

Ocular health knowledge modifications

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Abstract

The purpose of the project was to investigate ocular health knowledge modifications in subjects of the former communist country Romania. Accessible, high-quality eye health care in Romania remains a primary challenge to be overcome. Because for many Romanians eye care is difficult to obtain, the intention of this research was to raise awareness about preventive eye care versus costly treatment. NEI (National Eye Institute) recognizes that an increasing occurrence of eye afflictions is becoming a major public health problem worldwide. NEI also underlines the importance of public education through health-promotion workshops, and it encourages community leaders and local efforts to foster vision health education and research. Voluntarily-participating subjects were asked to complete a pre-seminar interview assessing basic knowledge of proper eye care. General qualitative questions included: what are effective ways to protect one's eyesight, why do we need to take care of our vision, and how can eye exercises be effectively used to maintain healthy vision. Additionally, information was collected about subjects' socio-economic backgrounds via individual surveys. Post-seminar interviews, using a format identical to that of the pre-seminar interviews, were distributed within a two-week timeframe. Changes in participants' knowledge were gauged via comparison of the two sets of interviews. The population distribution was assessed in terms of gender, age, medical (mainly ocular) family history, ocular health, economic status, and education level. Final evaluations of educational outcomes showed retention and application of information.

Preliminary Research Data

Eye care health disparities have long been the subject of debate and deliberation, both locally and nationally, in organizations such as National Eye Health Education Program (NEHEP). The need for a greater number of ocular health care providers is undeniable. The issue has gained interest and has started to be addressed in third world countries such as India. In fact, the National Eye Institute (NEI) endowed seven research grants in 2005 to expand vision research in India. However, more work in ocular research is still needed in many other developing countries.

Upon approval of the University and Medical Center Institutional Review Board (UMCIRB), I gathered pilot data over the last two years in a project titled "*Eye-care health disparities: International and Rural United States Comparison.*" This 2007 self-designed research was conducted in Bihor County, Romania and Pitt County, NC, under the supervision of two family practitioners, Dr. Aurelia Marti and Dr. Tom Irons. Educational seminars and vision acuity examinations provided opportunities to explore and compare the basis of health disparities among subjects at both research sites. Preliminary data indicated that a high percentage of the populations studied (55.19% in Oradea, Romania and 68.90% in Belvoir Elementary School, Pitt County, NC), had vision-related problems. These problems included poor to very poor vision acuity, frequently combined with the usage of inappropriate glasses. The findings, recently published in *Explorations* (Gliga) underlined the urgency of providing proper eye care and health education. In the research of ocular health knowledge modifications reported in this paper, I address the need for health education and test its impact on targeted populations.

Literature Review

Addressing health disparities:

Approximately 250 million people worldwide cannot see, or they have trouble with their eyesight. Yet it is estimated that 75% of blindness cases could be treated and that 90% of cases of blindness could be prevented (National Eye Health Education Program). A lack of access to eye care and a lack of funding are the main obstacles. "Optometry Giving Sight" is an international initiative which, in cooperation with CIBA Vision, raises funds to help cover the costs of ophthalmologic care for inhabitants of impoverished countries. Forty countries receive funding through the project, including Sri Lanka, Kenya, Tanzania, Uganda, South Africa, and Zambia (National Eye Health Education Program). Unfortunately, Romania has not yet received such support despite its status as a third world country with a modest economic profile and limited access to ocular care. And although the National Eye Institute (NEI) has collaborated with populations-based visual impairment surveys in Nepal, China, Chile, India, South Africa, Malaysia, and Brazil, Romania has not yet been included.

An unstable economy and a poorly funded health care system make medical care in Romania very nearly a luxury item. Nationally, an average of only six hospital beds are available for every thousand patients. Currently, in this country of more than two million people, only about a thousand ophthalmologists and residents are in practice. There are no optometrists; routine vision examinations are performed by family practitioners. However, these physicians are mostly unable to offer effective services as they are expected to attend daily to more than 40 patients within a four-hour time span. Additionally, people in greatest need of vision care tend to be residents of geographically isolated villages scattered throughout the country. The availability of technology is also very limited in the field. As Dr. Benone Cârstocea stated in an interview, there are locations where machines as old as 100 years are being used as ocular diagnostic tools (In Romania).

