Title of project: To investigate patients' opinion on the point at which visual correction is required.

Name of students(s): Rose Liverpool and Ariel Lochin

Name of supervisor(s) with qualifications: Mr. Niall Farnon MCOptom FIACLE

Affiliation: Optometry Unit, Department of Clinical Surgical Sciences, Faculty of Medical Sciences, St Augustine, The University of the West Indies

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Abstract

Many persons may experience problems with their vision at some point in their life, but each person has a different opinion on when they need to get spectacles or see an optometrist. Some persons can withstand a significant amount of blurred vision before having and eye exam whereas others cannot. There is not much research on patients' opinions on when they believe they need visual correction. This study aims to determine the point at which patients will decide visual correction is required by investigating the amount of blur they believe they can sustain and their reasons for having an eye exam.

Method: 39 patients ranging from 24-54 took part in the study. They each had their vision blurred with plus lenses through a phoropter to a point in which they believed they would need correction while looking at specific lines on the Snellen chart. Majority of the participants, 33.33% sustained a blur of 0.75DS and 30.77% sustained a blur of 0.50DS.The participants were also given a questionnaire to complete from which it was determined that the main reasons they will get an eye exam were because of blurry vision or a general checkup. Other major factors included experiencing headaches and light sensitivity.

Conclusion: It can be said that the point at which visual correction is needed according to patients will be when they experience blurry vision or have a prescription of +0.75 or +0.50 diopters. This correlates to other studies which concluded that they would normally prescribe spectacles at a prescription of +0.75DS.

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Definition of Terms

Binocularly – using both eyes simultaneously

Chi – Square Test – a statistical hypothesis test that is used to determine the significance of the data analysis

Coronavirus – in reference to COVID – 19, the respiratory illness caused by a coronavirus

Emmetropic – an eye with a refractive state that focuses light directly on the retina, resulting in crisp and clean vision

Extrapolate – the action of approximating or concluding something by using the assumption that existing trends will continue

Hyperopic – also called farsightedness, refers to an eye with a refractive state that focuses visual images behind the retina and vision is better at distance

Mean – also called the average or expected value, refers to the central value of a discrete set of numbers

Myopic – also called shortsightedness, refers to an eye with a refractive state that focuses visual images in front of the retina and vision is better at near

Phoropter – also called refractor, refers to an ophthalmic testing device in which different lenses are used for refraction of the eye during eye examinations, also used to measure refractive error and to determine spectacle prescription

Presbyopes – refers to people that have presbyopia which is the gradual loss of the eyes' ability to focus at near objects that begins onset around 40 years of age

Snellen chart – an eye chart that can be used to measure visual acuity

Standard Deviation – a value used to tell how data is spread out from the mean or expected value of the data set, showing the precision of the data collected

Standard Error of Mean – also called SEM, refers to a value that measures the accuracy of the data collected and being analyzed

Statistical Package for Social Sciences – also called SPSS, refers to software that is used for complex statistical data analysis

Visual acuity – also called VA, refers to the clinical measurement of visual function

Visual Correction – refers to methods used to improve blurred/poor vision caused by refractive error, such as the use of spectacles or contact lenses

Chapter 1

Introduction

Each patient perceives the world differently and the point at which visual correction is needed can be very subjective to each patient. Some persons may be able to withstand a greater limit to needing visual correction. It would be interesting to try to determine the reasons the patient decides visual correction is needed and gets an eye exam. Many factors such as age, occupation or if they drive can play a role in their decision. Other variables include gender, social/educational background and if the patient is emmetropic, myopic or hyperopic. For this project, two broad categories of pre-presbyopes/presbyopes vs non presbyopes will be analyzed and any further variables that arise will also be discussed.

The outcome of this project is to determine what is the tipping point in visual impairment that would lead a patient to get tested/get visual correction and also what inhibits patients from getting tested in the first place if it is found that they need visual correction. This would be helpful to from a professional standpoint as a more pinpointed approach to patient education on why visual correction is important and at what point it is necessary as well as being useful is solving any problems that are the reasoning behind why the patients don't seek visual correction even when it is required.

Statement of the Problem: There are many individuals that don't take their vision seriously until it reaches a point where they almost can't see at all and that is the problem, a person's opinion on when to access visual correction varies for each. Since it is very subjective, we do not know for sure the cause of patients thinking they have reached the point of needing visual correction.

Purpose of the Study: To investigate patients' opinion on the point at which visual correction is required.

Objectives:

● Why do patients decide they need visual correction and get an eye exam done?

● Does the point at which they decide they need it correlate with that of the physician?

Justification/Significance of the Study: This study will help us to better understand reasons patient decide to have an eye exam done and if it is a late point for majority therefore we know how to improve with patient education therefore ensuring that more patients get the correction they need sooner rather than later. This study will be beneficial in understanding the patient mindset in regard to what they believe warrants an eye examination and therefore should be helpful in ensuring that patients get the visual help they need.

