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A survey of aspects of pathology detection in optometric practice

Abstract

A survey of aspects of pathology detection in optometric practice

Degree Type

Thesis

Degree Name

Master of Science in Vision Science

Committee Chair

Bradford W. Wild

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A SURVEY OF ASPECTS OF PATHOLOGY DETECTION
IN OPTOMETRIC PRACTICE

A SIXTH YEAR THESIS PRESENTED TO
THE FACULTY OF THE COLLEGE OF OPTOMETRY
PACIFIC UNIVERSITY

IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE
DOCTOR OF OPTOMETRY

by

RICHARD G. BRAUTIGAM

THOMAS E. HAINSTOCK

MAY 1970

Accepted by the Faculty of the College of
Optometry, Pacific University, in partial
fulfillment of the requirements for the
Doctor of Optometry degree.

Bradford H. Wild
Director of Thesis

Chairman of Thesis

ACKNOWLEDGMENTS

The authors wish to express their appreciation for the willing assistance rendered by the optometrists who participated in the survey. We are particularly grateful to Dr. Bradford Wild whose guidance and help enabled the work to be carried to completion.

TABLE OF CONTENTS

	Page
Introduction	1
Procedure	6
Results	7
Table 1 - Graduation data	8
Table 2 - College of graduation	8
Figure 1 - Optometric affiliations	9
Figure 2 - Population sizes	11
Figure 3 - Practicing eye physicians	11
Figure 4 - Examination with Ophthalmoscope	12
Figure 5 - Visual fields examination	12
Figure 6 - Use of tonometers	14
Figure 7 - Tonometric examination	15
Figure 8 - Criteria for performing tonometric examination	15
Figure 9 - Use of topical anesthetics	17
Discussion	18
Conclusion	21
Appendix A - Resolution	22
Appendix B - Cover letter	23
Appendix C - Questionnaire	24
Appendix D - State Optometry Laws	25
Bibliography	26

INTRODUCTION

The following demographic study was an attempt to determine certain aspects of clinical optometry, especially those aspects that pertain to pathology detection. The study details the clinical criterion for the utilization of ophthalmoscopy, fields, and tonometry. In addition to these three main categories of pathology detection, the clinical use of a topical anesthetic was also probed. A review of both optometric and ophthalmological literature of recent years produced no similar study so the data contained herein provides information for optometry in ascertaining its role in the area of pathology detection.

Historically, the profession of optometry has always recognized its responsibility to the public in the prevention of blindness. The American Optometric Association Code of Ethics contains a tenet which states, "To advise the patient whenever consultation with an optometric colleague or reference for other professional care seems advisable."¹ In reference to professional conduct, the American Optometric Association states, "The presence of a pathological condition should be communicated by the optometrist to his patient."² Optometrists also recognize their responsibilities with regard to the health of the eye and agree that surgery of the eye and treatment of disease belong to the profession of medicine. Any activity in these areas by optometrists is considered to be unethical to the practice of optometry. Epitomizing such feeling, Bertram L. Roberts says, "Although the treatment and

management of pathology are not in the province of optometry, the recognition of disease for referral is very definitely an optometric responsibility."³

Such an opinion is not specific to optometry alone. The revised Civil Service Standards states, "Optometrists, though not legally licensed to give medication or to do eye surgery, are professionally qualified to recognize the presence of pathological conditions for referral to a physician or surgeon."⁴ Due to increased education in detecting pathology, the optometrist's legal responsibility in this matter has been amply recognized by the courts, and has become common law in many jurisdictions. Such statements by state and federal agencies have aroused concern by the medical profession, many of whom feel the long range plan of optometry is to enter the practice of medicine by the "back door." This precipitated three resolutions by the House of Delegates of the American Medical Association in 1966. (Refer to Appendix A). The resolution opposed any legislation that would authorize optometrists to engage in the diagnosis or treatment of disease or injury of the eye and stated that optometrists lack the necessary training and qualifications to diagnose or treat disease or injury of the eye. Already committed to the fact that the treatment of disease or injury of the eye lies in the realm of medicine, optometry took issue with the statements on diagnosis. Dr. Milton J. Eger says, "Optometric education mandates that optometrists be well trained to recognize evidence of normality versus abnormality. In every professional

act, a decision of normality versus abnormality is made. The testing of every visual skill and function provides clues as to the health of the eyes. From visual acuities to field studies, from phoria to fusion reserves, from ophthalmoscopy to refraction, a professional judgment, based upon training and experience, is made. This professional judgment must be considered diagnostic in nature, as attested to by the vast number of patients who are constantly referred. Optometry, like medicine, recognizes its avowed responsibility to the public in the prevention of blindness, and shall continue to educate its students and its practitioners in the need for early "diagnosis" and referral."⁵

In order to protect the public welfare and move toward the eventual elimination and prevention of blindness, the following requirements must be met.

- (1) Professional commitment on the part of optometry for the detection of pathology and its immediate referral.
- (2) Laws that make (1) a legal responsibility.
- (3) The finest of education for optometrists in the area of pathology detection.
- (4) Inter-professional cooperation.
- (5) Proficiency in the detection of pathology by optometrists.

