There Is More than Meets the Eye

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Abstract

The eyes are a very important organ so it is important that we take good care of them. The eye allows us to see and life as we know it could not be possible if we did not have eyesight. There is more than meets the eye as it can be threatened by disease that cannot be simply seen without the use of specially designed instruments or machines. Some of the disease the eye can have are glaucoma, which causes a loss in eyesight overtime due to the increase in pressure within the eye. Retinopathy or also known as dietetic retinopathy which is caused by damage to the blood vessels of light sensitive tissue located in the back of the eye. Both of these disease will take away one’s eyesight if not treated. Treatments for glaucoma can include medications and surgery such as laser eye surgery. It is very important to protect the eyes so that there is a reduced chance of complications of the eyes late in life.

Keywords: [eyesight, retinopathy, glaucoma, disease, eyes]
[there’s More than Meets the Eye]

[The eye is an organ that may seem simple from the outside; however it is much more complex. The eye can have many details within its anatomy and physiology. There’s more than meets the eye in understanding the anatomy, physiology, diseases, diagnosis, and protective factors focusing on the internal eye.]

The internal eye contains many features that allow it to function such as lens, pupil, cornea, optic nerve, and many other parts within the eye. The iris is the colored part of the eye and is the part of the eye that regulates incoming light by either increasing in size to allow more light to enter the pupil or contracting in order to reduce the size of the pupil. The lens “is an adjustable, transparent, elastic ball that lies just behind the iris.” The lens reflects light coming into the eye and focuses it on the retina. The ciliary body consist of ciliary processes and the small ciliary muscle and these muscles are used to allow the eye to focus on object whether they are far or near from the person. When the eye focuses on objects, the ciliary muscles can contract causing the lens “to assume a rounder a shape” to focus objects that are near. To focus on far objects, it would relax the muscles and “the lens assumes a flattened (ovoid) shape. The retina contains photoreceptors which consist of rods and cones. Rods allow the eye to see in low light conditions and detect “shape and movement” While cones allow the eye to see color and are mainly responsible for “vision during the daytime”. The cones are “most concentrated in the fovea- a small depression in the center of the posterior region of the retina. The white of the eye is known as the sclera, “it is a tough, fibrous tissue, generously supplied with nerve endings.” The cornea is “the transparent layer that covers the iris and pupil at the front of the eye.” The second layer of the eye is called the choroid and it is made up of “black pigment cells” which absorb light rays so that they are not “reflected back out of the eye.” There is a cavity known as
the anterior cavity which located between the cornea and the lens and is filled with a water substance—“the aqueous humor.” “the larger posterior cavity between the lens and the retina is filled with a more viscous liquid—the vitreous humor.” These fluids are essential to the eye as they maintain the shape of the eye by “providing an internal fluid pressure.

There are many diseases concerning the eye. A specialist that specializes in the eye, and is the one to find these diseases, is called an ophthalmologist. Some of the diseases that affect the eye are glaucoma and macular degeneration. Glaucoma is the condition of an abnormal increase in “intra-ocular pressure, greater than 20 mm/Hg. The high pressure can sometimes reach 70-80 mm/Hg, which causes compression on the optic nerve as it leaves the eyeball.” There are two types of glaucoma known as primary open angle and angle closure glaucoma. Primary open angle glaucoma is “often called the sneak thief of sight as it has no symptoms until substantial loss of sight has occurred.” Angle closure glaucoma causes the person to complain of pain and comes with progressive vision loss (has symptoms unlike primary open angle). Macular degeneration is the degeneration of the macula which is a area that contains millions of photoreceptor cells. These cells allow us to see fine detail and colors. As this disease develops the cell become damaged decreasing our eyes ability to see clearly. One of the solutions for these disease is the dietary sources of lutein and zeaxanthin as these have “been linked with reduced risk of age-related macular degeneration and cataracts.

There is more to the eye than one can just see with the naked eye as there is more hidden within the inner eye. The inner eye disease’s will can affect any part of the eye but especially disease that cause vision loss such as glaucoma and macular degeneration. Although they may seem untreatable there are many solutions such as surgery and preventative measures such as lutein and zeaxanthin.]
References


Appendix A

Date: 01/30/2017
Due: Today at end of class

Name: Anna Villarreal

Classes participating Human Anatomy and Physiology II with Professors R. Brown & R. Cravo
With a class from the Health Sciences Academy with Professors K. Newby & T. Sanchez

Human Biological Organ(s) interested in:

Eye

Interest in medicine or research:

eye diseases

Style of communication/presentation preferred:

video

Review Rubric criteria and grading or replacement assignment per individual Professor.

Agreement to participate with assigned partner in the Premier Workshop Undergraduate Research Health Sciences Symposium. I attest I will meet all requirement of the assignment and present on March 31, 2017.

Signature: Anna Villarreal  Printed Name: Anna Villarreal
Email: avillarreal12@comcastmail.com
(This will be shared with partner)

You will be matched with a student in another class by your Professors. Your information will be shared for contact purposes. We ask that you correspond via email, texting, or zoom. This will be a project that you can work and grow from. If you have further questions, please contact your professor(s).
I, Ryleigh Bryant, give my permission for Anna Villarreal and Henry Nguyen to use the research information collected by our group for the Symposium (URHSS) workshop project for educational purposes only. Each of the three named individuals have permission to utilize this intellectual material insofar as they each provide proper attribution to all parties involved.

Signatures Below:

Anna Villarreal ___________________________ Date ___________________________

Henry Nguyen ___________________________ Date ___________________________

Ryleigh Bryant 2/8/17
Ryleigh Bryant ___________________________ Date ___________________________
I, Anna Villarreal, give my permission for Henry Nguyen and Ryleigh Bryant to use the research information collected by our group for the Symposium (URHSS) workshop project for educational purposes only. Each of the three named individuals have permission to utilize this intellectual material insofar as they each provide proper attribution to all parties involved.

Signatures Below:

[Signature]
Anna Villarreal 02/10/2017
Date

[Signature]
Henry Nguyen
Date

[Signature]
Ryleigh Bryant
Date
I, Henry Nguyen, give my permission for Anna Villarreal and
Ryleigh Bryant to use the research information collected by our group for the Symposium
(URHSS) workshop project for educational purposes only. Each of the three named individuals
have permission to utilize this intellectual material insofar as they each provide proper
attribution to all parties involved.

Signatures Below:

Anna Villarreal                         Date

Henry Nguyen                           2/21

Ryleigh Bryant                         Date
Appendix C

Hello, my name is Anna Villarreal and I, along with my peer Henry Nguyen, are going to be your mentees for the Undergraduate Research Health Science Symposium. Below I have the permission slip that I would really appreciate if you would sign. Please send it to me as soon as possible.
Appendix D

I. Introduction

- Our project is about the eye and its many diseases
- There is more to them than one what the naked eye can see

II. Body

- Mode of delivery is a poster, essay, and short video presentation
- Roles:
  1. Anna Villarreal: Main researcher, creator of annotated bibliography, abstract, essay creator
  2. Henry Nguyen: Co-researcher, creator of outline, abstract, props for video presentation, essay co-creator
  3. Ryleigh Bryant: Mentor (to answer mentee questions and look over and judge assignments created by mentees).

III. Main idea

- Video to explain how we can, modify healthcare delivery to improve healthcare for eyes
Appendix E

Our projects is about the eye and its many diseases and also how there is more to it than just what the naked eye is able to see. It is going to be presented by video, poster, and an essay. Anna Villarreal is the group’s main researcher and will be creating the bibliography, abstract and essay. Henry Nguyen will be co-researcher, creator of the outline, abstract, essay co-creator and prop maker for video. Ryleigh Bryant will act as the mentor of the group, answering questions, and looking over our work. We will incorporate the lessons we have learned to improve healthcare delivery for the eyes.
Appendix F


Abdel-Aal was associated with Guelph Food Research Centre, Agriculture and Agri-Food Canada in Guelph, ON N1G 5C9, Canada. Akhtar was a Consultant in Toronto, ON M3M 2E9, Canada. Zaheer was a part of the Department of Food Science and Technology at ICCBS, University of Karachi in Karachi 75270, Pakistan. Also, Ali was associated with the English Biscuit Manufacturers Pvt. Ltd. at the Korangi Industrial Area in Karachi 74900, Pakistan. This article reviews the health benefits of Carotenoids and Lutein for eye health. The source will be used to support the argument and research.


Information regarding the author is unavailable. The book includes information such as the prognosis, diagnosis, physiology, and treatment of congenital glaucoma. Information and findings of the source will be used as support.


Clark is from the Department of Cell Biology and Anatomy in the North Texas Eye Research Institute at the University of North Texas Health Science Center in Fort Worth, Texas. This article gives information on the biology of Glaucoma. The source and information from the source will be used to support the research.

Glaser, Doss, Shih, Naigam, Sperduto, Agrón, and Ferris are associated with the Division of Epidemiology and Clinical Applications, National Eye Institute, National Institutes of Health in Bethesda, Maryland. Clemons and Chew were a part of the EMMES Corporation in Rockville, Maryland. The information regarding vitamins that are beneficial for eye health and cataracts is represented in this article. This source will be used as support for the research.


Indaram and Agrón are associated with the Division of Epidemiology and Clinical Applications, National Eye Institute, National Institutes of Health in Bethesda, Maryland. Clemons and Sperduto were a part of the EMMES Corporation in Rockville, Maryland. Wong and Ferris were a part of the Unit on Neuron-Glia Interactions in Retinal Disease at the Office of the Scientific Director at the National Eye Institute, National Institutes of Health in Bethesda, Maryland. The article focuses on the changes in lens opacities when used to determine the progression to cataract surgery and vision loss. The information, which is related to glaucoma, eye function, and anatomical structures of the eye, will be useful. The source will be used as support for the research.

Information regarding the author is unavailable. The article contains information about the physiology and anatomy connected to dry eye. This article supports the argument and research. The source and findings will be used for support of the research.


Information regarding the authors is unavailable. This source was found on the website of the National Center of Biotechnology Information. Macular Degeneration is a known disease of the eye. It is also one of the diseases that are going to be mentioned. The source will be used as support for the research.


Ola has a PhD and specializes in Diabetes Research and is a part of the Biochemistry Department. Siddiquei specializes in Neuroscience and Diabetic Retinopathy at the. Nawaz specializes in Diabetes, Diabetic retinopathy, Angiogenesis, Neurodegeneration, and Inflammation. All were associated with the King Saud University in Saudi Arabia. This article contains information on Diabetic Retinopathy and a detailed account of the physiology of the disease. The source will be used as support for the research.

Snell is a MD, PhD, and Professor of Anatomy at George Washington School of Medicine and Health Sciences in Washington D. C. Lemp is also a MD and a Professor. He is a Professor of Ophthalmology at Georgetown University Medical Center and the President of the University Of Ophthalmic Consultants Of Washington in Washington D. C. This source is helpful due to the content about the anatomy of the eye. The anatomy is critical in order to understand the importance of function and the severity of diseases. The source will be used a support for the research.


Information regarding this author is unavailable. This source contains information regarding anatomical functions and structures of the eye which will be used to support the research and argument. The research will be used to support the research.


Dr. Michel W. Stewart is a Director of Ophthalmology at the Mayo Clinic in Jacksonville, FL. This article mentions several anatomical factors that could be useful to the research. The source will be used to support the research.

They are all associated with the Department of Ophthalmology at the Second Xiangya Hospital of Central South, Changsha 410011, PR China. This article contains information on pathophysiological functions of Diabetic Retinopathy. The source will be used to support the research.
Appendix G

There have been no changes made to this research paper.