Chapter 2

Literature Review

Literature on this topic is very scarce however one relevant source found is a study titled "Why don't younger adults in England go to have their eyes examined" by [1] Shickle et al. Their research was the first qualitative study that specifically focused on young adults and their thoughts on deciding when an eye exam becomes necessary to them. The researchers conducted 6 one-hour focus groups which was attended by forty-four young persons. The results spoke about persons perception on wearing spectacles and for both genders aesthetics of wearing spectacles was the main issue. When speaking about eye exams they quoted some of the subjects' responses from which we may have a better understanding of how persons may be thinking. "Well I obviously value it [my vision] quite highly, but I feel like I'm in control of it, because I see through it...well I use it every day, it's constantly tested [Male, 29]"

"I only went because I started getting headaches from revising and wondered if I needed glasses. Whereas if your eyesight is fine you do not think to go [Female, 22]." Persons admitted to not having enough knowledge on the need for eye exams and eye diseases and some persons also believed that spectacles could make their vision worse. In conclusion the study focused more on the importance of eye exams for eye health than detecting refractive error and was therefore concerned if the low uptake of eye exams were to continue amongst the younger generation into middle and older aged. However, from the study it cannot be said if the lack of knowledge was related to the little uptake in exams or if less exposure to eye exams and the lack of knowledge is related.

The study also explored the impact of cost being a reason why persons do not have an eye exam and it was said that most participants agreed it was a barrier. It also concluded that persons can find eye exams uncomfortable with the constant shining of lights in their eyes as well as sometimes become confused by the tasks they are asked to carry out during the exam hence they avoid getting a regular eye exam.

[2] Shickle et al also did the same study on older adults in England, in their study they stated reports from a literature review done by [3] Evans et al. in which they concluded 10% of persons between the ages 65-75 and 20% aged 75 and over are affected by visual impairment. It was said that the relationship between impaired vision and a reduction in life quality in older persons is quite strong. Between 20% and 50% of older person were suggested to have undetected reduced vision. [2] Shickle et al conducted focus groups in which participants were asked about their knowledge on eye exams, it was said that they had basic knowledge about it however those with diabetic retinopathy believed retinopathy surveillance was a replacement for a general eye test and in particular males believed an eye exam was only needed when persons problems with their vision. It was found that persons did not want to get the test wrong and appear foolish, they become anxious and uncomfortable therefore dislike some of the tests. Vanity and pride were other main reasons persons did not want to get an eye exam as spectacles are already associated with being old. Persons also said they were afraid of the elements of an eye exam, cost of having to get spectacles or receiving bad news when going to an optometrist. Similarly, it was seen with younger persons also avoiding eye examinations because of lack of comfort and cost.

In another study done by [4] Alexander et al, the objective was to better understand possible factors that influenced persons to seek out eye care so that they could promote early detection and treatment through screenings and education programs. Like the other studies discussed above focus

groups were conducted to examine how knowledge and communication influence behaviors towards having an eye exam. For their study they focused on persons over the age of 40 who did not work as a type of health care professional and a variety of races/ethnicities. From the focus groups it was found that some persons stated they valued their eyesight and thought of it as indispensable, whereas some said they believe they take their sight for granted and some didn't see the necessity in seeing an eye care provider, one participant was quoted saying "Most people are born with very good eyesight, so they don't concentrate on that. I take it for granted."

Another one stated "I don't even know. Not since I've lived here and that was '88, so what's that, 17 years ago? It's been a long time. I don't need glasses. I have nothing wrong with my vision. I have no pain. I just kind of know that they're fine."

The study indicated that persons primarily visited their optometrist to check or change their spectacles or their contact lens prescription, the study however focused mainly on if participants will visit their eye care provider because of eye problems or general health of their eyes. Barriers to getting an eye exam were mentioned to be fear and denial by some persons.

In order for us to make a comparison of the point at which a person may think they need visual correction to when the optometrist may decide they need visual correction we look at a study by [5] O'Leary et al. They distributed questionnaires asking optometrists questions about when they will prescribe for different categories of refractive error. It was reported that for symptomatic hypermetropes 50% of the time they would prescribe for refractive error of +0.75D and raised to 90% of the time for +1.00D. With asymptomatic patients they would not regularly prescribe less than +2.00D. For symptomatic presbyopic patients they would prescribe a reading add of +0.75D above 80% of the time and for asymptomatic 60% of the time they prescribe +1.50D.

This next study talks about the criteria for the level of refractive error Israeli optometrists will prescribe. The research was done by [6] Shneor et al, by distributing online questionnaires based on previous studies to optometrists in Israel. Similarly, to the study by O'Leary et al, [6] Shneor et al study reported that for symptomatic patients they would prescribe +0.75D but for asymptomatic they would prescribe at +1.50D.

It is also important to consider the day to day activities of the patients as this would affect their judgement on whether they need visual correction as they might not think it necessary. A four part series of articles written by Chris Wray [7] states that the need for glasses are conventionally defined "…in terms of a given refractive error (the optical power specified on an optometrist's prescription) or visual acuity." While this might be used to build a criteria, the "functional context" of the patient must also be considered, which is what this series indicated in part two titled "Who needs glasses? What do they need them for?". The article also talked about the five A's which were used as an indication as to why patients decided whether or not they should get an eye test. The five A's discussed in part four of the series titled "Why do so many people not have the glasses they need?" were: Awareness, Accessibility, Affordability, Access and Accuracy.

Chapter 3

Methodology

Research Design:

A subjective, prospective study was conducted in which subjects took part in a quantitative analysis to determine to point at which they perceive the need for visual correction test to. This was done by presenting patients with varying plus lenses of increasing powers until they believe they have reached the degree of visual impairment at which they will need visual correction. The subjects were also asked to fill out a questionnaire which asked questions that can aid us in determining their lifestyle and thoughts on what would influence them to decide to get an eye test when they believe they need visual correction. The subject will have to read off the chart initially to get a visual acuity as a baseline which is considered part of a regular eye exam, however, the plan to deteriorate vision with the addition of plus lenses to the point where correction is considered necessary is not expected as part of the routine eye exam, as well as the use of a questionnaire, therefore they will be considered experimental.