In reference to (1), the commitment, as stated earlier, is complete. Considering (2), the laws are on the books. A survey of the catalogues from the optometry colleges shows that the optometry colleges are supplying the education, thus working toward fulfillment of (3). In addition to this, each state board examination includes questions on

ocular pathology. In reference to (4), inter-professional cooperation becomes strained under such resolutions by the American Medical Association as well as by professional rebuff by optometry. But as Dr. Milton J. Eger, in reference to the American Medical Association resolutions, admonishes, "Political chicanery may have its place in our modern times but not in the domain of two professional disciplines whose basic premise is providing the best vision care for the changing health care world, not as competitors, but as colleagues. Let us as true professional men, ophthalmologists and optometrists alike, accept this statement by medicine as a signpost along the road of future cooperation toward the eventual elimination and prevention of blindness."⁶

Consideration of (5) supplies the purpose for this study. Though political chicanery may have played a role in the resolutions by the American Medical Association, there are two other distinct possibilities. The first is that the resolutions may have been a result of a lack of knowledge by the American Medical Association of the present maturity, competence and convictions of optometry. The second possibility is that the resolutions were the result of a well-founded lack of proficiency on the part of optometrists in the area of pathology detection.

In reference to the first possibility, an article appeared in the December 1969 issue of the Journal of the American Optometric Association in which Dr. Edward H. Forgotsen admitted to the lack of research by the American Medical Association into the professional maturity and competence of optometry. The 1967 Report of the National Advisory

Commission on Health Manpower, which was directed by Dr. Forgotsen, included the following statement: "It is not realistic, however, that optometrists, especially with present training, should carry the critical responsibility of referral to a physician on suspicion of eye or other disease."⁷ Commenting on the above statement, Dr. Forgotsen admitted, "Neither the writer nor his staff, because of time and budgetary constraints involved in the study which was published as Appendix VII, did sufficient study of the curricular, educational, and professional progress of the profession of optometry and consequently, to support any alternative conclusions except the above quoted ones which would relegate optometrists, in effect, to the position of a dependent practitioner in the health manpower matrix."⁸

In reference to the second possibility, the leaders in optometry have answered the accusation, "Optometrists cannot detect ocular pathology", (which Dr. Milton J. Eger terms, "The major weapon in attempting to discredit optometry twenty years ago ... it is the major weapon today and may well continue to be twenty years from today.")⁹, by calling for higher quality education, rigid state boards, more research and greater proficiency by all optometrists in the detection of pathology. This study investigates optometry's present strengths and weaknesses in the area of pathology detection.

PROCEDURE

Based on the 1969 survey by the American Optometric Association, three states were chosen for their similar optometric populations.¹⁰ These states were Florida, Washington, and Wisconsin. The optometric populations of these states is such that 20-25% of each could be sampled by the survey. The states were also chosen for their broad geographical representation. One hundred optometrists from each state were selected from the 1968 Blue Book of Optometrists, by using a random number method.¹¹ The total optometric population of each state was divided by 100 ($\frac{x}{100} = N$). The optometrists were then numbered in the Blue Book in groups numbered one through n. The Random Number Table was then used to select a number between one and n. If the number was, for example, 3, then every third optometrist in the pre-assigned groups was selected to receive a questionnaire. Each optometrist was then sent the questionnaire which was designed to be as concise as possible to promote a large percentage of returns. Each questionnaire was accompanied by a cover letter. (See Appendices B and C).

RESULTS

Of the 300 questionnaires sent out, 208 were returned (69.4%). Of the 208, five were practicing in other states, 3 were retired, and one was practicing law. Therefore, 199 returns (66.4%) were used for the calculations. From Washington 64 were returned, with 62 usable. Wisconsin had 64 returns with 63 usable. Florida had 75 returned, with 74 usable.

Any further reference to optometrists will pertain only to those optometrists surveyed.

QUESTION 1

Most optometrists graduated in the late 40's and in the 50's. 31.1% graduated in the years 1948, 49 and 50. Refer to Table 1 for the overall distribution.

QUESTION 2

The Illinois College of Optometry graduates represented 46% of the total. Pacific University and Southern College of Optometry each accounted for 16% of the optometrists. A large percentage (12%) omitted this question entirely. Refer to Table 2.

QUESTION 3

As shown on Figure 1, 86% of the optometrists are members of the AOA, State associations and local societies. OEP members comprised

TABLE 1

Data on Year of Graduation from a College of Optometry

Year Graduated	Washington	Wisconsin	Florida	Average
1920-29	5.1%	1.8%	0%	2.1%
1930-39	6.8	21.0	4.1	10.1
1940-49	30.5	35.1	28.8	31.2
1950-59	44.1	31.6	46.5	41.3
1960-68	13.5	10.5	20.6	15.3
Dominant Years*	32.2	24.6	33.0	31.1