There are no sources in the current document.

Barriers to healthy vision:

Limited professional advice

In Romania there is limited information regarding ocular prophylaxis. A few informative pamphlets are available at private ophthalmologic practices, but this means that only patients to such practices are able to access them. Because of the high private health care cost, not many people can afford such services. As of 2010, the average consult in Oradea, Romania costs 700 RON, which is the equivalent of \$24. Average monthly salaries in Oradea are only 1940 RON (\$646) as of February 2010 (Salarii mai mici).

Corruption in the healthcare field

There is also a pressing issue of corruption in the Romanian medical field. It is known that there are still doctors who do not give the proper (or *any*) medical care unless the patient pays bribes beyond the standard fee. Statistics show that 29.72% of doctors receive bribes and 36.58% receive "Thank You" awards (Craciunas). It can thus be said more bluntly that 29.72% of doctors can rightly be accused of corruption. However, the benefits of Western advances in ophthalmic care are available for those who can afford to pay. These include lenses such as Air Optix Aqua and DAILIES, exams with expert machinery such as PlusoptiX A09, and eye-care solutions such as AOSept Plus and SoloCare Aqua (Spune din Priviri).

Government-funded hospitals and universities

Because of the financial crisis, most patients seek help at government-funded hospitals. In such locations the doctor must divide a four-hour schedule between eye exams (for out-patients and in-patients), hospital rounds, surgery, and administrative tasks. Patients wait between one and

two hours to be seen (first come, first serve basis) and once inside the doctor's office, they are rushed through the exam—an arrangement which leaves no time for educating the patient. This raises the question of whether pharmacists might provide an educational link between doctors and patients. Recently, more emphasis has been placed on exploring this idea, but as with all things new, it takes time to implement. As of now, the government-funded medical system gives the appearance of being staffed with personnel who, to some degree or another, lack adequate preparation. There are various reasons for this lacuna, including a lack of materials and access to too-few faculty. It is also alarming that in the Transylvanian system of universities, 74% of people report having heard from others about cases of professional dishonesty, and 36% know of such cases from their *personal experience* (Coruptia din Mediul Universitar).

Impact of the Internet

A key to disease prevention is education of the public. Educational materials concerning the importance of drinking water, eye-relaxation, wearing eye glasses, and sleeping sufficiently exist on the Internet, but such materials written in Romanian are limited (Spune din Priviri).

Current movements to decrease vision health problems:

The popular “Did you know...” articles have been adapted by Romanian online magazines. New mothers, for example, can find articles that answer concerns or state facts regarding the care of newborns. This information includes how newborns see most clearly within a 25-cm range, and how the size of an eyeball does not substantially change through the years (Stiati ca...). The particular set of facts conveyed through such materials is not especially critical insofar as they do at least help stimulate people's inquisitiveness, inducing them to seek more (and more instructive) information. One can also find online advice on various blogs. This decidedly western idea is gaining currency in Romanian culture, too. One can find information pertinent to various eye-care topics and concerns, such as “ways to alleviate ocular discomfort from excessive computer usage (Raspunsuri de la cititori). One reader, Vasile Niculescu, answers this question with good advice. Such networking helps break down geographic barriers to information exchange. (The reader is from Bucharest and the inquirer is from Oradea.) However, it bears noting that Internet advice must be taken cautiously, as the persons giving advice may not be professionals or experts in the subject.