Study population:

The study population was selected from patients attending the UWI Optometry Clinic at Couva Multi-training Facility which consists of persons throughout Trinidad. However, since the clinic is located in Couva majority of patients attending were from Couva or areas near Couva like Chaguanas and San Fernando. Couva is in Caroni country and is located in Central Trinidad approximately 15 km from San Fernando, 10 km from Chaguanas and 30 km from Port of Spain, in the 1800s its population mainly consisted of Indian indentured workers and a small amount of

former African slaves, its population in 2011 was around 48000 and still majority of the population is of Indian descent now.

Participants will be selected from patients who present with an appointment for an eye exam at the UWI Optometry Clinic between the ages of 18 to 75 of all races, ethnicities and genders. However, patients with systemic and ocular diseases, patients who have presented for low vision or binocular vision exams, patients who have been referred to the clinic by ophthalmologists/optometrists for suspected ocular pathologies, pregnant women, children, persons with diminished mental capacities, non- English speaking subjects and prisoners will be excluded.

Sample size and sampling technique:

Initially subjects were to be selected from the UWI Optometry Clinic with an expected sample size of 80 participants however, taking patient dropout into consideration 100 participants were to be chosen to partake in the research at a confidence level of 95% with a 5% margin of error. (This was calculated using Raosoft).

With the Covid-19 pandemic our sample size was reduced to almost half to be 39 participants. Therefore 45 participants were chosen to take part in the research at a confidence level of 95% and a 5% margin of error a sample size of 41 would have been need. With a sample size of 39 confidence level is 90% with a margin of error of 5%. (This was calculated using Raosoft).

Ethical Consideration:

Many ethical considerations were taken before, during and after the study. Ethical approval from the UWI Ethical Committee was obtained before data collection began. Approval/permission

to collect data at the UWI Optometry was also obtained from the Head of the Optometry Unit before data collection began. The participants' data was not be recorded using any identifying markers, so the risk of a confidentiality breach was extremely negligible. Participants were not referred to by any identifiable markers to ensure patient confidentiality. Also, the data obtained is only be available to the investigators. Data will be stored electronically, on a computer for the duration of the research project. All computer devices used will be password protected. Data will be stored for 5 years or until it has been published.

Participants with significant ocular diseases were not used in this study, however, during the screening process, if any diseases were discovered, these participants were referred for appropriate treatment. Participants were also given a consent form before taking part in the study, fully and clearly explaining the purpose of the study and the procedure which was non-invasive and painless with no psychological impact on the participants and only strayed slightly from the usual standard procedure of an eye exam. There were also no repercussions to participants who decided to drop out of the study. A trained professional such as a lecturer was always be present when the measurements were being conducted therefore in any cases of emergency, they were on hand to assist. Participants also had the option to view their data if they so desired.

Data collection procedure:

A subjective quantitative analysis was done by presenting patients with varying plus lenses of increasing powers until they believed they reached the degree of visual impairment at which they will need visual correction. This analysis was done binocularly using a phoropter to vary the plus lenses while the subject focused on a Snellen chart in order to quantify. The patient's visual acuity was checked both before and after in order to determine the change in vision that occurred during the testing. This was done by having the participant read the Snellen chart both before and

after. Questionnaires were also presented to each patient to determine their lifestyle and thoughts on what would influence them to decide to get an eye test when they believe they need visual correction. The plus lens that garnered the visual acuity change noted by the participant was noted manually during the test on a table. These results together with the questionnaire results were then tabulated using Microsoft Excel.

Data Analysis:

The data analysis was done carefully using the Statistical Package for Social Sciences (SPSS) software version 24.0 for Windows. Descriptive statistics were also used to formulate continuous variables and frequencies. Contingency chi-square test was used to assess the association.

Chapter 4

Results

Table 1: Total number of participants by age and gender

Age	F	M	Grand Total
18	1	1	2
19	2		2
20	1		1
21	3	2	5
22	6	2	8
23	4	2	6
24	3	2	5
25		1	1
26	1	1	2
32	1		1
38		1	1
44	1		1
46		1	1
48		1	1
52	1		1
54		1	1
Grand Total	**24**	**15**	**39**

Table 1. showing the relationship between the age and gender of the participants

Females:

Mean: 2.182

Standard Deviation: 1.585

Accuracy (SEM): 0.478

Males:

Mean: 1.364

Standard Deviation: 0.481

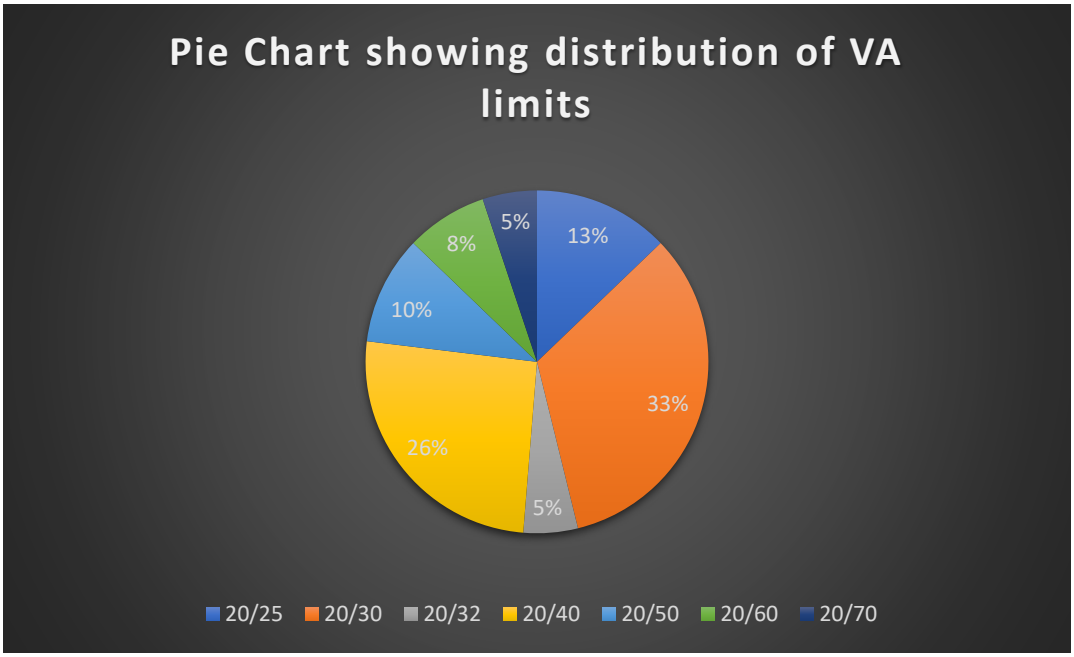
Accuracy (SEM): 0.145

The average age of the female participants was found to be approximately 25 years old with a precision of 7.64 years. This means that the range of ages lies 7.64 years younger than 25 years and 7.64 years older than 25 years old. Due to this large range, it can be deduced that the results

are not very precise, most likely due to the outliers in age such as the one 52 year old participant. However, the small SEM value of 1.56 shows that the mean value is accurate.

The average age of the male participants was found to be approximately 28 years old with a precision of 11.22 years. This means that the range of ages of male participants lies between approximately 11 years younger than 28 years and 11 years old older than 25 years old. Due to this large discrepancy, it can be said that the results are not very precise due to outliers such as participants that are 52 and 54 years old. However, the small SEM value of 2.999 shows that the mean value is accurate for this data set

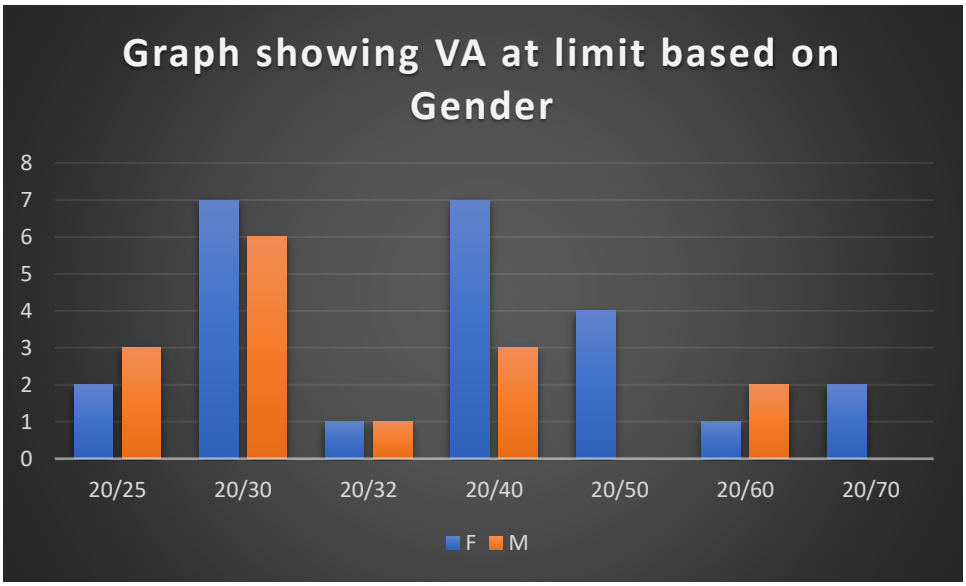
Graph 1. showing the distribution of VA Limits amongst the participants



Graph 1 showing percentages of n = 39 participants

From this chart, it is clearly seen that the highest percentage of participants found their VA limit to be 20/30 with 20/32 and 20/70 being the VA limit for the lowest number of participants. It was also found that majority of the patients within the age range of 18-24 had a VA limit of 20/30.