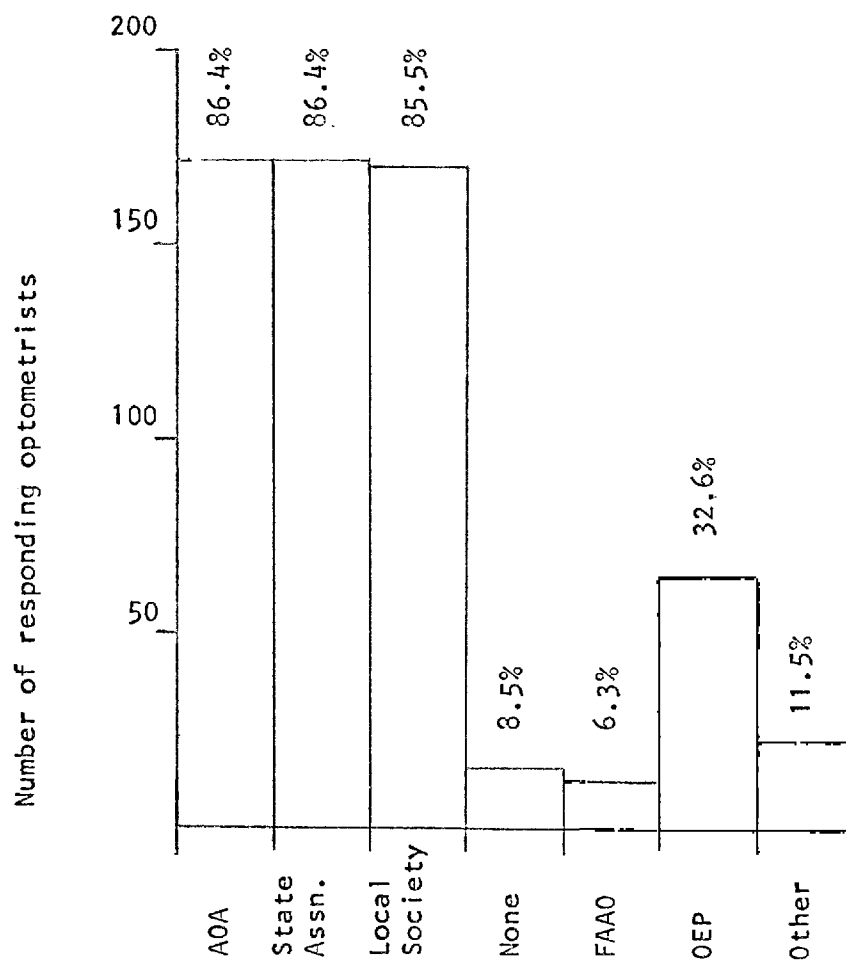
*1948 - 1949 - 1950

TABLE 2

College of Graduation

Coll. of Optometry	Washington	Wisconsin	Florida	Average
Pacific	45.0%	4.5%	1.5%	16.0%
Illinois	31.0	77.0	30.0	46.0
Southern	3.0	3.0	39.0	16.0
Pennsylvania	-	-	5.5	2.5
Massachusetts	-	-	4.0	1.5
Los Angeles	3.0	-	-	1.0
Univ. of Calif.	1.5	-	1.5	1.0
Ohio	-	1.5	1.5	1.0
Houston	-	-	1.5	0.5
Indiana	-	-	1.5	0.5
Other	4.5	1.5	1.5	2.0
Undetermined	9.5	12.5	13.5	12.0

Figure 1. Membership in optometric organizations



32.6% and 6.5% were FAAO. Those not belonging to any organizations represented 8.5%. 11.5% belong to other optometric organizations.

QUESTION 4

The majority of optometrists practice in towns with populations of 25,000 or more (64.6%). Figure 2 shows the distributions in the various community sizes.

QUESTION 5

Most optometrists practice in communities with five or more eye physicians. See Figure 3.

QUESTION 6

Ophthalmoscopy was found to be a routine procedure for 96% of the optometrists. Only 0.5% reported that it was not done and 3.5% do it, but not routinely. See Figure 4.

QUESTION 7

Visual fields were found to be done routinely by 8.3%. Of the 82.5% doing fields work, the most frequent clinical criteria was by symptoms alone (66%). Age was used only rarely as a criteria. See Figure 5.

QUESTION 8

92% are performing tonometry, with 8% reporting it not being done.

In Florida 96% are doing tonometry, in Washington 90%, and in Wisconsin 89%.

Figure 2. Relationships of optometrists in practice and population of community.

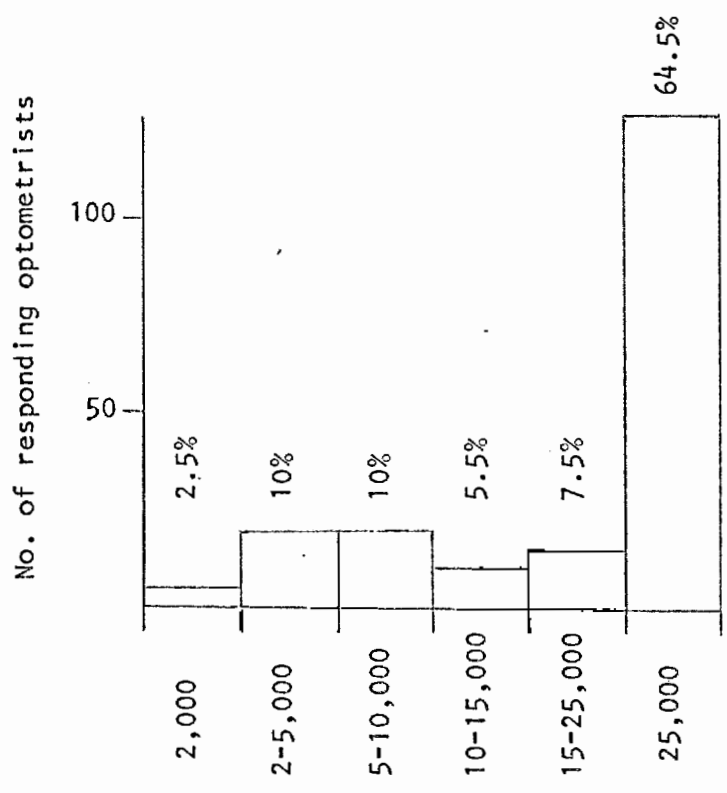
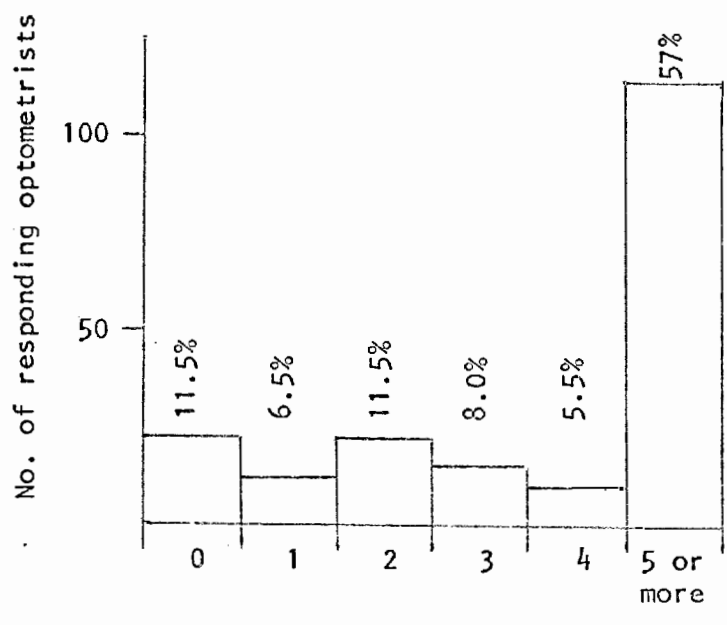


Figure 3. Eye physicians located in community of practice.