Much of the online educational materials available in Romanian concern the importance of beautiful, healthy eyes, and explains medical terminology and conditions “in plain language” that the average reader can understand. Besides stating the problem, such articles often suggest solutions, whether this be something that can be accomplished at home or purchased off the shelf. Romanian doctors in specialized fields can be found on the Internet writing articles or reviewing others' writings prior to publication. Thus, Dr. Ionut Costache advises pregnant women to check with their ophthalmologists, especially during the last trimester, since retina formation exerts a nutritive effort, and contractions during labor can sometimes rupture the retina and lead to blindness (La varsta de 3 ani). Dr. Mircea Filip makes available to the public a list of expected costs related to eye care.

Another example is the article “Ochi Frumosi si Sanatosi” (Mihailan), wherein several ophthalmologists discuss macular degeneration and ocular disease prevention. The importance of Lutein and Vitamins A, E, and C are mentioned (Mihailan). There is a downside to this otherwise helpful article. For instance, because it is featured in an online magazine sponsored by pharmacological funds, a particular drug (Vizual Aktiv) is recommended for a particular ocular condition (Mihailan). It is left to the reader to discern meaning from the business propaganda when choosing which products to purchase.

Advice regarding the vision of children can also be found on the Internet. In a 2009 poll of 232,700 students in Bucharest, it was found that ophthalmologic problems were the most commonly encountered health problems (Chirileanu). These difficulties interfered with students'

academic life, introducing further complications such as depression, even from a kindergarten level. “Organizatia Mondiala a Sanatatii” reported in 2002 that more than 161 million people worldwide suffer a vision deficit, out of which 37 million are blind—1.4 million of them being younger than 15 years (Lentilele de contact). Dr. Gina Tanase, Bucharest medical center director, states that positive vision rehabilitation (up to 20% of vision acuity) is attainable in patients older than five years of age, with treatment ranging from 10 sessions to a full six-month recovery period (Lentilele de contact). Dr. Marinela Gheorghe echoes her colleague, suggesting that eye diseases in children should be identified early because otherwise they can bring worse complications (Gheorghe). These problems can be further exacerbated by an overuse of computer screens and TV viewing. A list of symptoms, possible causes, and treatment options are provided. It is nationally recommended that the first eye exam be done at three years of age, which is equivalent to the Western standard. Dr. Mircea Moraru from Oculus Clinic, underlines this critical idea since the eyes can be best “educated” up to five or six years of age (Bendelic). As for the older population, an experiment conducted by Dr. Johanna Seddon on 935 people between 67 and 71 years of age revealed the unhealthy effects of excessive smoking, obesity, or unwise eating habits (Maresan).

It must be noted that while useful information exists online in Romanian, the majority of the Romanian population does not possess the financial or educational resources to access the Internet, so this information remains out of reach to most. Unfortunately, those lacking Internet access are precisely the people in greatest need of medical attention: they are primarily of median to old age with limited educational, medical, and socio-economic status.

Various ophthalmological research efforts in Romania:

A number of research projects are ongoing in Romania in various specialized areas within the field of ophthalmology. Examples include “Modern treatment of Dry Eye Syndrome (DES)”, a study conducted by a team of doctors/researchers in Chişinău, Moldova (Lopata). The study was based on 78 patients with DES of various etiology and moderate severity. Three different, inoffensive, non- or mini-invasive treatments were judged fruitful (Lopata).

Another group from the USMF “Nicolae Testemiţanu” and “Spitalul Clinic Republican” focused on the comparative study of different imagistic modalities in orbital trauma complicated with intraorbital foreign body (Lopata). With conventional and radiological techniques they determined efficiency in diagnosis and localization of the roentgen-positive intraorbital foreign body in 145 patients with orbital trauma. The group identified strong and weak points of different imaging methods as well as the preferred diagnostic sequence depending on the foreign body characteristics and possible localization (Lopata).

Even at the University of Medicine and Pharmacy in Oradea there exist some impressive thesis projects. One example is Dr. Tomina Popescu’s dissertation on correlation between diabetic retinopathy and subclinical arterosclerosis (Popescu). The subject pool consisted of 100 patients from Spitalul Clinic C.F. Craiova. They were screened for a year (2008), regularly given check-ups and evaluations (Popescu). Strong correlating factors were proven to be hypertensive stress, smoking history, and presence of plaques.

