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RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

Optisyenlik Öğrencilerine Yönelik Hemianopsi ve Strabismus Hastalarına Karşı Empati

Teaching Opticianry Students Empathy for Patients with Hemianopia and Strabismus

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ÖZ

Giriş ve Amaç: Strabismus, gözün dış kısmındaki altı kasın koordinasyon bozukluğu sonucu oluşur. Hemianopi durumunda ise görme alanının yarısı görülmez ve her iki gözün her iki yarısından da aynı yarım alan algılanır. Bu çalışmanın amacı; optisyenlik öğrencilerine bu hastaların yaşadıkları zorlukları yapay olarak yaşatarak, öğrencilerin hastalar ile empati kurmalarını sağlamak ve bu hastalıkların rehabilitasyonunda prizmaların nasıl kullanıldığını açıklamaktır.

Gereç ve Yöntem: Araştırmada strabismus ve hemianopi ile ilgili birer tane simülasyon gözlüğü geliştirilmiştir. Simülasyonlar bu hastalıkları canlandıracak biçimde kalibre edilmiştir. Araştırmada karma model kullanılmıştır. Araştırmaya, İstanbul'daki bir üniversitenin optisyenlik programında öğrenim gören 25 öğrenci katılmıştır. Öğrencilere çalışma için geliştirilen simülasyon gözlükler kullanılarak empati eğitimi verilmiştir. Araştırmaya katılan öğrenciler simülasyon gözlükleri takarak çeşitli etkinlikler gerçekleştirmiştir. Bu etkinlikler strabismus ve hemianopi hastalarının güçlük çektiği durumlar arasından seçilmiştir. Araştırmada ölçme aracı olarak "Simülasyonlar için Değerlendirme Anketi" ve kompozisyonlar kullanılmıştır.

Bulgular: Araştırma sonuçları öğrencilerin, hastalarla empati kurma açısından simülasyonları başarılı bulduğunu göstermektedir. Ayrıca simülasyonu kullanan öğrencilerin hastalara yönelik telafi edici stratejiler önerdikleri, hastalara yönelik farkındalık oluşturdukları ve empati kurdukları da tespit edilmiştir.

Sonuç: Sağlık programı öğrencilerinin çalışma alanları ile ilgili hastalara karşı empati kurmaları önemlidir. Bu araştırmada geliştirilen simülasyonların optisyenlik ve optometri öğrencilerinin eğitiminde kullanılması önerilmektedir.

Anahtar Kelimeler: Strabismus, Hemianopia, Prizma, Simülasyon, Empati

ABSTRACT

Introduction and Objective: Strabismus occurs as a result of the coordination disorder of the six muscles in the outer part of the eye. In case of hemianopia; half of the visual field is not seen and the same half area is perceived from each half of both eyes. The aim of this study is; to mimic these conditions artificially for the students to make them experience the patients' difficulties and create empathy as well as to teach them the use of prisms in correcting these conditions. In accordance with this purpose, simulation goggles which mimics the condition were designed.

Method and Materials: In this study, two different simulations were developed. One of them is about strabismus and the other one is about hemianopia. Simulations were arranged to simulate these disorders. The mixed-method was used in this research. This study was attended by 25 students studying in the second year of the optician program of a university in Istanbul. The effects of the developed simulations on the students' empathy with patients were evaluated. As a teaching process, opticianry students worn these simulation goggles and complete some activities. These activities have chosen among the situations in which patients with strabismus and hemianopia have difficulties to complete. After using these simulations for empathy teaching, empirical data concerning "Self-Assessment Survey for Simulators" and "Writing Essay" were collected.

Results: Students' view on the simulations is that they are convenient tools for empathy training. In addition, it was determined that the students using the simulations suggested

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compensatory strategies which also shows that, they created awareness and empathy among themselves towards the patients.

Conclusion: It is important for health program students to empathize with patients related to their field of study. It is recommended that the simulations developed in this research be used in the education of opticians and optometry students.

Keywords: Strabismus, Hemianopia, Prism, Simulation, Empathy.

INTRODUCTION

Optical devices like prism is used frequently for corrections and rehabilitations of ophthalmic disorders. Refractive environments surrounded by lateral surfaces which are non-parallel to each other are called as prisms. The peak edge of prism is referred to as the prism apex. The place against the prism apex is referred to as prism base. Prisms change the direction of the light towards its base. In this case, the image slides towards the prism apex (1).