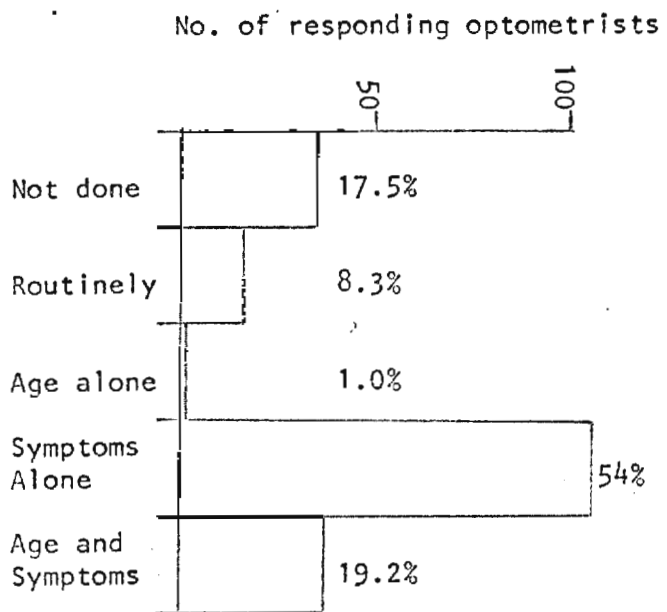


Figure 5. Criteria for visual fields examination

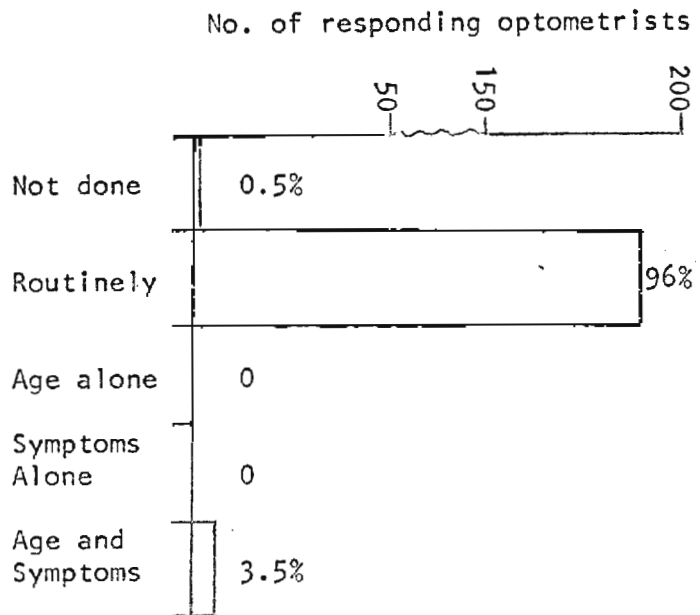


Figure 4. Criteria for ophthalmoscopic examination

QUESTION 9

Of those doing tonometry, 63% are using electronic tonometers. In Florida 42.2% are using electronic tonometers, in Washington 76.7% and in Wisconsin 75%. The MarcKay-Marg and the Durham were reported as the most frequently used electronic tonometers.

The indentation type tonometer is used by 25%. In Florida 49%, in Washington 5.4% and in Wisconsin 14.3% are using this type. The Schiotz was reported as the most frequently used indentation tonometer.

The applanation type is found to be used more frequently in Florida than in Washington and Wisconsin, but it is used less by all.

In Florida 25.3% utilize more than one technique for tonometry, but only 8.9% do this in Washington and Wisconsin. Refer to Figure 6.