Other research is noted on various topics, ranging beyond dry-eye syndrome studies to one project investigating minute, genetic details. For example, an investigation of Dr. Lilia Dumbrăveanu from the ophthalmology department at USMF “N. Testemiţanu” (Dumbrăveanu) researched the role of major histocompatibility complex HLA in the diagnostics of uveitis associated with seronegative ankylosing spondylitis. Dr. Iulia Lopata, from the same department, investigated the critical role of the structure of the tear film in the interaction between contact lenses and the anterior surface of the eye (Lopata).

It is notable that these studies addressed ways to alleviate ongoing ophthalmologic conditions, but none of them focused on prophylaxis and its probable positive effects in ocular

disease prevention. While certain diseases “come with age,” with proper home-based, sanitary habits, the age at which these conditions appear could be pushed back.

Vision health disparities in Romania:

International collaborations are symbolic of the linking elements between developed and developing countries. They emphasize that accessible, high-quality care is the main challenge to be overcome. NEI, in its support for international research, has cooperated for more than 25 years with populations-based visual impairment surveys in Nepal, China, Chile, India, South Africa, Malaysia, and Brazil (Bridbord). However, many more European developing countries such as Romania remain underserved when it comes to ameliorating visual health disparities. The need for research and promotion of proper health care in such places remains critical.

Romania thus provides an interesting venue for reviewing visual health disparities. An October 2006 survey reports that there are a total of 40 Romanian national ophthalmology residences divided among the principal municipalities—and concomitantly main medical centers—such as Oradea, Arad, Iasi, Timisoara, and Bucharest. It must also be taken into account that the 2740 total national residency seats in the medical field include, but are not limited to, ENT, family practitioners, radiologists, urologists, dentists, pharmacists, even legal medicine practitioners (Numarul de locuri). These numbers further reflect the deficits in ophthalmologic care in Romania. The “Capital” newspaper reported that in Bucharest, more than 5% of people wearing eyeglasses did not receive a prior eye checkup, whereas 19% of them had not had an eye exam in more than three years (Jumatate din Romani).

Additionally aggravating the situation is that the population most critically in need of vision care is geographically isolated in villages throughout the country. They lack transportation, and none of the practicing ophthalmologists engage in house calls. It must also be noted that there is no notion of optometrists in most European countries such as Romania (“In Romania”). Thus, the research and educational interventions that would be most beneficial to these individuals must be brought to them.

Legislation itself creates a gray area for treatment of ocular conditions such as dicromatism (Toma). In Romania, approximately 0.4% of the male population is affected (Hurbea). In the ordain Nr. 87 from 03/02/2003, Anex 1, paragraph “Oftalmologie”, number 4, it is stipulated that discromatopsies are among the medical maladies deemed incompatible with driving a vehicle. This law was modified on 12/4/2003, leaving to the ophthalmologist to decide how the condition can affect driving. If the doctor considers it to be an issue, a stamp of “INAPT SOFER” (inapt driver) is placed upon the medical record (Hurbea). This of course creates disparities in how this group of patients is evaluated and regarded.

Methodology

My plan of action in the Fulbright research project focused on the effectiveness of educational seminars promoting preventive ocular health practices. Data collection and analysis consisted of three main components: a pre-seminar interview to assess the knowledge pertaining to potential ocular health implications, an educational workshop on ocular preventive care, and a post-seminar interview (format identical to the first). The second interview was distributed within two weeks of the first. Thus, individual personal knowledge modification was assessed and measured. Close observation, recording, and analysis were avenues of data collection.

