% of Kathmandu's 1100 schoolchildren examined in the study have ocular morbidity, 97% (117 out of 121) of which is preventable or treatable.[16] The WHO recommends a pediatric eye care team to be a part of a high volume eye center of a hospital.[17] Optometrists, interested in pediatrics, are an important asset as multiskilled professionals; optometrists can fill the roles of refractionist, binocular vision and low vision specialist for the younger population.[17] In Nepal's National Plan of Action for VISION 2020, goals stated for the provision of optometrists include establishing eye care services such as refraction, low vision, school screenings, and dissemination of low-cost affordable spectacles at the district level.[8]

At present, Nepal has 12 optometrists who work in the public hospital sector in only two districts of the country. It is projected that the need for optometrists in the next five years will be 41[6] (see Figure 2). It is also recommended that Nepali optometrists be placed strategically in districts devoid of eye care in the next five years.[6] An effective model developed by the LV Prasad Eye Institute in Hyderabad, India, recommends a ratio of four optometrists per 1,000,000 people[14] (see Figure 3) in order to produce an efficient and cost effective community eye care team. Under the LV Prasad model, Nepal's population of 26 million people would ideally need 104 optometrists; this number if 63 optometrists short of the projected need of 41 (see Figure 2).

Conclusion

In order to meet the manpower needs of this small landlocked country, optometrists play a key role in the delivery of trained health care. The optometry curriculum and training at BPKLCOS reflects the needs of the country. Students learn not only theoretically, but also practically with direct hands-on patient care in the community. With plans underway to place optometrists at the district level in established Ministry of Health district hospitals, optometry will play a major role in the implementation of WHO's Vision 2020: The Right to Sight.[8] With the launching of WHO's Vision 2020: The Right to Sight, optometry carved a permanent place on the battlefield to fight blindness in Nepal.

Acknowledgements

I want to give special thanks to Suraj Shakya, M.D., for her help during my fellowship and Mr. Basanta Khadka for his help through the World Health Organization (WHO) office in Kathmandu, Nepal. I would also like to thank HOYA Corporation for its HOYA Vision 2020 Fellowship Program and the Kanai Fellowship Fund that helped to make my fellowship a reality.

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Unification of Optometry in India

Satya B. Verma, O.D., F.A.A.O.

Abstract

Optometry in India is characterized by marked diversity in professional organization and significant disparity in educational programs. This has been brought about by the lack of legal recognition and no harmonized standards of optometric education. As a result, optometry has struggled for professional recognition within a myriad of eye care practitioners serving over one billion people. In March 2003, the Indian Optometric Association (IOA) and the World Council of Optometry (WCO) jointly sponsored symposia and organizational meetings to unify both the profession and its educational and training programs. This "new beginning" promises to provide a strategic foundation to positively impact the future of optometry in India.

Key Words: Optometry, Education, Vision Care, India, Blindness, and the World Council of Optometry

Dr. Verma is assistant professor at the Pennsylvania College of Optometry, WCO Fellow and Presidential Envoy to India.

Introduction

India accounts for 25 percent of the world's blind population, with approximately 12 million people with avoidable blindness. This does not take into account millions of others who have refractive problems but are unaware of them. The India Ministry of Health reports that the prevalence of bilateral blindness is 1.10 percent or 11.5 million persons. Among these, 22 percent above 50 years of age have low vision. These vision impairments are defined in four categories: normal or near normal with the best corrected vision of 20/60 or better; low vision between 20/60 and 20/200; economic blindness between 20/200 and 20/400; and social blindness with acuity of less than 20/400.[1]

According to Dr. Gullapalli N. Rao, medical director of the LV Prasad Eye Institute and president-elect of the International Agency for the Prevention of Blindness (IAPB), India has between 10,000 and 13,000 ophthalmologists, unequally distributed and underutilized, and between 6000 and 8000 "optometrists" and other professionals.[2] The exact number of opticians and others who take care of the visual needs of the over one billion lives is unknown.

Ophthalmic Professions in India

Eye care practitioners in India include ophthalmologists, optometrists, opticians, orthoptists, and other ophthalmic technicians and assistants.

Ophthalmologists: The process of becoming an ophthalmologist in India involves a basic degree in medicine (MBBS) followed by ophthalmology training of two or more years leading to a DO (diploma in ophthalmology), MS (ophthalmology) or MD (ophthalmology). In addition, there are others who did not graduate as MBBS but had other degrees and were trained in ophthalmology. Ophthalmologists practice in three different modes. Some are employed by federal, state and local hospitals or by other hospitals run by private charitable trusts and organizations. Others have their own private practices and clinics. There are still others who have practices affiliated with optical show rooms and shops.

Optometrists: Over the last forty years, optometrists have been trained in two-, three- or four-year programs. The earlier two-year programs were started by the state governments in affiliation with reputed eye hospitals, run by ophthalmologists. The later three- and four-year programs have been affiliated with universities and are run by optometrists. Optometrists, like ophthalmologists, practice in similar three modes.

Opticians: There have not been any formal training programs for opticians in India. However, there are several state opticians/optical associations that have conducted some short continuing education courses for their members. Opticians are self trained or trained under apprenticeship and are involved in dispensing of glasses and also providing examinations and contact lenses.

Others: In addition, there are some ophthalmic technicians and orthoptists who have provided eye care and are often included under the title of "optometrists." This group, however, is typically not engaged in private practice.

Optometric Education in India

Optometry was born in India in 1958. Two schools of optometry, one at Gandhi Eye Hospital, Aligarh, and the other at Sarojini Devi Eye Hospital, Hyderabad, were started that year. These were two-year programs with enrollment of 20 students at each school. These schools were started by prominent ophthalmolo-

gists and were affiliated with very reputed eye hospitals. The curriculum was built on the British model. For reasons unknown, they did not use the title of ophthalmic optician, but chose optometry instead; hence, the beginning of optometry in India.