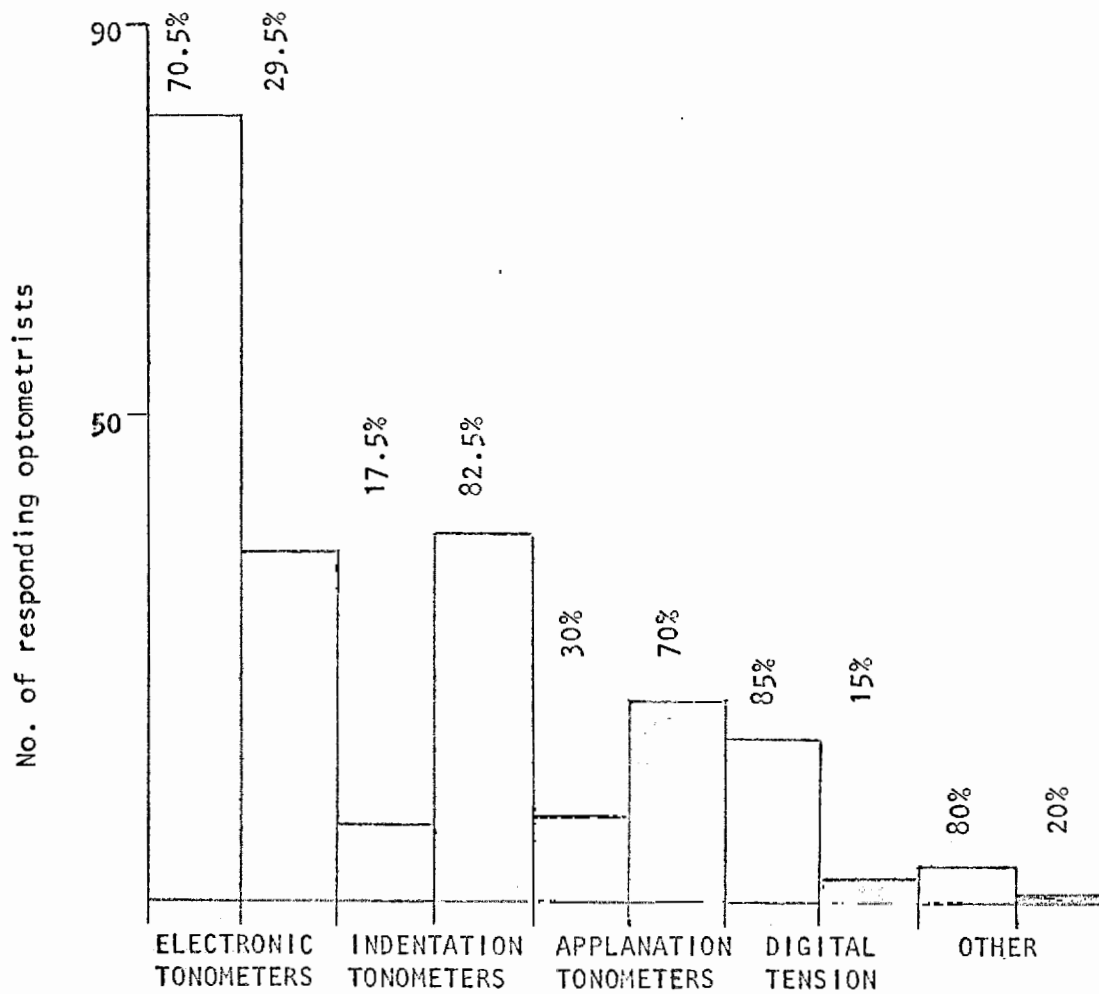
QUESTION 10

Of those doing tonometry, 2.7% do it routinely with all patients. The clinical criteria of age alone routinely is used by 31.3%. Symptoms alone is used by 13.3% and 50.7% are using both age and symptoms as a criteria.

Of the 82% using age as a criteria, 63.3% are performing tonometry routinely on all patients greater than forty years of age.

Of the 64% using symptoms as a criteria, most reported using more than one symptom. Family history accounted for 80%, subjective symptoms 71%, ophthalmoscopy 64%, and visual fields 40%. See Figures 7 and 8.

Figure 6. Number of optometrists using various types of tonometers. Shaded areas represent optometrists using topical anesthetics.



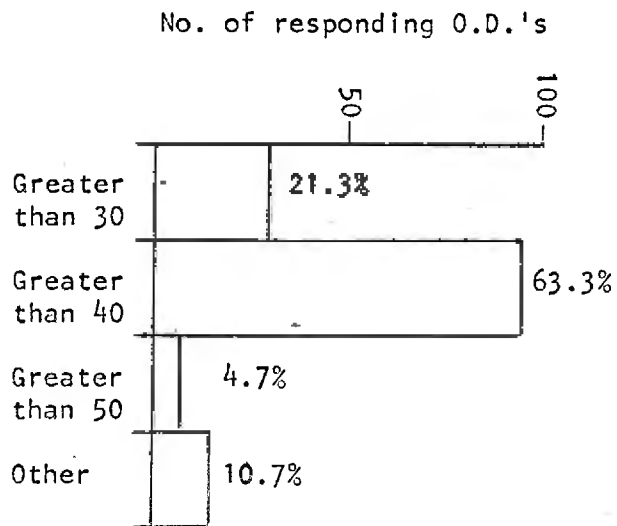


Figure 8a. Specific age level criteria for performing tonometric examinations.

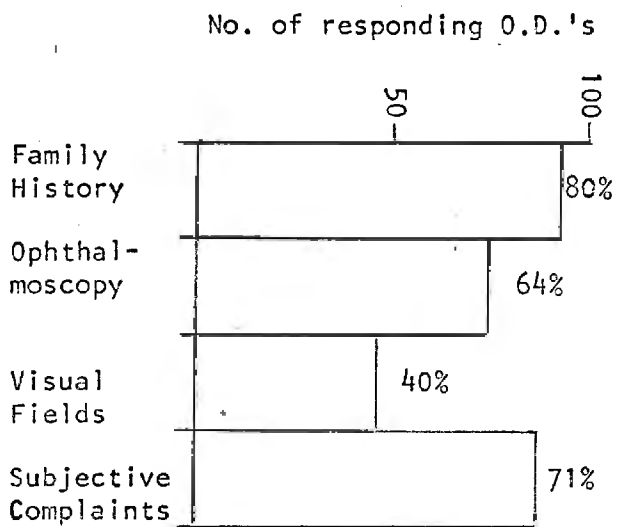


Figure 8b. Criteria, other than age, from total sample for performing tonometric examinations. Multiple answers were permitted.