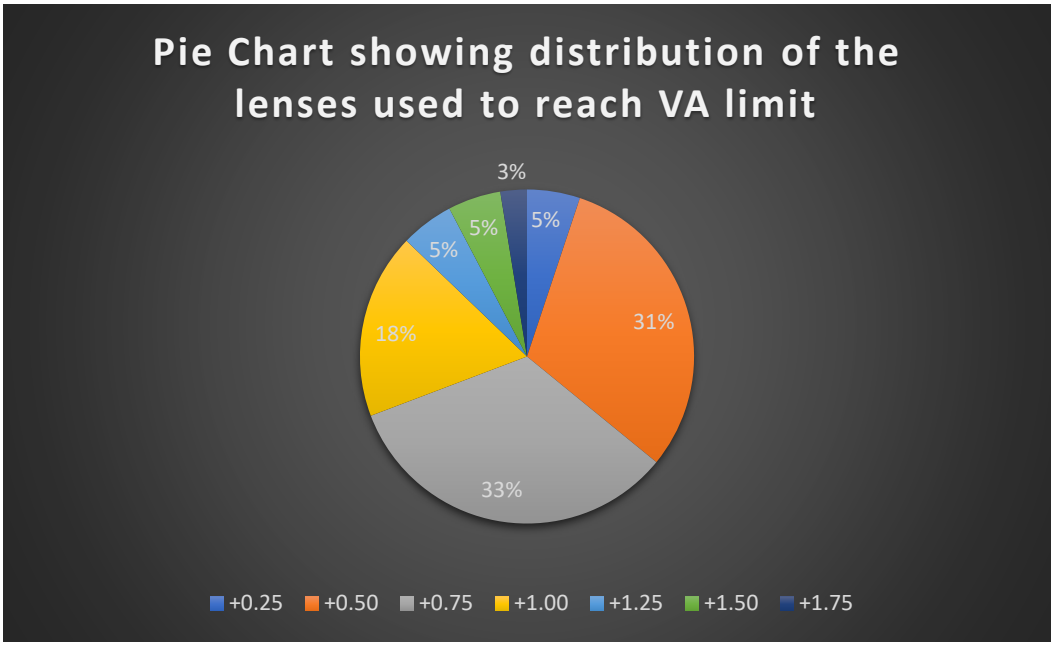
Graph 2: VA at Limit with respect to Gender



Graph 2. showing the VA limits for both male and female participants (n = 39 participants)

This graph shows that the highest number of females found their VA limit at both 20/30 and 20/40 and the lowest number of females found their VA limit to be 20/32. The majority of male participants found their VA limit at 20/30 and 20/32 was the VA limit for the least number of males. This correlates with the data from graph one which showed that the overall VA limit was 20/30.

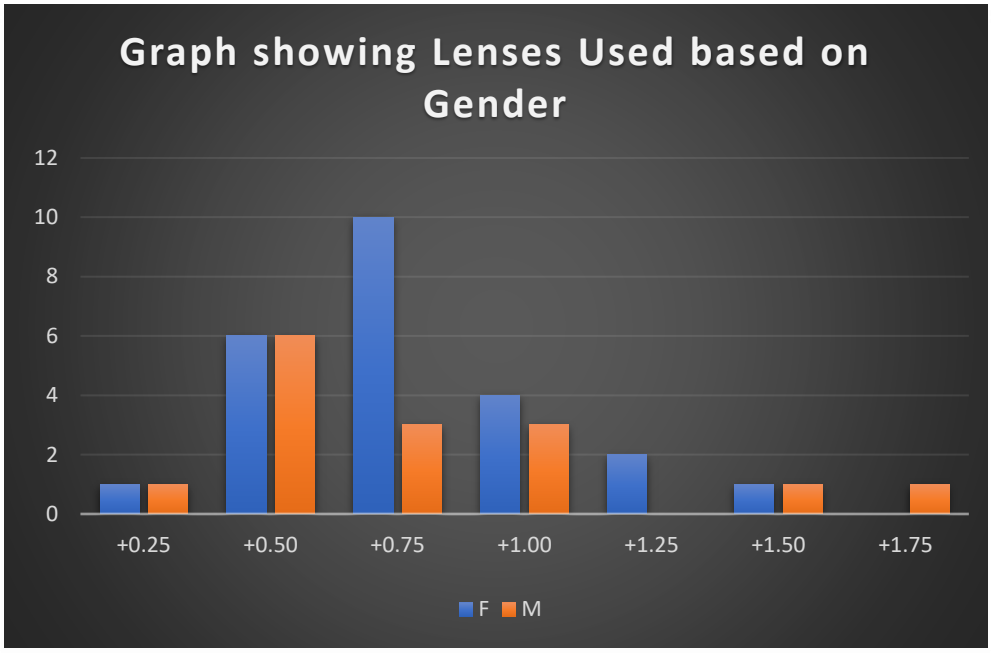
Graph 3. showing the distribution of lenses used to reach VA limit amongst the participants



Graph 3. showing percentages for n = 39 participants

This graph shows that the majority of the participants, 33% achieved their VA limit with +0.75 lenses. 3% of the participants got to their VA limit using +1.75 lenses.

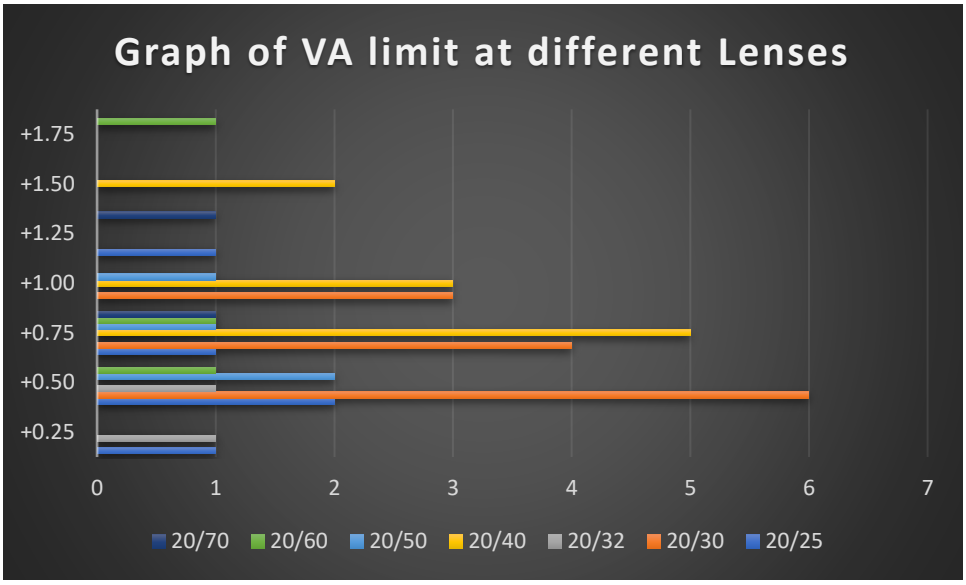
Graph 4: Relationship between Gender and lenses used to reach VA limit