The first group of optometrists graduated from these schools with a Diploma in Optometry, i.e., D.Opt. However, in some schools the word "R" was added to reflect the diploma as Diploma in Refraction and Optometry, i.e., DR.Opt. In 1959, a third school was opened in affiliation with Sitapur Eye Hospital. Simultaneously, a school of orthoptics was also started at the same hospital. Later, a few more schools opened in affiliation with different hospitals in different parts of the country.

It was in the seventies that the BS degree in optometry program was started at the Elite School of optometry in Chennai and the All India Institute of Medical Sciences optometry program became a BS in ophthalmic technology degree program. At present, there are about 20 optometric institutions granting diplomas and degrees with a duration ranging from two to four years.

Optometric Legislation

Optometry in India is not a state registered or licensed profession; hence anyone, regardless of education and training, can examine eyes. Organized optometry under the banner of the Indian Optometric Association (IOA) and other state and regional organizations has been struggling to have some form of registration. The call that was made 30 years ago on the eve of the 10th Annual Conference of the Indian Optometric Association in 1974 is still being made today.[3] It was Professor B. R. Shukla , director, AMU Institute of Ophthalmology, Aligarh, who very strongly urged that optometrists must be registered and encouraged liberally to spread their knowledge and expertise in the service of rural India. He further stated that they should be accepted as important co-workers to ophthalmologists in the field of ophthalmic planning. He also encouraged the optometrists to remain positive and not give up in spite of the environmental darkness, as the struggle between the right and wrong would one day fall in their favor and justice would prevail.[4]

There has been some movement in this regard, but it has taken over thirty years. In 1998, through the Gazette Notification, the Union Ministry of Social Justice and Employment made it mandatory for all ophthalmic technicians with stipulated qualifications to become registered with the Rehabilitation Council of India, after classifying them as Rehabilitation professionals. This was a far cry from having an optometric regulating body. In the year 2000, one of the largest states in India, Uttar Pradesh (UP) Government, gave notice that beginning in the year 2000, all qualified optometrists, ophthalmic assistants, ophthalmic technicians and orthoptists would be designated as optometrists for registration with the state government. One other state, the Madhya Pradesh (MP) Government, went a step further when it notified opticians without proper qualifications that they would not be allowed to refract and prescribe glasses.[5]

Professional Organizations in India

In 1964, four years after India's first educational programs produced their first graduates, some of these graduates felt the need to have an organization to represent them. This was the birth of the Indian Optometric Association. The first meeting was held at the residence of one of the optometrists. Thus began the movement of organized optometry in the Northern part of India. Concurrently, there was organizational movement in the Eastern part, especially in the Calcutta area where some practitioners had been trained through an Optical Institute and Refraction Hospital Trust. In 1967-68, the author was elected as the Secretary of the Indian Optometric Association. For the next three years efforts were made with the state authorities to provide registration of optometrists without much success. This effort has continued to this day.

During all these years, the Indian Optometric Association has become a stronger organization; however, there has been no paid staff working for the organization. All the work is done by the volunteers, some of whom may not have the luxury of time, financial and other resources to get actively involved.

Several regional organizations have come into existence when linkages with the national organizations became very thin. There has been lack of organization, planning and follow through among the organizations. The government authorities realize the need for regulating the profession; however, because of the lack of their own knowledge and pressure from a strong ophthalmology presence, it has not yet materialized. This has resulted in frustration and sometimes disenchantment with the optometric leadership and may have been the reason for the formation of several splinter groups. The different levels of education and training among the optometrists has been an additional factor that is responsible for the historical disunity among the profession.

The New Beginning

After over forty years of existence and ongoing struggle to get recognition of the profession among eye care providers, state and federal government agencies and legislative bodies, Indian optometry made little progress. In 2001, the World Council of Optometry (WCO) and the Asia Pacific Council on Optometry (APCO) agreed to hold their General Delegates Meetings (GDM) in India in 2003 in conjunction with the annual conference of the Indian Optometric Association. A delegation of Indian optometrists attended a WCO meeting held in Atlanta in February 2001 with the SECO annual meeting. They had made a convincing argument that the WCO 2003 GDM meeting should be held in India. And then came 9/11, creating fear and anxiety among the traveling public. As a result of that fear and other reasons, APCO decided to pull out of the India meeting. WCO, however, thanks to its leadership under President Dr. Damien Smith and other executive body members, decided to stay the course and gave its blessings to hold the meeting in India.

The decision that WCO would meet in Delhi and Agra in March 2003 was the "new beginning" for optometry in India. While the Indian Optometric Association was busy in preparations to host optometrists from around the world, WCO started looking at ways to create an impact that its visit to India could make. As a part of my WCO Fellowship, I was appointed as Presidential Envoy and visited India in November 2002. The objective of this visit was to determine the current needs and growth opportunities for optometry and eye care in India. Initially it was decided that the Presidential Envoy would visit Mumbai (Bombay), Kolkotta (Calcutta) and Delhi, but at the insistence of the

hosts, Hyderabad and Chennai (Madras) were added to the itinerary. These cities were selected, one because these are metropolitan cities with the majority of the practicing optometrists and, secondly, because each of these cities also had optometric educational institutions.

During these visits, the Presidential Envoy met separately with optometrists representing various organizations and the faculty from optometry schools and made the following observations:

1. Several educational institutions that were started in the 1960's with a two-year training program still existed, but no significant improvement was in sight.
2. There were now several newer institutions with a four-year degree programs, producing well-trained optometrists, some of whom have been able to successfully complete masters and PhD degrees in the United States.
3. There are some private and quasi-government training centers offering various levels of training.
4. The disparity in the educational institutions was also very much apparent among the practicing optometrists as they are the by-products of one of these schools or the other.
5. These disparities have resulted in a fractured profession, further hurting the cause of the profession.