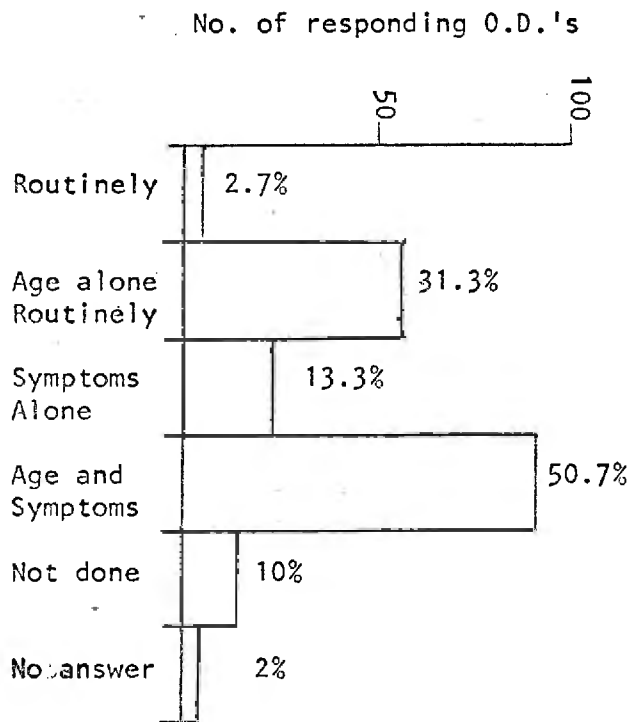


Figure 7. Criteria for tonometric examination

QUESTION 11a

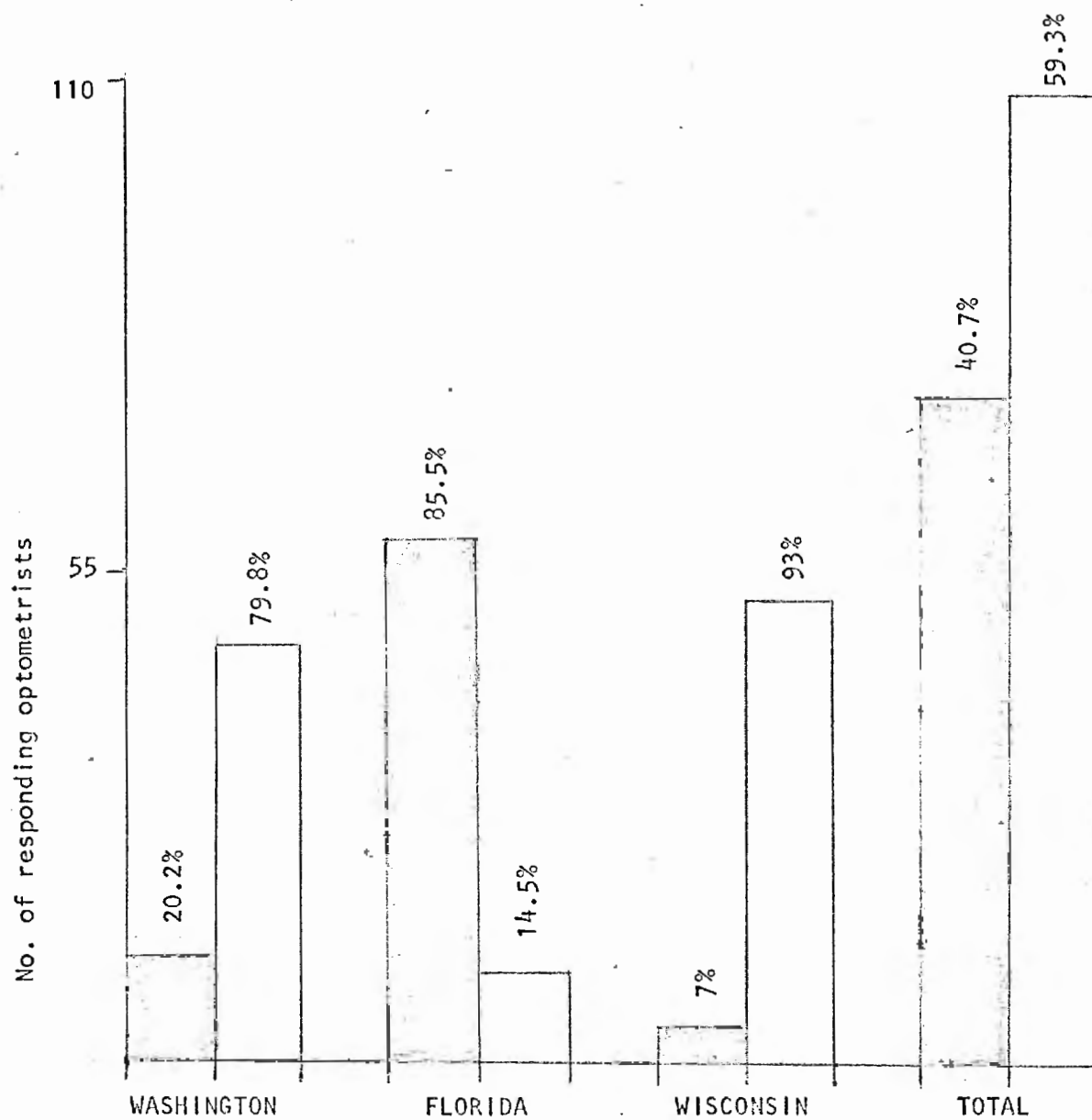
From the total responses, 40.7% are using topical anesthetics as compared with 59.3% not using topical anesthetics. In Florida, where the use of topical anesthetics is legal, 85.5% are using them. In the other two states the use of drugs is prohibited by law. In Washington 20.2% of the optometrists are using topical anesthetics and in Wisconsin 7% utilize them.

Refer to Figure 9. See Appendix D for the state laws.

QUESTION 11b

The most frequent reason given for using a topical anesthetic was for all tonometry. Three optometrists reported using a topical anesthetic in contact lens fitting. The most frequent reason for not using a topical anesthetic was that it is against the law.