The image-shifting ability of a prism is very useful. Prisms are used in the treatment and rehabilitation of various ophthalmic disorders, especially strabismus and hemianopia (2). Strabismus is caused by the effect of six muscles which are located in the externum of the eye. As the strength increases or decreases in one or more of these muscles, the position of the eye changes as well (3). In the case of strabismus, one eye may look straight and the other may slide in, out, up or down. Prisms are used for treatment and rehabilitation of strabismus, in addition it is used for visual field expanders in patients with hemianopia (4,5). In case of hemianopia; half of the visual field is missing and this missing is perceived from both eyes. A loss of vision in these two areas is called homonymous hemianopia (6). Peli prisms are used for hemianopia and are actually a special fresnel prism designed to expand the visual field (7).

Empathizing with patients is very important for health professionals. Empathy, a skill that can be learned, which means intellectual and emotional understanding of other people's feelings, thoughts and behaviors is very important for health professionals (8). One of the most effective methods used in empathy teaching is simulation (9,10,11). Thus, there are various studies using simulations in empathy teaching (12,13,14).

In this research, simulations were developed and applied to enable the opticians and optometrists to empathize with patients have hemianopia and double vision problems.

MATERIAL AND METHOD

The mixed-method was used in this research. This method means that combining qualitative and quantitative data collection tools using together (15). Data collection instruments were administered to the students after the course. Participants, data collection tools and data analysis of the research are explained in the following.

Participants: This study was attended by 25 students studying in the second year of the optician program of a university in Istanbul. The ages of these students vary between 18 and 45. While 13 of the students are female and 12 of them are male. Students participating in the research have basic information about eye anatomy, physiology and eye health. Participants succeeded "anatomy of the eye", "diseases of the eye", "visual optics", "basic physics" and "optical physics" courses in the optician program.

Data Collection Tools: The effects of the simulations on empathy towards patients were evaluated with the students. These students' evaluations about the simulations were collected with "Evaluation Survey for Simulations". The survey is set as a five-point Likert and consists of seven items. It was created by DeCarlo and Shechtman (9). Survey scales were adapted according to hemianopia and diplopia. The survey items are included in Table 1. Another data collection tool of the research is "Essays". The students who participated in the research wrote essays on three subjects after course. The essays topics were; "Balancing Strategies for Patients with Homonym Hemianopia and Double Vision", "Awareness of Patients with Homonym Hemianopia and Double Vision" and "Empathy for Patients with Homonym Hemianopia and Double Vision".

Data Analyses: In the study, the data of the "Assessment Survey for Simulations" were analyzed by descriptive analysis. Furthermore, the essays were evaluated by the researchers and student's opinions in essays are coded and then categorized.

Developing Simulations:

Simulation for Strabismus: To simulate double vision (strabismus), a goggles with a temple length of 140 mm, a bridge size of 19 mm and a diagonal length of 56 mm was used. On the right side of the goggles 4.00D (base up) prismatic lens was mounted. A glass without an optical power was mounted on the left side of the frame.

When this goggles is worn, the objects appear double. The image in the right eye is located below the image in the

left eye. As in the Figure 1, when 4.00D Fresnel (bottom down) are placed on the right side of this frame, the double image turns a single image.

Figure 1. Simulation for strabismus and double vision and correction of double vision with Fresnel prism.

This simulation was tested by one student. Firstly, the student was asked to read a word document containing 542 words, written in size 10 Times New Roman without simulation goggles. The student completed reading this text in 2 minutes and 39 seconds. Secondly the student was asked to read same document with simulation goggles. In this condition, the student completed reading this text in 2 minutes and 47 seconds. The student stated that reading with simulation goggles was difficult due to her double vision problem. It was observed that the student read more slowly when wearing simulation goggles. It was also observed that she could not read some words and her fluency decreased and she had difficulty in reading. She stated that it was very difficult to read with simulation because of double vision. Finally, 4.00D fresnel prism (bottom up) was fitted right part of frames and she said that she started to see the objects one by one again. In this condition, the student was asked to read the same text again. The student completed reading the text in 2 minutes and 40 seconds. She indicated that she did not see a double vision with simulation goggles with fresnel. This application shows that the simulation goggles created double vision. Also, the results concerning the usage of goggles with fresnel shows that the simulation goggles have corrected the double vision.