This visit made it quite evident that the first and foremost need of Indian optometry was for unity and thinking on common grounds. The Presidential Envoy made it very clear to all the key players that they needed to join hands and work together and pool their limited resources for any success. It was strongly suggested that two organizations be formed at the national level, one representing all the teaching institutions (similar to the North American Association of Schools and Colleges of Optometry — ASCO) and the other representing the professional organizations. A representative from each organization and each of the schools was appointed to two ad hoc committees to draft by-laws within a Memorandum of Understanding (MOU) for the new organizations. They were given a deadline of January 26, 2003 (India's Republic Day) to come up with the draft document, but this deadline was not met. The Presidential Envoy then reviewed several countries' by-laws and drafted two documents consistent with and sensitive to the environment, background and needs of Indian optometry. The draft was then circulated among the ad hoc committees for comments and additional input.

These drafts formed the basis of MOUs that were signed on March 30th in New Delhi as part of two days of historical meetings, political action planning, compromise and good will among a large and diverse mix of Indian optometrists and educators. These were organized into two steps. Step One included *Impact Day* and *Unification Day*; Step Two included the beginning framework for a long-term strategic follow-up plan.

Step One

Step One involved bringing together leaders from within the profession and outside the profession to underscore the monumental unmet need for vision and eye care in India. The WCO presence in India witnessed *Impact Day* on March 29, 2003 whereby dignitaries from government, non-governmental organizations (NGOs) and ophthalmology groups were invited and exposed to the "case for optometry" as an indispensable part of solving India's vision and eye care problems. The following day was celebrated as the *Unification Day*. In two separate sessions, memoranda of understandings for the formation of the Indian Association of Schools and Colleges of Optometry (IASCO) and National Association of Indian Optometric Organizations (NAIO) were signed. Fourteen schools signed an MOU to be a part of IASCO and eleven organizations signed on to be a part of NAIO on March 30, 2003. The date will be an historical turning point in the development of optometry and optometric education in India.[6] Since April 2003, both the groups have been at work to strengthen these national organizations.

Step Two

The formation of IASCO and NAIO was a new beginning, and it will remain a beginning unless giant steps are taken to strengthen these organizations and the optometric profession in India. Nothing will happen until the leadership among Indian optometrists commits its resources to implement the vision expressed on *Unification Day*.

It is clear that WCO will need to continue to provide support, guidance and leadership with full force until the next steps are reached; otherwise all its previous efforts may have little long-term impact. A strategic plan for the future of Indian optometric education is essential. There is agreement that the strategic plan should include a number of strategies. For example, each school of optometry in the United States could adopt one school in India and serve as the "big brother" providing guidance and resources that can improve the standard of optometric education in India. WCO Fellowships would provide continuity for professional development and educational growth.

With improved education, guidance and resources from the international optometric community and, above all, with united efforts and dedication from the Indian leadership, Indian optometry can grow and play an invaluable role in serving the visual needs of the over one billion people in India.

Acknowledgements

My sincere appreciation and thanks to Dr. Damien Smith, president of WCO, and Dr. Anthony Di Stefano, executive director, WCO, for their trust and guidance during my Fellowship. Their true desires and commitment to help optometry grow in India will certainly bear fruit one day. Thanks also to Dr. Dan Sheni, president-elect of WCO, for his ongoing efforts to improve the standard of the optometric profession in India. Special thanks to HOYA Corporation for its continuous support of the HOYA *VISION 2020* Fellowship Program and to the Kanai Fellowship Fund, which have helped to fund my WCO Fellowship.

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Educators in Latin America Unite Optometry

Janet L. Leasher, O.D., M.P.H.

Abstract

Optometric Education in Latin America is currently characterized by significant variability across borders, reflecting the diversity in the legal, professional, and scope of practice status of optometry in the region. There are over 30 universities or training centers offering optometric programs in ten countries. The formation of **Asociación Latinoamerica de Escuelas y Facultades de Optometría** (ALDEFO, the Association of Latin American Education and Faculties in Optometry), in 2003 addresses the growing commitment to harmonization, resource-sharing, and program development and innovation.

Keywords: Optometry, Education, Vision Care, Latin America

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This report summarizes general information from the inaugural meetings of ALDEFO, attended by the author as the World Council of Optometry presidential envoy.

The Formation of the Latin American Association of Schools and Faculty of Optometry

The newly formed association of schools and programs of optometric education in Latin America, ALDEFO (Asociación Latinoamerica de Escuelas y Facultades de Optometría) is an event of great historical significance in the evolution of optometric education in the region.

Quito, Ecuador, February 5, 2003. University faculty and leaders in optometric education in the region met for the first time in conjunction with the biannual congress of the Asociación Latinoamericana de Optometría y Optica (ALDOO) with the theme "Latin America United." They gathered to contemplate the formation of an international entity that would join the optometry schools together so that optometry could work as a unified academic front, to fortify the ties between Latin America and North America, and to optimize academic resources among different universities. Seven observers from outside the region and fifteen deans and faculty from Latin American optometry programs tackled workshop discussions and plenary sessions covering:

- The definition of optometry: the role of an optometrist and the public's perception of an optometrist
- Minimum curriculum: faculty development, student evaluation, teaching methodology, continuing education, research and student visual health campaigns
- Legal aspects of optometry: Ministry of Health and Ministry of Education recognition of the optometry career, regulation, the legislative power of educational programs
- Student issues: recruitment and retention, postgraduate employment opportunities, traditional lecture teaching vs. distance or semi-distance learning
- Formation of the constitution and bylaws of ALDEFO, the executive committee, financial issues, country by country requirements

San Jose, Costa Rica, November 5, 2003: Fifteen deans of Latin American optometry schools and 14 deans and observers from North America and Spain participated in the writing of the Constitutional Statutes of ALDEFO. The founding group adopted the Statutes and voted for the first Governing Board. The ALDEFO Governing Board for 2003-2005 is:

- **President:** Jairo García Touchie, dean, Universidad de La Salle, Colombia
- **President-Elect:** Julio Torres Fuentes, dean, Instituto Politécnico Nacional, México
- **Secretary-Treasurer:** Margarita Ayala, dean, Universidad Santo Tomas, Colombia
- **Trustees:** Pilar Contreras, dean, Universidad Autónoma de Aguascalientes, México and Jorge Cherusse, faculty at Universidad La Plata, Argentina.
- **Executive Director:** Andre Pagan, dean of academic affairs, Inter.-American University School of Optometry, Puerto Rico