Seven hundred twenty-three subjects were recruited on a voluntary basis and without incentive offered. Cooperation with local family practitioners, medical university professors, and middle/high school directors allowed me access to a large subject pool. UMCIRB approval was obtained prior to start of research, and this approval was subsequently renewed in February 2010. UMCIRB approved informed-consent documentation for participants (and for parents of those under 18 years of age) was given to participants. Students tested were from a pool of various schools in metropolitan Oradea, such as Scoala Generala Oltea Doamna, Scoala Dacia, Liceul

Emanuel Gojdu, and Liceul Lucian Blaga. Rural areas represented in the study include: Alparea, Baile Felix, Bors, Capalna, Gepiu, Ineu de Cris, Osorhei, Paleu, Sacadat, Sanmartin, Santandrei, and Sarand—all villages in Bihor County.

Pre-Seminar Interview:

Information was gathered regarding birthplace, age, gender, and employment.

The questionnaire was divided into two sections, one pertaining to ocular medical history, and the other addressing personal knowledge about eye care. The first section included the following:

1. Have you ever been told that you have an eye problem or disease? What and when?
2. Does anyone in your family suffer eye problems? Who and what?
3. Have you ever had eye-related surgical interventions or special treatments? Describe.
4. Whom do you seek when you experience personal eye-related pain/discomfort?
5. How often do you have eye exams? What's covered by the eye exam and/or treatment?
6. Do you wear eyeglasses and/or contact lenses? Since when?
When was your last eye prescription changed? Is the prescription from the last exam adequate now?
7. Who wears eyeglasses and/or contact lenses in your family?
8. Do you have health insurance?

The second section was designed in a TRUE/FALSE format. The subject had to distinguish between eye-care truths and myths, and to circle an answer. The following statements were included:

1. "Reading in dim light is hurtful to your eyes."
2. "Using computers can hurt your eyes."
3. "Wearing the wrong kind of eyeglasses damages your eyes."
4. "Children outgrow crossed or misaligned eyes."
5. "Eating carrots improves your vision."
6. "People with weak eyes should avoid reading fine print."
7. "Wearing eyeglasses will cause you to become dependent on them."
8. "A cataract must be 'ripe' before it is removed."
9. "Contact lenses can prevent nearsightedness from getting worse."
10. "Eyes can be transplanted."

Educational seminars:

Eye health concepts were presented to 541 fifth, sixth, seventh, and eighth grade students at various schools in Bihor County, Romania, and to 182 Romanian subjects at the university level and beyond. Goals included eye safety, preventative care, and internalization of knowledge presented. Students received comprehensive individual brochures. The colorful and informative handouts kept the students engaged and interested. Other concepts included verbally in the presentations were:

- Why do we have eyes—purpose?
- Why do we need blinking, eyelashes, eyelids, and tears?
- What are glasses and contacts for?
- What are good ways to protect our eyes? (e.g., nutrition, eye exercises, avoiding bright lights, no sharing of glasses, makeup, etc.)
- Eye structure and communication with the brain.

Brochures

The informational brochure included two parts. One listed the answers to the Eye-Care TRUE/FALSE section of the questionnaire, along with the reasoning behind each answer. The second part gave information regarding eye-injury prevention in various settings such as the

home, in the workshop, around children, in the garden, around cars, during sports, and while using fireworks. First-aid tips for eye injuries were also listed, categorized by the various types of injury such as foreign objects in the eye, cuts to the eye and eyelid, blows to the eye, and chemical burns.

The brochure information and questionnaire were offered in both Romanian and English so that participants could answer in whichever language they knew or felt more comfortable with.

Post-seminar questionnaire and interview:

Within two weeks, a questionnaire identical to the pre-seminar one was given to participants. Final evaluations of the collected data gauged the retention and the application of the information presented in the seminars. Subjects with affected vision were encouraged to visit ophthalmologists.

The maximum score on the questionnaire was 10/10 (10 questions answered correctly out of 10 possible questions). Thus, for example, if a subject initially scored 3/10 (three correct answers) and then 9/10 (nine correct answers), an overall increase in retained knowledge was indicated.

