DIGITAL/FREEFORM PROGRESSIVE ADD LENSES: IS THE 'BANG' WORTH THE BUCK?

by

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APPROVED:

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I, Kristin Sarah O'Brien, hereby release this Paper as described above to Ferris State University with the understanding that it will be accessible to the general public. This release is required under the provisions of the Federal Privacy Act.

ABSTRACT

Background: The benefits of digital/freeform progressive add lenses (PALs) has already been studied and well documented.[1-5] Many patients are hesitant to spend extra money on this type of medical device despite the added benefits. The purpose of this study is to target patients who wear digital/freeform PALs and find out whether or not they believe the benefits are worth the added cost. In essence, did the patient get the 'bang' for their buck? *Methods:* Data was acquired through a patient satisfaction questionnaire via telephone interview to established PAL wearers who upgraded to digital/freeform lenses. *Results:* Seventeen out of 25 participants were very satisfied with their digital/freeform PAL. Ten of those participants thought their digital/freeform lenses were better than their habitual PAL while 14 participants couldn't tell much of a difference but didn't think they were any worse. Twenty three participants would value the satisfaction of their digital/freeform lenses at above $200 to $300 while 10 of those would value higher than $300. *Conclusions*: Digital/freeform PAL wearers tend to be very satisfied with their lenses despite an apparent lack of educated about their lenses. Participants were still willing to pay a premium fee for a digital PAL in their next pair of glasses, as cost was determined not to be the driving force behind whether or not to purchase digital versus traditional PALs.

It is without hesitation that I dedicate this Senior Paper to my parents, Jim and Cathy O'Brien, who stood behind me every step of the way.

ACKNOWLEDGEMENTS

Jamie Brady M.Ed, and David Oosting O.D., went above and beyond as advisors for my Senior Paper. Their guidance and input was invaluable from beginning to end of this lengthy process.

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BACKGROUND:

The benefits of digital/freeform progressive add lenses (PALs) including reduced peripheral distortions, wider distance field of view, wider intermediate corridor, wider near reading zone, reduced image blur, and easier adaptation for new progressive wearers has already been studied and well documented.[1-5] However, as with all new technology, many patients are hesitant to spend extra money on this type of medical device despite the added benefits. The purpose of this study is to target patients who wear digital/freeform PALs and find out whether or not they believe the benefits are worth the added cost. In essence, did the patient get the 'bang' for their buck?

METHODS:

Qualified Study Subjects: Any patient who ordered digital/freeform PALs between April and August, 2012 from the University Eye Center at the Michigan College of Optometry qualified for this study. Candidates must have worn some form of non-digital/freeform progressive add lens design in their habitual prescription in order to qualify.

Recruitment: Subjects for this study were recruited by University Eye Center staff members and student interns. Staff and students were instructed to ask subjects who qualified for the study if they would like to participate. If the subject agreed, the staff or students gave the participant's name to the researchers for data collection. Additional qualified subjects were identified through a query search on the EyeCare Advantage electronic health record system at the Michigan College of Optometry. Parameters for this search included those who received a free upgrade to a digital PAL design.

Subject Background Information: Subject background information for this study was accumulated via patient information in the EyeCare Advantage electronic health record system at the Michigan College of Optometry's University Eye Center. EyeCare Advantage provided basic patient information concerning age, sex, insurance, digital/freeform PAL design, contact information, and method of acquisition (free, upgraded for free, upgraded with insurance, or full out of pocket payment).

Data Collection: The main mode of data acquisition was through a phone interview conducted between January 26 and 28, 2013. The interview consisted of eight to nine parts:

1. Introduction of Researcher
2. Purpose of Study
3. Informed Consent*
4. Invitation to Proceed with Study
5. Subject Identification Confirmation
6. Survey Questionnaire**
7. Clarification Questions (if applicable)
8. Contact Information for Results
9. Thank You for Participating

* *Appendix A*, ** *Appendix B*

Data Analysis: Answer choices from the questionnaire were tallied and re-verified by the researcher once all identified study subjects completed the survey or declined to participate. Additional comments were noted and attached to the participant number for

analysis purposes.

RESULTS:

The patient satisfaction questionnaire yielded 27 participants in all (n=27, 22 females, five males). Two of those participants, participant number two and 27 (both female), were disqualified from the study because they were first time progressive add lens wearers and were unable to compare their digital lenses to a traditional PAL, leaving 25 qualified participants in total.

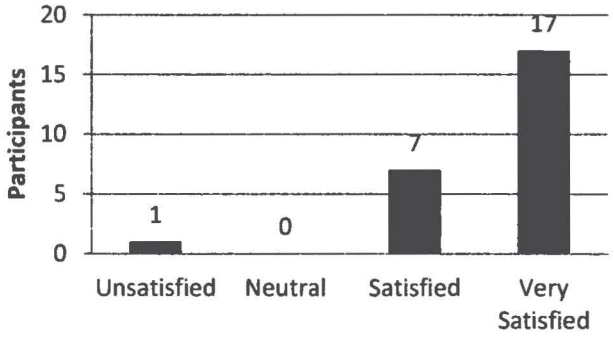

Figure 1 Answer choices of participants (n=25) rating overall satisfaction with digital progressive add lens.