In the constitutional statutes, ALDEFO recognizes optometry as ***"a healthcare profession that is autonomous, educated, regulated, (licensed and registered), and*** **[that]** ***optometrists are the primary healthcare practitioners who are the primary professionals of the visual system that provide the comprehensive eye and vision care, which includes refraction***

and dispensing, detection, diagnosis and management of disease in the eye, and the rehabilitation of conditions of the visual system. [1,2]

The objectives of the organization are multi-fold:

- To organize, unify, and represent the legal and professional optometry programs in Latin America.
- To orient the member programs and faculties on curriculum aspects, standards of academic competencies, length of duration and academic credits required for the preparation of a professional in optometry, in accordance with the international trends.
- To foster opportunities for the exchange and academic cooperation among the member programs and faculties. This includes the exchange of bibliographical material, magazines and newsletters.
- To support the development of formative and scientific investigation among the member programs and faculties of optometry.
- To establish protocols that support development of vision promotion and prevention programs with active participation of the members to impact the region.
- To promote the creation of an independent accreditation agency that stands for guaranteeing the quality of the programs and faculties of optometry at the Latin-American level.

Historical Considerations for the Formation of Aldefo

Latin America's oldest optometry school is the Instituto Politécnico Nacional Escuela Superior de Medicina in Mexico City — the first university to train optometrists in 1950.[3,5] La Salle University in Bogotá, Colombia, opened its doors to the study of optometry next and became a leader in optometric education in South America.[4,5] Today there are over 30 universities or training centers offering professional programs in optometry in ten different countries from Mexico to Brazil. Latin American optometry programs are generally undergraduate programs, accepting students directly from high school. Upon completion of the program, the school may grant the title of Optometrist, or Optometric-Optical Technician, or Medical Technologist in Optometry. Programs vary in length from 2-3 year technical programs, to 4-5 year professional programs. Some programs are developing Master's level training. Anyone seeking PhD level training in optometry must go outside the region. The Doctor of Optometry degree (known to USA and Canada standards) is not granted, although there are many Latin American practitioners who have trained in the United States or Canada to obtain this title.

Established Latin American technical and professional programs deserve recognition for their efforts to develop quality optometric education. At the ALDEFO meetings, many deans reported one of the obstacles to quality optometric education were the 'escuelitas' or little schools opened by optical companies needing refractionists to work in their opticals. These certificate-training programs (reportedly from two weeks to two months) grant job skills to trainees, then offer them employment in their company and call them optometrists. When there were enough optometrists to work for said company, the company would close the school, potentially opening again years later when the need for refractionists became evident. These practitioners usually do not have the same quality education as a graduate from a professional optometry program. These 'empiricists' or 'empiricos' as they are called in Spanish, do not or cannot apply for licensure or register to practice in many cases. They undermine the quality of care given by the professionally trained optometrists and their presence undermines the quality reputation and respect for the optometric profession.

The improvement of the professional education system in optometry and the deterioration of the empiricist training system presently coexist to various degrees in most countries in Latin America. The challenge for ALDEFO is the development of professional education to ensure equitable access to appropriate quality care. While professional optometric service may not yet be broadly available, the empiricist system still flourishes with the justification that perhaps in areas where no quality vision care exists, one could argue that any service is better than no service.

Implications for the Future

The changes that unfold as a result of the formation of ALDEFO will be historical. Hemispheric change and exchange between North America and Latin America can further create the coordination, integration and globalization of the profession. The intent to have open regionalism in the aspect of education will hopefully bring about scientific and technological development on the educational level that will influence policy and planning on the federal level in each country. A systematic analysis of the wide array of optometric educational programs in Latin America shall be one of the outcomes of ALDEFO.

While information and education crosses national borders, measures may be taken to ensure that international professional standards are developed and met. The analysis of the barriers that significantly undermine the quality of and optometric care for inhabitants of the region should lead to initiatives to breech some of those barriers. Exploring different modes of practice and service delivery, licensing of professionals, mutual recognition of diplomas, regulation based on the need to meet legitimate objectives such as consumer/patient protection/rights are all issues that can be addressed by having a solid organization in regional optometric education. Optometric educators can look at the barriers that limit entry into the study of optometry, the ethics of health and optometric practice, the health and medical responsibility, norms and standards of quality of care that affect the entire region.

As the profession grows in Latin America, it has become much more diverse, from optical schools to professional schools. ALDEFO can work toward harmonizing international legislation on educational qualifications, and assess the health impact of its decisions according to effectiveness, quality and efficiency.

Ultimately, transparency in the development of programs with the exchange of ideas should lead to modernization and institutional change in the region.

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The author wishes to acknowledge the World Council of Optometry (WCO) for the opportunity to travel to the ALDEFO meetings; and WCO Educational Committee member Dr. Bina Patel of the New England College of Optometry for developing the database on the optometry educational institutions in Latin America.

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Appendix

Optometric Educational Institutions in Latin America

Argentina

Population: 36, 955, 182
Number of Optometrists: approx 200
Number of Ophthalmologists: approx 5,000
Number of Opticians: approx 5,000

1. **Escuela Superior de Optometría,** Buenos Aires
2. **Universidad Nacional de La Plata,** La Plata Web Page: http://www.unlp.edu.ar

Brazil

Population: 172,860,370
Number of Optometrists: unavailable
Number of Ophthalmologists: unavailable
Number of Opticians: unavailable

1. **Universida de Luterana do Brasil,** Ciudad Canoas, Rio Grande do Sul Web Page: http://www.ulbra.br
2. **Universidade do Contestado,** Santa Catarina Web Page: www.unc-cni.rct-sc.br

Chile

Population: 15,153,797
Number of Optometrists: unavailable
Number of Ophthalmologists: approx 500
Number of Opticians: approx: 800

1. **Universidad Católica de Valparaíso,** Valparaiso Website: www.ucv.cl

Colombia

Population: 43,070,703
Number of Optometrists: approx 2,500
Number of Ophthalmologists: approx 1,500
Number of Opticians: none