Data Analysis and Discussion

Although the research history was already built at several primary and secondary schools in Oradea and at the medical office of Dr. Aurelia Marti, my goal was to reach a larger population in this city and in the surrounding villages (e.g., Santandrei, Ineu de Cris, and Paleu). The initial proposed sample size for the research was 500 people, but the final tally amounted to 723 participants. With invitations from several family practitioners (Dr. Aurelia Marti, Dr. Olimpia Perez) and from Dr. Straciuc—University of Medicine and Pharmacology in Oradea, along with access to various academic settings (e.g., Health Classes at Liceul Oltea Doamna, Liceul Lucian Blaga, and Liceul Emanuel Gojdu, secondary schools in Oradea), I was able to access the resulting participant pool.

Examination results:

Data were analyzed on the basis of regional differences (rural vs. municipal), gender, age, education level (fifth through eighth grades vs. university and beyond), economic level (having state insurance vs. having no state insurance), social influence (having family history of ocular issues or not), personal ocular health (having problems with vision or not), and socio-medical status (how often an eye exam was received).

Subjects from both municipal and rural settings showed a positive increase in ocular health knowledge from pre to post interview, as apparent in Figure X.. Initial interview scoring averages were 37.57% and 39.57% respectively. Post-educational seminar interventions revealed average scores of 74.55% and 75.35% respectively. This shows a 37.69% overall increase in knowledge accumulation regarding proper eye-care.

Similar results were observed in other categories as well. For female subjects in municipal and rural settings, initial scores were 37.66% and 36.92% respectively. Post-educational scores were 75.64% and 87.69% respectively. This shows a 39% overall increase. For male subjects in municipal and rural settings, initial scores were 38.03% and 42% respectively. Post-educational scores were 73.31% and 82.44% respectively. This shows a 36.12% overall increase. When comparing female to male subjects, the former had a higher overall increase.

Education level plays a part in the effectiveness of information assimilation. Thus, when comparing fifth through eighth grade students with university level/beyond subjects, these findings were noted: initial interview scoring averages of correct answers were 35.54% and 44.61% respectively. Post-educational seminar interventions revealed an effective ocular prophylaxis, with average scores of 68.53% and 95.93% respectively. This shows that

prophylaxis is observed to be effective in classes as early as fifth grade. A higher maturity level for subjects at university-type settings shows greater information assimilation. A similar trend holds true for ascending age groups. Positive health knowledge retention was thus observed in subjects with various educational backgrounds.

In order to analyze the effectiveness of the seminars for subjects with different economic levels, I had to define the economic parameter. The defining factor was whether the subject carried state insurance or not. Having state insurance implies that one is employed by the state, or is the child, 18 years or younger, of one employed by the state. Having no state medical insurance implies that the subject might have private insurance (perhaps due to owning a private business or because the participant was able to afford an additional private policy), not necessarily that the participant carries no insurance at all. For subjects with state insurance, initial interview scoring averages of correct answers were 37.90%, and for those with no state insurance were 37.48%. Post-educational seminar interventions revealed an effective ocular prophylaxis, with average scores of 75.26% and 76.53% respectively. This shows that subjects with no state insurance (and thus with a better economic level) scored with 0.27% higher than those with state insurance. Because the difference was small, economic level might not play a part in the change of health knowledge. Additional research could shed more light on this.

Social influence could also play a part in a person's degree of information assimilation. This parameter was examined via family history of ocular issues, whether this may be ocular disease (e.g., astigmatism, conjunctivitis), ocular surgical interventions (e.g., cataract surgery), or affected visual acuity. If a subject's family member had such a history, then by association, the subject could have heard of and learned about various eye conditions, causes, and treatments. For subjects with a medical family history of ocular issues, initial interview scoring averages of correct answers were 38%, whereas those without such a history scored 37.47%. Post-educational seminar interventions revealed an effective ocular prophylaxis, with average scores of 75.83% and 74.82% respectively. The difference of 1.01% between groups shows that there is a social influence for how much information one can internalize.

