Fall 12-12-2021

Importance of Optometric Practices

Nikhita Jacob
nsjacob@bgsu.edu

Importance of Optometric Practices

Nikhita Jacob

Honors Project

Submitted to the Honors College at Bowling Green State University

Professor Raymond Larsen Department of Biological Sciences, Advisor

Professor Sharon Schaeffer Department of Public and Allied Health, Advisor

Abstract

This research examines what effect education has on people's decision-making. More specifically, whether better education leads to better decisions and health outcomes, and why that is important for optometry. Every decision someone makes depends on some type of information, whether it is heard, read about, watched, or experienced. The more information someone has, the more confident someone can be in the decisions they make. Access to information and to education, whether it is through school, libraries, or news channels, is not always equal. It is important that people are informed about subjects as important as their health, by those who have that background knowledge and information. Knowing what effect education has on decision making and health outcomes can push health care providers to continue to spread their information and talk about the importance of healthy habits. This will slowly help ease the burden on patients and on the healthcare system. Data from the OECD and the World Bank published in April of 2020 looked at the influence of education on health over the span of 20 years. This study and data looked at enrollment rates at various levels of education and levels of life expectancy of birth, deaths from cancer, and school life expectancy. A more educated population leads to a healthier population. With increased education, people will make better decisions and therefore make healthier decisions. This research is important because of the impact it can have on preventing future problems.

Introduction

In this study, I analyzed the patterns and associations between education and health outcomes. As of 2019, heart disease is the leading cause of death in the U.S., accounting for 1 in 4 deaths. The most common type of heart disease is coronary artery disease which can lead to heart attack. (Murphy, 2018). The leading cause of death in the U.S. is extremely preventable

through changes in lifestyle, early detection, and healthy habits. Many people do not know the importance of some of these lifestyle changes until they go in to see their doctors. Similar to primary care physicians, optometrists can catch and diagnose many diseases, both ocular and systemic, at regular checkups. Diseases and disorders such as glaucoma, diabetic retinopathy, macular degeneration, and cataracts can be diagnosed by optometrists during regular eye exams. The U.S. population is becoming older and more diverse. By 2030, about 1 in 5 U.S. residents is expected to be older than 65. By 2050, 54% of U.S. residents will be members of minority groups. Underrepresented groups have a high prevalence rate of visual impairment and eye diseases in comparison to non-minorities. The number of Americans with visual impairment and eye disease is likely to continue to increase.

Not only is vision and eye health important for older individuals, it is also extremely important for the younger population. Myopia, or near-sightedness, is a refractive error in which objects look clear close up, but far away they appear blurry. Myopia currently affects about 25% of Americans. (Turbert, 2021). By 2050, half of the world's population will be myopic based on projections noted in the AOA's Myopia Management Clinical Report, produced by its Evidence-Based Myopia Management Clinical Report Task Force. Increasing screen time and online work as well as decreased amount of time outside all lead to a greater likelihood of developing myopia.

Optometrists are now able to help slow and even prevent the progression of myopia. This can be done using orthokeratology, low concentrations of atropine, soft multifocal contact lenses, and spectacles lenses for progression and behavior modification. With increasing technology and research, myopia progression and be slowed and controlled, but this is only possible if people, especially young children, get their eyes checked regularly. In order to do so, the general

population and the parents of these children need to be informed about these types of preventative measures. Instead of waiting until something is wrong, getting regular checkups can lead to fewer complications. Pre-myopic kids rarely get their eyes checked. If nearsightedness is reduced, this can also reduce the risk of retinal detachments, glaucoma, and cataracts. The healthcare burden can be eased, vision can be preserved, and lives can be saved. This is why education is so important.

Background / Review of literature

It was difficult to find research that did not support my hypothesis that more education leads to better health outcomes. This has been a topic of interest for decades and continues to be one even now, with expanding avenues for further research. Of all of the data and articles reviewed, almost all of them have the same conclusion. That conclusion is one in which increased education means better health.

Data from the Organisation for Economic Co-operation and Development (OECD) and the World Bank from 1995-2015 looked at enrollment rates at various levels of education and levels of life expectancy of birth, deaths from cancer, and school life expectancy. (Raghupathi, 2020). The most significant relationship is the one between education level and child vaccination rates. There is a positive relationship between vaccination rate and adult education levels. This portion of data is important because it notes a relationship between education and taking preventative health care actions. Someone who is more educated is more likely to have trust in vaccinations and in medicine, therefore they will take healthy and preventative measures such as vaccinating their child in order to prevent future health issues. The data reflects a positive relationship of child vaccination rates with tertiary enrollment and tertiary education levels. This

relationship can also be applied to optometric rates. People who are more educated will be more likely to see an optometrist regularly, more likely to learn about preventative eye care practices, and more likely to bring their children to their optometrist.