1. **Universidad Santo Tomás,** Bucaramanga Web Page: www.ustabuca.edu.co
2. **Universidad Metropolitana de Barranquilla,** Bucaramanga Web Page: www.unimetro.edu.co
3. **Fundación Universitaria San Martín,** Bogota Web page: www.sanmartin.edu.co
4. **Fundación Universitaria Del Area Andina,** Bogota Web Page: www.areaandina.edu.co/
5. **Universidad de la Salle,** Bogota Website: www.lasalle.edu.co
6. **Universidad Antonio Nariño,** Bogota Web Page: www.uanarino.edu.co/
7. **Fundación Universitaria del Area Andina de Perieira,** Pereira Web Page: www.funandi.edu.co/programs/optometria.html

Costa Rica

Population: 3,710,558
Number of Optometrists: ~ 320
Number of Ophthalmologists: 22
Number of Opticians: 0

1. **Universidad Latina,** San Pedro Web Page: www.ulatina.ac.cr/pl_optometria.html

Ecuador

Population: 12,920,092
Number of Optometrists: approx 210 - 350
Number of Ophthalmologists:
Number of Opticians: 100

1. **Universidad Cristiana de Guayaquil,** Guayaquil
2. **Pontificia Universidad Católica del Ecuador-Sede Ambata,** Ambata Web Page: www.puce.edu.ec
3. **Universidad San Francisco de Quito,** Quito Web Page: www.usfq.edu.ec/
4. **Escuela Politécnica Javeriana**
5. **Universidad Estatal de Guayaquil,** Guayaquil Web Page: www.ug.edu.ec

Guatemala

Population: 12,639,939
Number of Optometrists: unavailable
Number of Ophthalmologists: unavailable
Number of Opticians: unavailable

1. **Universidad Galileo,** Guatemala City
2. **Universidad Rafael Landivar,** Guatemala City

Peru

Population: 27,012,899
Number of Optometrists: approx: 250
Number of Ophthalmologists: approx 700
Number of Opticians: approx 650

1. **Escuela Superior Privada De Optica y Optometria,** Lima
2. **Universidad Nacional Federico Villarreal,** Lima
3. **Instituto Educación Superior Barraquer del Perú,** Lima Website: www.optometriaperu.org

Mexico

Population: 100,349,766
Number of Optometrists: unavailable
Number of Ophthalmologists: unavailable
Number of Opticians: unavailable

1. **Universidad Nacional Autonoma de Mexico,** Mexico City Web Page: www.iztacala.unam.mx/wwwcampus/links.html
2. **Instituto Politecnico Nacional CICSA-Sto Tomas and Milpa Alta,** Mexico City Web Page: www.ipn.mx
3. **Universidad Autonoma de Aguascalientes,** Mexico City Web Page: www.uaa.mx:8001/ **Universidad Autónoma de Ciudad Juárez,** Chihuahua Web Page: www.uacj.mx/icb/carreras/optometria
4. **Centro de Estudios Universitarios Xochicalco** Web-Page: http://www.ceux.mx/

Venezuela

Population: 23,542,649
Number of Optometrists: 500
Number of Ophthalmologists: 1035
Number of Opticians: 1500 non academically trained refractionist/opticians

1. **Instituto Universitario de Optometria (IUO)**

IN REVIEW

Primary Care Optometry, fourth edition. T. Grosvenor: Butterworth-Heinemann, 2002, 649pp, $90.00.

Like the three previous editions, **Primary Care Optometry** continues to be an exceptional clinical guide. Its pages are easy to read and its material is clear, succinct and easily understood. While the traditional nuts and bolts of optometry have not been forgotten or dimished, new topics have been added to reflect the expanding role of optometry. A chapter on Nonsurgical Methods of Myopia Control or Reduction has been included. The chapter on Refractive Surgery has been updated with the most current information. The chapter on Low Vision has been expanded to meet the growing need of an aging population.

For the student, this comprehensive text covers the meat of optometry in an easy-to-understand manner. Study questions at the end of each chapter reinforce important points and concepts. For the practitioner, this book is one-stop shopping. Grosvenor takes four years of optometry school and condenses it into one tome. It's a great resource of information that we once knew for the Boards, but forgot soon thereafter.

Prior to writing this review, I decided to put Grosvenor to the test with two patients that I had recently seen in my office. The first had a varying vertical deviation. So I searched for Parks Three Step test. I found it on page 302. The next had keratoconus with corneal powers beyond my keratometer. I wanted to know what trial lens power I could place in front of the keratometer and what additional power it would yield. Page 452 informed me that a +1.25 would give me an additional 9.0 OD. Grosvenor had passed the test.

I highly recommend this book.. **Primary Care Optometry** is an exceptional reference guide that will be used again and again.

Guest Reviewer: Dr. John E. Larcabal
Assistant Professor
Southern California College of Optometry

Maximizing the Potential of Your Ophthalmic Office: What You Need to Know About Planning and Design. Fred L. Kahn: Butterworth Heinemann, 2002, 385 pp., $46.95.

When I first heard the title of this book I only heard the main title and assumed it was going to be about maximizing office potential through marketing. The secondary title explains more about the subject of this book. The title really should be *Maximizing the Potential of Your Ophthalmic Office Space.*

Fred L Kahn grew up in the optical supply business. He has been involved in ophthalmic design for over 50 years, most recently with Zeiss Optical. In the preface of the book, Mr. Kahn states that "you will learn the essentials of the complex and time consuming process of relocating or renovating an existing office, or planning a startup." He delivers on that promise. This is the most comprehensive and inclusive guide to ophthalmic office space I have seen. It is filled with easy-to-follow lists, photos, office plans and practical solutions to office space and design issues. The middle chapters on design criteria include features on most clinical functions, eyewear delivery, specialty care such as contact lenses and vision therapy, computerization, and advanced clinical procedures. As Mr. Kahn promises, there is useful information for the optometric startup, renovation of space, relocation, purchase vs. lease, and even new construction.