The socio-medical category relates how one's behavior in seeking prophylactic medical care can vary based on social-circle influences. The various categories are based on frequency of seeking eye exams. Subjects were divided on the basis of whether they never had an eye exam, had one exam in their lifetime, had two to five exams total, had one exam or more every year, or had an exam every two years. The initial interview scoring averages of correct answers for the above mentioned categories were 36.16%, 37.96%, 38.93, 39.83, and 44.37% respectively. Post-educational seminar interventions revealed an effective ocular prophylaxis, with average scores of 75.28%, 75.47%, 71.19%, 80.33%, and 80.31% respectively. This shows that effectiveness is to a certain degree positively influenced by an increase in personal outreach for ocular care.

Limitations

General Research Limitations:

A primary concern is the fact that there was considerable restriction on the time frame during which research was conducted, particularly with trying to organize travel in Romania. Obtaining prior UMCIRB approval was somewhat time-consuming and constraining. Since there were no other principal or secondary investigators, it was considerably harder to examine and to educate a larger subject pool. This reveals the need for constant research and for support of current researchers who are gathering information to be made available as future references and implementations toward the betterment of society. Partnerships with more schools in Romania would have also furthered the current studies.

Regional Research Limitations:

A significant limitation in hopes for improving the vision health of Romanians is the healthcare system, which lacks the needed workforce. Currently, the national combined number

of practicing ophthalmologists and residents is approximately 1,000 (“Numarul de locuri”). Additionally, Romania became part of the European Union in 2007. Consequently, the number of young Romanians leaving the country to seek better opportunities has increased considerably. Availability of needed technology in the field is also a huge limitation.

The cost of any ophthalmologic intervention is considerable and can lead people not to seek treatment. For example, the cost of cataract surgery in Romania is approximately 12 million lei (with \$1=23000lei, the cost is approximately \$522 dollars), of which insurance covers no more than 2.4 million lei (approximately \$104) (40.000 de cazuri de cataracta operate anual in Romania). It must also be noted that the average monthly income for a middle-aged worker is \$270.

Further questions:

The investigation showed that there is a positive educational impact in rural groups and in municipal subjects. Investigations in rural settings should be conducted which adjusts for any influencing factors such as an education in the city, social ties to city subjects, etc.

To further assess the effectiveness of the ophthalmologic prophylaxis seminars it would be necessary to re-examine the subjects. This would include completion of the prophylaxis questionnaire and the conduction of comprehensive eye exams. It could be thus established whether healthy ocular-care habits are followed, and whether they are in correlation with good results in the examination. This subject reevaluation should be at an interval of every two years for a duration of at least 20 years. The reason for such a timeframe is that eye exams are recommended every one to two years and the time in which an ocular condition can appear is faster in younger subjects. This screening would determine the success rate of subject education. At the moment we can show that people have a positive education growth, but we have yet to correlate it to disease prevention and/or postponement.

Conclusions

The research conducted in Oradea has shown a great success in regards to the educational interventions. There was a significant rate of information retention as evidenced in final assessments. With Romania just entering the EU, the working, middle-class population is leaving the country in greater numbers, in hopes of finding better-paying jobs in neighboring European countries. In the process, they leave behind those who need the most medical attention. These people are the ones who *need to be reached*, and the sooner the better. Of course, since over half of the tested subjects in Oradea are in the “need of ophthalmologic attention” category, there is an obvious need for further research, for implementation of efficient educational interventions promoting preventive care, and for assistance to individuals requiring immediate medical attention.

Upon my return from Romania I plan to adapt the research to rural eastern North Carolina, USA. I will identify high-risk groups in local communities through regular vision screenings. Afterwards I will be able to apply my experience, my broader understanding of the subject, and my cultural sensitivity to the promotion of ocular preventive care. Meanwhile, I will assess the individual knowledge modification and information retention change with respect to each participant’s personal ocular health behavior. My future goal is to promote a healthier vision status in the at-risk identified population.

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