Question number one of the patient satisfaction questionnaire addressed the participant's overall satisfaction rating of their digital PAL. Results yielded one unsatisfied, zero neutral, seven satisfied, and 17 very satisfied out of 25 total participants (see *Figure 1*).

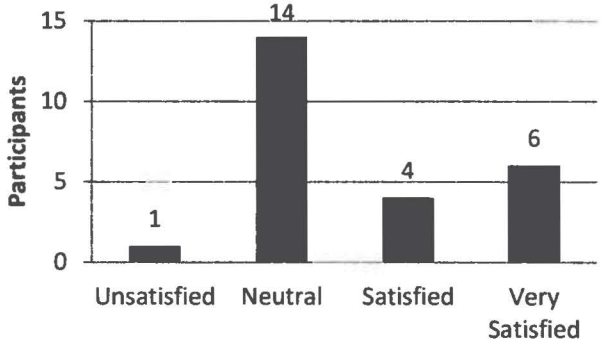

Figure 2 Answer choices of participants (n=25) rating satisfaction of digital progressive add lenses compared to traditional progressive add lenses.

Question number two of the patient satisfaction questionnaire compared the participant's satisfaction of their digital PAL to their traditional progressive. Results yielded one unsatisfied, 14 neutral, four satisfied, and six very satisfied out of 25 total participants (see *Figure 2*).

Question number three of the patient satisfaction questionnaire determined who made the initial recommendation for the participant to switch from a tPAL to a digital. Results yielded recommendations from two optometrists, five optometry student interns, five opticians, five participants said they were automatically upgraded without their knowledge, and eight were unsure out of 25 total participants.

Question number four of the patient satisfaction questionnaire asked if any participant had been aware of digital lenses before their last examination. All 25 participants answered 'no' to this question.

Question number five of the patient satisfaction questionnaire determined the degree to which cost was a factor in purchasing digital PAL. Results showed 15 participants thought cost was not a factor, eight somewhat a factor, seven mostly a deciding factor, and zero participants out of 25 based the purchase of their digital progressive lenses all on cost.

Question number six of the patient satisfaction questionnaire asked how valuable the participants rated the quality of their digital progressive add lenses. One participant said less than $100, one said between $100 and $200, 13 said between $200 and $300, nine said between $300 and $400, and one out of the 25 valued their digital PAL as greater than $400 (see *Figure 3*).

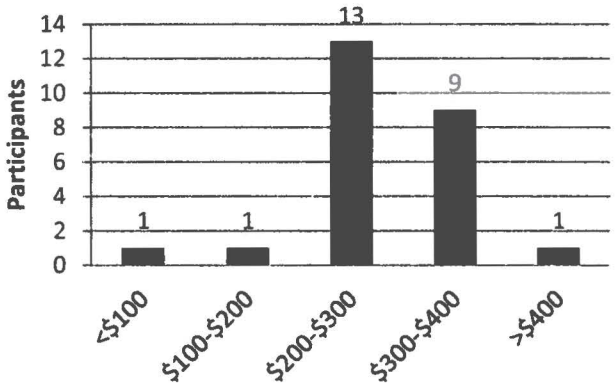

Figure 3 Answer choices of participants (n=25) rating value of quality of digital progressive add lenses.

DISCUSSION:

Limitations of this study include the small sample size and sample population demographic. Participant willingness to pay more for glasses and value technologically advanced lenses at a higher dollar amount may be more likely in a less rural community. In addition, between four to eight months lapsed between the participants acquiring their digital progressive add lenses and the administration of the satisfaction questionnaire. It is possible that participants would have been more familiar with comparing their traditional and digital progressives as well as remembering who recommended the upgrade if they had been asked in a more timely manner.

Within the qualified participants there was one outlier (participant number eight) noted in questions focusing on satisfaction and value. This participant had a digital progressive office lens and was not happy with the accuracy of the assigned working distance of the lens. Her low level of satisfaction reflected the prescription inaccuracies of the lens rather than peripheral distortion, corridor width, etc.

Additionally, there may have been some confusion in the wording of question number six of the patient satisfaction questionnaire. No questions for clarification were asked by participants while administering the questionnaire. However, it was later pointed out by David Oosting, O.D. that participants could have interpreted the questions as asking either 1) the total price willing to be paid for the lenses if not provided a free upgrade, or 2) what patients would be willing to pay above and beyond their traditional PAL lenses for the digital design.

CONCLUSIONS:

It is clear through previous research that from a technical standpoint, digital lenses are overall higher quality lenses for a variety of reasons.[1-5] This study has shown that in general, digital progressive add lenses wearers tend to be very satisfied with their lenses. When comparing satisfaction between traditional and digital progressive add lenses, over half of wearers don't discern much difference. Despite this, digital progressive lens wearers are still willing to pay a premium fee for a digital PAL in their next pair of glasses as cost was determined not to be the driving force behind whether or not to purchase digital versus traditional progressive add lenses.