In an article by Zajacova and Lawrence, they analyzed and reviewed the relationship between education and health and found that less educated adults report worse general health, more chronic conditions, and more functional limitations and disability. Much of the research and conclusions drawn from the association between education and health is based on the Fundamental Cause Theory which proposes that many different factors, education being one, are causes of health and disease because they determine access to many different resources. (Zajacova, 2012). This article also pointed to the relationship of mortality declining with years of schooling. This information shows that increased awareness and education can be the difference between life and death. In the same manner, education about glaucoma or cataracts can be the difference between becoming or avoiding blindness.

The next study examined looked at biomedical data of disadvantaged children who participated in the Carolina Abecedarian Project (ABC), one of the oldest and most cited early childhood programs. This study compared long-term health effects of disadvantaged children who were treated for their noncommunicable diseases to disadvantaged children who were not treated for their noncommunicable diseases. (Campbell, 2014). The study looked specifically at the mean systolic blood pressure of the treated individuals versus the non-treated individuals. For males especially, there was a lower and healthier mean systolic blood pressure of those who were treated at a young age compared to those who were not. Researchers concluded that there is evidence to believe that early life interventions can promote health and prevent disease at a later

age. This is very significant, as it demonstrates the importance of early detection and treatment in order to have better health outcomes later in life.

In another article, Jain and Moroz discussed strategies to reduce disparities in maternal morbidity and mortality. This article was significant because the authors addressed the fact that there is already a lot of education and knowledge that both patients and providers are aware of, specifically when it comes to racial health disparities. (Jain, 2017). However, the same can be said for general health and eye health. A lot of information is already out there about lifestyle choices and healthy habits such as limiting screen time and increasing outdoor activity. Although this information is available, more can and should be done. Information and conversations need to be happening continuously in order to address our "current knowledge deficit" and a constantly evolving healthcare system.

Behrman et al conducted a study titled, Does More Schooling Reduce Hospitalization and Delay Mortality? This study took into account family background and genetics while also looking at the number of days hospitalized per year before mortality of different men and women from varying ages. (Behrman, 2011). This data was analyzed from the Danish Twin Register (a tool for genetic epidemiological research) and the Danish National Hospital Register and found significantly negative associations between schooling, hospitalization, and mortality. (Kyvik, 1996). The more time spent in school and the more time dedicated to in-school activities such as reading, the less likely one is to have undesired health outcomes such as hospitalization and mortality. This too can be applied to optometric practices and desired vision-related outcomes.

Silk and Kwok wrote an article addressing adolescent oral health, which resonates with many optometrists in their call for more education in their profession. This article states that oral health is one of the most unmet health care needs of adolescents and emphasizes the importance

of forming lifelong health habits at a young age, when there are numerous prevention opportunities available. (Silk, 2017). This article notes the increased sugar intake and nicotine initiation in the teen years, both of which have an effect on oral and ocular health.

Elizabeth Lawrence examined the difference in health behaviors between college graduates and less educated individuals. Her findings, based on data from the National Longitudinal Study of Adolescent to Adult Health pointed to many different factors contributing to better health outcomes, but all of the factors led to those who were more educated having better health outcomes. (Lawrence, 2017). Again, there is the constant pattern of having better health outcomes when one has more education and more knowledge.

In an article focused on the economic value of education, Krueger et al found that more education means additional lifetime earnings. More specifically, the someone with a baccalaureate degree will make more additional earnings in their lifetime than someone with a high school degree. Although this study is focused more on the financial aspect of education and health, this too infers that if you are more educated, you will be living longer. Therefore, if you are living longer, you are most likely making better health-related decisions. Again, more education leads to longer lives and better health outcomes.

Hypothesis

My hypothesis is that with more education, people will make more educated decision regarding their health and therefore have more favorable health outcomes. I think this is the case because as people become more educated, they learn more about themselves and their bodies. People also start to spend more time thinking about the things they are doing and why they are doing them. More favorable health outcomes could be in the form of longer life spans, lower

mortality, or even better mental health. When talking about education, it is usually measured by years in school and levels of degrees obtained. However, I also believe that education can come in many different forms. Someone without a college degree may spend much of their time watching videos and reading textbooks on a certain subject and in fact be very educated on that subject, even though they may lack a traditional degree. Although many of the studies cannot account for this type of education, it is important to consider these methods of education.