The book is fast reading, yet valuable as a reference resource both for the existing practitioner, student, and new graduate. Mr. Kahn covers contemporary issues such as adding an associate or partner, design needs for electronic medical records, return on investment analysis in space allocation and design, as well as managed care concerns. I think this book would fill a valuable space on every optometrist's bookshelf.

Guest Reviewer: Dr. Stuart Rothman
Associate Clinical Professor
SUNY State College of Optometry
Private practitioner, Livingston, New Jersey

Visual & Vestibular Consequences of Acquired Brain Injury. Irwin B. Suchoff, Kenneth J. Ciuffreda, and Neera Kapoor, eds., Optometric Extension Program Foundation, Santa Ana, CA., 2001, 244 pp., $35.00.

This book is a compilation of papers from the Academy 1999 symposium in Seattle and a few other articles from other authors that the editors had felt rounded out the discussion well. The topic is ambitious for two reasons: there are untold visual and vestibular consequences of brain injuries and there is very little known and even less that is published on this topic. Traditionally, almost every ophthalmologist and far too many optometrists are content to patch an eye to manage diplopia, ignore any other symptoms, and wait for six months. If the symptoms have resolved, that is wonderful; if not, then there is nothing else to be done. This attitude is far too pervasive for a syndrome in which almost every other area is aggressively treated, not passively ignored. The visual system is the only one traditional medicine expects to get better on its own, which implies that they respect the power of that system for recovery. To say that, in this kind of system, if there is no *spontaneous* recovery, then there can be no recovery strikes me as seriously flawed logic that is cer-

tainly not backed up by research.

This book should serve as a call to action for optometry to halt the undue suffering these patients currently have to undergo in waiting for spontaneous recovery. It is a well-researched, multidisciplinary manifesto for patients who deserve better. The foreword by Freeman sets the tone wonderfully. He writes about his experience with a patient who had suffered traumatic brain injury in a way that will resonate for anyone who has worked with these challenging and rewarding cases. He writes an apology for the "catch as catch can" nature of the book and he is absolutely correct when he states that this "is not offered as a textbook." In the beginnings of the first six chapters, there are multiple definitions of acquired brain injury (ABI), traumatic brain injury (TBI), etc. The same diagram to illustrate coup and contracoup injury to the brain is shown in two different chapters. However, if you can look past the unusual editorial choice of letting these redundancies stand, you will find much that is challenging and useful.

The preface lays out the goals of this book very succinctly: "...to provide optometrists with a broad understanding of ABI, its ocular and visual consequences, the developing clinical strategies that address these consequences, and some of the current pertinent research." The book meets these goals and more. Among the highlights are the first chapter, which lays out the groundwork and what is known about ABI. It is accompanied by several useful tables and diagrams. The second chapter should be required reading for every optometrist and every member of the health care team who will ever see a patient who has suffered a brain injury. The author, Edwin Richter, M.D., presents the financial and social costs of head trauma. The clinical considerations he outlines are important for anyone who is testing this population to remember. He illustrates a good model of the interdisciplinary rehabilitation team and the appropriate role for the optometrist in that team.

I believe that this is one of the most important books for our profession. It shows why optometry continues to be a viable and valuable health profession, despite the challenges we face from third party payers and some medical specialties. This book brings together viewpoints from several different disciplines, sometimes within the same chapter, and shows how these viewpoints can combine to create a powerful team for the treatment of a difficult set of conditions. It is my hope that every optometrist, and indeed every staff member in every rehabilitation center in the country, would read this book and understand what optometry can offer to patients who may have a best-corrected visual acuity of 20/20 but nonetheless suffer from disabling visual conditions. The Optometric Extension Program has performed our profession an important service by publishing this book.

Guest Reviewer: Dr. David Damari
Assistant Professor
Southern College of Optometry

Clinical Manual of Specialized Contact Lens Prescribing.

TR Scheid, ed. Boston: Butterworth-Heinemann, 2002, 222 pages, $45.00.

This book is enjoyable reading from cover to cover for optometric students, recent graduates and experienced practitioners alike. The authors break down complex fitting philosophies into clinically relevant information. The reader is not overwhelmed with theory found in more academically oriented textbooks.

Dr. Terry Scheid, the book's editor, collaborated with ten contributing authors to write eight chapters ranging from basic contact lens fitting to more advanced topics. Therefore, each chapter has a slightly different format and writing style. There are 31 color plates in the middle of the book along with several black-and-white photographs and drawings located throughout the book.

Chapters provide overviews of rigid gas permeable contact lens fitting, rigid lens modification, toric soft contact lenses, keratoconus, toric rigid lens design, optics and fitting, post-surgical contact lens fitting and orthokeratology. A soft contact lens identification chart is one of three helpful appendices.

A few of the topics could have been covered in more detail, but the majority of chapters contain extensive references to assist the reader in obtaining more detailed information if desired. Additional areas of specialized contact lens care, such as pediatric and multifocal contact lenses, are not addressed.

Guest Reviewers: Dr. Jennifer Jung
Dr. Tim Edrington
Southern California College of Optometry

Genetics for Ophthalmologists - The Molecular Genetic Basis of Ophthalmic Disorders.

Graeme CM Black: Remedica Publishing, 2002, 352 pp., $40.00.

This book, written by Dr. Graeme Black, an authority in the area of genetic ocular disease, is a concise compendium of eye disorders that have a genetic basis and inherited systemic metabolic disease with ocular manifestations. It includes diseases of the cornea, lens and retina; glaucoma; vitreoretinal disease; optic nerve disorders; and several of the more common inborn errors of metabolism. It includes as well a very complete glossary, which can be especially helpful to eye care practitioners who are not conversant with up-to-date genetic concepts and terminology.

In addition to presenting the genetic information (e.g., inheritance pattern, chromosomal location, specific gene involved and the effect of a missense mutation) to the extent known for each condition considered, the author presents a thorough description of the clinical characteristics of each disease. High quality ocular photographs (fundus and otherwise) are often part of the presentation.