Figure 9. Optometrists, by state, utilizing topical anesthetics. Shaded areas represent optometrists using topical anesthetics and the clear areas represent optometrists not using topical anesthetics.



DISCUSSION

A return ratio of 69.4% is high for a demographic survey and such a response reflects well on the participating optometrists. Of the 69.4%, the majority of them graduated from the Illinois College of Optometry, with the graduating years of 48, 49 and 50 dominating. This is consistent with the AOA survey published in December of 1969.¹² The majority belong to optometric associations and practice in communities of greater than 25,000 having five or more eye physicians.

In the area of pathology detection, the consensus was that ophthalmoscopy is done routinely with all patients. Tonometry is done whenever the age and symptoms indicate the need. Fields, although the consensus for its utilization is not as great, is done most often by symptoms alone.

Of those doing tonometry, the most frequent instrument used is the electronic tonometer. Of those using this instrument, the largest percentage are not using a topical anesthetic. The second most used instrument is the indentation type and is used almost exclusively by those practitioners using topical anesthetics. The statistics indicate that where the use of a topical anesthetic is legal, it is a common practice to use it, and that where a topical anesthetic is being used, so is the indentation type of tonometer. This raises the question of why the indentation type of tonometer is being used by these practitioners. Is it considered more accurate by these men and used when it can be? Are they using it only because it is more economical?

The large difference in anesthetic usage between Florida with Washington and Florida with Wisconsin appears the result of different state laws. The differences between Washington and Wisconsin appear to be due to strictness of enforcement of similar laws. This indicates that where it is legal for optometrists to use topical anesthetics, the majority are using them routinely. Where the use of a topical anesthetic by an optometrist is prohibited by law, they are still being utilized, but to a lesser degree, the extent of which depends on the strictness of the law. This would indicate that if the state laws in Washington and Wisconsin were amended to allow the use of topical anesthetics by optometrists, a marked increase in their usage would be expected in these states. However, a consensus was found among the non-users in these states to the effect that topical anesthetics are unnecessary in tonometry. Judging from the above dichotomy, a prediction in this area would be at very least, hazardous. The answer lies possibly in the question of whether the comments by both the users of topical anesthetics, who claim them necessary, and by the non-users who claim them unnecessary, are in earnest or made for other reasons.

If participation were the sole criterion for proficiency, this study would show that optometry is proficient in the detection of ocular pathology, for it has been shown that the offices are well equipped and that the instruments are being used. (A further study into what other instruments are being used for pathology detection is recommended.) This usage indicates that optometry considers the ocular health portion

of their examination important in rendering care to the entire patient. To better determine optometry's proficiency in pathology detection an investigation should be made into the number and accuracy of referrals for ocular pathology.

In reference to usage of instruments, though 82.5% were doing fields, only 8.3% did them routinely. Sharp contrast is found with the tonometer, where 92% perform it and 63.3% do it routinely for patients past the age of forty. From the study by Armaly he found that the use of the tonometer alone runs the risk of not detecting glaucoma when visual fields are not taken.¹³ He therefore supports the theory that screening should be done with the tonometer and fields. The research by Sloan also supports this theory.¹⁴ This points out a possible deficiency in the detection of glaucoma by optometrists, this being visual fields investigation. This indicates that there may be some credance to ophthalmology's accusations towards optometry's proficiency in the detection of pathology. However, research is lacking as to the utilization of fields by ophthalmology in the area of glaucoma detection.

What, therefore, is the answer to the question of whether optometry has reached the point where the accusation, "optometrists cannot detect ocular pathology" is no longer valid or not? Optometry has not yet erased the label. Optometry may never rid itself of the label. What stands out in this study is that whether the label is lost or not, optometry considers ocular pathology detection vital to the care of their patients.

CONCLUSION

The vast majority of optometrists surveyed examine each patient they see for ocular pathology. Practically all of the optometrists surveyed are performing ophthalmoscopy routinely with all patients. Visual fields are being taken by most, and done routinely by only a few. Most practitioners are doing tonometry. The most frequent criterion for tonometry is by age, greater than forty, and the most frequent instrument used is the electronic tonometer. Topical anesthetics are being used for tonometry where the law permits their use by optometrists. This demographic survey shows that optometrists possess the instrumentation for pathology detection in the eye and are utilizing it.

APPENDIX A

Resolution (AO66):107, House of Delegates of the American Medical Association, Introduced by Harold F. Falls, M.D.

1. Constituent medical associations are urged to oppose as detrimental to the public interest any proposed legislation that would authorize optometrists to engage in the diagnosis or treatment of disease or injury of the eye.

2. The diagnosis or treatment of disease or injury of the eye, or bodily ailments which cause eye symptoms, constitutes the practice of medicine. What may appear to be a slight abnormality in the eye may be symptomatic not only of a diseased condition of the eye but also of other bodily ailments. If optometrists observe evidence which indicates any abnormality of the eye, they should refer them to the patient's physician, since optometrists without having fulfilled the requirements of licensure for the practice of medicine, do not have the necessary training and qualifications to diagnose or treat disease or injury of the eye or other bodily ailment.

3. The full benefit of medical progress and existing opportunities for the prevention of blindness can be realized if there is no avoidable delay between the onset of abnormalities or their symptoms and the provision of medical care by qualified physicians. The improvement of educational standards of optometry is a laudable objective. Doctors of medicine may, as teachers, participate in the education of optometrists within the legitimate scope of optometric practice.

APPENDIX B

COVER LETTER

PACIFIC UNIVERSITY

COLLEGE OF OPTOMETRY
FOREST GROVE, OREGON 97116

February 15, 1970

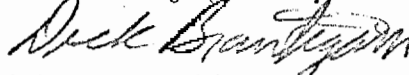
Dear Doctor,

First allow us to introduce ourselves as two sixth year optometry students struggling to complete our O.D. thesis. We hope this study will contribute to the betterment and progress of optometry and invite you to participate by filling out the enclosed questionnaire and returning it as soon as possible in the self-addressed envelope.

Realizing how busy you are, we have designed the questionnaire to be as concise as possible and to require only a few minutes of your time. Having been a student yourself, we are sure you can appreciate our position and how full participation would enhance our study. Since we are only interested in the information we obtain from the questionnaire, please do not sign your name to it.

Thank you for your time and consideration and for any information that you can give us.

Sincerely yours,



Dick Brautigam



Tom Hainstock

P.S. Please return no later than March 1.

APPENDIX C

QUESTIONNAIRE

QUESTIONNAIRE

1. What year did you graduate from Optometry School? _____
2. From which Optometry School did you graduate? Please write in.
3. With which optometric organization(s) are you affiliated?

<input type="checkbox"/> AOA	<input type="checkbox"/> Amer. Acad. of Optometry
<input type="checkbox"/> State Assoc.	<input type="checkbox"/> OEP
<input type="checkbox"/> Local Society Assoc.	<input type="checkbox"/> Other
<input type="checkbox"/> None	
4. What is the size of the community or general area you practice in?

<input type="checkbox"/> less than 2000	<input type="checkbox"/> 10-15,000
<input type="checkbox"/> 2000-5000	<input type="checkbox"/> 15-25,000
<input type="checkbox"/> 5000-10,000	<input type="checkbox"/> greater than 25,000
5. How many eye physicians practice in your community or general area?

<input type="checkbox"/> none	<input type="checkbox"/> three
<input type="checkbox"/> one	<input type="checkbox"/> four
<input type="checkbox"/> two	<input type="checkbox"/> five or more
6. What is your basis for doing Ophthalmoscopy?

<input type="checkbox"/> a. Not done.
<input type="checkbox"/> b. Done routinely with all patients.
<input type="checkbox"/> c. By age alone.
<input type="checkbox"/> d. By symptoms alone.
<input type="checkbox"/> e. Both c. and d.
7. What is your basis for taking Fields?

<input type="checkbox"/> a. Not done
<input type="checkbox"/> b. Done routinely with all patients.
<input type="checkbox"/> c. By age alone.
<input type="checkbox"/> d. By symptoms alone.
<input type="checkbox"/> e. Both c. and d.
8. Do you do Tonometry in your practice?

<input type="checkbox"/> Yes
<input type="checkbox"/> No
9. What type of instrument or method is employed?

<input type="checkbox"/> Electronic Tonometer (MacKay-Marg, Durham, etc.)
<input type="checkbox"/> Indentation or impression type (Schiötz, Harrington, etc.)
<input type="checkbox"/> Applanation (Tonomat, Maklakov's, Goldmanns, etc.)
<input type="checkbox"/> Digital tension
<input type="checkbox"/> Other
10. On what basis do you perform a tonometric examination?

<input type="checkbox"/> a. Routinely with all patients.				
<input type="checkbox"/> b. By age routinely. <table border="0" style="margin-left: 20px;"><tr><td><input type="checkbox"/> 1. greater than 30.</td></tr><tr><td><input type="checkbox"/> 2. greater than 40.</td></tr><tr><td><input type="checkbox"/> 3. greater than 50.</td></tr><tr><td><input type="checkbox"/> 4. other</td></tr></table>	<input type="checkbox"/> 1. greater than 30.	<input type="checkbox"/> 2. greater than 40.	<input type="checkbox"/> 3. greater than 50.	<input type="checkbox"/> 4. other
<input type="checkbox"/> 1. greater than 30.				
<input type="checkbox"/> 2. greater than 40.				
<input type="checkbox"/> 3. greater than 50.				
<input type="checkbox"/> 4. other				
<input type="checkbox"/> c. By symptom(s) <table border="0" style="margin-left: 20px;"><tr><td><input type="checkbox"/> 1. Family history.</td></tr><tr><td><input type="checkbox"/> 2. Ophthalmoscopy findings.</td></tr><tr><td><input type="checkbox"/> 3. Fields.</td></tr><tr><td><input type="checkbox"/> 4. Subjective complaints.</td></tr></table>	<input type="checkbox"/> 1. Family history.	<input type="checkbox"/> 2. Ophthalmoscopy findings.	<input type="checkbox"/> 3. Fields.	<input type="checkbox"/> 4. Subjective complaints.
<input type="checkbox"/> 1. Family history.				
<input type="checkbox"/> 2. Ophthalmoscopy findings.				
<input type="checkbox"/> 3. Fields.				
<input type="checkbox"/> 4. Subjective complaints.				
- 11a. Do you use a topical anesthetic?

<input type="checkbox"/> Yes
<input type="checkbox"/> No
- 11b. If no why not? If yes when? Please comment.

APPENDIX D

State Optometry Laws

1. Florida:

There is no statement of restriction of drug use.

Excerpt from the Florida Optometry Law of the definition of optometry and optometrists in Section 463.01. "...to be the diagnosis of the human eye and its appendages, and the employment of any objective or subjective means or methods for the purpose of determining the refractive powers of the human eyes, or any visual, muscular, neurological or anatomic anomalies of the human eyes and their appendages." .

2. Washington:

From the Washington Optometry Law Section 18.53.140, Unlawful Acts - Penalty. "(9) To use drugs in the examination of eyes,".

3. Wisconsin:

From the Wisconsin Optometry Law, Section 153.01. "(1) Optometry: The practice of optometry is defined as follows: The employment of any means other than drugs to determine the visual efficiency of human eyes or the measurement of the powers or defects or vision;".

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