Simulation for Homonymous Hemianopia: To simulate homonymous hemianopia, a goggles frame with a temple length of 140 mm, a bridge size of 19 mm and a diagonal length of 56 mm was used. Half of the glasses, which has not refractive power, of this goggles are painted to be opaque. The sides of the frames are covered with a leather material to narrow the visual field of view.

Figure 2. Simulation for homonymous hemianopia

The simulation in figure 2 was arranged according to the pupillary center of each student. Firstly, the pupillary center of the students was determined. After that, glasses were painted as per focal point of each student. In other words, the simulations were designed specifically for each student's pupillary centers.

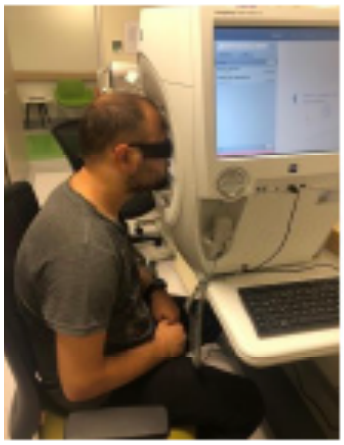
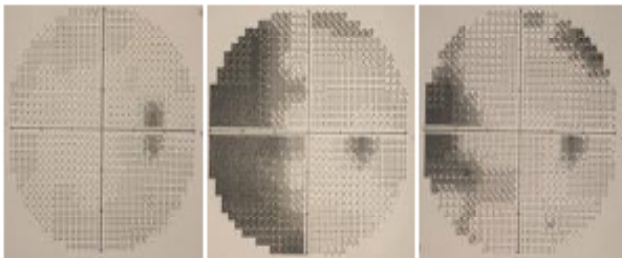


Figure 3. Visual field measurement (The vision field measurement by Zeiss Humprey 850)

As seen figure 3, this simulation was tested by one student. At first, the student's visual field was tested without simulation goggles and then the test repeated with simulation goggles for homonymous hemianopia. Finally, the visual field of the student was tested with Peli prisms attached to simulation goggles in figure 5. The results obtained from these examinations are given below.



(a) (b) (c)

Figure 4. (a) Normal visual field, (b) Hemianopic visual field with simulation goggles (the outer half of the visual field is black) (c) Peli prisms attached to simulation goggles

Figure 4(a) shows the normal visual field while figure 4(b) represents the narrowing of the visual field with simulation goggles. This situation is similar to the visual field of a patient with Homonim hemianopia. Changes in the visual field after the application of Peli prism are shown in figure 4(c).

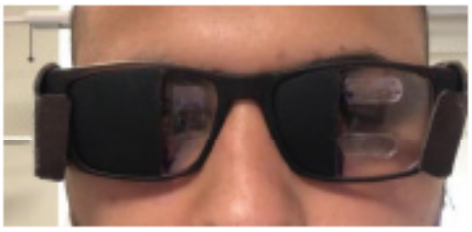


Figure 5. Visual field testing with Peli prism attached to simulation goggles

As a result of these tests, it can be claimed that a student using this simulation experienced homonymous hemianopia condition and is able to understand the correctional use of Peli prisms in enlargement of the visual field.

Teaching Process:

After the development of the simulations, the teaching phase was started. Empathy training with simulation goggles was carried out in 2018-2019 academic year in accordance with the following steps.

Empathy training for double vision: The students participating in the research first practiced reading text using double vision simulation goggles (542 words, written in 10 points Times New Roman size). They also took a short walk between the desks in a classroom with these goggles. Students also performed the same activities with fresnel mounted simulation goggles. Since it was uncomfortable for the students to wear these goggles for a long time, no other activity was done.

Empathy training for homonymous hemianopia: 25 students wore the goggles simulations separately for homonymous hemianopia. All students walked individually for 250 meters across the university campus wearing hemianopic simulation goggles. This predetermined track is arranged to include crowded areas. For the safety of the student using simulation goggles, another student accompanied her/him. In addition to this activities, students wore this simulation goggles for 3 hours during their daily activities at home.

After the empathy training, research data were collected by measurement tools. Students evaluated both simulations by Evaluation Survey for Simulations. Furthermore, the students who participated in the research wrote essays on three subject.

RESULTS

In this section, the data obtained from the survey and essays are presented. The Table 1 below shows the distribution of students' responses to the "Evaluation Survey for Simulations".

Table 1. The result of students' evaluation of simulations

Survey Items	5	4	3	2	1
Simulators are effective in representing the vision of hemianopia and diplopia patients.	11	11	2	1	0
The tasks I performed with simulators taught me to empathize with hemianopia and diplopia patients.	20	2	2	1	0
The tasks I performed with simulators taught me compensatory strategies that could be useful for hemianopia and diplopia patients.	19	3	2	1	0
Using simulators increased my awareness of the difficulties experienced by that hemianopic and diplopic patients.	20	2	1	1	1
After this simulation I feel capable to adjust goggles for hemianopia and diplopia	11	9	2	2	1
Consequently, this experience with simulators is a valuable part of the courses.	17	5	2	1	0
After using these simulators, I had the idea that hemianopia and diplopia could not be taught by traditional teaching methods.	9	8	5	1	2

5=I strongly agree, 4=I agree, 3=I am undecided, 2= I disagree,1= I strongly disagree.

Considering the answers for Table 1, it shows that the students found the simulations very successful in terms of empathizing with patients, suggesting strategies for patients, and awareness of diseases. The Table 2 contains the themes from student essay.

Table 2. Themes related to strategy, awareness and empathy

Themes for Compensatory Strategies	Frequency	Themes for awareness	Frequency	Themes for empathy	Frequency
Security	12	Difficulty doing housework	7	Panic, fear and stress	11
Ergonomics	7	Hobby difficulties	7	Insecurity	6
Using other senses	3	Walking difficulties	7	Environmental barriers	5
Act independently	2	Basic maintenance difficulty	3	Building a relationship	4
Amount of light	2	Reading and vision difficulties	2	Enjoying life	3
Using auxiliary equipment	1	Difficulty building a relationship	1	Despair	1
Contrast	1	Suffering from pain	1	Irritability	1
		Driving difficulties	1		

According to themes, students frequently emphasized the patients' difficulties about housework involving movements. It was understood that students mostly shared their feelings of panic, fear and stress. In addition, students offered security strategies to patients who have hemianopia and double vision.

DISCUSSION

As a result of the research, students having simulation experience suggested especially safety-themed strategies for patients. It was determined that they the noticed patients' difficulties they experienced in housework. In addition, it was understood that the students empathized with the patients especially about their panic, fear and stress. Both hemianopia and diplopia patients do not feel safe in environments with movement. These patients feel fear, anxiety and stress in these places. They also have difficulty in doing work involving movement. Therefore, it is also important for students to understand this situation after the application.

When the students' opinions about the developed simulations were examined, it was understood that the students found the simulations quite successful (9-12) in terms of empathizing with patients, awareness of disorders and they suggested strategies for patients. This result was achieved other studies about health professional educations. Chua et al. recommended to use simulations in the education of health care students. Effectiveness of simulation-based interventions in improving empathy among health-care students was examined in this study. In this review study, sixteen researches were included and collected data with meta-analysis. It was indicated that using regular simulation-based interventions develop health-care student's empathy (16). Campbell et al. investigated the effect of simulation based education for empathy of Alzheimer disease on nursing students. 163 under-graduate baccalaureate nursing students were attended this study. After the 44-minute interactive simulated virtual reality dementia experience with Virtual Dementia Tour (VDT®), increasing of student perceptions of awareness, knowledge and sensitivity of Alzheimer disease were detected in the study (17). Wang and Zhang were developed low vision simulation in virtual reality for training empathy within eye care providers. This computer based virtual reality simulation can support hazy vision, contrast difficulty, peripheral vision loss, night blindness and central vision loss. They emphasized that the simulation particularly useful for eye care providers such as optometrists, ophthalmologists, vision rehabilitation therapists, mobility specialists, and potential eye care providers such as students related to specific areas (18).

Finally, from the results of this research and other related studies, it was concluded that it is necessary to use and develop various simulations to increase health professions students' empathy towards different patients.

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