Graph 4. showing the different lenses used based on the gender of the participants (n = 39) to achieve VA limit

From this graph, it is seen that the majority of female participants found their VA limit at +0.75 lenses and the least number of female participants found their VA limit at +1.75 lenses. The majority of the male participants found their VA limit at +0.50 lenses and the least number found their VA limit at +1.25 lenses.

Graph 5: Relationship between VA Limit and Lenses Used



Graph 5. showing the VA limits for different lenses for n = 39 participants

This graph shows distribution of VA limits for each of the lenses used. For +0.25, both 20/25 and 20/32 were observed equally as the VA limit. For +0.50, the most frequent VA limit that occurred was 20/30 with 20/32 and 20/60 being the lowest. For +0.75, the most frequent VA limit that occurred was 20/40. For +1.00, the most frequent VA limit was found to be both 20/30 and 20/40. For +1.25, the VA limit was found to be 20/50 and 20/70 equally. For +1.50, the VA limit was found to be 20/40 and for +1.75, the VA limit was found to be 20/60

Chi – Square Tests

VA Limit * Age

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	92.879[a]	90	.397
Likelihood Ratio	71.009	90	.930
N of Valid Cases	39		

The minimum expected count is .05.

Taking into consideration the number of valid cases was 39 out of an expected 100 cases, the chi – square result is significant for the number of cases that were analysed.

VA at limit * Gender

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	116.611[a]	14	.000
Likelihood Ratio	142.235	14	.000
N of Valid Cases	100		

The minimum expected count is .30.

The chi – square value was found to be exceedingly high, however, the SPSS program found the number of valid cases for this field to be 100 which is inaccurate as only 39 patients participated in the study, therefore rendering this insignificant.

Power of lens added to meet limit * VA at limit

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	233.243[a]	49	.000
Likelihood Ratio	175.745	49	.000
N of Valid Cases	100		

The minimum expected count is .02.

The chi – square value was found to be exceedingly high, however, the SPSS program found the number of valid cases for this field to be 100 which is inaccurate as only 39 patients participated in the study, therefore rendering this insignificant.

Power of lens added to meet limit * Gender

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	113.095[a]	14	.000
Likelihood Ratio	139.933	14	.000
N of Valid Cases	100		

The minimum expected count is .15.

The chi – square value was found to be exceedingly high, however, the SPSS program found the number of valid cases for this field to be 100 which is inaccurate as only 39 patients participated in the study, therefore rendering this insignificant.

Power of lens added to meet limit * Age

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	86.485[a]	90	.585
Likelihood Ratio	65.682	90	.975
N of Valid Cases	39		

The minimum expected count is .03.

Taking into consideration the number of valid cases was 39 out of an expected 100 cases, the chi – square result is significant for the number of cases that were analysed.

Chapter 5

Discussion

The majority of patients that took part in this study were within the range 21-24 years of age although all the participants were aged between 18 to 54 and mostly female. When looking at our first objective "why patients decide they need visual correction and get an eye exam done?" we could more focus relation of our results to that from the literature by [1]Shickle et al entitled "Why do young adults in England go to have their eyes examined" since majority of the participants were young adults. For our study patients were given a short questionnaire to fill out as compared to the studies mentioned earlier in which focus groups were carried out. From the questionnaires it could be determined that most patients either had an eye exam within the last year or two to more than two years ago, it can be said that approximately half of the sample size regularly had an eye exam while approximately half did not.

Since we did not conduct a focus group like the other studies, we were not able to completely get an idea of how the patient may be really thinking. We limited them to a few possible answers as compared to them getting to fully express their opinion on why they decided to have an eye exam. Most patients both young and old said the main factors that lead to them having an eye exam were just experiencing blurry vision or blurry vision with associated headaches. Another major factor was light sensitivity and eye pains. However, with these factors leading to have an eye exam, the main reason patients decided to come into the clinic the day they participated in this study was because of blurry vision or some came for a general checkup.

The studies looked at in the literature review focused on why persons did not get an eye exam, however for our study we just on focused on the why so those studies concluded that most

persons did not come in for an eye exam because of lack of comfort or the cost. However, study by [1] Shickle et al determined a factor which contributed to younger persons seeking out eye exams were headaches which is similar to what was determined in our study. The study by [4] Alexander et al concluded most persons mainly visit the optometrist for check ups or to get spectacles changed similarly to what we found. However, this study also focused on the barriers of getting eye exams unlike our study. We didn't focus on barriers or why persons didn't seek out eye exams because our main focus is the patients opinion on when visual correction is needed so we questioned on why they will come into get an eye exam.