This book is clearly a wonderful reference source for clinical ophthalmologists who are dealing with genetic eye disorders. Since, to my knowledge, there are very few clinical optometrists in the U.S. working in this area, my guess is this book will have little appeal in the optometric community.

Guest Reviewer: Dr. Jerry Rapp
Professor
SUNY State College of Optometry

Ophthalmic Photography: Retinal Photography, Angiography, and Electronic Imaging, second edition. PJ Saine, ME Tyler: Butterworth-Heinemann, 2002, 368 pp, $150.00.

This well-thought-out and organized text was written with a large audience in mind including professional ophthalmic photographers as well as optometrists, ophthalmologists, and students. The intent of the second edition of this text is to meld the basics of ophthalmic photography with the new technology of digital imaging with the hope of making one a better ophthalmic photographer. The scope of this text spans from the very basic to very advanced. Principles and techniques of stereo fundus photography, fluorescein angiography, indocyanine green angiography, electronic imaging, analog and digital videography, and scanning laser ophthalmoscopes are meticulously detailed in the 9 chapters of this text. Accompanying this are high quality color and black/white images, descriptive interpretation of sample cases, emergency intervention, step-by-step guide in trouble shooting, and film processing and printing. In addition, an extensive discussion on basic topics is presented. Subjects such as dilation, ocular and retinal anatomy, documentation, patient positioning, film and lens selection, and alternate languages are covered.

This is an exceptional text and resource tool for the student and doctor learning how to capture stereo retinal photos with either traditional film or digital/computer imaging. It is also an excellent instructional text on performing, reading, and interpreting the various angiographies. The only fault of this text is that it indiscriminately covers too many topics, some of which might be better relegated to more basic sources.

Guest Reviewer: Dr. Judy Tong
Assistant Professor
Consultant, Ocular Disease and Special Testing
Southern California College of Optometry

Color Atlas and Synopsis of Clinical Ophthalmology 5-Volume Library (Wills Eye Hospital Series). Christopher Rapuano Ed., New York: McGraw-Hill Professional - paperback. 1,613 pp., $275.00/Library, $65.00/Volume.

I found this series to be an easy to use text and an excellent clinical resource. As a faculty member who teaches both optometry students and private practitioners, I am repeatedly asked to recommend a reference text that provides both pictures of an ocular disease condition, as well as a synopsis of how to manage the condition. This series provides both of these requirements.

The library is divided into the following topic areas: cornea, glaucoma, neuro-ophthalmology, oculoplastics and retina. The first thing that will strike the reader is the exquisite photography that is displayed in the series. In each of the volumes, the clarity and detail of the pictures is superb. The text or synopsis for each ocular disease condition is clinically relevant, giving the reader a quick overview of the disease and how to evaluate, treat and manage the disease entity. If the reader requires a more in-depth explanation of a particular ocular disease, he would have to utilize other reference materials.

The volume on cornea covers the areas of conjunctiva and sclera as well as cornea. The majority of the volume is dedicated to cornea and covers developmental anomalies, dystrophies, degenerations, infectious diseases, inflammatory disorders, ocular surface disease and systemic conditions affecting the cornea. Corneal surgery and complications are included at the end of the volume. I believe the reader who is in a refractive co-management setting will find this to be an excellent review and helpful reference resource.

The glaucoma volume was one of the best clinical texts on the disease that I have had the pleasure of reading. The text is broken into four sections: glaucoma diagnosis, glaucoma management, disease syndromes and imaging technologies. I found this volume to provide an excellent clinical review for the individual comfortable with managing glaucoma patients, as well as a very good foundational text for those who are less experienced in managing the disease. The final section on imaging technologies reviews recent and emerging technology for glaucoma diagnosis and management. This section also reviews how to interpret the test results from each instrument.

I believe the volume on retina would be very beneficial to the primary care provider. The format is similar to the other volumes in providing a brief background of the disorder, pathophysiology, clinical signs, diagnostic evaluation, prognosis and management It is divided into ten chapters which include categories such as macular diseases, diabetic retinopathy, retinal degeneration and dystrophies, chorioretinal inflammatory diseases and peripheral retinal disease to name a few. For practitioners or students looking for a good reference in posterior segment disorders, this volume will serve them well. The pictures and clinical synopses will provide the user with an excellent foundation of the posterior segment disease processes. There are several tables at the end of the text which provide a differential diagnosis of common retinal entities which the clinician will find helpful as well.

The volume on Neuro-ophthalmology is broken into thirteen chapters. I found the section on Magnetic Resonance Imaging for the ophthalmologist to be a very good review with excellent pictures of orbital disease and intracranial lesions. Practitioners in a hospital and/or multi-disciplinary setting will find this to be a great reference source. This volume should also be helpful to practitioners with a large pediatric practice. There is a very good chapter on ocular misalignment and other ocular motor disorders. This text provides common neurological ocular disorders that one might encounter in a general practice as well.

Finally, one would imagine that the volume series on oculoplastics would not be utilized much by Optometry. One would be wrong. There are three sections in this volume divided into eyelids, lacrimal apparatus and orbit. I believe that the practitioner might utilize this volume more frequently due to the day to day lid and lacrimal disease entities that one might encounter in practice. The pictures and clinical

description of the various anterior segment disorders are very good and provide the user with an excellent reference source.

In summary, I found the Color Atlas & Synopsis of Clinical Ophthalmology (Wills Eye Hospital Series) to be one that would fit nicely into any practice setting. I would advise purchasing the entire set as I believe that all five volumes will be utilized by the practitioner. This small paperback series can be easily stored on a desk top for quick and easy reference.

Guest Reviewer: Dr. David Sendrowski
Chief, Ophthalmology
Consultation/Special Testing Service
Associate Professor
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Field of Vision: A Manual and Atlas of Perimetry. JJS Barton and M Benatar: Totowa, New Jersey: Humana Press 2003, 334 pp., $150.

This textbook is the seventh in a series entitled Current Clinical Neurology. Its purpose is to address measurement of the visual field and interpretation of test results, along with assessment of the history and other findings, in the context of neuro-ophthalmic disease. The book is for those who are already familiar with visual field testing and visual pathway disorders.

The first chapter, *An Introduction to Perimetry and the Normal Visual Field,* provides a general review of perimetry. *Functional Visual Anatomy* describes the visual pathway and includes many illustrations, brain sections, and magnetic resonance images. *Perimetry at the Bedside and Clinic* emphasizes the importance of the central field and discusses confrontation, Amsler grid, and tangent screen testing. *Goldmann Perimetry* and *Automated Perimetry (Humphrey Field Analyzer)* describe each technique and interpretation of results, with case examples demonstrating various artifacts.

Following the chapters is the atlas, where 100 cases are presented in anatomical order. The reader is challenged to develop his diagnostic skills by first reviewing *History and Exam,* then turning the page to see the *Discussion,* which includes a description of the visual field, localization, diagnosis, brain scan and/or fundus photos. The *Discussion* for each case covers the differential diagnoses, which had been considered, and management. The next 20 cases are presented in random order so that one can test his skills. More than half of the cases have Goldmann fields.

One of the best aspects of the book is that it demonstrates and explains the variabilities and irregularities in visual field testing which are encountered in clinical practice. The numerous MRIs are quite helpful in learning to interpret brain scans, particularly to recognize small normal structures and subtle abnormalities. The *Discussions* provide many clinical pearls. I would have liked to see more photographs and Humphrey fields in the case presentations.

I don't think the textbook is appropriate as an introduction to visual field testing for optometric students, and private practitioners might feel it is not sufficiently relevant to their work, given the emphasis on Goldmann fields and radiology. I think it would make a useful library resource for fourth-year interns. I heartily endorse it as a learning tool for trainees in ocular disease, geriatric, or hospital-based optometric residency programs, where they may frequently encounter neurological conditions, and have access to Goldmann perimetry and radiology. Optometric educators and those who work in hospital settings would likely enjoy testing and fine-tuning their diagnostic skills.

Guest Reviewer: Dr. Pauline F. Ilsen
West Los Angeles VA Healthcare Center
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Industry News
(Continued from page 89)

ness of lens discomfort and to help spread the word that we can in fact do something about contact lens comfort, according to Dr. Nikki Iravani, director of clinical research and professional relations, in Connected, Coopervision's monthly email newsletter. Other articles in the most recent issue of Connected were: "Fitting Tip: Proclear Compatibles Solves Dry Eye Concern"; "CooperVision's Frequency 55 Multifocal: A Balancing Act that Works"; and "Fitting Stock Prosthetic Lenses". For more information, contact Connected@Coopervision Connected.com

New Varilux Aids For Optometrists

R. Michael Daley, president of **Essilor Lenses,** inaugurated Varilux' new electronic newsletter - "See What's Ahead." Daley underscored Essilor's number one goal - to help eye care professionals grow their business through the most popular brands and highest quality products like the new Crizal Alize lenses. Varilux has also created *Paramount* by Varilux, a program designed to advise eye care professionals about various business building opportunities for their practice. The program covers a variety of topics including "How to build patient satisfaction with Varilux Panamic, How to achieve higher profits in your dispensary, Marketing your practice from the inside and How to capitalize on marketing your practice externally.

Volk Names New Regional Manager

Volk Optical, the industry leader in aspheric optics, is pleased to announce that Amanda Mechem has joined the company as regional account manager, West/Central U.S., providing sales and customer service support for Volk's complete line of diagnostic, therapeutic and surgical ophthalmic lenses, equipment and accessories. Meechem's territory includes the Western United states, Arizona, Illinois, Indiana, Kansas, Michigan, Missouri and Ohio. Meechem joins Volk with a great deal of field sales experience from her most recent position with IKON Office Solutions.

Volk Optical is an industry leader in the design and manufacture of aspheric optics. Glass lens construction and the company's patented double aspheric technology result in the highest quality imaging for precision diagnostic and laser work. The company is based in Mentor, Ohio.

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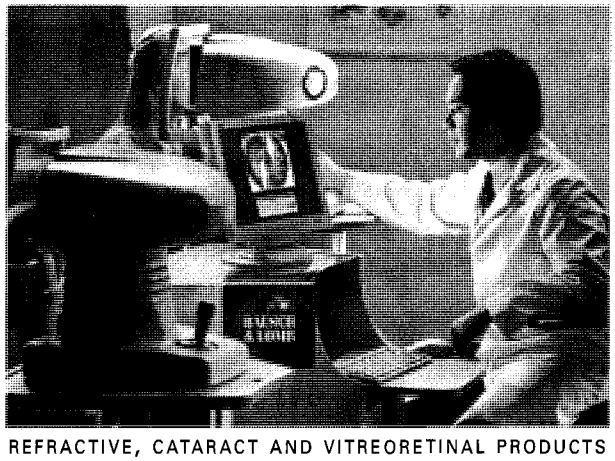
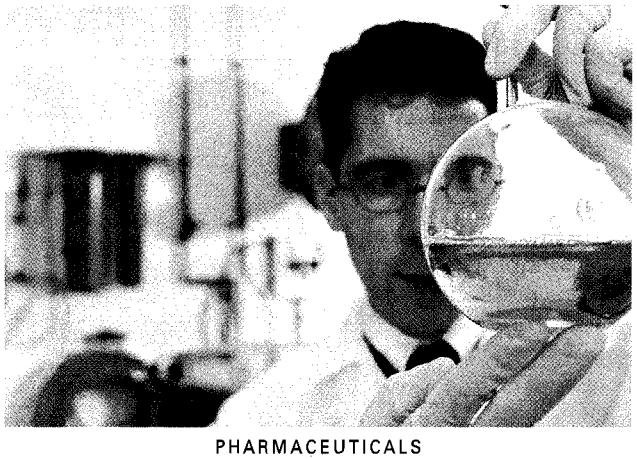


REFRACTIVE, CATARACT AND VITREORETINAL PRODUCTS



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