It also became quite evident that the optometric industry needs to do a better job educating their patients and the public about the latest advancements in technology, as no study participants were previously aware of the existence of digital lenses or their benefits. In fact, many study participants claimed they the patient satisfaction questionnaire was the first time they had encountered the term. Optometrists, optometry student interns, and opticians need to improve their delivery when educating their patients on the lens technology available, if they qualify for a free upgrade for a lens, and what changes to expect with the new lens design. Of the participants who remembered the person that recommended the digital lens upgrade (optometrist, optometry student intern, or optician) almost all of them were very satisfied with their digital lenses and also had a higher satisfaction rating of the digital vs. traditional progressive add lenses than those who did not remember or were unaware. In addition, these participants were more likely to assign a higher market value to the quality of their lenses.

More research needs to be done to determine if there is a correlation between differences in the participant's habitual traditional progressive lens designs and the degree of the participant's satisfaction with a digital upgrade.

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APPENDIX A

INFORMED CONSENT

Informed Consent

Digital/Freeform Progressive Add Lenses:
Is the 'Bang' Worth the 'Buck'?

Kristin S. O'Brien
(Advisors: Jamie Brady M.Ed, David Oosting O.D.)

This study is being conducted by Ms. Kristin O'Brien, Mr. James Brady, and Dr. David Oosting, sponsored by the Michigan College of Optometry at Ferris State University.

The Purpose of this patient satisfaction study is to determine if the participants believe the added benefits of digital/freeform PALs are worth the additional cost or, if the participant received a free upgrade, if they would be willing to pay for the digital/freeform lens in the future.

The reason you qualify for this study is because you have either purchased or received a free upgrade to a digital/freeform progressive add lens from the Michigan College of Optometry in the past 12 months.

We, the researchers, will collect the following personal health information from your University Eye Center electronic health records: your age, gender, health insurance information, the type of digital or freeform progressive add lens design, refractive status, how you paid for your lenses, and personal contact information. This information will be stored on a password protected external hard drive, known only to the primary researchers. The external hard drive will be stored in a locked file cabinet of patient information at the Family Vision Center in Westminster, CO (an approved external rotation site Kristin O'Brien is attending for the Winter 2013 semester). At the conclusion of this study, the external hard drive will be erased and destroyed. All patient data will be protected in accordance to the HIPAA (health information privacy and accountability act) law.

Your participation in this study will include answering a 6 multiple choice question survey about your digital/freeform lenses which should take no longer than 5 minutes.

There are no known risks associated with participating in this research study.

As a participant in this research study, you have the right to be informed about:

- Why the research study is being done
- What will happen to you during the research study
- Whether any study procedures, drugs, or devices are different from standard medical care
- The risks, side effects, and discomforts from taking part in the study
- The possible benefits from taking part in the study
- Other treatment choices and their risks and benefits

- Medical treatment in case of complications
- How your privacy and/or confidentiality will be protected

Research participants also have rights to:

- Decide not to take part in the study, or decide to drop out, at any time. Your decision will not affect your right to the usual care not related to the study
- Decide whether to take part without any pressure
- Ask questions at any time
- Receive a copy of the consent form

You will be told of any significant new findings which develop during the study which may affect your willingness to participate in the study. If you are an employee or student, your employment status or academic standing at FSU will not be affected by your participation or non-participation in this study.

If you have any complaints or concerns about how this study is being conducted, you may contact the FSU Institutional Review Board at IRB@ferris.edu or by calling Dr. Connie Meinholdt, Institutional Review Board chair at 231-591-2759.

Contact Information for Results:

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APPENDIX B

PATIENT SATISFACTION QUESTIONNAIRE

Digital/Freeform Progressive Add Lenses:
Is the 'Bang' Worth the 'Buck'?

Questionnaire

Participant:

1. How satisfied are you with your digital progressive lenses overall?
    a. Unsatisfied
    b. Neutral
    c. Satisfied
    d. Very Satisfied
2. How satisfied are you with you digital progressive lenses over your traditional progressive lenses?
    a. Unsatisfied
    b. Neutral
    c. Satisfied
    d. Very Satisfied
3. Who recommended that you upgrade to a digital progressive lens?
    a. Optometrist
    b. Optometry student intern
    c. Optician
    d. Automatically upgraded without my knowledge
    e. Unsure
4. Were you aware of digital lenses before your last examination?
    a. Yes
    b. No
    c. Unsure
5. How much of a factor was cost in your decision to purchase your digital progressive lenses?
    a. None
    b. Somewhat
    c. Mostly
    d. All
6. For those who received a free upgrade, how valuable do you rate the quality of your lenses?
    a. Less than $100
    b. $100-200
    c. $200-300
    d. $300-400
    e. More than $400