Since most patients will seek out an eye exam when they experience blurry vison the next step is determining the point of blur they will think they need visual correction and looking at our second objective determine "Does the point at which they decide they need visual correction correlate with that of the physician?". The point at which an optometrist would prescribe spectacles for visual correction can be concluded to be +0.75 for symptomatic patient and to +1.00 to +1.50 for asymptomatic from two studies seen in the lit review earlier, one done by [6] Shneor et al and the other by [5] O'Leary et al.

For this study to determine the point at which the patient needs correction the patients were given plus lenses from +0.25 to +1.75 until they reached what they considered their limit of blur. From the results approximately 33% of the participants could only sustain up +0.75 diopters of blur while 30% had a limit of +0.50 and approximately 18 % had a limit of +1.00 diopters. A limit of +0.25, +1.25 and +1.50 were sustained by 5% each and 3% preferred a limit of +1.75. We didn't compare our results to the patient being symptomatic or asymptomatic but it could still be seen that the point at which the patient decides they need correction correlates to the research of what point the physician will prescribe. Most patients over 30 considered pre-presbyopes and

presbyopes were either very sensitive and took up to +0.50DS of blur or were able to withstand up to 1.00DS of blur whereas for the younger non-presbyopic participants majority had a limit of +0.50 to +0.75 diopters.

With regards to gender it could be said that females have a greater limit for the amount of blur they could sustain before deciding visual correction is need, it is seen that of all the females in this study most had a limit of +0.75 which was 42% of the females whereas of all the males most had a limit of +0.50 which was 40% of the males. So, it can be said that more males will be more sensitive to the blur and need a visual correction when at +0.50DS. Hence optometrist can also use gender to determine if to prescribe +0.50 lenses.

Conclusion

As mentioned in the introduction, the purpose of this research project was to investigate patients' opinion on the point at which visual correction is required. It was done to determine at what point do patients decide to get an eye exam and why and if this point correlates with that of the physician's. Data collected between January 2020 to the beginning of March 20202 resulted in 39 patients between the ages of 18-54 being part of this study. 24 of the participants were female and 15 were male. Participants of age 22 were the majority with a percentage of 20.52%. Of the 39 patients, 33.33% reported that that at a visual acuity of 20/30, they would believe that they need visual correction and come in for an eye exam. 33.33% of the participants also recorded that +0.75 lenses resulted in the vision change that would lead them to getting an eye exam. The majority of the participants (33.33%) also reported their VA limit at 20/30 at +0.75 lenses. As the minimum

driving requirement is 20/40, these findings show that most participants would decide to get an eye exam before their eyesight became too impaired to drive. 84.63% of the participants stated that headaches, blurry vision and light sensitivity as the main factors for getting an eye exam.

Limitations

The projected number of participants at the beginning of the study was 80, with a maximum of 100. However, due to the coronavirus and the closure of the UWI Optometry Clinic on March 12 the number of participants was drastically decreased to 39. Therefore, making it difficult to extrapolate any trends or sequences in the data.

Recommendations

- Recommend similar study should be done in other communities in Trinidad with a bigger sample size in order to get a better comparison and conclusion especially since there is not much research done on patients' opinion of when visual correction is needed.

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Appendix

Table 1. showing raw data from graph 1

Occupation	F	M
Caregiver	1	
Contractor		1
Farmer		1
Housewife	2	
Medical Intern		1
Optometrist	1	1
Prisons Officer		1
Sales Director	1	
Student	18	8
Unemployed	1	2
Grand Total	**24**	**15**

Table 2. showing raw data from graph 2

VA at limit	F	M	Grand Total
20/25	2	3	5
20/30	7	6	13
20/32	1	1	2
20/40	7	3	10
20/50	4		4
20/60	1	2	3
20/70	2		2
Grand Total	**24**	**15**	**39**

Table 3. showing raw data from graph 3

Lenses Used	F	M	Grand Total
+0.25	1	1	2
+0.50	6	6	12

+0.75	10	3	13
+1.00	4	3	7
+1.25	2		2
+1.50	1	1	2
+1.75		1	1
Grand Total	**24**	**15**	**39**

Table 4. showing raw data from graph 4

Lenses Used	20/25	20/30	20/32	20/40	20/50	20/60	20/70	Grand Total
+0.25	1		1					2
+0.50	2	6	1		2	1		12
+0.75	1	4		5	1	1	1	13
+1.00		3		3	1			7
+1.25	1						1	2
+1.50				2				2
+1.75						1		1
Grand Total	**5**	**13**	**2**	**10**	**4**	**3**	**2**	**39**

Table 5. showing the raw data of factors for getting an eye exam with respect to gender

Factors for Eye Exam	F	M	Grand Total
blurry vision	4	3	7
blurry vision, H/A	3		3
blurry vision, H/A, eye pain	1		1
blurry vision, H/A, eye pain, light sensitivity	2		2
blurry vision, H/A, eye pain, light sensitivity, dry eyes	1		1
blurry vision, H/A, eye pain, light sensitivity, dry eyes and mucus	1		1
blurry vision, H/A, light sensitivity	1		1
blurry vision, light sensitivity		1	1
blurry vision, tired and burning eyes,not seeing well		1	1
blurry vision; H/A	1	1	2
blurry vision; H/A; light sensitivity	2		2
blurry vision; watery eyes	1		1
eye pain	1		1
general checkup	1		1