Method

In order to solve the problem of overlooking eye health and answer the question being researched, literature review was done. Obtaining data from several different sources as well as analyzing studies and researching previous data allowed for the question of whether education is associated with better health outcomes to be answered. In terms of reaching out to the public and increasing awareness about eye health, an informative flyer was created and distributed. This flyer is a form of education and it touches on a few areas of optometry that affect a numerous amount of people. This includes myopia and presbyopia. In addition, this informative flyer encourages the public to reach out to their local optometrist and schedule their regular eye exam.

Discussion / Results

Based on the findings of the studies and articles examined, my hypothesis was confirmed, and it is clear that there is a strong association between education and positive health outcomes. What does this mean moving forward? For one, optometrists and other health care professionals should be encouraged to continue to educate not only their patients, but also anyone they interact with, whether it is family or friends. This should also be motivation for teachers and school

systems to implement conversations about health and wellness in schools, even from a young age.

Although the research and data that is referenced in this paper is looking at traditional education in terms of schooling and degrees obtained, it is important to note that education does not just take the form of going to school. This points to a limitation of my study, which is that not all types of education can be accounted for due to the lack of quantitative basis that different forms of education take on. It can be difficult to accurately measure education outside of years of schooling or degrees obtained. Education can come from conversation, from reading a newspaper or book, or watching news channels or educational videos. Any time there is information posted, once the information is read and consumed, the reader has a little more information in their possession and therefore becomes slightly more educated.

The research done is the basis for putting out more information about optometry for the general public to see and become educated about. For many, eye health is often overlooked. If someone does not need glasses or contacts, they often make the decision to not go to their local optometrist. However, as people age, even those who never needed any type of vision correction from a young age, they start to notice some changes. Usually around age 40, people start having a harder time focusing on objects that are closer to them. This eventually brings people into the optometrist or leads to dependence on over the counter “readers.” Instead of waiting until someone has a problem with their vision or notices changes, going to an optometrist regularly can maintain proper care of the eyes as well as the overall body.

Future studies could look at why education leads to better health outcomes as well as how to reach more people. Not everyone has the same amount of access to information and resources. I think that a great area for further research is one that focuses on availability of education and

how to spread education, especially to areas with residents of lower income. This will be important for the future of health care because often times, the people who need the most help are the ones who are not as educated and who lack the resources to get more care for themselves.

References

Behrman, J. R. et al. (2011). Does More Schooling Reduce Hospitalization and Delay Mortality? New Evidence Based on Danish Twins." *Demography* vol. 48,4 (2011): 1347-75. doi:10.1007/s13524-011-0052-1

Campbell, F. et al. (2014). Early Childhood Investments Substantially Boost Adult Health. *Science*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4028126/

Jain J., & Moroz L. (2017). Strategies to Reduce Disparities in Maternal Morbidity and Mortality: Patient and Provider Education. *Semin Perinatol*. 41(5):323-328. doi: 10.1053/j.semperi.2017.04.010

Krueger P. M., Dehry I. A., & Chang V. W. (2019). The Economic Value of Education for Longer Lives and Reduced Disability. *Milbank Q*. 97(1):48-73. doi: 10.1111/1468-0009.12372

Kyvik K.O., Christensen K., Skytthe A., Harvald B., Holm N.V. (1996). The Danish Twin Register. 43(5):467-70.

Lawrence E. M. (2017). Why Do College Graduates Behave More Healthfully than Those Who Are Less Educated?. *Journal of health and social behavior*, *58*(3), 291–306. https://doi.org/10.1177/0022146517715671

Murphy S. L., Xu J., Kochanek K.D., & Arias E. (2018) Mortality in the United States, 2017. *NCHS data brief*, no 328. Hyattsville, MD: National Center for Health Statistics

Raghupathi, V., & Raghupathi W. (2020). The Influence of Education on Health: An Empirical Assessment of OECD Countries for the Period 1995-2015. *Archives of Public Health*. https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-020-00402-5#Sec3

Silk H., & Kwok A. (2017). Addressing Adolescent Oral Health: A Review. *Pediatric Review*. 38(2):61-68. doi: 10.1542/pir.2016-0134

Turbert, M. (2021). Nearsightedness: What Is Myopia. *American Academy of Ophthalmology*. https://www.aao.org/eye-health/diseases/myopia-nearsightedness

Zajacova, A., & Lawrence, E. (2012). The Relationship Between Education and Health: Reducing Disparities Through a Contextual Approach. *Annual Reviews of Public Health*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5880718/