H/A	1	2	3
H/A, eye pain ,light sensitivity	1		1
H/A, light sensitivity		1	1
light sensitivity	1	4	5
other	2	2	4
Grand Total	**24**	**15**	**39**

Table 6. showing raw data of VA limit with respect to factors for getting an eye exam

Factors for Eye Exam	20/25	20/30	20/32	20/40	20/50	20/60	20/70	Grand Total
blurry vision	2			1	1	3		7
blurry vision, H/A		1		1	1			3
blurry vision, H/A, eye pain		1						1
blurry vision, H/A, eye pain, light sensitivity		1					1	2
blurry vision, H/A, eye pain, light sensitivity, dry eyes			1					1
blurry vision, H/A, eye pain, light sensitivity, dry eyes and mucus		1						1
blurry vision, H/A, light sensitivity		1						1
blurry vision, light sensitivity			1					1
blurry vision, tired and burning eyes,not seeing well		1						1
blurry vision; H/A	1				1			2
blurry vision; H/A; light sensitivity		1			1			2
blurry vision; watery eyes				1				1
eye pain	1							1
general checkup				1				1
H/A				2			1	3
H/A, eye pain ,light sensitivity				1				1
H/A, light sensitivity		1						1
light sensitivity		4		1				5
other	1	1		2				4
Grand Total	**5**	**13**	**2**	**10**	**4**	**3**	**2**	**39**

Table 7. showing raw data percentages of Age and Gender

Age	F	M	Grand Total	Percentage/%
18	1	1	2	5.13
19	2		2	5.13
20	1		1	2.56
21	3	2	5	12.83
22	6	2	8	20.52
23	4	2	6	15.39
24	3	2	5	12.83
25		1	1	2.56
26	1	1	2	5.13
32	1		1	2.56
38		1	1	2.56
44	1		1	2.56
46		1	1	2.56
48		1	1	2.56
52	1		1	2.56
54		1	1	2.56
Grand Total	**24**	**15**	**39**	**100**
Percentage/%	61.54	38.46	**100**	

Table 8. showing raw data percentages of VA Limit and Gender

VA Limit	F	M	Grand Total	
20/25	2	3	5	12.83
20/30	7	6	13	33.33
20/32	1	1	2	5.13
20/40	7	3	10	25.64
20/50	4		4	10.25
20/60	1	2	3	7.69
20/70	2		2	5.13
Grand Total	**24**	**15**	**39**	**100**
Percentage/%	61.54	38.46	**100**	

Table 9. showing raw data percentages of Lenses Used and Gender

Lenses Used	F	M	Grand Total	Percentage/%
+0.25	1	1	2	5.13
+0.50	6	6	12	30.77
+0.75	10	3	13	33.33
+1.00	4	3	7	17.95
+1.25	2		2	5.13
+1.50	1	1	2	5.13
+1.75		1	1	2.56
Grand Total	**24**	**15**	**39**	**100**
Percentage/%	61.54	38.46	**100**	

Table 10. showing raw data percentages of Lenses Used and VA Limit

Lenses Used	20/25	20/30	20/32	20/40	20/50	20/60	20/70	Grand Total	Percentage/%
+0.25	1		1					2	5.13
+0.50	2	6	1		2	1		12	30.77
+0.75	1	4		5	1	1	1	13	33.33
+1.00		3		3	1			7	17.95
+1.25	1						1	2	5.13
+1.50				2				2	5.13
+1.75						1		1	2.56
Grand Total	**5**	**13**	**2**	**10**	**4**	**3**	**2**	**39**	**100**
Percentage/%	12.83	33.33	5.13	25.64	10.25	7.69	5.13	**100**	

Tables 11 and 12 showing raw data from chi – squares

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
VA at limit * Age	39	39.0%	61	61.0%	100	100.0%
VA at limit * Gender	100	100.0%	0	0.0%	100	100.0%

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Power of lens added to meet limit * VA at limit	100	100.0%	0	0.0%	100	100.0%
Power of lens added to meet limit * Gender	100	100.0%	0	0.0%	100	100.0%
Power of lens added to meet limit * Age	39	39.0%	61	61.0%	100	100.0%

Copy of the Questionnaire distributed

1. Gender
   - Male
   - Female

2. Age:

3. What is your occupation? (please be specific):

4. When was your last eye exam?
   - Within the last year
   - 1.5 years ago
   - Two years ago
   - More than two years ago

- Never had one

5. If never, why have you not had an eye exam?
- Do not have the time
- Too expensive
- Do not see any reason for it
- If other, briefly state:

6. Do you have glasses or contacts?
- Yes
- No

7. If no, do you have problems with your vision?
    - Yes (please briefly state):
    - No
    - Never noticed

8. If yes, do you know your prescription?
        - Yes
        - No
        - If yes, please state:

9. If yes, how long have you been wearing glasses/contacts? (please be specific):

10. Is this your first eye exam at the UWI Optometry Clinic?
    - Yes
    - No
    - If yes, when was the last eye exam at the clinic? :

11. What factors lead to you getting an eye exam? (tick all that are relevant)
    - Blurry vision
    - Headaches
    - Eye pain
    - Light sensitivity
    - Other (please state) :

12. Which of the factors mentioned above are your reasoning for coming in for an eye exam today?

    Please state: