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PERCEIVED IMPACT OF LOW VISION

IN OLDER ADULTS

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Catherine Falz Bennett

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MSN degree in NURSING

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ABSTRACT

PERCEIVED IMPACT OF LOW VISION IN OLDER ADULTS

By

Catherine Falz Bennett

A descriptive study was designed to identify the perceived effect of low vision in the daily lives of older adults. Data was obtained from a convenience sample of fifteen subjects with low vision, referred by an optometrist. Data was collected using the Sickness Impact Profile, a valid and reliable instrument, and with an open interview.

Self rated vision was found to be a greater predictor of impact of low vision than visual acuity. The greatest areas of impact were found in areas of Home Maintenance, Recreation and Pastimes and Emotional Behavior. Using both the SIP and interview results, much individual variation was seen in the subject's description of impact. No significant relationships were found between the SIP scores and sociodemographic characteristics. Recommendations were made for research, nursing practice and education.

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ACKNOWLEDGMENTS

Completing a Masters thesis is a process that can be described as simultaneously challenging, tedious, stimulating, frustrating, and satisfying. With the sigh of relief that comes at the completion, also comes a sense of appreciation and gratitude for the many people who have guided, supported and tolerated this effort.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

There is a prevalence of visual impairment in old age. According to a 1984 National Health Interview Survey of noninstitutionalized older adults, visual impairment was a problem for 9.5 percent of persons ages 65 to 74 years, 16.0 percent of persons ages 75 to 84 years and 26.8 percent of persons over age 85 (Havlick, 1986). Similar statistics have been reported in the Framington eye study (Liebowitz, Krueger & Mauder, 1980), the Rand Corporation Study (Rubenstein, Lohr, Brook & Goldberg, 1982), the Duke University Study (Anderson & Palmore, 1974) and in several other surveys (Kirchner & Peterson, 1979; Milne, 1979). Based upon U.S. Census projections, the number of severely visually impaired elderly persons is expected to reach 1,756,000 by the year 2000 (Lowman & Kirchner, 1979).

An individual's ability to carry out daily activities is highly dependent on their capacity to receive and respond to information transmitted through the senses. Visual impairment limits communication, contributes to compromising physical mobility and independent activity, affects safety, has an effect on cognitive integrity and reduces enjoyment in everyday life. Vision that declines in old age, therefore is assumed to have an impact on

the older person's ability to function.

Background of the Problem

Researchers have extensively studied specific structural changes in th eye which accompany the normal aging process. Kline and Schieber (1985 reviewed research regarding changes in the cornea, anterior chamber, iri and pupil, lens, vitreous body, retina and visual brain. Among the change studied and documented are flattening of the cornea, thickening of th ciliary body, reduction in pupil size, yellowing of the lens, reduction i vasculature to the retina and atrophy of the ciliary muscle (Fozard, Wol Bell, McFarland, & Podolsky, 1977; Kasper, 1983; Kline & Schieber, 1985 Lubinas, 1980).

Another approach taken in the study of vision has been to researc specific visual functions under controled conditions. Changes i accomodation, dark adaptation, color matching, critical flicker frequenc and figural afteraffects were reviewed (Corso, 1971; Bennett & Eklun 1983a). Fozard et al. (1977) reviewed research regarding changes i sensitivity to low illumination, glare, flicker, differential sensitivity static and dynamic acuity, depth perception and other complex visua functions. Cristarella (1977) has listed and discussed many specifi aspects of vision demonstrated to decline with age. They are acuity accomodation, visual field, light sensitivity, dark adaptation, brightnes discrimination, color discrimination, recovery from glare, visual spatia ability, visual figure ground discrimination, resisitance to visua figural-after-effect, perception of ambiguous figures, visual memor visual closure, depth perception, visual serial learning ability, resistance t

flicker fusion and resistance to visual illusion.

Visual information processing is an additional area that has been studied extensively by researchers. The perceptual process, considered to be an important aspect of vision includes interaction of brain function and previous experience. Study areas reviewed with respect to changes in aging include briefly presented targets, complex displays, duration and presentation rate, response bias, target identification with memory load, continuous perceptual-motor tasks, ambiguous figures, figural aftereffects and closure (Fozard et al., 1977; Ordy & Brizzee, 1979; Wilford, 1980). Kline and Scheiber (1985) review backward masking, encoding speed, visual search, perceptual flexibility, incomplete stimuli, and contextual effects. Each of the studies reviewed are directed to identifying changes which occur in aging.

In addition, there are a variety of diseases or clinical conditions which tend to affect vision. Senile cataracts, diabetic retinopathy, glaucoma and senile macular degeneration account for 98 percent of acuity loss for people over age 70 and are viewed as the four leading causes of blindness. In each of these conditions, incidence rises with age.

In summary, numerous very specific research studies have resulted in an understanding of many age related changes in the eye structures, The use of controled laboratory studies generate knowlege of specific visual functions that decline as the individual ages. A variety of other studies have been done to examine perceptual processes in the older adult (Kline & Schieber, 1985; Welford, 1980; Fozard, et al, 1977). The relationship between the conditions of controled testing and the experiences in the everyday visual world, however, is not known (Fozard et al., 1977; Ordy & Brizzee, 1979; Kline & Schieber, 1985).

Decline in vision with age may have a wide range of consequences Clinical and theoretical discussions frequently center around assumed o observed impact on the individual's physical, social, emotional and cognitiv competencies (Sullivan, 1983; Faye, 1984; Emerson, 1981; Bennett & Eklund 1983b; Maguire, 1985; Cristarella, 1977). There seems to be a consensus tha visual impairment is best defined functionally rather than by limited acuit measures (Faye, 1984). Unfortunately, comprehensive functional measure have not been developed. Some authors have looked at selected areas o function as they relate to reduced vision (Kaarlela, 1978; Jacobs, 1984 Doderi & Murphy, 1983; Haase & Bryant, 1973).

The physical impact of decreasing vision is often assumed. Sulliva (1983) discusses the impact of visual changes on safety and on household activities. Her discussion seems based on the premise that by knowin specific physiological changes we can assume certain problems wit function will develop. Other authors present data about general areas i which preceived functional impact has occurred. Kaarlela (1978 demonstrated a reduction in self reported daily activities like hous cleaning, shopping or use of public transportatioon in elderly subjects wit visual impairment. Participants in the Duke University Study reporte decreased work activity with poor vision (Anderson & Palmore, 1974). In NCHS study 17 percent of severely visually impaired persons reported tha they were unable to carry on their major activity because of their visua condition (Kirchner & Peterson, 1979). In a study of older blind Nebraskans Jacobs (1984) found that the majority of the subjects had faced problems i home and daily living tasks and mobility as a result of their visual loss.

The psychological status of the older person is also affected b declining vision. Some older visually impaired people suffer a loss of sel

esteem and privacy. They may feel unproductive and react with feelings of depression (Hill & Harley, 1986). Hilbourne (1983) in a study of patients with cataracts concluded that many subjects reacted with some degree of denial of the severity of their visual problem. Rosenbloom (1982) observed that patients experience grief, self pity, doubt and lowered self confidence when faced with the new experience of low vision. Low vision was reported most frequently as the cause of feelings of diminished capability and decreased enjoyment in life (Kaarlela, 1978). A great proportion of the subjects in the Nebraskan study (Jacobs, 1984) experienced depression, anger and fear as a result of their poor vision.

Social interaction and activity can be affected by changing vision. In a study of patient's reaction to cataract surgery, Hilbourne (1983) noted that patients complained of the problem of not recognizing a person they knew. Data from the Duke University study reflects that people with declining vision report decreased group activity (Anderson & Palmore, 1974). Visual handicap is often defined as the social or psychological disadvantages an individual may experience as a result of visual problems (i.e. inability to meet role expectation) (Peterson, Lowman, & Kirchner, 1978). These scientists speculate that lowered role expectations of older people may reduce the prevalence of reported visual handicap. Kaarlela (1978) found that club activities and visiting neighbors were reduced in the subjects, but tended to be attributed to age or other disabilities as much as to visual impairment. Social aspects of life are impacted but we are not sure of the extent of the effect.

Cognitive changes occur in many older people. Bennett and Eklund (1983a, 1983b) discuss the question of whether declining vision can play a part in the cognitive deterioration seen in some older adults concluding that

intellectual functioning, specifically fluid intelligence is affected by decreased vision. Changes in tested responses are discussed with respect to motivation, cautiousness and decreased reaction time, test anxiety, fatigue, memory and practice effects and sentence comprehension abilities. In a study done in a residential center for older people, Snyder, Pyrek and Smith (1976) found that there was a direct relationship between results of the Kahn-Goldfarb Mental Status Questionaire and tested visual acuity of the patients. Since our ability to think clearly depends to some extent on receiving accurate input, one can assume that declining vision will affect cognitive functioning.

There is no doubt that deterioration of visual function interferes with the older persons ability to function. Individuals seem to differ in the specific way in which this happens (Genesky, 1976). Padula (1982) states that the impact of visual loss may not correlate with the objective measures of visual acuity or visual field since the relationship between vision and the individuals own situation is complex.

There remains a need for research regarding the impact of deteriorating vision in the older adult. Health care professionals need to be able to assist the older adult to analyze the effects of reduced vision on his ability to function, in order to make decisions about the need for supportive services or care.

Purpose of the Study

The purpose of this study is to describe how older adults perceive the impact of low vision. Increased knowlege of the specific areas in which low vision affects function will enhance the nurses ability to assess clients who are experiencing visual decline. Nurses may then develop strategies to

help the client adapt to low vision, enabling them to remain independent.

Statement of the Problem

The problem posed by this researcher is: How do older adults describe the impact of low vision on ability to function?

Research Questions

1. What common and unique areas of impact of low vision are identified by the subjects?

2. Are there relationships between the subjects' tested visual acuity, their self-rated vision and their description of the impact on function?

3. Are there relationships between selected sociodemographic characteristics and perceived impact on function?

Definition of Concepts

The following are definitions of concepts introduced in the research questions and used throughout the study.

Older adults Men and women age 60 and older who are residing independently in the community (i.e. noninstitutionalized).

Low Vision A decreased ability to perceive stimuli with the eyes, (either self rated or clinically measured) with best correction with conventional glasses, resulting in an impairment severe enough to reduce the individual's ability to function visually.

Impact on Function Behavioral effects of alterations in health status. The behavioral effects are changes which the individual recognizes and can report. The behavioral effects represent the integration of the biophysical, psychological, social and cognitive relams of existance. The impacts are

experienced by the individual as effects on their sleep and rest, eating, work, home management, recreation and pastimes, ambulation, mobility, body care and movement, social interaction, alertness behavior, emotional behavior and communication.

Assumptions

For the purpose of this research, the following assumptions were made:

1. The experience of low vision will result in changes in an older persons self reported ability to function.

2. The impact on function can be recognized and reported by the study subjects.

3. The study participants will respond honestly to the questions.

4. The interview used in this study will accurately answer the research questions.

Limitations

The following limitations are identified in this study.

1. The study will use a convenience sample whose responses may differ from those of a randomized sample.

2. There will be a small number of participants in the study.

3. Subjects used will be those who agree to participate and may be different from those who refused to participate.

4. The participants' perceptions of the impact of low vision may change over time and circumstances. The results may not reflect their perceptions at other points in time.

5. Validity and reliability of the interview schedule will not be established as it applies to subjects perceptions of the impact of low vision.

6. This study will not control for other variables which could affect the participants' response. There include items like social support, previous coping mechanisms, and other existing physical limitations.

Outline of Remaining Chapters

This thesis is organized into six chapters. In Chapter I the introduction, background of the problem, the purpose of the study, a statement of the problem, research questions, definition of concept, assumptions, limitations and an outline of the chapters is included.

In Chapter II the concepts and theories that are relevant to this study are discussed. The relationship of these concepts is presented in a conceptual model for the study utilizing the Sickness Impact Profile and the Modeling and Role Modeling nursing theory. A review of the literature pertinent to the study is presented in Chapter III.

Proposed methodology, including the characteristics of the sample, the instrument, data collection and analysis methods will be discussed in Chapter IV. Chapter V will contain a description of the findings. In Chapter VI the conclusions and implications for nursing intervention, education and research will be presented.

CHAPTER II

CONCEPTUAL FRAMEWORK

Introduction

In this chapter, the major concepts of the study will be discussed. Th chapter is divided into two major areas since the concepts to be considere will be low vision and impact on function. The discussion of low vision wil begin with a review of vision, then review low vision, continue b explaining how vision changes in the older adult and finally describe severa clinical conditions which result in low vision in older adults. Impact o function will be developed using the concepts presented in the Sicknes Impact Profile (Bergner, Bobbitt, Carter & Gilson, 1981). This will b viewed within the framework of the conceptual system for nursing calle Modeling and Role Modeling, developed by Helen C. Erickson, Evelyn M. Tomli and Mary Ann P. Swain (1983). Utilizing this nursing theory, the impact o low vision on function will be developed into a conceptual model for thi study.

Low Vision

Introduction to Vision

Although discussions of vision are commonly found in health car literature, relatively few articles about vision include definitions of thi concept. Likely, this is the case because of the assumption that the ter vision or the ability to see has a commonly held meaning. Wheneve discussion is directed toward defining or quantifying visio acknowlegement is made that it is a complex phenomenon, includin environmental stimulus, physical structures in the body, chemicall mediated impulse transmission and interpretation within the cognitive an

emotional system for each individual. Before proceeding with a description, it is best to review the anatomy and physiology of the eye.

The Eye

The eyes are spherical organs located in bony orbits in the front of the head. Figure 1 shows the eye in relation to some of the supportive and protective structures, and includes reference to the pertinent parts of the eye. The discussion of the eye which follows has been drawn from information by Luckmann and Sorenson (1987) and Bowers (1986).

Each eye has a circular area in the front which allows light to enter, has muscles surrounding it to provide support and control movement, and an optic nerve which exits from the posterior to carry impulses to the occipital lobe of the brain. The eyes are positioned and protected by the

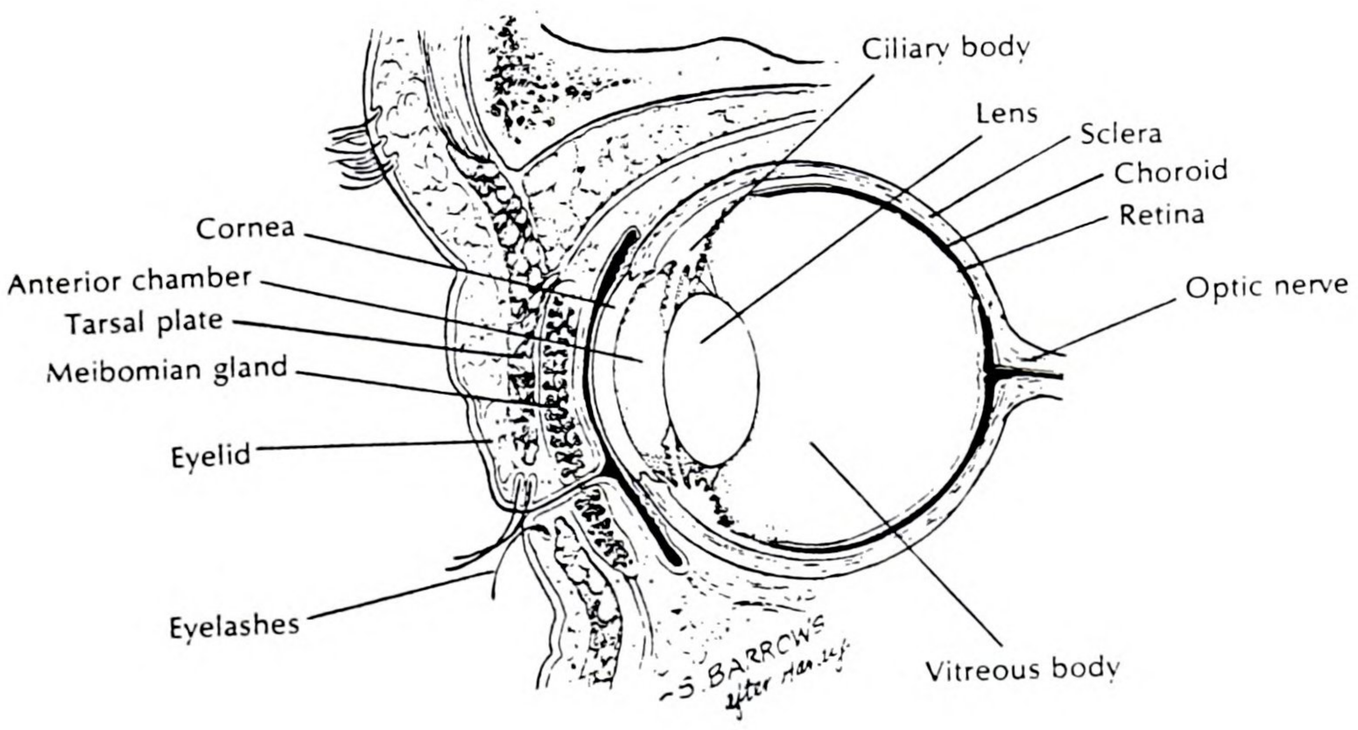

Figure 1: Structures of the Eyelid and Globe
Reproduced with permission from Malasanos, L., Barkauskas, V, Moss, M. & Stoltenberg-Allen, K. (1986). Health assessment (3rd ed.). St Louis: C. V. Mosby Co.

bony orbits of the skull, fat pads surrounding each eye, muscles, the out protective layer of tough connective tissue, the eyelids and lashes, t lacriminal glands and ducts and the mucus membrane covering both the and the eye called the conjunctiva.

Light enters the eye through the cornea, a transparent portion of t outer layers. The middle layer of the eye includes the iris, a ring shap muscular structure which controls the amount of light entering via chang in diameter of the pupil, the circular opening in the center. With a stro light and near vision the pupil constricts. It dilates with far vision and d light. Light then passes through aqueous humor, a fluid in the anter chamber. Next light passes through the crystalline lens, a biconv structure suspended by ligaments in a transparent elastic capsule. The le shape changes by contraction and relaxation of the muscles of the cilia body surrounding it. The purpose of the lens is to maintain its own clar and to bend light rays to that they focus on the retina (Bennett & Eklu 1983a). Finally, light must pass through the vitreous humor, a jellyl material in the posterior cavity behind the lens.

When the light has entered the eye it is received by photoreceptor ce of the retina (inner neural layer) called rods and cones. At this point triggering a chain of chemical reactions, the retina translates the light ra into nerve transmission and the impulses are transmitted via the op nerves to the occipital lobe of the brain following the pathways illustrat in Figure 2. Within the occipital lobe and in interaction with other parts the brain, these impulses are interpreted as sight or vision.

Many physical and physiological activities must be integrated for th to occur. The lids must be open to allow light to enter the eye, body, he and eye movement must occur to fixate the eyes in the direction of t

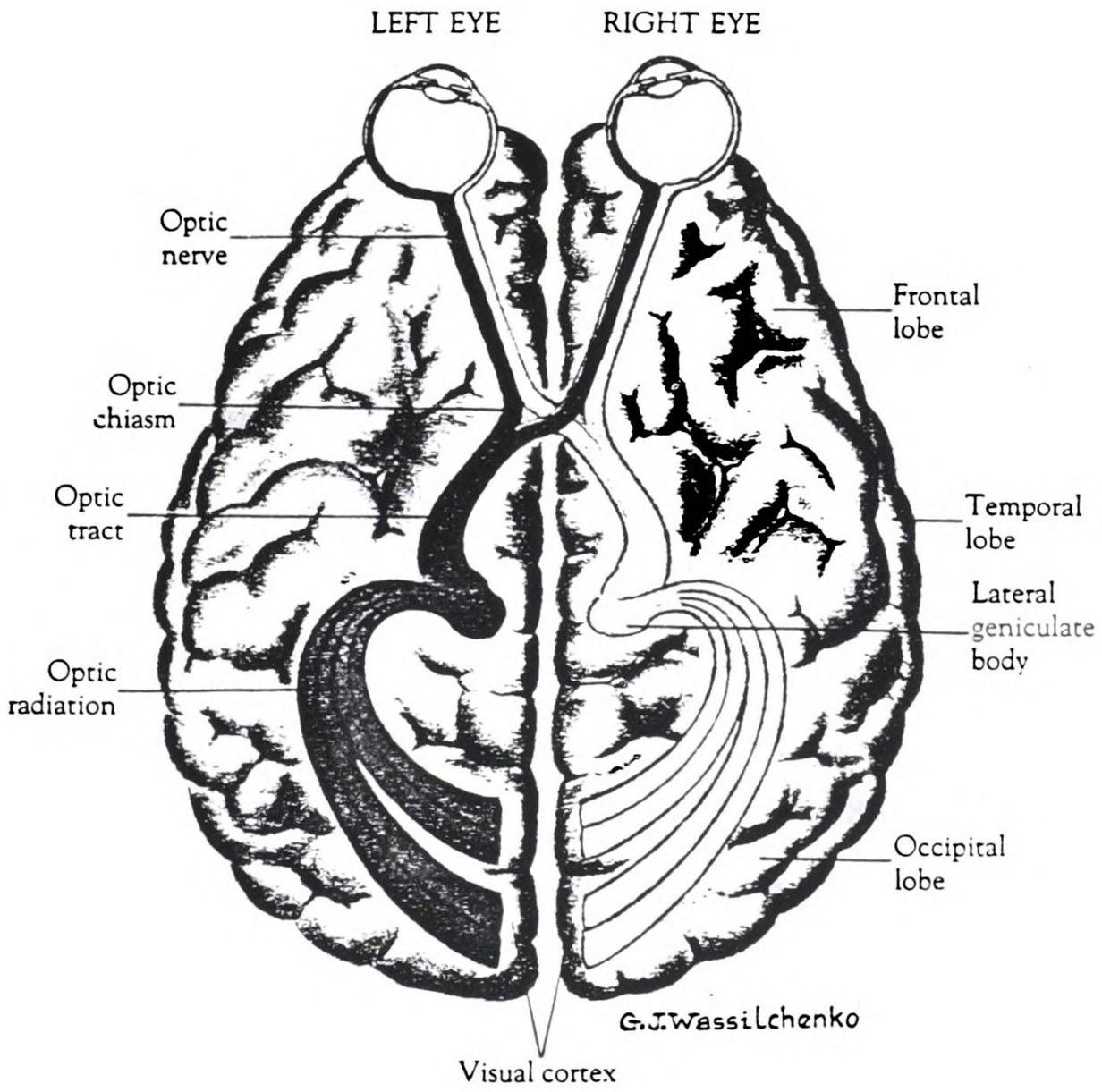

Figure 2: Visual Pathway
Reproduced with permission from Thompson, J.M., McFarland, G.K., Hirsch, J.E., Tucker, S. M. & Bowers, A.C. (1989). Mosby's manual of clinical nursing. (2nd ed.). St. Louis: C.V. Mosby Co.

stimulus, and the pupil size must regulate the amount of light to enter the eye. Accomodation, or the adjustment of lens convexity or thickness, affects the refraction or bending of light rays. The aqueous humor and vitreus humor must be able to allow rays to pass through. Finally, all neural tissue must be intact to receive, translate and transmit the impulse to the brain. In future discussion, references will be made to these structures and their function.

Definitions of Vision

In order to present a definition or discussion of the concept of low vision, it is necessary to begin by defining vision. Consequently, literature was reviewed for information about the concept of vision.

Some of the definitions for the term vision are very general. Ordy and Brizzee (1979) refer to vision simply as one of the senses by which man acquires information about his environment. As an introduction to a large review article on the many specific and selective research studies on the eye and perceptual processes, Fozart et al. (1977) define visual perception as "those processes required to sense, interpret and to respond to visual information" (p. 497). Barraga and Collins (1979) in a glossary of terms, related to vision and visual impairment, refer to vision as " the process of looking, seeing and perceiving through the sense of sight" (p. 124). Looking is further defined as "the act of using the eyes to search for and examine visual things" (p. 124) and seeing is "the process of gathering and understanding information through looking" (p. 124).

Woo and Bader (1978) use the term visual acuity as a means to define vision and they define it as "the capacity to distinguish form and resolve fine details" (p. 29). This definition omits the interpretive function as a part of vision. Finally, a general theoretical definition of vision is presented by Howes(1982), a clinical nurse expert in eye care. She states that "vision is the ability to perceive stimuli with one's eyes. It is the primary sensory link of an individual to his environment. It is deeply personal, and is never quite the same for any two people" (Howes, 1982, p. 10).

A number of the authors seek to refine their concepts of vision by subdividing the concept into parts. In an article about the development of a

program to stimulate visual development in children with low vision, Barraga and Collins (1979) separate vision into two functions, the optical functions and perceptual functions. Optical functions are those which are primarily biological involving control of eye muscles, for focusing tracking and accomodation. The perceptual functions relate to the organization and interpretation of visual information. Fozart et al. (1977) also acknowledge the perceptual component of vision when they point out that man is an information processing device and note the importance of the relationship between the visual processes and the expectations and experiences of the individual.

Another group of authors seem to separate visual function into three entities. Fineman (1981) reduces visual perception to three events. These are the presence of light, an image formed on the retina and an impulse transmitted to the brain. In this description, the interpretive processes within the brain are not acknowledged.

Similar viewpoints are expressed by Ordy and Brizzee (1979):

> The basic structural and functional organization of the visual system throughout phylogeny is essentially similar. It includes the eye, where light rays emanating from objects are refracted by the cornea and lens, so that they are focused on the retina as an optical image. The spatial, spectral, and temporal features of visual stimuli are then encoded by the rods and cones of the retina. The encoded information from the retina is then transmit through optic nerves to the lateral geniculate relay nuclei, and projected to the cortical visual integration centers of the brain. Major conscious psychophysical responses to light include such visual functions as brightness discrimination, color vision, depth perception, and the storage of visual

information covering the entire life span. (p. 13)

It would appear, therefore that Ordy and Brizzee organize this concept t recognize four components to the total visual process, light rays, refractiv eye structures, neural encoding and transmitting structures and th psychophysiological integration processes.

Corn (1983) presents an interesting theoretical model of visua function designed to assist the professional to look at people with lov vision and to plan interventions. The model contains three dimensions visual abilities, stored and available individuality and environmental cues It would appear that in this model the optic and neural components of visio are combined in the category of visual abilities. Corn has further divide each dimension into five components. Visual abilities include near distanc acuity, central and peripheral visual fields, mobility of the visual aparatus functions of the brain, and light and color perception. The category o stored and available individuality is divided into cognition, sensor development (other than vision) and sensory integration, perceptua abilities, psychological makeup and physical makeup which includes moto development and general, health. Environmental cues are attributes o objects which may allow them to be visible. They include color, contrast time, space and illumination.

Corn's model is presented graphically as a cube with each of thes dimensions forming one side of the cube and each category a strip along th designated side. According to Corn, when working with low vision children one should analyze each of the 15 categories with the expectation tha there can be assessment and manipulation of components to therapeutical assist the child.

Although Corn's model does provide a conceptual means to think abou

and plan for visual care, it has flaws. Argument can be presented that these categories are not mutually exclusive, information is not presented about how to measure them and no information is provided about how knowlege of the cells developed by the model are individually useful. Corn does acknowledge that her model is presented to stimulate systematic exploration of visual function and expects that strengths and weaknesses will emerge as it is used.

Finally, in discussing vision, it should be noted that most discussions of vision are written with acknowlegement that it is a complex task. Historically, however, definitions tend to relate only to those visual processes which are easily measured (Howes, 1983). As a result, the common clinical measures of vision, measures of visual acuity, measurement of visual field and measurement of color vision are the common means for describing an individuals vision (Fozart et al., 1977).

In this study, vision will be described utilizing the definition proposed by Howes (1983) and expanded using concepts developed by many others.

Vision is the ability to perceive stimuli with the eyes. It is one of the sensory links of an individual to his environment. Visual process includes a complex interdependence of four components.

1. Stimulus must be present in the form of environmental cues which reflect or transmit light rays.
2. Eye structures contribute an optical component and function to focus and transmit the light rays.
3. The neural system receives and projects the impulse to and within the brain.
4. Vision is altered through perceptual processes mediated by the cognitive and emotional state of each individual.

Vision is a personal experience and is not the same for any two individuals.

With an understanding of the concept of vision as a basis, the concept of low vision will then be explored.

Definition of Low Vision

The term low vision is widely used in discussions of vision and visual problems. In spite of this, there is no universally accepted definition of the term (Morse & Friedman, 1986). There is agreement only that low vision is below normal, but above total blindness.

Rosenbloom (1982) stated that low vision is the middle range of a continuum of visual impairment from normal to total blindness. Morse and Friedman (1986) write of an individual with an eye disorder which reduces visual performance and which cannot be corrected by conventional means. The World Health Organization (1981) has defined low vision as a significant visual handicapp involving significant usable residual vision. Corn (1983) refers to low vision as the ability to function visually in conjunction with a visual impairment that connot be corrected to normal standards.

A similar definition is proposed by Lubinas (1980) who states that low vision is a disability when performing certain visual tasks, with best optical correction. He continues by subdividing low vision into categories based upon whether the cause of the problem is of optical or neural origin. Optical causes are either defocus or disability glare and neural causes are either central or peripheral visual field loss. Lubinas, in this discussion, does not address the changes which can occur with the neural integrative processes in the optical cortex.

Definitions are often based upon measurement only of visual acuity and visual field (Faye, 1984). The historical definition of blindness, for

example, was established by the Social Security Act of 1935. Blindness since that time is legally defined as visual acuity for distance vision o 20/200 or less in the better eye with best correction or visual acuity o more than 20/200 if the widest diameter of field of vision subtends a angle no greater than 20 degrees (United States Government, 1982).

Faye (1976) bases her notion of low vision on three assumptions whic seem to reflect consistency with the definition of blindness. She notes tha in low vision visual acuity and visual field may be below normal, that th poor acuity cannot be corrected with conventional glasses and that reduce acuity or defects in visual field cause problems in daily life.

Many authors attempt to quantify the definition of low vision, basin their ideas on either visual acuity or visual field. Anderson and Palmor (1974) indicate that visual acuity of 20/50 or worse indicate definit impairment, and mention that most states impose restrictions on drivin when impairment is this severe. Emerson (1981) refers to low visio clients as those with visual acuity of less than 20/60. Morse and Friedma state, "Low vision is properly applied to a range of visual acuities fro 20/70 to 20/1000 in the better eye and/or reduced field of vision (1986, p 803). The definition by Morse and Friedman, then incorporates the perso who is legally blind along with those who are not. In a study of low visio care, correlating patient age, visual goals and aids prescribed, Kleen an Levoy (1981) identified subjects whose best visual acuity with conventiona aids did not exceed 20/70 in the better eye. In examining all of the abov definitions, we note that the authors refer only to the measure of visua acuity when they discuss low vision.

The State of Michigan Drivers License Standard allows an unrestricte driver license to be issued when the applicant has a best corrected visua

acuity of 20/40 and a peripheral visual field of 140 degrees (1987). A restricted license which permits daylight driving is allowed with an opthalmologists statement if visual acuity is as poor as 20/70 and visual field is of 90 degrees or greater.

Many of the discussions of low vision are confusing, according to Peterson, Lowman and Kirchner (1978) due to inconsistencies in the use of terms. Genesky (1971) points out problems with many of the definitions and also notes that the visually impaired population is not at all homogeneous. In addition he also notes that the legal definition of blindness was not based upon research but probably represented the best estimates of a group of people who were authorities on visual impairment at the time. Bishop (1987) indicates that the legal definition of blindness is based upon measures of distance vision, but many people who fit the definition of legal blindness can see well at nearpoint and are able to read.

Faye,(1984) a low vision specialist has observed that when vision is impaired, many functions may be disrupted. Not only does acuity or visual field change, but there can also be alterations in color perception, ability to perceive contrast, binocular vision, light and dark adaptation and other visual areas. Genesky (1976) also notes that traditional vision testing (acuity and visual field) are conducted in clinics with controled lighting and an absence of distractions. Currently the assessment of vision is not carried out in a way that identifies how well a person can resolve symbols under conditions typical of the ones he uses regularly. Weinstock (1987) points out that because cataracts cause a glare problem, some people could have 20/20 vision in the doctors office and be unable to function outdoors when faced with sunlight or headlights. Genesky (1971) suggests that definitions related to low vision be separated so that reading, ability to

identify objects and competence with mobility be appraised both with and without aids to vision.

In addition, statistical studies which identify the number of people with low vision have been conducted using a variety of methods to identify those individuals. Prior to 1970, the Model Reporting Area for Statistics on Blindness (MRA) maintained a roster of legally blind persons based on tests of visual acuity. The acuity measure used was a specific objective measure of distance vision (Kirchner & Lowman, 1978). Since that time, an annual national interview survey has been conducted to collect data including data on visual impairment. These studies are by the National Center for Health Statistics of the U. S. Department of Health, Education and Welfare. The statistics on visual impairment are based on self-reported estimates of the ability to read newsprint or near vision (Kirchner & Lowman, 1978). The reported inability to see well enough to read ordinary newsprint is classified by the National Center for Health Statistics as severe visual impairment (Kirchner and Peterson, 1979). Thus, previous statistics on visual acuity for distance vision are being compared with current statistics for self-reported near vision. In the report of the results of the 1984 survey, people were asked to report blindness in one eye, in both eyes, to report trouble seeing and to indicate if they had no trouble, little trouble or a lot of trouble (Havlik, 1986). Data on the incidence of low vision were based on these findings.

Nelson (1987) discusses differences in the reporting procedures between the 1977 interview and the 1984 interview. She concludes that the survey techniques and wording of questions in the more recent National Health Interview Surveys result in a more accurate estimate of older persons with visual impairment. These questions were directed to the

persons perceived inability to see well enough to recognize the features someone nearby, to watch TV from 8-12 feet, to read newspaper print, see to step off a curb and to recognize a friend across the street. The 19 version did report on activities in the natural setting rather than the sta acuity measures.

It is clear that only very general agreement exists regarding concept of low vision. As a concept, it is difficult to define because of variable quality of impaired sight and lack of easily used, clinica accessable comprehensive measures to quantify all of the dimensions of visual process. Consequently, a simple definition is used in this study.

Conceptually , for this study, low vision will be defined as decreased ability to perceive stimuli with the eyes, (either self-rated measured), with best correction with conventional glasses, resulting in impairment severe enough to reduce the individuals ability to funct visually. Because of current common measurement technology, howev subjects will be selected for this study using only acuity measures as guide.

Vision Changes in the Older Adult

When discussing specific individuals with low vision, we can identif variety of causes for decline in visual function. This study is planned look at impact on function in older adults. Consequently it is necessary review a variety of the causes of decreased visual function in older adu First, changes in vision caused by the normal aging process will review Following that, a few of the clinical conditions, common in older age wh result in low vision will be discussed.

There are many changes or potential changes in vision which are a related and represent normal aging process (Stengel, 1986). Senile chang

in the function of the optical structures of the eye and the neural systen both impact the older persons vision. Many studies have been done t document these specific changes.

Research on visual function has included many very specific studies o changes in eye structure. Other research has been conducted to examin functional aspects of vision such as color vision or visual field. Stil another broad area of research, done mostly by psychologists covers th perceptual abilities of individuals and those changes which occur with ag Review articles by Fozard, Wolf, Bell, McFarland and Padalsky (1977) Cristarella (1977), Welford (1980), Sullivan (1983), Hakkinen (1984), Klin and Schieber (1985) and Morgan (1986) will be the primary sources o information used to summarize the changes seen in normal aging. Origina sources will need to be identified for individual topics by reading thes review articles.

In old age there is a wrinkling of the eyelids accompanied by a loss o fat and muscle tone around the eyes (Thompson, 1984). The eyelid doesn' follow the movement of the globe as well (Fozard, et al., 1977) and thu could interfere physically with vision. With the loss of fat pads, the eye become more deep set and the nose may shadow the visual field (Hakkiner 1984). The range of voluntary eye movements becomes limited (Morgan 1986) and apparently this especially limits the older persons ability to loo upward (Kline & Schieber, 1985). Furthermore, as a person becomes older, i is more difficult to converge the eyes to read (Bennett & Eklund, 1983). A slowing of eye movements occur and there is some latency in initiating ey movement (Kline & Schieber, 1985). As a result there is a lag in ability t maintain fixation on a moving object (Morgan, 1986).

Older individuals will often complain of either an excess of tears, o

dry eyes. There is actually a decrease of tear production, combined with a reduction in drainage (Hakkinen, 1984). When the decreased tone of the lids results in the lids not following the eye, tears are more likely to spill over the lower lid (Fozard, et al., 1977). If the eyes are dry there may be burning and a resulting decrease in use of the eyes (Hakkinen, 1984).

The sclera may appear yellow in old age according to Weale (1985) who suggests that increased lipids may be the cause. The cornea flattens contributing to a decreased luster of the eyes and a decrease in refractive power (Kline & Schieber, 1985). Apparently there is an increase in problems of astigmatism due to the variations in the curvature of the cornea (Fozard, et al., 1977; Kline & Schieber, 1985). Sensitivity to touch decreases in the cornea with age (Morgan, 1986; Hakkinen, 1984;Kline & Schieber, 1985). This results in greater ease in wearing contact lenses but a greater risk of asymptomatic corneal abrasion. There is a decrease in pigment of the iris (Weale, 1985) as well as a decrease in permeability of this structure (Fozard, 1977).

One of the aging changes that impacts vision in the older adult is the decrease in size of the pupil (Weale, 1985; Stengle, 1986; Hakkinen, 1984; Morgan, 1986). The pupil shrinks from 5-6 mm in early adulthood to only 2 mm by old age and because of its small size, appears less mobile. The illumination reaching the retina is thus 1/3 of what is was earlier in life (Weale, 1985). Kline & Schieber (1985) note a decrease in the velocity of constriction and an increase in the time between light stimulus and pupil reaction. Apparently a partial cause for the change in pupil size is a decrease in sympathetic function so that there is a predominance of parasympathetic stimulation of the pupil (Hakkinen, 1984).

The pupil changes are credited for several alterations in vision seen in

the older person. Ordinarily, when confronted with a decrease in illumination, the visual system responds with an increase in pupil size and an increase in sensitivity (Hakkinen, 1984). All of the authors who studied this process called dark adaptation, found a marked elevation in time required to adapt to the dark (Kline & Schieber, 1985; Hakkinen, 1984). Further, the absolute level of ability to adapt to the dark is less than with younger subjects (Morgan, 1986). Older adults also lose contrast sensitivity. The amount of contrast required to detect a target increases (Kline & Schieber, 1985) and there is difficulty differentiating objects when there is low contrast (Morgan, 1986).

The lens is a structure which changes continually throughout life. New cells are constantly laid down on the outside of the lens, with the oldest tissue forming the nucleus of the lens. The result is that as a person ages, the lens becomes more dense and more rigid (Sullivan, 1983). With the loss of elasticity, accomodation, the ability of the eye to maintain sharply focused retinal images independent of object distance is diminished (Kline & Schieber, 1985; Weale, 1985). When accomodation occurs, acuity of images is maintained. Diminished accomodation is also caused by atrophy of the ciliary muscle (lFozard, et al, 1977). Apparently static acuity, the ability to resolve fine detail of stationary targets changes a small amount, but dynamic acuity, the accuracy of vision when the target is moving changes dramatically in the older subjects (Kline & Schieber, 1985; Morgan, 1986).

As the lens ages it becomes yellowed (Kline & Schieber, 1985). This contributes to a fainter image (Weale, 1985) and also alters color perception. White objects appear yellow and the distinction between blue and green decreases (Kline & Schieber, 1985). Research also is consistent in showing a general loss of color sensitivity in the older person (Sulliven,

1983).

As the person ages, the vitreous humor, usually gelatinous, begins to liquify. The partial liquid forms bubbles which act as "floaters" and appear in the vision of the older adult (Weale, 1985). The fibrillary network changes, and the person experiences a scatter of light which interferes with visual acuity (Sullivan, 1983; Kline & Schieber, 1985).

Glare is a problem which results when light is inappropriately directed or excessively bright and results in a decrease in visual effectiveness (Kline & Schieber, 1985). Morgan (1986) reports more sensitivity to glare in the older adult as well as an increase in time to recover (Morgan, 1986). Both the changes in the vitreous humor and an increase in lens opacity in aging contribute to the increased glare sensitivity (Kline & Schieber, 1985; Weale, 1985).

The retina also seems to be altered as the person ages. In aging, more of the blood vessels supplying the retina are narrow or sclerotic. Many changes occur in the composition of the cells of the retina, and all seem to contribute to a loss of visual acuity and a need for higher illumination in order to see.

Kline and Schieber (1985) note that the visual field seems to constrict with age, especially on the temporal side of vision. Welford (1980) notes that the size or intensity of stimuli presented in the peripheral parts of the visual field need to be increased if they are to be seen by the older adult. Depth perception is another of the visual tasks which seems to decline (Kline & Schieber, 1985) and seems to be attributed to a combination of factors.

Some of the visual changes seen with aging must be attributed to changes in the central nervous system (Weale, 1985; Kline & Schieber, 1985)

and specifically to the visual nervous system. Welford (1980) discusses this subject at length, pointing out the complexity of these perceptual processes. In addition to the incoming sensory stimuli, apparently there is also a background neural activity which acts as noise. The incoming signal, then, needs to be discriminated from the noise to perceive a particular object. Previously discussed were the numerous ways in which the optic system results in a reduced signal strength. Apparently, it is conceived that older individuals also experience an increase in the background neural noise (Welford, 1980). The result is much more difficulty with perception.

According to Kline and Schieber (1985), "Older perceivers experience greater difficulty than their younger counterparts in achieveing organized perceptions from other than unambiguous complete and clearly structured stimuli" (p. 322). Older subjects have an increased sensitivity to the interfering effects of irrelevant stimuli (Kline & Schieber, 1985) and have more difficulty rejecting irrelevant material (Welford, 1980). There is decreased resistance to distraction and a decreased ability to selectively attend to one source of information (Morgan, 1985). Because of this distractability, Bennett and Eklund (1983) note that older subjects may have a harder time seeing small objects in their visual field.

Another visual problem for older adults is the difficulty in recognizing incomplete simuli. Welford (1980) explains that we tend to accumulate information until a criterion level is reached before perceiving an object. In the older person, this process seems to take longer. Both Welford (1980) and Kline & Schiever (1985) note older adults have difficulty in arriving at a perceptual decision when stimuli is incomplete. An added factor occurs with very large images because of needed visual field and eye and head turning to see the complete picture (Welford, 1980). Older adults are also

less likely to modify a perception once it has been established (Kline & Schieber, 1985). Consequently, they have more difficulty with changing images.

Speed of performance is affected in many ways in the older adults visual tasks. The total time to extract information visually includes the length of time needed to look and the time for an after image (Fozard, et al, 1977). Both are slowed in the older adult. There is a decline in the speed of neural transmission of visual information (Morgan, 1985). The speed of encoding also declines (Kline & Schieber, 1985).

When two images follow one another at intervals, the second image may mask perception of the first if it follows too closely. Because the nervous system is slower to recover there is a "smear" of stimuli. The ability to separate visual events that happen serially, then declines (Morgan, 1985). Kline and Schieber (1985) note that closely occurring visual events that can readily be distinguished by younger observers are reported as fused by older people.

Weale (1985) suggests that changes in memory may have an effect on visual performance since it is necessary to integrate perceptual data with memory. Older people do have broader experience and frame of reference, but tend to be less flexible in applying recently acquired data to a situation, so the role of memory in perceptual changes is complex.

In summary, some decline in vision is viewed as age related and part of the normal aging process. Changes impact all components of the visual process. Eye structures are altered to decrease the optical component of the visual sequence. The neural system is affected so that transmission is slowed and there is an increase in noise. Visual perception is reduced in speed and efficiency. As a result, we can assume that all older persons

experience some decline in their visual function.

Eye Diseases of the Older Adult

In addition to the visual changes which are part of the normal aging process, there are a variety of diseases which result in decreasing vision in old age. According to Kahn (1977) 98 percent of the acuity loss for those over 70 is due to four diseases: senile cataracts, diabetic retinopathy, glaucoma and senile macular degeneration. Although there are other diseases contributing to low vision in the older adult only those four will be summarized here. It is anticipated that the majority of study subjects will have at least one of these four diseases.

Senile Cataracts, the most prevalent ocular disease of the elderly accounts for half of the instances of reduction of acuity to levels of 20/50 or worse (Anderson & Palmore, 1974). Ninety percent of all cataracts are of the sinescent type (Paton & Craig, 1974).

A cataract is most simply defined as an increased opacity of the crystalline lens (Kasper, 1983). The real cause of the changes in the lens are not known. It is believed that old lens fibers become dehydrated and compacted and are then referred to as sclerosed. Lens protein changes cause the material of the lens to become insoluble and opaque. There is also thought to be an increase in water between the lens fibers (Kasper, 1983). Added to that there may also be fragmentation of lens fibers and deposits of calcium and cholesterol in the lens (Michaels, 1986).

Cataracts are often classified as either nuclear or cortical, indicating their location within the lens (Paton & Craig, 1974). The nuclear cataract, sometimes referred to as nuclear sclerosis involves changes in the protein in the central part of the lens. When the nucleus is involved, many people experience a temporary myopic shift in refraction (Bennett & Eklund, 1983).

This is the most common form of senile cataract.

There may also be associated changes in the cortex, or outer portion of the lens (Michaels, 1986). Some authors (Bennett & Eklund, 1983) (Paton & Craig, 1974) associate the cortical changes as a progression outward from the nuclear cataract, however the cortical cataract may develop independently (Michaels, 1986). In the case of the cortical cataract, there may be translucent grey spokes, flakes and dots arranged radially in the peripheral part of the lens (Michaels, 1986). When both the nucleus and cortex and involved, the cataract is termed mature and there is a complete opacification of the lens. It is at this point that the lens may swell by osmotic effects and cause damage by pushing the iris anteriorily and creating narrow angle-closure glaucoma (Kasper, 1983).

The symptoms associated with cataract are similar to and superimposed on normal aging changes. The person experiences a decrease in visual acuity which cannot be corrected with eyeglasses. Apparently some cataracts interfere more with near vision while others interfere with far vision (Michaels, 1986). Opacities in the lens create serious problems with glare. Color changes become severe (Allen, 1975). Senile cataracts, then, represent a common problems creating visual impairment in the older adult.

Diabetic Retinopathy is one of the visual sequela of diabetes. About three fourths of the patients who are diagnosed with Diabetes Mellitus before age twenty nine will develop retinopathy (Michaels, 1986). Furthermore it develops more quickly in those diagnosed at an older age. It seems that diabetic retinopathy is being diagnosed with increasing frequency, probably because more effective treatment of diabetes has resulted in the longer survival of diabetics (Kasper, 1983). The result is

that retinopathy and the resulting visual impairment are becoming more a geriatric problem.

Diabetes is a complex disease of impaired metabolism involving carbohydrate, fat, protein and insulin utilization (Michaels, 1986). In addition, there are vascular changes throughout the body. In diabetic retinopathy, the vascular changes occur in the retina and sometimes over the entire retinal surface and into the vitreous (proliferative retinopathy) (Michaels, 1986).

Initially there is an increase in capillary permeability in the retina. The retina eventually contains microaneurysms, small irregular hemorrhages and exudates which appear white or yellow (Kasper, 1983). Consequently the retina cannot perform its function effectively. The end result is generally diminishing vision and eventually a loss of central vision (Morse, Silberman and Trief, 1987). The visual loss is almost always bilateral (Kasper, 1983).

Glaucoma is often described as a group of disorders in which there is an increase in intraocular pressure and if continued can cause progressive optic nerve damage. An increase in intraocular pressure occurs when there is resistance to the passage of aqueous humor out of the eye (Rubenstin, Lohr, Brook & Goldberg, 1982). The incidence of Glaucoma is at about 2% in people over 40 with a definite increase in frequency as age increases (Kasper, 1983). Pitts (1982), on the other hand, shows data from the Framington Eye Study indicating 13.7% of the subjects over 52 had glaucoma.

Glaucoma is classified as primary, secondary or congenital. Primary glaucoma is further classified as simple open angle or closed angle. About 90% of glaucoma cases are the open angle type, one in which the cause of

the interference with outflow of acqueous humor is not known (Rubenstin, et al., 1982). Open angle glaucoma is best diagnosed through regular routine measurements of intraocular pressure, since its' slow insidious development results in a lack of significant symptoms until permanent visual loss has occurred (Kasper, 1983). When the patient is aware of blind areas in the visual field, the disease will have caused irreversable damage to the optic nerve (Stengel, 1986). When visual loss occurs it is described as loss of vision in the nasal and peripheral parts of the visual field rather than the central vision (Rubenstein et al., 1982). Later in the disease central vision is lost.

Senile Macular Degeneration, according to Marmour (1982), is the most prevalent and most serious disease of the aging retina. It is a problem in which damage evolves as an exaggerated form of the normal aging changes. This disease accounts for 41 percent of visual acuity decline over age 52 as reported in the Framington Study (Pitts, 1982). It is a leading cause of new cases of legal blindness in persons over 65 in the United States (Stengel, 1986).

Since the macula is an area of the retina where central and detailed vision is received, the result of senile macular degeneration is a loss of central vision. Peripheral vision remains intact so that vision is never totally lost (Kasper, 1983). The symptoms reported are difficulty reading, inability to recognize faces and a loss of the vision straight ahead (Faye, 1984). Visual lossd is usually bilateral (Kasper, 1983).

Senile macular degeneration has been classified as dry or exudative (wet)(Morse et al., 1987). It is believed that sclerosis of the choroidal blood vessels reduces nutrition to the macula and results in loss of photoreceptors. This is an atrophic or "dry" change and causes reduced

acuity (Marmor, 1982; Kasper, 1983)). No prevention or treatment is know for the nonexudative macular degeneration (Morse, et al., 1987). When flu or blood leaks from the choroid and causes a retinal epithelial detachmer in the macular area, this is referred to as wet or exudative senile macul degeneration. The lasar can be used to attempt to seal vessels to prevel futher damage in this form of the diasease (Marmor, 1982; Morse, et a 1987).

Although other diseases do impact visual function, the ones discusse here are the most common causes of decreasing visual ability in the old adult. Cataracts can cause gradual clouding of both near and far visio diabetic retinopathy results in clouding of vision and eventual blindnes glaucoma, if untreated can cause a narrowing of the visual field ar ultimately total visual loss. Senile macular degeneration interferes main with central vision leaving people with usable peripheral vision.

Impact on Function

Introduction

Discussions of low vision frequently emphasize the complexity of th low vision phenomenon. There is often a variable quality of impaired sig and a lack of easily used, clinically accessable comprehensive measures quantify all of the dimensions of the visual process. Many authors believ therefore, that an appraisal of the individual's ability to function in the daily lives may be a more appropriate way to examine low vision (Klin Sekuler & Dismukes, 1982). It is the intent of this research to obtain se reported descriptive information about how low vision, as recognized by th traditional measurement techniques, affects the elderly person's ability function.

In the field of geriatrics there is a prevailing trend to view the heal

of the older person, not only from the perspective of the disease oriente medical field, but from the functional viewpoint. Indeed, the definition o health status by Chappell (1981) as it relates to the elderly, include reference to an appraisal of the degree of functional disability. Accordin to Williams (1983) an assessment of effect on function in life activities i essential to the planning of care of older people. Becker and Cohen (1984 note the inadequacies of the traditional biomedical care model, and identif research results showing correlation between functional status and the us of health services as justification for this functional approach to healt care planning The therapeutic emphasis, they also note, is no longer th cure of disease but in old age focuses much more on caring for the person sometimes referred to as concern for quality of life. Indeed, it i appropriate then to seek descriptive information on the effect of low visio on the older persons perceived ability to carry out their daily activities.

A conceptual definition of impact on function and a framework fo viewing the concept of impact of low vision on function within the contex of nursing process will be presented in the following section. Th discussion will begin with an overview of some of the literature which i relevant to a discussion of the concept of function.

The Sickness Impact Profile (Bergner, Bobbitt, Carter & Gilson, 1981 a general measure of health related behavioral dysfunction will be used as basis for the concept of impact on function in this study, and consequentl will be discussed in some detail. The relationship of this study to nursin will be established by describing the holistic paradigm presented in th nursing theory, Modeling and Role Modeling by Erickson, Tomlin and Swai (1983). Then, using the basic tenants of this paradigm and the behaviora categories of the Sickness Impact Profile, the concept of impact o

function will be developed for this study.

Background

In reviewing the literature for content which relates to the concept o impact on function, it became apparent that there was a complicated an confusing interrelated use of concepts and terminology. A majority o discussions of the care of the elderly begin with reference to the ter health or health status. Using a variety of stated or assumed definitions fo this construct, it is then noted that health is often described in part b references to function, effect on function, or to disability (Chappel, 198 Stewart, Ware & Brook, 1981; Bergner, 1985).

Reviews which include instruments designed to measure these thre concepts are equally confusing. Articles about instruments to measur health status (Katz, 1983; Bergner & Rothman, 1987; Read, Quinn & Haefe 1987) list some of the same research or clinical tools as an article abou measures of functional status (Stewart, Ware & Brooks, 1981) and a article discussing instruments to measure disability (Feinstein, Josephy Wells, 1986). The terms health status, disability and functional statu seem, therefore to be applied at times as if they were similar, overlappin or even interchangable. In order to develop the concept of impact o function as it will be used in this research, therefore, these three concept will be discussed separately, pointing out similarities in meaning d domain.

The measurement of health or health status is stated as the major goa of many studies ranging from population surveys to clinical evaluations. I spite of this, there remains a lack of an agreed-upon conceptual definitio of health (Bergner & Rothman, 1987). All who discuss this concept do see to show recognition that there are many dimensions of health statu

Bergner and Rothman (1987) note that many conceptual definitions of hea do include some aspects of physiological or biological status, mental sta physical and social functioning and health behaviors and attitudes.

One of the simplest definitions of the health concept was presentec Chappell (1981) who said, " 'health status' of the elderly has one of t meanings: (1) the presence or absence of disease or (2) degree of functio disability" (p. 90). Chappell continues by expressing the opinion that second approach is favored in evaluation of the elderly. In other wor examining the impact on function becomes the means of measuring hea status. Another discussion aligning health with functional status is fo in an article by Stewart, Ware and Brook (1981) about aggregate indexes functional status. The purpose of the article is to describes "advances the measurement of physical health in terms of functioning in gene populations" (Stewart, et al., 1981, p. 473). Five categories are then lis self care, mobility, physical activities, role activities and leis activities. The implication, of course is that those five categor represent the composite of function representing the concept of health.

Katz(1983) did an extensive summary of the history of m instruments designed to measure health status in terms of funct Although function is not specifically defined, in many of the instrume physical, mental and social measures are included. Katz (1983) seems view health in a holistic manner when he refers to the goals of long t care to restore and maintain physical, psychological, social and econo function. Katz seems to refer to dysfunction and disability as if they w interchangable concepts. Thus there is a tie between the concepts of hea status, functional status and disability as if they were similar concepts.

Another article containing a definition of health which inclu

functional status is the discussion of the development of the D
University Health Profile, discussed by Parkerson, Gehlback, Wagner, Jam
Clapp and Muhlbauer (1981). After referring to this instrument as a hea
status measure for adults, they state, "The principal application of t
instrument is to assess the effect of primary medical care services on
self-reported functional status and feelings of patients"(Parkerson, et
1981, p. 807). This scale includes four dimensions; symptom stat
physical function, emotional function and social function. The fi
dimension seems to be disease oriented and the other three are orien
toward assessment of functional disability.

Parkerson, et al. (1981) go on to describe the functional categor
Physical function is described as including disability days, ambulation
the use of upper extremities and is seen to measure an individu
perceived capacity to perform tasks rather than actual performance of
tasks. Emotional function is self perceived interpersonal competence
social function is the person's ability to perform their role in society, th
self care capacity, ability to function in the workplace or ho
interactions with people and participation in the community and soc
events (Parkerson, et al., 1981). These conceptual definitions then refl
that function is defined as a self report of behaviors for the individuals
question and function in turn again represents the concept of hea
Although representing only a few of the discussions of the measurement
health, it is seen that health is frequently conceptualized through conce
of function or of disability.

Disability is the second concept frequently used in discussions of
evaluation of the elderly. Although the term disability is not alw
conceptually defined, there does seem to be some commonly underst

meaning for this term. Peterson, Lowman and Kirchner (1978) in a discussion of vision loss research, show clear delineation between the terms disorder, impairment, disability and handicap. Relating it to vision they define a disorder as "deviation from normal in the structure of the eye", an impairment as "limitation of overall function of the eye", disability as "limitation in the ability of an individual to perform specific tasks" and handicap as "limitation in social functioning of an individual"(Peterson, et al., 1978, p. 419). These definitions clearly link disability to task performance, the description Parkerson, et al. (1981) had applied to physical function and the term handicap to the description Parkerson et al.(1981 applied to social function.

Feinstein, et al. (1986) have written an article pointing out a variety of issues to be considered when looking at indexes of disability. They reviewed more than 1000 indexes noting a wide scope in the ways of expressing disability. Some, they said, refer only to the capacity for managing basic hygiene, self care and mobility while others extend to occupational, social function and emotional function. Feinstein, et al (1986) are referring to many of the same instruments that have been reviewed elsewhere as indexes of health status. Lawton (1971) in an article on the functional assessment of old people states, "The difficulties of representing health in any unitary way have led most researchers to the easier task of measuring disability" (p. 468). Disability, then is a word used as an alternative manner of expressing health status, or a means of identifying problems with function.

The third concept of interest in this discussion is that of function or functional status. A conceptual framework focusing on a functional approach to the care of the elderly was discussed by Becker and Cohen

(1984). In this discussion, they state, "Functional status can be viewed as the composition of various biologic psychologic and social capabilities that are integrated in order to perform the activities necessary to ensure the individual's well-being (p. 923). The activities the individual performs, or his functional status, then is a holistic integration of these three realms.

Becker and Cohen (1984) define each of the three realms. The biological area refers to the functioning of the organ systems of the body. The psychological includes cognitive capabilities, perceptual ability and personality traits. Finally, the social component incorporates the persons total support network of people, economics and public policies and attitudes. Aging is seen by Becker and Cohen (1984) as the accumulation of deficits in many areas. The resulting stress ultimately effects the persons ability to perform the activities necessary for their well-being. Since Becker and Cohen (1984) are writing about a conceptual approach to this topic, they do not suggest areas to be included in a systematic evaluation of function.

Kane and Kane (1981), in a book specifically directed to a review of many of the indexes which have been developed to assess the elderly further support the need for a holistic approach to the appraisal of the older person. Chapters in the book are devoted to measures of physical functioning, mental functioning and social functioning. Eventually, however Kane and Kane devote a section to multidimensional tools, acknowledging the need for an integrated approach to the appraisal process.

In discussing the separate sections, Kane and Kane (1981) define physical function as including ability to perform self care tasks, further described as tasks of daily living and more complex instrumental tasks. Mental functioning is described as "measures of cognitive or intellectual

activities and measures of mental-health status, particularly affecti
functioning" (Kane & Kane, 1981, p. 20). They then describe soci
functioning as including extent and nature of family and social suppor
activity levels, and participation in satisfying human relationships as we
as measures of subjective well-being. A variety of instruments are th
reviewed, all designed to measure specific narrow areas of function.

A final section of the book (Kane & Kane, 1981) is devoted to t
review of multidimensional measures, noting that the distinction betwe
the measures of physical, social and mental functioning are oft
interactive or even blurred, especially at the lower levels of functionir
This viewpoint is repeated by others. Lawton (1971) had noted that
recurrent and clear finding in gerontological research is the mutual
interdependence of the emotional state, adaptive behavior and physic
state. Ultimately, then, to determine the health in an older person, it
valid to assess the extent to which that person can live their daily life
all it's dimensions.

In arriving at a concept of impact on function for this research,
seemed important to acknowlege the integration of the concepts of heal
status, disability and function. To express the totality of impact of lo
vision in the individuals life, function needed to be appreciated in its mo
comprehensive or multidimensional sense. The Sickness Impact Profi
(Bergner, et al., 1981) seemed to have been developed in a manner that f
this researcher's ideas of impact on function, both conceptually a
operationally. The conceptual development of the Sickness Impact Profi
will therefore be discussed as a basis for the development of the concept
impact on function for this study.

Sickness Impact Profile

Measures used for the evaluation of health status are important in the planning of individualized care as well as in the planning and evaluation of programs of care. One of the measures developed and extensively used in the evaluation of health care services has been the Sickness Impact Profile (SIP) (Gilson, Gilson, Bergner, Bobbitt, Dressel, Pollard & Vesselago, 1975). Based on the assumption that self perceived effects or outcomes are a useful way to appraise health status, the instrument uses self reports in an array of 12 categories of impact.

According to the developers of the SIP, signs and symptoms result in a self perception of sickness. "Effects or impacts, whether they derive from untreated sickness or from sickness under professional care, may be manifested in changes in performance, feelings, attitudes or symptoms".(Bergner, Bobbitt, Kressel, Pollard, Gilson & Morris, 1976, p. 398). Consequently, a problem like low vision results in a self perception by the client and subsequent changes in behavior. In the working definitions used in the SIP, impact is then defined as behavioral dysfunctions reported by the self or others.

In order to identify the full range of behavioral effects from sickness, the researchers gathered more than a thousand statements of sickness-related changes in behavior from patients, health care professionals, individuals providing care, healthy people and from a review of the literature (Bergner, et al, 1981). These statements were sorted to yield over 300 separate items. Eventually, after further sorting, field trials, reliability testing and validation, a final version consisted of 136

items in 12 categories. The categories in the final version are sleep a rest, eating, work, home management, recreation and pastimes, ambulati mobility, body care and movement, social interaction, alertness behavi emotional behavior and communication. These categories are considered represent the entire realm of possible areas of impact on function of a alteration in health status. The categories are not defined any furth except through the items in the Sickness Impact Profile instrument found Appendix D.

In this study, impact on function is defined as the behavioral effec of alterations in health status. These behavioral effects are changes whi the individual can recognize and report. The behavioral effects represe the integration of the biophysical, psychological, social and cogniti realms of existance. The impacts are experienced by the individual effects on their sleep and rest, eating, work, home management, recreati and pastimes, ambulation, mobility, body care and movement, soc interaction, alertness behavior, emotional behavior and communication.

The basic concepts found in the research question in this study ha been reviewed and defined. In addition to defining the concepts of l vision and impact on function, it is relevant to conceptually show how th are relevant to nursing. Modeling and Role Modeling by Erickson et a (1983) a nursing theory will be discussed as a framework for the conceptu model for this study.

Modeling and Role Modeling

The Modeling and Role Modeling paradigm for nursing (Erickson et a 1983) is a model based on the assumption that humans are holistic w multiple interacting subsystems. Nurses help their clients through interpersonal interactive process to enable them to cope with th

circumstances and environment and to achieve their optimum growth potential.

Modeling is the process the nurse uses as she/he develops an image and understanding of the clients world, developed within the clients framework and from the clients perspective. Role Modeling is the process of facilitating individual growth of the client, using the model as a basis for planned interventions. Nursing synthesizes philosophical viewpoints, existing scientific theories and clinical practice research in this process. A more detailed description of holistic humans and the role of nursing in the modeling and role modeling process follows.

According to Erickson et al (1983), human beings are holistic with multiple interacting subsystems. The subsystems include the cognitive, biophysical, psychological and social areas and are overlapping and interacting in each individual so that the whole is greater than the sum of the parts. The authors of this paradigm do not provide specific conceptual definitions of these subsystems, but seem to assume a common definition is understood. In addition, each individual is born with a genetic makeup which influences that individual throughout life. Each person is also influenced holistically through spiritual drive which fosters their inherent desire to fulfill their potential. Neither of these permeating bases are explained more fully by the authors. Figure 3 shows a graphic representation of the holistic individual as conceived by Erickson, et al (1983).

Erickson, Tomlinson and Swain's (1983) model of holism is also based on two sets of presumptions. One is a list of the areas in which individuals are similar and the second, a list of areas in which individuals are different. These two areas will be described more fully in the following paragraphs.

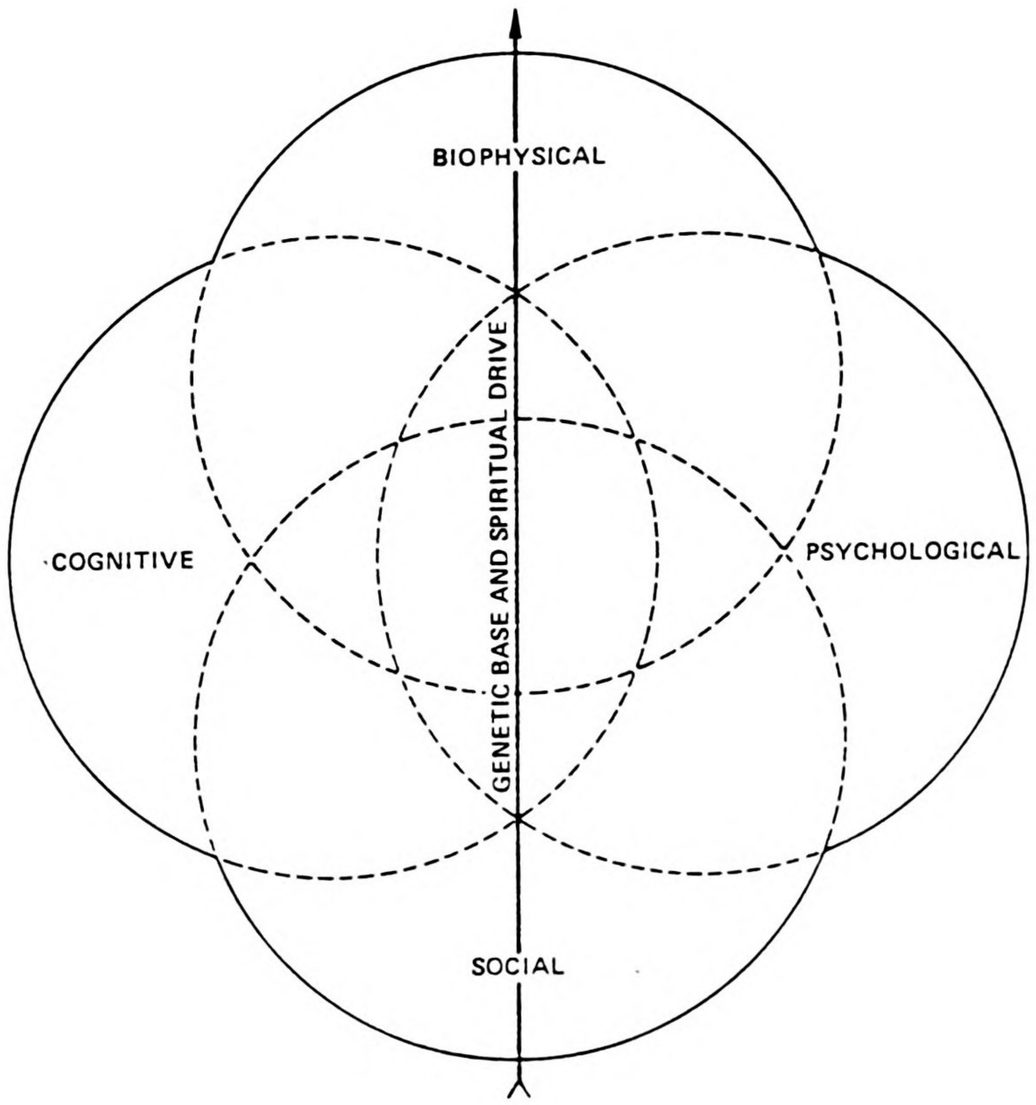

Figure 3: A Holistic Model
Reproduced by permission from Erickson, H. C., Tomlin, E. M., & Swain, M. A. (1983). Modeling and role-modeling: A theory and paradigm for nursing, Englewood Cliffs, N.J.: Prentice-Hall, Inc.

All people are similar because their basic biophysical makeup is alike. We all have basic needs and these basic needs drive behavior. Using Maslow's theory, Erickson, et al., (1983) states that an individual's basic needs are only met when the person believes them to be met.

Erickson , et al. (1983) also uses Erik Erikson's developmental theory. The authors believe that people are similar because all individuals progress through stages of development. In addition, we all progress through a lifetime of cognitive development. The authors use Piaget's stages of

cognitive development as a basis for describing this area of similarity in al individuals.

Another area in which all people are similar is through an innate need of people to attach to one another. The need is termed affiliated individuation by Erickson, et al. (1983) and occurs when a person perceives oneself to be simultaneously close to and separate from a significant other person. Finally, as a result of the affiliated individuation, all people are alike in their potential for the severing of attachment and their response to loss. This concept of response to loss was derived from the work of Engel (Erickson, et al., 1983). The authors of this paradigm suggest that there may be other areas in which humans are alike, leaving freedom for application of other sources of knowlege or theory to this concept of holistic humans.

Although these are areas in which all humans are inherently similar they also form the basis for our uniqueness from one another. We may at any given time be uniquely adapting to our environment and have met or unmet basic needs. We each develop in a unique manner. And we have personal and specific attachments and losses to cope with throughout life.

The holistic person is not only similar to one another in specific ways but also has predictable areas in which they differ from one another. Each person has a unique inherent endowment which causes him to be different from everyone else. Each person's ability to react to stressors is, at any time, unique. Finally, each person's complex and specific model of his own world is unique.

Nursing, then is the holistic helping of persons. It is an interactive interpersonal process, designed to enable growth and development in the client. It is based on unconditional acceptance of the client by the nurse. The nurse is a facilitator, not an effector in the process of helping people

with their responses to health and illness states and with their coping a adapting. The aims of nursing are based on the assumption that humans a born with the capacity for growth and development and an inherent desire fulfill one's potential.

When viewed in connection with the Modeling and Role Model Paradigm, nurses act to assess the client to obtain a model of the clien world. The knowlege clients have of themselves is referred to as self ca knowlege. In the assessment (modeling) phase of nursing, the client facilitated to reveal their self care knowlege through the interpersonal a interactive process. Modeling occurs through the ongoing interact exchange of information between the nurse and the client. In t interaction, the client describes their situation, their expectations for future, reveals their resource potential and their goals and life tasks. T nurse receives and synthesizes the information to understand (develop model of) the client's world.

This knowlege then allows the nurse, through an interpersonal a interactive process to role model, a term which in this case means facilitate growth through individual interventions unique for the client. T client takes part in decisions and has control over the planning a implementation of their own care. The major aims of nursing are to bu trust, promote the client's positive orientation, promote the clien control, affirm and promote the client's strengths and set mutual goals th are health directed. In some cases the client has diminished resources a is referred to as being in an impoverished state. Then, the nurse m temporarily need to make decisions for the client, provide physical care a involve the opinions of the family to a greater extent than when work with a client who is fully capable of an adaptive response. Erickson et

(1983) are not clear in explainaing how one recognizes that the client is an impoverished state.

Conceptual Model for the Impact of Low Vision on Function

This study will examine the impact of low vision according to t holistic model developed by Erickson et al. (1983). The subjects of t study will be older adults who have been medically diagnosed as having l vision according to standard acuity measures. The application of t holistic model to the older adult with low vision is illustrated in Figure 4

The experience of low vision will be perceived by each client as effect on their ability to carry out their daily lives. The impact, or effe will be experienced within the context of each individual's unique model their world. This behavioral effect will be experienced holistically, that experienced by the person in a way that represents an integration of th biophysical, social, psychological and cognitive self. Areas of impact th the individual perceives could be within the realms of sleep and rest,eati work, home management, recreation and pastimes, ambulation, mobili body care and movement, social interation, alertness behavior, emotio behavior and communication. Each person has an awareness of t behavioral effect of their low vision. The individual's awareness of h low vision is affecting them is their self care knowlege. The basis planning of intervention, according to the Modeling and Role Model paradigm is that self care knowlege, integrated by the nurse into a uni model of the clients world.

The nurse, through an interactive approach with the client, can obt information about the impact of low vision for that individual. T information can be obtained through the use of the interview format of Sickness Impact Profile as well as through an open interview process.

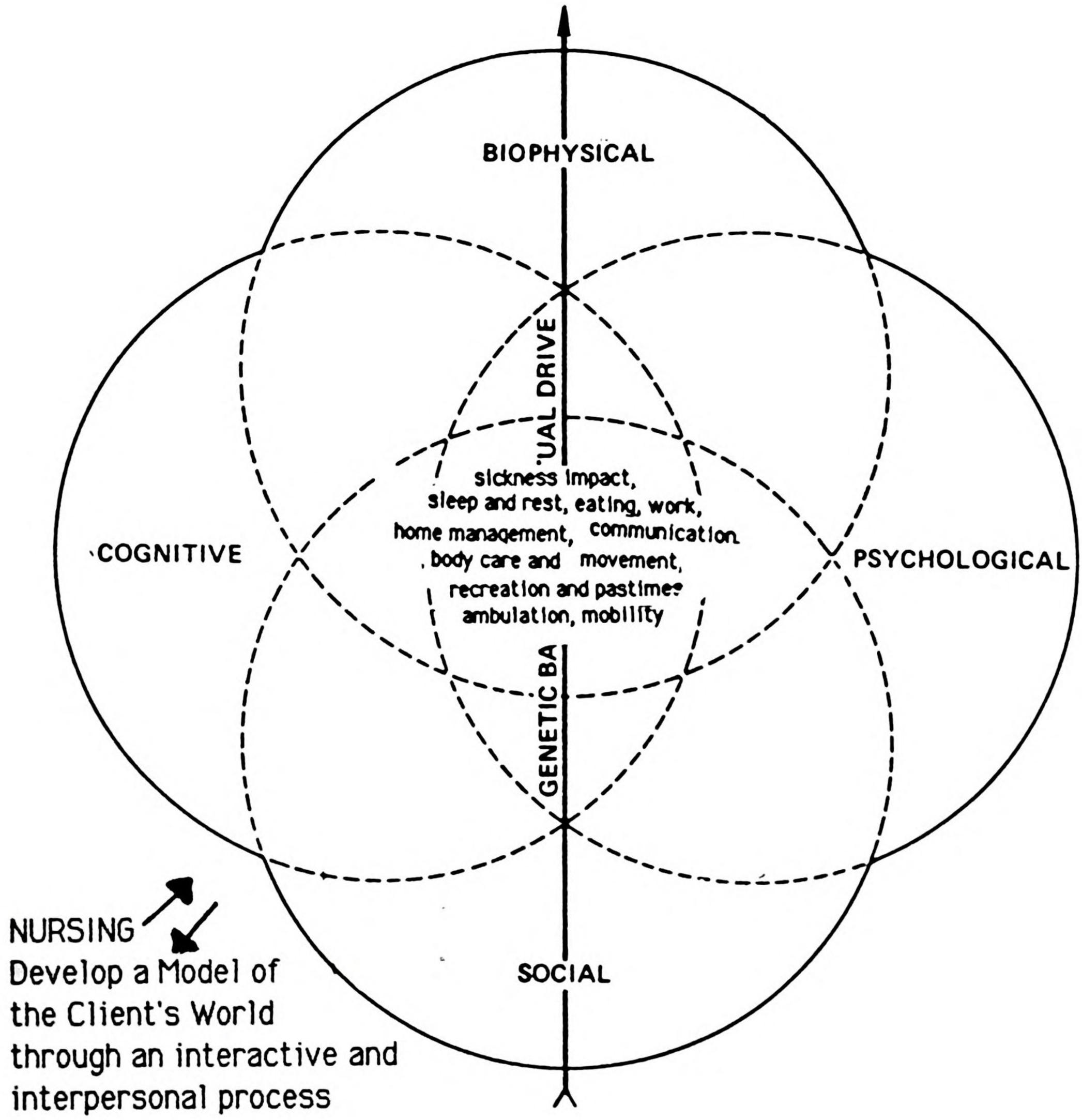

Figure 4: Nursing Application of the Holistic Model to the Older Adult with Low Vision
Adapted from the Holistic Model (Erickson, et al., 1983, p. 45).

As a result of this communication process, the nurse (researcher) will be able to develop a model of each client's world. The SIP score will provide a profile of how the experience of low vision has a self described behavioral effect for that client. The individual score for each subject (client) will be the unique model of that person's world relative to the experience of low vision.

The researcher will also be able to develop an aggregate of the models of all subjects worlds. A goal of the study will then be to describe the ways in which individuals experiences with low vision are similar.

The resulting data may be used to develop a research instrument which can be used specifically for studying the impact of low vision. Data may also be useful in developing an assessment tool to help determine the unique model of impact of low vision in a single individual.

Summary

In this chapter, the concepts of this study were discussed in detail. First the physiology of the eye was reviewed followed by a discussion of the concept of vision and a conceptual definition of vision. Literature was reviewed to discuss the concept of low vision and this concept was defined for the study. Because the subjects of the study will be older adults , a description of the normal aging changes to vision was presented. The theory and paradigm for nursing, Modeling and Role Modeling was explained and then used as a basis for presenting the conceptual model for this study. The Sickness Impact Profile provided a conceptual and operational definition of the impact on function. Chapter III will be a review of research on the functional Impact of low vision in both the general and the nursing literature.

CHAPTER III

LITERATURE REVIEW

Overview

The research question posed in this study is: How do older adults with low vision describe the impact on function? The discussion of the concepts of low vision and impact on function in Chapter II included a review of literature related to the concepts of vision and low vision. In addition, research reviews were used to describe the changes in visual function commonly found in old age and to briefly describe impact on function.

In this chapter relevant research related to the impact of low vision on function will be reviewed. Most of the studies have been selected for this review only if they contain some self-rated measures of vision, interview or self-administered instruments or subjective rating by the client of the impact of visual changes on function. This chapter will thus be divided into three sections: studies including self-rated vision, research involving selected areas of impact of low vision and comprehensive studies of the effect of low vision on function.

Self-Rated Vision

Several studies have been conducted in which the subjects have been asked to rate their vision. In other words they decide whether they think their vision is good or poor or they rank it as the same as other people their age, worse or better. In one such survey, Hilbourne (1983) did a study of patient's scheduled for single eye cataract surgery. Data was collected from 66 patients during a six month period in 1973 and 1974. The patients, who were otherwise healthy, were interviewed in their homes prior to

admission for surgery. All patients had a corrected central visual acuity of 6/12 or worse. This value is a metric conversion of the American Snellen value of 20/40 (Anstice, 1986). (In the remainder of this discussion the converted value will be placed in parenthesis following the metric designation).

Data collected for the Hilbourne study (1983) included the acuity data, self assessed eyesight (Good/Average; Moderately Impaired; Very much Impaired), self appraised comparison of eyesight with age contemporaries (Better/Same; Worse), and major reasons for initially seeking professional attention. Hilbourne (1983) failed to find a relationship between the individuals visual acuity and their stated ratings of eyesight. It was noted that 50% of the patients with vision of 6/36 (20/120) or worse in their better eye rated their vision as good or average. In other words, Hilbourne (1983) concluded that self rating of vision in this manner is not a valid measure of vision.

Hilbourne (1983) also concluded that declining vision seemed to be an expected consequence of old age. There were clear indications in the data that even those who recognized that their eyesight was impaired felt that it was the same as or better than other people of their age. Since self-rated vision seemed better than one would assume from the visual acuity measures, Hilbourne (1983) wondered why these patients had sought help from an opthalmologist. He found that 62% stated that they had noted an inability to see something they specifically wanted to see. Of that group, 39% said it was reading difficulty, 24% that they had an embarrassing reading difficulty and 37% experienced social embarrassment because of an event like not recognizing a friend. Concluding that possibly there are many older people who do not seek help because they do not recognize that their

vision is decreased, Hilbourne (1983) makes an appeal for more systematic screening procedures to be put into place.

A similar approach to appraisal of visual acuity was used in a study of hearing and visual loss as social stressors in the elderly. Oppegard, Hansson, Morgan, Indart, Crutcher and Hampton (1984) investigated the role of social-caregiving support as a buffer against the psychological consequences of hearing and vision loss among the elderly. They surveyed 102 Americans between 60 and 92 with a questionnaire which included self ratings of vision and hearing, a short form of the Beck Depression Inventory, a short form of the Taylor Manifest Anxiety Scale and ratings of the frequency with which the subject saw children and family. Correlations were then calculated between the self rated vision or hearing and the results of the measures of anxiety, depression and social support. Conclusions drawn by Oppegard et al.(1984) were that hearing and vision loss were moderately related to depression and to anxiety among older adults but only for those persons with less than average access to the support of the family.

Indications of reliability of the anxiety and depression instruments were included in this report, but the authors (Opppegard et al., 1984) do not show recognition that self rated vision and hearing may not correlate with conventional acuity measures. In other words, the entire study was based on a false assumption that self rated vision is representative of actual measured visual acuity.

Self rated vision has also been used by Jette and Branch (1985) as one of the variables in a study to compare visual impairment and disability. They too seem to base their research on the assumption that self rating of vision can accurately be assumed to measure vison. All conclusions of the

study by Jette and Branch(1985) are based on this assumption.

Another approach to the self rating of vision is apparent in the paper presented by Haase and Bryant (1973). Instead of asking subjects to rate their vision, they ask them questions about what they can and cannot see. The study, done for the National Center for Health Statistics, was conducted for the purpose of developing and testing three scales designated to measure functional vision loss using an interview. Although the scales listed were the distance vision scale, near vision scale and a self evaluation scale related to trouble seeing, only the distance vision scale was discussed in this paper (Haase & Bryant, 1973). Published discussions of the other two scales were not found, but it appears that all three were later used in the 1984 National Health Interview Surveys (Nelson, 1987).

Conducted in 1972 and 1973, the study by Haase and Bryant (1973) was done at 6 clinics throughout the country. Subjects were patients in these clinics and were at least 6 years old. Data were not presented regarding the age distribution of subjects, though the authors noted that the population studied contained a large proportion of visually impaired elderly people (Haase & Bryant, 1973).

The distance vision scale had five questions ordered in the form of a Guttman scale, so that when the first negative answer is obtained, all following will also be negative. The questions were: (When wearing glasses) can you <u>see</u> well enought to recognize a friend if you get close to his face?, ...who is an arms length away?,...who is across a room?, ... who is across the street?(Haase & Bryant, 1973). The authors felt, based on common sense and professional judgement, the scale to have face validity. Construct validity was viewed as present since only 1% of the 1,661 people responded inconsistently when correlating their response to their measured

visual acuity.

The authors also discuss content validity; whether the scale actually measures what it is intended to measure. When talking about the comparison between clinical acuity measures and interview data, Haase and Bryant (1973) state,

> How a person perceives he can function is related to a number of factors of which his physical capability is only part. These scales are psychological measurements which will be influenced by actual visual acuity measurements. Also they will be related to the patient's own subjective evaluation of the severity of his visual impairment and the degree of effort he puts forth in overcoming it. In addition the environment in which the person generally functions may be quite different from the clinic environment in which the examination was performed. Therefore, both measurements, assuming that they adequately represent the phenomenon of interest, are important statistics in their own right (p. 275).

Haase and Bryant (1973) conclude, then that measures of visual acuity and self rated perceptions of what an individual can see are a similar phenomenon measured from differing perspectives and even though it may be weak, there should be a statistical relationship. Using Pearson's phi coefficient to indicate the degree of association between the two measures, they found a 0.35 value for phi (range 0-1). Although this was a weak association Haase and Bryant (1973) noted that it was positive , and indicated plans to include the distance vision scale in the next National Health Examination Survey.

A variety of possible explanations were offered for some of the inconsistent responses found by Haase and Bryant (1973), including effects

of adaptation, relating the questions to only vision in the better eye, or worse eye rather than binocular vision and the possibility that subjects who were interviewed at a clinic visit tending to be people who would be prone to exaggerate their problem. In summary, Haase and Bryant's (1973) approach appeared to be sound, using sound research design, adequately defining concepts, addressing validity and reliability issues, testing hypotheses appropriately and analyzing inconsistencies and sources of error. This conclusion is further augmented by the knowlege that these scales are being used as a means of acquiring national statistics on the incidence of visual impairment (Nelson, 1987).

A large health insurance study conducted by the Rand corporation and reported by Rubenstein, Lohr, Brook and Goldberg(1982) also appears to use questions similar to those developed by Haase and Bryant(1973). The Rand study, conducted through a grant from the U.S. Department of Health and Human Services, had a general goal to evaluate a variety of health problems for consideration in health insurance benefits, recognizing that the quality of care the client receives may be a function of insurance benefits. An evaluation of the prevalence of visual impairment and visual disability, therefore, was conducted with this in mind.

The Rand Insurance study, done in 1973 and 1974 enrolled 5835 adults at six U.S. sites. Two sources of data were used, a self administered questionnaire and a medical screening exam. At some sites, only a random sample of the original enrollees received the medical screening exam.

Although the entire group of subjects was under the age of 62, this study was selected for this review because of the questions requesting a self-rating of visual abilities and a self rating of visual disabilities. Subjects were only asked two questions, one representing near vision and

the other representing far vision (unlike Haase and Bryant (1973) who asked a series of five for far vision alone). Subjects were asked, "Without glasses, can you read ordinary newsprint?" and "Without glasses, can you recognize a friend across the street?"(Rubenstein, et al., 1982, p. 91). Subjects were required to answer yes or no to these questions and the researchers used these single responses to identify impaired vision based on the criterion of interference with simple functional tasks. Comparing data from these two questions with visual acuity data from the medical exam, the researches concluded that for far vision the questions had a sensitivity of only 32% and were only truely sensitive to people who do not have any visual impairment. There were inconsistencies in responses by the subjects similar to those found by Hilbourne (1983). Of the people with 20/200 vision, 14 percent stated they could recognize a friend across the street (Rubenstein, et al., 1982). Similarly, for near vision, the question had a specificity of 97% and a sensitivity of 44%.

Results reported by Rubenstein et al. (1982) are not consistent with conclusions by Haase and Bryant (1973). Haase and Bryant (1973) found the self-rated vision questions to correlate with true vision and did not find a significant number of inconsistent responses by the subjects whereas Rubenstein et al. (1982) concluded that the questions were not sensitive and found a significant number of inconsistent responses by subjects. It should be noted, however, that the Rand study based distance vision conclusions on a single question, whereas Haase and Bryant (1973) based their distance vision data on the series of five questions. Another factor which probably affected these results was that Rubenstein et al. (1982) classified anyone with vision less than 20/20 as having visual impairment. It would not be surprising that many of the subjects with "impaired" vision

reported they could recognize a friend across the street or read a newspaper.

In summary, five studies have been reviewed, each of which uses some form of self rating of vision. Three of the studies included questions asking subjects to judge their own vision as good, fair etc. Two of the authors used those answers to represent actual vision and used the ratings as variables in their studies (Oppegard et at., 1984; Jette & Branch, 1985). There was no recognition in these two reports that self-rating of vision might not be consistent with measured acuity, a conclusion drawn in the first study discussed (Hilbourne, 1983).

A second type of self rating of vision, developed for and used as the basis for low vision statistics in this country (Nelson, 1987), is a scale developed by Haase and Bryant (1973) and used in part in the Rand study (Rubenstein, 1982). Even though the correlations between self rating and actual visual acuity were weak, Haase and Bryant (1973) do present a logical argument for the position that the self rating of vision is a valid measure of vision and can be used as a basis for national service planning.

Clearly, self rating of vision is only one piece of data which might be used for planning of care. In order to obtain data that is more specifically useful, it is important to find out how the client or subject perceives that their low vision effects their ability to carry out their daily lives. A few authors address this problem by measuring a single area of impact, and some others attempt to measure effect on function in a more general or more comprehensive manner.

Selected Impact

In addition to studies in which the subject is asked to rate their vision or to report their perceived level of vision, there also have been a few

research studies designed to examine the impact on function. Some of them are not comprehensive but are very specific for area of function studied. Following is a discussion of four studies, each designed to examine a specific area of impact of low vision.

Snyder, Pyrek and Smith (1976) discussed the complex problem of mental impairment in the older adult as it relates to vision. Defining mental function as the ability to respond to stimuli appropriately in both content and emotion and to be able to do this over time, they also note that within the context of this definition we can see that perception (i.e. vision) can influence mental function just as mental function can influence perception.

The study reported here was one aspect of a much larger project designed to address many questions about mental function and mental impairment in older people. The purpose of Snyder et al's paper(1976) was to test the hypothesis that vision is related to mental function in older people.

Subjects were 295 residents of skilled, intermediate and board and care units of a large multiservice and residential center for older persons in Minneapolis. The subjects were tested for near and far vision and examined by an opthalmologist for a variety of the common eye problems found in older adults. Of the subjects, 24% were legally blind and 34.6% had vision between 20/70 and 20/100. The Kahn-Goldfarb Mental Status Questionnaire was selected as a measure of mental function (Snyder, et al., 1976). The subjects were placed into 3 categories according to their visual acuity and the acuity scores were evaluated against mental status scores. The results of the study confirm the hypothesis that mental function and vision are related. Analysis of variance was used to indicate that the differences

were statistically significant. Causality was not shown.

Snyder, et al.(1976) noted that there were many intervening variables in the study which were not controled including medications, over-all physical health and emotional state. An additional factor which could have affected data collection, and not mentioned by these authors is the possibility that those subjects with impairment in mental state might have difficulty cooperating with the vision testing procedures, this altering the results in the direction of the reported findings. In other words, measured vision and mental function may not actually be related and all Snyder et al. (1976) might have demonstrated was that people with impaired mental function have difficulty cooperating with visual acuity testing.

Another study in which a specific impact was appraised was done by Tobis, Reinsch, Swanson, Byrd and Scharf(1985) in a study of older adult fallers. These authors note that previous discussions about falls have ignored the influence of visual perception on the control of posture and coordination. They believe that as people age, the proprioceptive cues which we rely on to keep our balance are diminished in older people and they rely more on their vision to assist them in posture and mobility. The older adults with deviations in vision, then will be more inclined to fall.

This study, then, was done using 199 community dwelling adults between 60 and 94 years old. All were living independently and were described by the authors as able bodied. A manipulation of a rod and frame apparatus was used to determine accuracy of use of visual cues. The subjects were interviewed regarding their health history, including medications, diseases, and a detailed history of whether they had fallen in recent months. Tobis, et al. (1985) used analysis of variance and logistic regression to establish relationship of variables. Conclusions were that

the fallers demonstrated larger deviations from the true vertical and true horizontal in manipulating the rods (representing their visual inaccuracy) than the nonfallers.

The only instrument presumably designed to measure impact of low vision located in this review was the Anxiety Scale for the Blind developed by Hardy(1968). The assumption of the author was that anxiety is a major impact of low vision. Hardy (1968) suggests use of his measure of anxiety in studies of academic achievement, mobility, social behavior and work in visually impaired subjects. It is obvious that he sees anxiety as the dependent variable for all other impacts on function.

According to Hardy (1968), the Anxiety Scale for the Blind was originally tested with 122 high school students. A split-half reliability check was completed and yielded an r of .789 and a retest method of determining reliability yielded an r of .746 with these students. Psychologists specializing in work with the visually impaired were used to evaluate the scale to determine content validity. In addition validity was established by a correlation of 0.742 with the Taylor Manifest Anxiety Scale(Hardy, 1968).

A recent study of 20 recently blinded elderly clients of a Dallas Low Vision Rehabilitation program was conducted by Hensley(1987) using the Anxiety Scale for the Blind. Hensley's hypothesis was that the anxiety of recently blinded or visually impaired adults would be lower after instruction in daily living by a certified rehabilitation instructor. The subjects were given the instrument before rehabilitation began and a second time after 4 to 6 weeks of rehabilitation at home. Change levels were scored and a reduction in anxiety was established at a significance level of .05. The only impact examined in this study was the subjects anxiety.

The only research study in nursing found in this literature review was an investigation of the relationship between the loss of visual and auditory acuity and social disengagement in the aged by Edsall and Miller(1978). The researchers were using disengagement theory which states that society and the individual prepare for the ultimate disengagement of serious illness or death by a gradual and mutually satisfying process of withdrawl from one another. Snellen Acuity values were used to assess vision and the tools developed by Cumming and Henry (Edsall & Miller, 1978) were used to assess disengagement. The study was conducted with 122 residents of a public high rise for the elderly. The authors report that no relationship between loss of visual or auditory acuity and social disengagement was found. Explanations offered for these results included the possibility that those who live in this type of public housing have a great deal of opportunity for socialization or that perhaps the disengagement theory cannot be universally applied.

In each of the studies discussed in this section, impact on function was described only with respect to single specific impacts. Attempts were made to correlate low vision with measured mental status (Snyder et al., 1976), tendency to fall (Tobis et al., 1985), anxiety (Hensley, 1987), and social disengagement (Edsall & Miller, 1978). None of the research studies, examined thus far approach the study of impact of low vision in a comprehensive manner.

Comprehensive Effect on Function

Although a great deal of research exists on vision, the visual process and the specific changes in vision with aging, very few studies seem to have been done which are comprehensive and seek to identify the behavioral

effects of low vision or the individual's perception of their ability to carry out their daily lives. Even though an extensive search was conducted, only ten studies were located which seemed to be directed at impact of low vision in a general or broad sense. Of the ten, most did not relate to impact of low vision in a comprehensive manner and virtually all had serious methodological problems. Each of the ten will be reviewed in the following section.

In a study of 185 low vision patients, Kleen and Levoy (1981) surveyed the subjects, all older adults, for factors related to low vision rehabilitation. Along with objective visual acuity data, information was gathered about the patient's visual goal and the devices that had been prescribed. Simple frequency statistics were reported for these items. Although not a study of impact on function, this was selected because of the information about the subjects goals in rehabilitation. This writer assumed that a persons goals for rehabilitation would in turn explain something about their perception of the impact of their low vision.

Kleen and Levoy (1981) do not describe how data about the subjects rehabilitation goals was collected so it is not known whether this was done by informal interview or with a pre-established list of items. A list of 15 vision related tasks, however, are presented in reporting the results of this study. The items listed consist mainly of tasks like driving, sewing or television watching and specific visual functions like glare reduction or field expansion. The list does not comprehensively cover other areas like emotional reactions, thinking ability or social activity. It is not surprising that improved reading ability was important to 68% of the low vision patients in the study. Kleen and Levoy(1981) found that the older patients were mainly interested in improving their reading ability while younger

patients are more concerned with distance vision.

The Rand insurance study (Rubenstein et al., 1982) , discussed earlier, was a large study designed to evaluate a variety of health problems for consideration in health insurance benefits. The study contained questions requesting a self-rating of visual abilities and self rating of visual disabilities. Visually abilities were rated using the two questions designed to appraise near vision (self assessed newspaper reading) and far vision (ability to see a friend across the street).

Two other questions, included in the Rand study were designed to assess disability. Based upon the content of the questions, they are viewed by this reviewer as questions of impact on function. The subjects were asked, "During the past 3 months, how much have your eyesight probems worried or concerned you?" and "During the past 3 months, how often have your eyesight problems kept you from doing the kind of activities other people your age do?"(Rubenstein, et al., 1982, p. 91). Answers were rated on a 4 point scale from "A Lot" (1) to "Not at All "(4). In other words, one question was directed at emotional impact and a second globally asked about an area of physical impact. Reliability and validity data were not presented for these questions.

The responses to the disability questions were placed in a chart comparing visual ability data with impact on function data. Questionnaire response results about "worry" and "activities" was arranged in categories of "No impairment", "Impairment only in far vision", "in near vision" or "both". It was not clear to this reader whether the visual ability data was derived from the actual visual acuity records or from the self rated vision questions. Rubenstein et al., (1982) reported that there was a general trend in which people with impaired vision were more likely to report adverse

effects than people with no impairment. The term "adverse effects" seemed to refer to any response indicating worry or activity restriction. There were some inconsistent results in this tabulation. For example, 22 percent of those with no impairment in vision report worrying and 4 percent with no impairment report activity restrictions.

The impact questions used in the Rand study were very general, referring to worry in one and activity restriction in the other. They do not provide the subjects an opportunity to describe the impact in a way that would be useful in planning programs of care. Furthermore, the question about effect on activity is phrased "from doing the kinds of activities other people your age do?". As it is phrased, it might not provide accurate impact data about the subjects. A much more accurate phrasing might have been "from doing the kinds of things you usually do?"

Another study which included a comparison of low vision and several areas of impact on function was conducted through the New York Association for the Blind. The authors, Gillman, Simmel and Simon (1986) discussed self reported visual disability and the quality of life of older low vision individuals. Their report was part of a large study designed to measure the effects of a transportation service on some residents of special housing units in New York. They interviewed a total of 525 individuals of whom 486 were 60 or older and living in a building reserved for the elderly. According to Gillman, et al.(1986), the interview focused on four topics: travel behavior, disabilities, health and morale. The authors provide no rationale for selecting these four areas and do not provide conceptual or operational definitions of these categories. No hypotheses are advanced regarding the relationship between variables. Apparently these four topic areas represent the researcher's interpretation of impact on

function.

Gillman et al., (1986) collected data about self rated vision. Subjects were asked, "Do you have difficulty seeing?" and "Do your visual difficulties prevent you from going out?" (Gillman, et al., 1986, p. 588). The researchers stated that those two questions represented measures of visual impairment. Specifically, the 20.6% of the respondents who reported that problems seeing "sometimes" or "often" prevented them from going out were classified as visually impaired. This group, then was used as the visually impaired group who were studied for morale, health and other variables.

Items were included in the interview which presumably were designed to measure morale. Questions in that part of the interview were geared toward satisfaction and to feelings of well being. The authors note that respondents with visual handicaps were less satisfied with their health care, transportation, social life, shopping opportunities and food than those who were not visually impaired. In all areas, negative responses were more frequently made by the visually handicapped than by those who had adequate vision.

The methodological problems with the research by Gillman et al.,(1987) are overwhelming. Criterion for classifying subjects as visually impaired was based upon answers to the question about whether visual difficulties interfered with travel. In other words, the person with low vision has been identified here as someone experiencing an impact of low vision. No acuity measures were used to verify this classification.

Terminology was used very inconsistently in the study by Gillman et al., (1986). Subjects were referred to as visually impaired, visually disabled and visually handicaped in an interchangable fashion. (These terms have been established to be conceptually separate and should not be

interchanged [Kirchner & Lowman, 1978]). As stated earlier, there were no conceptual or operational definitions offered. Reliability or validity data was not presented. Results were reported without supporting statistical data.

The study by Gillman et al., (1986) was similar to others in that impact (disability) was not measured to reflect the full range of areas of impact. Morale (emotional impact) and travel behavior were the only effects of low vision measured. Many other areas of impact need to be measured to appraise the effect of low vision in a comprehensive manner.

Another study with multiple methodological problems is one by Jette and Branch (1985). They used data from the Massachusetts Health Care panel Study, a longitudinal investigation of the health and social needs of the noninstitutionalized elderly to look at the relationship between impairment and disability among the aged. To conduct this research, Jette and Branch(1985) interviewed 776 subjects, all older than 71. Three types of impairments; hearing, sight, and musculoskeletal were evaluated against measures of physical disability and social disability.

Preliminary findings of the study were presented. Levels of visual impairment were found to be unrelated to increasing social disability in this sample, but were significantly related to increasing physical disability. Those with visual impairments reported increased levels of disability regardless of their living situation (Jette & Branch, 1985).

In Jette and Branch's study (1985) the impairments in hearing and sight were operationalized by asking respondents to rate their hearing and to rate their vision as excellent, good, fair, and poor. Muscular impairment , on the other hand, was determined by interviewer scoring of the respondents actual performance of 10 gross body movements adapted from a reliable and

valid clinical tool (Jette & Branch, 1985).

There are several problems seen in the way Jette and Branch (1985) operationalized the impairments. First, the assessment of vision used in this research is inconsistent with the author's definition of an impairment. In developing the study Jette and Branch(1985) defined impairments as "anatomical or physiological abnormalities of body parts, organs or systems of the body"(p. 59). To measure impairment, however, they used self rating of vision. In other words, the conceptual and operational definitions do not match. Furthermore, the definition of impairment used by Jette and Branch (1985) does not coincide with generally accepted definitions of this concept (Kirchner & Lowman, 1978). Second, Jette and Branch (1985) base their findings on the assumption that visual acuity can be assumed from self rating of vision. As reported earlier in this review, Hilborne (1983) found that there are inconsistencies between actual visual acuity measures and a subjects self-rated vision. Third, we note that hearing and vision are self-rated whereas musculoskeletal impairment is interviewer-rated resulting in a source of inconsistency in measures treated as like categories.

Disability was defined by Jette and Branch (1985) as "alteration in the individual's functional performance"(p. 59). In other words, disability here is impact on function. Jette and Branch (1985) used adaptations of existing physical and social disability indexes. They measured six activities of daily living and five instrumental activities of daily living to represent physical disability. The social disability index focused on responses to four items: having someone to talk to daily, spending the day with someone, seeing a relative as much as one would like and seeing a close friend as much as one would like (Jette and Branch, 1985). Although more

comprehensive than the measure of disability in the Rand study (Rubenstein et al., 1982), these instruments still do not include the areas of mental or emotional function, nor do they tap the totality of physical or social function..

Leena Hakkinen (1984) conducted a large study of people over 65 in Turku, Finland during a six month period in 1983. Reported in a supplement to the Scandinavian Journal of Social Medicine, the stated aims of the study were to accomplish an up-to-date analysis of visual function, needs and disabilities of aged people. Eleven research questions were listed including questions of prevalence and degree of visual impairment, usefulness of specific visual function tests, demands of sight of older people and the subjective extent of disasbility in daily life as a result of visual impairment.

Random sampling was used to obtain 546 subjects aged 65 through over 85. Subjects received a thorough eye exam in a clinic, consisting of visual acuity measures, assessment of color vision, visual field, grating acuity and contrast sensitivity. The subjects were asked questions about their general health and an informal interview was conducted to obtain data about current optical devices, type of visual tasks and interests and perceived visual disability. Hospital records were used to augment data collection.

In addition to assessing best corrected visual acuity, Hakkinen(1984) made a determination of functional acuity. Although not clearly defined, it appears to relate to acuity in the person's actual life activities. In other words, it takes into account that people choose not to wear their glasses, or not to obtain new glasses. The percentage of subjects with a best corrected visual acuity of 0.3(20/60) or less was 9% whereas subjects with functional vision of 0.3 or less was 17% in people over 65.

Subjective disability was analyzed with respect to disability in moving about and in resolution requiring tasks in the 9% with best corrected acuity of 0.3 (20/60) or less. Haakinen(1984) reported that 67% felt they had difficulty moving about and 64% stated they had difficulty with resolution requiring tasks. There was some discussion of specific cases, and Haakinen (1984) indicated there were some individuals with very low acuity who reported they traveled independently. One reported conclusion was that a discrepancy between a persons subjective concept about his/her disability in the daily environment and the Snellen acuity had been demonstrated. Another conclusion, not supported by data visible to the reader was that independent elderly people cope relatively well at an acuity level as low as 0.2 to 0.15 (20/100 to 20/175).

There was discussion of the specific activities of driving, television, activities at close range (reading and needlework) and shopping. Information had been obtained regarding peoples activity preferences or their current activities. Each of the categories was discussed at length with discussion of remedial advice and citations of other authors, however, the statistical data from the study under discussion was not presented. It was not possible for the reader to clearly determine how these subjects viewed the impact of low vision on their ability to function in the listed activities.

Some correlation data was presented between stated activities and specific diagnostic vision tests. Of 82 drivers, none complained that glare interfered with driving even though 4% had measured visual acuity below the level of legal driving in Finland when in the presence of bright lights. Twelve of the 82 complained about rainy weather or dusk even though only one of the twelve deviated from safe scores in the contrast sensitivity

testing. Haakinen's (1984) conclusion was that contrast sensitivity showed the best correlation with subjective disability in traveling.

Although the purpose of the study by Haakinen was to collect data about impact of low vision on function there were numerous problems with the research design. Concepts were not defined. Data about impact on function was obtained in a casual interview so that there was not assurance that the same data was obtained in the same manner from each subject. No reliability or validity data is presented. In analyzing the data, all subjects with vision worse than 20/60 were placed in a single category even though 20/60 represents fairly good vision and anything worse than 20/200 represents legal blindness. It did not appear that all of the research questions were answered. In spite of the development of the "functional vision" category, these results were not used to discuss perceived disability. Conclusions are drawn that are not supported by the statistical data available to the reader. Only mobility and specific tasks are used to appraise disability. Although the stated aims of the study were to analyze disability related to low vision, it was not done in a comprehensive manner.

Three of the studies reviewed were about impact of vision with respect to cataract surgery. Two successive studies were done of pre and postoperative characteristics of patients having cataract surgery (Murphy & Donderi, 1980; Donderi & Murphy, 1983). The stated goal of the 1980 study was to predict successful recovery from cataract surgery. Although not overtly defined, it seemed that successful recovery was defined as postoperative activity and satisfaction with the results of the surgery.

Murphy and Donderi (1980) used a control group of 22 people with normal vision and a research group of 54 patients with a mean age of 71. Data analysis was done for only those 44 who used aphakic glasses after

surgery. The subjects filled out a questionnaire containing 5 questions about previous adaptability and adaptability to hypothetical situations and 18 questions about activity during the preceeding month. The subjects also completed tasks of mirror drawing, path walking, reading and binocular size matching. The questionnaires and tasks were to be completed preoperatively and at 7 and 16 weeks post operatively. Apparently there was a variance in these times due to scheduling difficulties. Attrition was high with only half of the subjects completing all the testing.

To analyze the data, correlations were calculated among many variables. The pre-operative prism difference score and the activities questionnaire predicted post operative performance of visual-motor tasts and reported post operative activity levels. In conclusion, Murphy and Donderi (1980) stated, "those who are preoperatively more active, who demonstrate better ability to learn new visual-motor tasks, and who walk a short path more efficiently are postoperatively both more satisfied, more active, and more efficient following surgery."(p. 13).

In the second study by Donderi and Murphy (1983), the adaptability questions were eliminated and the reaching and size matching tasks omitted since there was poor correlation of these items in the first study. The people conducting the tests eliminated the eye-hand coordination and eye-eye coordination after deciding they were impractical to perform. The second version, therefore consisted of the activities questionnaire, path walking and an added item, a question about post operative satisfaction. A larger sample was used and some additional data collected on the group from the first study. Comparisons of results were made for patients with lens implants, contact lenses and aphakic glasses correction. Composite scoring methods were developed. Conclusions were that youth, preoperative

activity levels and preoperative path walking were all correlated to satisfaction after surgery. Patients with intraocular lenses and contact lenses tended to be more active and satisfied after surgery than those who used the eyeglasses.

There were a number of limitations in both of the studies (Murphy & Donderi, 1980; Donderi & Murphy, 1983). Reliability and Validity data was not presented for any of the instruments or tasks. Attrition of the subjects was high and there was inconsistency in the timing of administration of the testing procedures between subjects. Satisfaction questions were not formally a part of the first study, but comments by subjects about satisfaction were used as part of the data for that study. An additional concern of this reviewer is the fact that apparently there was a wide variation in pre-operative vision, from ten with a normal nonoperated eye to three who were blind in the nonoperative eye. Expecting that preoperative vision level might affect activity levels as well as ability to perform the tasks, it seems that visual acuity is an important variable not considered in these studies.

Both of the research studies by Murphy and Donderi were designed to appraise some aspects of the effects of low vision. Objective evaluation of specific tasks was used as one means to examine impact of low vision. In addition, a questionnaire which sought information about specific tasks was used to appraise impact of low vision. Again, many areas of life activity are not included, so that impact is not evaluated in a comprehensive manner.

Another of the studies reviewed was a prospective study by Applegate, Miller, Elam, Freeman, Wood and Gettlefinger(1987), done in 1983-84 to determine the impact of cataract surgery on measured vision and on subjective and objective measures of function in 293 patients, all 70 and

over. Participants were 70% of all eligible patients from two opthalmology practices at the University of Tennessee. Patients were interviewed and examined before surgery and at 4 months and one year postoperatively.

Data was collected on vision, subjective measures of function and objective measures of function. Data on vision, taken directly from the patients charts included visual acuity as well as a calculated value for binocular vision. Subjective data included patient ratings of vision (5 point scale), patient ratings of newspaper reading, television watching and driving and a functional assessment inventory. The instrument used was a shortened version of the OARS instrument developed by Pfeiffer and others (Applegate, 1987). Questions in the instrument covered self appraisal of activities of daily living, physical health, economic resources, emotional health and social support. Objective measures of patient function included the Short Portable Mental Status Questionnaire and some timed manual performance tests (Applegate, et al., 1987).

Data was presented regarding improvement of vision after surgery and subsequent changes in self rated function as well as changes in objective measures of function. Mean changes in function were evaluated after dividing the group into subgroups based on the degree of improvement in vision at one year. Greatest improvement in vision was greater than 30%, moderate improvement was 1% to 29% and no improvement was 0% or a worsening of vision (31 cases).

The mean visual acuity before surgery (in the surgical eye was 20/100 and after surgery it was 20/40. Data from the subgroup analysis demonstrated that patients whose vision had improved most, also improved most in other measures of functional status. It was of interest that the improvement in function was greatest in the objective measures rather than

the subjective ones.

In general, this study by Applegate et al., (1987) was the most promising research reviewed. A large variety of data was obtained to describe vision. A method was used to quantify binocular vision so that all subjects could be evaluated consistently. Additionally, self rated vision and visual ability was included. The measure of impact on function was the most comprehensive used in the studies reviewed. The scale included many aspects of function, and a scale was selected with established reliability and validity. Limitations were discussed by the authors. Data was presented to support the conclusions drawn by the researchers.

The final two studies to be reviewed here are both theses. Both were designed as descriptive studies of the characteristics of older people with low vision. In each case the authors collected a very large variety of data from the subjects and then discussed frequency distribution results.

Kaarlela(1978), in a PhD dissertation from the University of Michigan, developed a 43 item questionnaire which she administered to 80 older subjects. According to a list by Kaarlela, (1978) areas covered on this interview schedule were basic descriptive characteristics, physical and social circumstances, services and needs, definition of self, and opinions regarding selected economic issues. Kaarlela(1978) indicates that some of the items in the interview schedule were derived from earlier similar research. but doesn't define concepts or the operationalization of concepts so that the reader understands why these categories were developed. Furthermore, no validity or reliability data are presented for either the previous or present instruments.

Data analysis in Kaarlela's thesis (1978) consisted of many frequency distribution tables and a narrative giving descriptive analysis of these

tables. Of interest to this reader was a list of activites in the questionnaire. The subject was asked to respond to each item by indicating whether they engaged in those activities at that time or at any time in the past. They were then asked to explain any changes from past to present In looking at the list of items, one wonders how the list was derived since many items seem similar, many are awkwardly worded and items on the list are not parallel in wording or concept. For example, some of the items, in order of frequency in which they were selected by subjects are: "Shop without difficulty", "Carry out most activities you like," "Go to movie, church, meeting", "visit friends alone", "More active than others same age", "shop frequently", and "leave house frequently"(Kaarlela, 1978, p. 100).

Although Kaarlela collected a great deal of data, it is difficult to draw conclusions from her data. Impact of function has not been defined conceptually nor appraised in a systematic or comprehensive manner.

A similar study was done by Jacobs(1981) in completion of a masters degree. When stating the general purpose of the study, Jacobs stated, "to collect data about what older people experience when they were faced with severe visual impairment (Jacobs, 1983; Jacobs;1984). Study subjects were from a Nebraska Rehabilitation service and were hand picked by staff to provide a geographic balance and a wide range of functional levels. The 54 subjects between age 60 and 95 were interviewed in their own homes by blindness counselors.

Jacobs(1981) developed a 10 page interview tool for her study. The instrument included questions in the categories of demgraphic data, adjustment to blindness, prior losses and coping skills, religiosity, life philosophy , attitude toward age , and life satisfaction Jacobs(1981) explained that she selected items from many other scales, describing them

and, when available, giving reliability and validity information. Jacobs interview instrument (1981) also seems to have many items which allow open ended answers. It does not appear that these were tape recorded, but rather the interviewer wrote summary comments in the blanks on the interview schedule.

A closer examination of the purpose of the thesis reveals that Jacobs (1981) sought answers to many specific questions. Among them is a null hypothesis stating that there is no significant relationship between the level of adjustment to blindness and each of many other variables (for example age, sex, marital status, coping skills, religiosity, life philosophy etc). Adjustment to blindness was defined by Jacobs (1981) as "the extent to which individuals are able to maintain or reclaim the level of independence in actions as well as attitudes to which they were accustomed prior to the onset of blindness"(p. 10). This concept is operationalized by a single item on the questionnaire. Subjects are asked to indicate the "degree to which you have been able to successfully deal with the changes which have come about in your life as a result of your vision loss" (Jacobs, 1981, p. 182). Answers are on a scale of five from "very successful" to "Not at all successful".

The problems identified with the work by Jacobs(1981) are very similar to those seen with the work of Kaarlela (1978). A very large volume of data was collected from a relatively small number of subjects. Rationale for selecting the topic areas for the interview were difficult to determine and the examination of impact was not done in a systematic manner. No data was presented about validity or reliability of the instrument used. Although all subjects in the thesis were from a low vision clinic, no data was presented which classified the level of vision in these subject. It was

not known how long any of the subjects had been blind. Most of the results were presented as relationships between the level of adjustment and factors like social support , religiosity etc. This data did not answer the question of what people experienced when they faced severe visual impairment.

Summary

Relevant research related to the impact of low vision has been reviewed in this chapter. Studies examined included self rating of vision and studies designed to identify perceived impact on function.

In reviewing the low vision literature, it is apparent that there is a need for sound research in this area. Many of the studies reviewed had serious limitations and there was a complete lack of consistency in approach between studies. Most of the research lacked a comprehensive approach to the study of impact on function.

There has been a wide variation in how subjects are identified or classified as having low vision. Self rating has been identified as inconsistent with visual acuity measures (Hilbourne, 1983). Self assessed eyesight, on the other hand, has been found to have a weak correlation with measured visual acuity (Haase and Bryant, 1973). Both self rating and self assessment have been used as the basis for identifying and classifying subjects for some of the studies of impact (Oppegard et al., 1984; Jette & Branch, 1985; Rubenstein et al., 1982). Other studies of impact of low vision have been done without using any data about vision (Murphy & Donderi, 1980; Kaarlela, 1978; Jacobs, 1981). Snellen visual acuity data is the most commonsly used means to identify low vision subjects(Snyder, et al., 1976; Haakinen, 1984; Edsall & Miller, 1978). Acuity data is usually gathered for each eye separately. Some studies classify subjects according to acuity in

the better eye, and others do not specify the source of acuity data. One study used a mathematically derived value for binocular vision derived from Snellen acuity data (Applegate, et al., 1987). With this variation, it is not possible to compare results from one study with another.

There were also a number of problems noted with regard to the attempts to study impact on function. Often described as disability, this concept was measured in a variety of ways. One study included only two interview questions to describe impact on function (Rubenstein, et al., 1982). The opposite extreme was found in a thesis (Jacobs, 1981) in which a 10 page plethora of questions were asked, but the researcher had not satisfactorily explained the basis for selecting the items. Most of the studies of impact included some questions about tasks of daily living but often did not include social, emotional, and cognitive effects. In many cases the impact questions had been designed by the researcher and data was not presented about validity or reliability of the instruments. Only one research study used a recognized comprehensive functional impact instrument (Applegate et al., 1987). There is a need for research to be done to identify the impact of low vision in a consistent and comprehensive manner.

The methodology used to complete this study of the perceived impact of low vision in older adults will be presented in Chapter IV. The research design, research questions, instruments, selection of the participants, data collection procedures and analysis of data will be discussed.

CHAPTER IV

METHODOLOGY AND PROCEDURE

Overview

This research study is designed to obtain descriptive information about the perceived impact of low vision in older adults. The purpose of this Chapter is to present the research methods and procedures used to accomplish this study. Included in this section are a description of the research design and research questions, a listing of operational definitions, discussion of the research instruments, explanation of the sample studied, the data collection procedure, a description of the analysis of data, and explanation of the protection of human rights.

Research Design and Questions

Design

This descriptive study has been designed to analyze data obtained by interview to identify the perceived impact of low vision in a sample of older adults. Visual acuity data, obtained from medical records was used to determine eligibility for participation in the study. A valid and reliable instrument, the Sickness Impact Profile was used to obtain data on impact of low vision. Pertinent demographic data and health related data was gathered in the survey questionnaire in order to examine findings with respect to visual acuity, self rated vision, demographic characteristics and Sickness Impact Profile scores.

Research Questions

The research questions for this study as listed in Chapter I are as follows:

1) What common and unique areas of impact of low vision are identified by the subjects?.

2) Is there a relationship between the subjects' tested visual acuity, their self-rated vision and their description of impact on function?

3) Are there relationships between selected sociodemographic characteristics (age, sex, income, living situation, etc.) and perceived impact on function?

Operational Definitions

Concepts used in the study were listed and briefly defined in Chapter I and were developed as conceptual definitions in Chapter II. In order to demonstrate the specific parameters of the study, they are further developed with the operational definitions that follow.

Older Adults was defined as men and women aged 60 and older residing independently in the community (i.e. non-institutionalized). The older adults may be receiving treatment for other health problems, but do not have diagnoses implying cognitive or psychiatric disorders.

Low Vision was defined as a decrease in measured visual acuity which can be attributed either to normal aging changes or to a specific diagnosis. The measured visual acuity, according to the records of an Opthalmologist or Optometrist should be a best corrected vision of 20/60 or worse in the better eye as measured using the Snellen chart (Luckmann & Sorenson, 1987). "Best corrected" refers to visual acuity measurements made while wearing conventional glasses.

The subjects were individuals who experienced a visual change as they aged, so that vision of 20/60 or worse in the better eye was acquired in late adulthood.

Impact on Function was defined conceptually as behavioral effects of alterations in health status which the individual recognizes and can report. In this study, the alteration in health status is low vision. The behavioral effects represent the integration of the biophysical, psychological, social and cognitive realms of existence. The impacts may be experienced by the individual as effects on their sleep and rest, eating, work, home management, recreation and pastimes, ambulation, mobility, body care and movement, social interaction, alertness behavior, emotional behavior and communication.

In operationalizing this term for the study, the Sickness Impact Profile was selected to represent impact on function (Bergner et al., 1981). The instrument has 136 items in 12 categories. The categories are sleep and rest, eating, work, home management, recreation and pastimes, ambulation, mobility, body care and movement, social interaction, alertness behavior, emotional behavior and communication. Although individual categories may be deemed to represent a predominantly physical, psychological, cognitive or social realm of function, they are all viewed as holistic. The instrument will be discussed in detail later in the chapter.

Instruments

In this study four sources of information were used. They included: 1) measures of visual acuity and specific eye condition diagnoses, gathered from medical records and obtained from an Optometrist 2) a questionnaire

which elicits information about demographic characteristics, health status and self-rated vision, obtained through interview from the older adult 3) the Sickness Impact Profile, a 136 item questionnaire about self-rated effects of health status on behavior, administered by interview to the older adult 4) an open-ended interview format designed to allow the patient to expain and expand upon specific areas of impact. (All instruments are found in Appendix D)

The instruments were used with the subjects in an interview format. This method was chosen because of recognition that it would be difficult or even impossible for individuals with impaired sight to complete a written questionnaire. A more complete description of the data collection sources follows.

Visual Acuity Data

The visual acuity measurements were recorded according to the standardized Snellen format (Luckmann & Sorenson, 1987). The Snellen Chart consists of a series of rows of symbols, usually block letters in gradually decreasing sizes. The sizes are listed according to the distances at which they are visible by a person with normal vision. Measurement of far vision is commonly made 20 feet from the chart. The person covers one eye and reads the line of symbols they see best. Results are documented in a fraction, with the numerator, the distance from the person to the chart, and the denominator the designation of the line. Vision of 20/60 means that the best line that person can read at 20 feet is the one a person with normal vision could read at 60 feet.

In addition, some of the low vision acuity data was collected using the

Feinbloom chart (Mehr, 1975), a refined version of the Snellen designation which allows finer gradations of low vision than the Snellen. It is used at ten feet from the patient and provides for designations up to 800 feet notation. The results were converted to the Snellen notation for analysis.

Sociodemographic and Health Information

Basic sociodemographic information data such as age, sex, living situation etc. were collected in order to provide descriptive information about the subjects of the study and to explore response differences among subjects.

A question regarding general health, questions regarding chronic illnesses and questions to determine general impact of chronic illnesses were included in order to identify subjects who's ability to function in their life's activities is significantly restricted because of chronic problems other than low vision. Several questions were asked to identify self-rated vision in order to provide further comparison between measured acuity, self rated vision and perceived impact on function. A copy of the sociodemographic questionnaire is found in Appendix D.

Sickness Impact Profile

The Sickness Impact Profile is a 136 item instrument designed as an outcome measure of behavioral dysfunction (Bergner, et al., 1981). The scale relies entirely on the individuals perception of the impacts of illness on his usual daily activity and the behaviors are viewed as reflecting both clinical and subjective dimensions (Gilson, Gilson, Bergner, Bobbitt, Kressel, Pollard & Vesselago, 1975). Each item describes a dysfunctional behavior and the respondent simply indicates which items apply to him.

The Sickness Impact Profile was used in it's exact form, but the instructions were altered to direct the subject to answer based upon the perceived effects of their low vision. See Appendix D for the SIP instrument and scoring instructions. The author's permission was obtained for use of the SIP instrument (See Appendix A).

The SIP instrument includes items in 12 categories of dysfunction listed as sleep and rest, eating, work, home management, recreation and pastimes, ambulation, mobility, body care and movement, social interaction, alertness behavior, emotional behavior and communication. Each category appeared to describe either an area of living or type of activity in which dysfunctional behavior might take place (Bergner, et al., 1976a). The categories, developed through a complex data collection and sorting process are considered to represent the entire realm of possible areas of impact on function of any alteration in health status.

Extensive testing and revision of the instrument was done throughout its original development. Field trials were conducted in 1973, 1974(4), 1976(2) as the refinements were made. Cumulative scores were established in addition to the analysis of each separate trial. Extensive reliability and validity tests were conducted at that time. Since then the SIP has been used in numerous studies (Bergner & Rothman, 1987).

In addition to its use for general population surveys as a general health status measure, the SIP has been found useful for other purposes. Bergner, et al. (1981) reported the SIP as useful in developing pattern and profile data for specific disease entities. Patterns of response were shown to characterize the dysfunction seen in patients with hyperthyroidism,

rheumatoid arthritis and total hip replacement (Bergner, et al, 1981).

The Sickness Impact Profile has also been used to assess the outcomes of clinical trials or to compare treatment modalities. Hart and Evans (1987) studied 859 patients with end stage renal disease to compare patients by treatment modalities. Significant score differences, controled for casemix variation were shown only between the transplant patients as compared with all others. Deyo and Cantor (1986) and Follick, Smith and Ahern (1985) found the SIP to have sensitivity in measuring low back pain and the improvement shown after treatment. Deyo and Diehl (1983) also found that the SIP was useful as a measure of change in patients with low back pain. There was a strong positive correlation between SIP scores and patients T_4 levels in the measurement of improvement of hyperthyroidism after therapy (Rockey & Griep, 1980). The SIP was also shown to correlate strongly with biological measures of improvement in patients with Rheumatoid Arthritis (Deyo, Inui, Leininger & Overman, 1983).

A study was done by Bergner, Hallstrom, Bergner, Eisenberg and Cobb (1985) using survivors of cardiac arrest and matched controls of patients who had a myocardial infarction. The researchers found the control scores (Myocardial Infarction) to be slightly lower reflecting less behavioral dysfunction than in the patients who had experienced the arrest. Patients with chronic airway disease were the subjects of a study by Howland, Nelson, Barlow, McHugo, Muir, Brent, Laser-Wolston and Parker (1986). In that study, only the physical domains of the SIP were used (Body care and movement, ambulation and mobility) with other instruments used to measure other domains. The authors found no measureable change among

participants relative to non-participants in an educational program. Likewise, Lareau and Larson (1987) concluded that the SIP was adequate for assessing general functioning in patients with chronic airway disease, but not sensitive enough to monitor small increments in improvement which might occur during a rehabilitation program.

On at least a few occasions, shorter, disease specific scales have been developed from the Sickness Impact Profile . King, Norsen, Robertson and Hicks, (1987) reported on a 20 item version to represent the activity expected after hospital discharge in patients after cardiac surgery. The shorter scale was reported by King, et al. (1987) to have an internal consistency with Cronbach's alpha reported at .84 for one study and .78 for the other. Deyo and Centor (1986) described a Roland Scale, devised for patients with low back pain by selecting 24 items from the SIP. The Roland scale was found to be valid and sensitive for clinical change in back pain.

Adminstration of the Sickness Impact Profile has been found to require some interviewer training and to take approximately 20 to 30 minutes to administer (Bergner & Rothman, 1987). The subject reads (if self administered) or is read (if by interview) each item and is told to respond only if the item applies to their state of health today. In this study the subjects were asked to respond only if the item applied to their state of health relative to their low vision today. The responses, then consist of either "no response" or a "yes". Specific scale values are listed next to each item. The scaling of the items was developed by 25 judges so that items are weighted according to the degree of dysfunction they represent (Pollard, Bobbitt, Bergner, Martin & Gilson, 1976). The score for each of the

12 scales is calculated by adding the scale values for each item checked, dividing by the maximum possible score for the subscale and multiplying by 100 to obtain the subscale score. A SIP percent score can be calculated for the entire SIP as well as for each of the subscales. The total possible raw score for the entire instrument is 1003.0 (Bergner, 1977). Scoring for this study will be done according to the author's instructions (Bergner, 1977).

In addition, two subscales have been designated by the developers. The physical impact dimension consists of the categories of ambulation, mobility and body care and movement, a total of 45 items. The psychosocial dimension is a combination of the subscales of social interaction, communication, emotional behavior, and alertness behavior, a total of 48 items. The final six subscales (eating, work, sleep and rest, household management and recreation and pastimes are not aggregated in any way (Bergner, et al., 1981). Thus, scoring for the SIP can be aggregated at several levels: the subscales, the two dimensions, or the aggregate total scale. In this study, scores were determined for each of the 12 subscales, for the two dimensions and for the total instrument.

Reliability and Validity of the Sickness Impact Profile

Extensive testing has been done to establish both reliability and validity of the Sickness Impact Profile. Reports appear, both in connection with the initial development of the instrument (Bergner, et al., 1976; Pollard, et al., 1976; Bergner et al., 1981) and in a recent study comparing three health status instruments (Read, Quinn & Hoefer, 1987).

Reliability

The reliability of an instrument is the "degree of consistency with which the instrument measures the attribute it is supposed to measure" (Polit & Hungler, 1983, p. 385). Reliability measures include studies of internal consistency, inter-rater reliability and test-retest reliability. The reliability coefficient represents the proportion of the score that contains information about a concept as opposed to random error (Bergner & Rothman, 1987). In early testing (Pollard, et al., 1976), the SIP was administered twice to 119 subjects using two forms of the questionnaire, two types of methods of administration and a long and a short form. In addition to analyzing test-retest reliability and interrator reliability, Cronback's alpha was used to determine internal consistency. Internal consistency has been reported as .63 to .90 for the categories and .96 overall (Bergner & Rothman, 1987). Interrator reliability is .72 to .92 for the categories and .92 overall and test-retest reliability was .88 to .92 overal (Bergner & Rothman, 1987). Thus the Sickness Impact Profile has been determined in past analysis to be a reliable instrument as measured by test-retest reliability, interrator reliability and internal consistency.

Validity

Pollit and Hungler (1983) define validity as the "degree to which an instrument measures what it is supposed to be measuring "(p. 394). Validity can be determined by a variety of methods. Face validity, the subjective evaluation by experts of whether the instrument measures what is is said to measure (Bergner & Rothman, 1987) was established for the SIP during the

development process. Responses by patients, health care workers, and items found in the literature were sorted and examined for the purpose of identifying categories of behavioral dysfunction. The sorting process was done by professionals so that face validity was established just in the process of developing the categories.

Other validation measures for the SIP included comparison of the SIP with a single item general rating of health status by the subject, comparison with physician ratings of dysfunction and comparison with scores on some other indexes of dysfunction, the Activities of Daily Living Index and the National Health Interview Survey (Bergner, et al., 1976b). In general the correlations between the SIP overall scores and these validity criterion were high. For example the correlation between the NHIS results and the SIP were .61 and between self assessed dysfunction and SIP were .52.

A number of the specific disease related studies include data to support disease specific validity. For example, Follick, Smith and Ahern (1985) report that the SIP scores correlated with the Minnesota Multiphasic Personality Inventory and with data in the patients daily activity diary. Rochey & Griep (1980) noted correlation with the SIP and T_4 levels in patients receiving treatment for hyperthyroidism. Deyo, et al.,(1983) noted correlation with hematocrit, sedimentation rate, grip strength and other valid measures of the status of patients with Rheumatoid Arthritis. In a study comparing three measures of health status, Read, Quinn and Haefer (1987) reported that the correlation between the SIP and time on the treadmill was 0.63. The General Health Rating Index and the Quality of

Well-Being Scale were compared with the SIP. Correlations were done to test convergence construct validity and the SIP values were 0.52 and 0.55 with the GHRI and QWB respectively. Thus, the SIP has been determined to have face validity, construct validity and convergence construct validity.

Open-ended Interview

After completing the SIP, subjects were asked to talk about any specific areas of impact of low vision. This gave the subjects an opportunity to describe any areas of dysfunction that they felt were not covered by the SIP or to describe in more detail any areas that were especially important to them. Reflective responses were used to facilitate communication. To stimulate the subjects thinking, general questions were phrased which suggested the categories of the Sickness Impact Profile. Guidelines used for this interview appear in Appendix D. This portion of the interview was no more than 30 minutes and the content was recorded using a tape recorder.

Data from this interview was then obtained by listening to the tapes and typing quotations which represented the major ideas offered by the subject. The quotations were sorted into the SIP subscale categories using key words to insure that correct sorting was done. Finally the items were sorted into subclassifications within the SIP subscales. At each stage, the data was examined by another Clinical Nurse Specialist/researcher for general fit of the items to the subscale or category and results were verified as generally consistent for those categories.

Sample

The target population of this study was older adults, 60 years of age and older who were patients of an optometrist in a midwestern urban community. An opthalmologist in that same community had agreed to provide subjects, but during the two month data collection period none were obtained from that clinical site. The subjects selected were a convenience sample and needed to meet the following criteria.

1) Be willing to participate in the study.

2) Be 60 years of age or older.

3) Be living independently in the community. This eliminates those people who were residing in a nursing home or foster care home.

4) Have a best corrected visual acuity with conventional lenses of 20/60 or worse in the better eye.

5) Be free of apparent mental impairment that would interfere with the ability to answer interview questions. (This was judged by the Optometrist.)

6) Be free of apparent severe hearing impairment that would interfere with the ability to conduct an interview.

7) Be able to speak and understand English.

Data Collection Procedure

The inital contact with the subjects was made by the Optometrist. This contact was made either during an office visit or by telephone. The general purpose of the study was explained, the time expected for the interview and assurance of confidentiality was made. (A script for this

request appears in Appendix C.) The subject was asked if they were interested in participating and permission was obtained for the subject's name and telephone number to be released to the researcher. In addition to the verbal explanation, the potential subjects received a written description, prepared in large print and were asked to sign a permission to release their name to the researcher (Appendix C).

Those who expressed willingness were contacted by the researcher by telephone. A more detailed explanation of the study was offered and an appointment was made to go to the subjects home for the interview. In addition the subject were assured that participation was voluntary, that they could withdraw from the study at any time, that confidentiality would be maintained and that the decision to participate or not to participate would in no way affect further care by the doctor.

The researcher went to the subjects, homes according to the appointment made at the time of the phone contact. The consent form for the study, a consent for release of the visual acuity and eye care records and a consent to tape record the final open discussion was obtained. (Copies of all consent forms appear in Appendix C). The demographic data was collected first, the SIP questionnaire second, and the open-ended interview third. Administering of the SIP was conducted following the protocols spelled out by the authors of the Sickness Impact Profile (Conn, Bobbitt & Bergner, 1978). Subjects were allowed to have a member of the family or friend present during the interview if desired. Total time for this data collection process was about 75 minutes.

Pilot Study

A pilot study was be done with two subjects. The purpose of the pilot study was to identify any problems with the instruments or with the interview format. Subjects were asked to comment on the ease of the use of the instrument, the length of time involved and any aspects of the procedure. No revisions of the procedure or instrument were determined to be needed.

Analysis of Data

Descriptive statistics were used to show the sociodemographic and clinical characteristics of the study participants. Specifically, the frequencies, percentages, and, where applicable, means, standard deviations and ranges were calculated for age, sex, marital status, education, living arrangements, employment, occupation and income. In addition, calculations were made to show perceived general health, chronic illnesses, eye disorders, measured visual acuity and self rating of vision.

The major research questions for this study and the procedures utilized to analyze the data obtained from the study follow.

1. What common and unique areas of impact of low vision are identified by the subjects?

Calculations were made of the individual items, the 12 SIP subscales, the two SIP dimension scores, and the total SIP score. Frequencies and percentages were calculated for individual items. Descriptive data for the subscales, dimensions and total included frequencies, percentages, means, standard deviations and ranges. The frequencies, percentages and means represent the common areas of impact of low vision for these subjects. The

standard deviation scores provided information about the variability among subjects. The range of responses provided some data about the unique areas of impact of low vision in these study subjects.

In addition, the open-ended interview responses were listed by items and sorted by the researcher into the 12 SIP subscale categories. They were sorted a second time to identify themes or categories of response within the SIP subscale categories. Identification of frequencies and discussion of the responses provided information about common and unique areas of impact of low vision in the study subjects.

2. Is there a relationship between the patients tested visual acuity, their self rated vision and their description of impact on function?

The five questions about self-rating and self-perception of vision were analyzed and calculations were made to determine a value to be used for self-rated vision. Then, using the Pearson product moment correlation, relationships were calculated between the measured visual acuity and the person's self-rated vision score. The total SIP scores for each subject were correlated with their visual acuity to see the relationship between the tested visual acuity and the SIP scores. The total SIP scores for each subject were correlated with their self-rated vision to determint the relationship between self-rated vision and the SIP scores. The Pearson r was used for all of the above calculations. For all tests, a level of .05 was used to determine significance. Multiple regression was also used to examine the relative contribution of visual acuity and self-rated vision to the SIP total score.

3. Are there relationships between selected sociodemographic

characteristics and perceived impact on fuction?

The relationship between age, self-rated health, number of chronic illnesses, and number of illnesses perceived as having a serious impact and the SIP scores were calculated using the Pearson product moment correlation. Sex, Marital status, income, education, and living situation were also examined relative to SIP scores to identify any relationships.

Protection of Human Subjects

Procedures for protection of human subjects was followed throughout this study. Initially consent was obtained to release the client's name, phone number and visual acuity and diagnosis data to the researcher. Consent forms were used for permission for the study , for obtaining visual acuity data and diagnosis from the medical records and for using a tape recorder during the last portion of the interview. Confidentiality was maintained by protecting the identity of the subjects. Participants were assigned an identification number which was the only identification on the instruments or on the typed script of the interview. Questionaire answers were converted to a code sheet, analysis was done by computer and results are being reported in group form. Names were not used with the typing of the open-ended interview responses. Signed consent forms were kept in a locked file, separate from the instruments used in the study. Potential risks to the subjects are unlikely and are limited to the possible psychological risk of divulging personal feelings about the experience of low vision. Approval to do the research was obtained by submitting the research proposal to the University Committee on Research Involving Human Subjects according to correct procedure. The UCRIHS letter of approval

appears in Appendix B.

Summary

A discussion of the methodology for this study has been presented in Chapter IV. The major topics of the chapter have included an explanation of the research design, a listing of the research questions, and a description of the operational definitions used in the study. The data collection instruments and methods were explained with emphasis on a discussion of the Sickness Impact Profile, and some if its uses, along with validity and reliability information. The criteria for subject selection was described. Procedures for obtaining the participants, data collection analysis of the data and the protection of human subjects has been described. Chapter V will include the presentation of the results of the study and the analysis of the data.

CHAPTER V

DATA ANALYSIS

Introduction

Results of the study are presented in this chapter. Descriptive information is presented on the sociodemographic characteristics of the sample, the participants' perceived general health, chronic illnesses, eye disorders, measured visual acuity and self-rating of vision. Data analysis which answer the major research questions of this study are presented. Data includes statistically analyzed results of the SIP as well as descriptive data from the open-ended interview.

Sociodemographic Characteristics

The sample for this study consisted of 15 subjects referred by an optometrist in an urban midwestern city. The 15 subjects included 3 men (20%) and 12 women (80%). Age of the participants ranged from 68 to 88 with a mean age of 76 and standard deviation of 6 years. Of the participants, 13.3% (n=2) were under 70 years old; 46.7% (n=7) were 70 to 79 years old; and 40% (n=6) were 80-89 years old.

Six of the subjects were married (40%) and living with their spouse. Six were widowed (40%) and three reported they were divorced (20%). Eight of those who were widowed or divorced were living alone, and one had a young grandchild living with her. Ten of the subjects (66.7%) were living in a house and five (33.3%) were in apartments.

Socioeconomic status of the subjects is reflected in data obtained about their educational level, income and occupation. None of the subjects in this study had college degrees and only four (26.7%) had some college education. The largest number (N=6, 40%) were high school graduates, with

two (13.3%) completing some high school and three (20%) completing grade school. More than half (n=10, 66.6%) reported their income to be in the range of $5,000 through $14,999 per year. Just three (20%) were in the range of $15,000 through $24,999 per year and two (13.3%) did not know or refused to answer. A summary of sociodemographic characteristics is shown in Table 1.

Table 1: Description of Subjects by Age, Marital Status, Education and Income (Frequency and Percentage)(N = 15)

Age Range	Number	Percent
68-70	2	13.3%
70-79	7	46.7%
80-89	6	40.0%

Marital Status	Number	Percent
Married	6	40%
Widowed	6	40%
Divorced	3	20%

Education	Number	Percent
Some College	4	26.7%
High School Graduate	6	40.0%
Some High School	2	13.3%
Grade School Graduate	3	30%

Annual Income	Number	Percent
$5,000-$14,999	10	66.7%
$15,000-$24,999	3	20.0%
Did not answer	2	13.3%

Thirteen of the subjects reported that they were retired. One of the subjects stated that she had never been employed and since she was a

housewife, continued her usual work. The other person was self employed as a beautician and has continued to do this on a part-time basis. Subjects were asked their pre-retirement occupation and reported as follows: Sales or office work (n=5, 33.3%), factory worker (n=4, 26.7%), truck driver (n= 1, 6.7%, farming (n =1, 6.7%), choir director (n = 1, 6.7%) and public relations (n = 1, 6.7%). Only one of the subjects indicated that they retired due to disability.

Information about health was obtained by asking the subjects to rate their own health and by asking them about chronic illnesses. Self-rating of health is shown in Table 2 and is as follows: Very Good (n = 1, 6.7%), Good (n= 3, 20%), Average (n = 9, 60%), Poor (n =2, 13.3%), Very Poor (n = 0, 0%). Information about chronic illnesses and perceived effect on health is shown on Table 3. The seven illnesses listed as "other" were a fractured femur with residual effects, a leg amputation (below-the-knee), gout, hypothyroidism, chronic back pain, dizziness and "nerves". All subjects listed at least one chronic illness, 33.3% (n=5) reported two illnesses and 36% (n=4) reported three illnesses. When asked about whether their chronic illnesses seriously affected their ability to carry out their daily lives, six responded that they did not. In five subjects (33.3%) only one illness had a serious effect.

Table 2: Self-Rating of Health by Frequency and Percent (N = 15)

Self Rating of Health	Number	Percent
Very good	1	6.7%
Good	3	20.0%
Average	9	60.0%
Poor	2	13.3%
Very Poor	0	0

Table 3: Incidence, Totals, and Perceived Seriousness of Chronic Illnesses in the Subjects by Frequency and Percent (N = 15)

Chronic Illness	Incidence		Perceived as Serious	
Name	Number	Percent	Number	Percent
Arthritis	6	40.0%	4	26.7%
Cancer	4	26.7%	1	6.7%
Chronic Lung Dis.	1	6.7%	1	6.7%
Diabetes	5	33.3%	1	13.3%
Heart Disease	6	40.0%	2	13.3%
Hypertension	8	53.3%	0	
Kidney Disease	0		0	
Stroke	2	13.3%	1	6.7%
Other	7	46.0%	4	26.7%

Number of Reported Chronic Illnesses per Subject

Illnesses per person	Number	Percent
1	3	20.0%
2	5	33.3%
3	4	26.7%
4	1	6.7%
5	1	6.7%
6	1	6.7%

Illnesses per Subject Reported as having Serious Effect

Illnesses per person	Number	Percent
0	6	40.0%
1	5	33.3%
2	3	20.0%
3	1	6.7%

The measured visual acuity of the participants used for this study was the visual acuity in the better eye with best optical correction using regular lenses. The range in measured vision for these subjects was 20/60 through 20/450 with a mean of 20/228 and a standard deviation of 126 (in the denominator of the Snellen designation). A summary of visual acuities is shown on Table 4. Vision in four subjects (26.6%) was better than the designation for legal blindness and the other 11 (73.3%) were classified as legally blind. All subjects had acquired their low vision as an older adult. Information about exactly how long it had been since vision was first reported as worse than 20/60 (best corrected) in the better eye was not able to be accurately obtained, but seemed to range from less than 1 year to approximately 10 years.

Macular Degeneration was the diagnosed eye problem for 14 (93%) of the subjects. Of those 14, two also had cataracts and one also had diabetic retinopathy. One subject had been blind in one eye since birth due to Amblyopia and had a diagnosis of Chronic Macular Cystoid Edema secondary to a cataract extraction resulting in low vision in her other eye.

Table 4: Best Corrected Visual Acuity in the Better Eye
by Frequency and Percent of Subjects (N = 15)

Snellen Value	Number	Percent
20/60	1	6.7%
20/80	1	6.7%
20/100	2	13.3%
20/200	6	40.0%
20/280	1	6.7%
20/300	1	6.7%
20/400	1	6.7%
20/450	2	13.3%

Subjects were asked to rate their present vision. These results are shown on Table 5. In addition they were asked a series of four questions to further subjectively rate visual activities. These data are presented on Table 6.

Table 5: General Self-Rating of Vision by Frequency and Percent of Subjects (N = 15)

Vision Rating	Number	Percent
Very good	0	
Good	0	
Average	2	13.3%
Poor	9	60.0%
Very Poor	4	26.7%

Table 6: Perception of Visual Activities by Frequency and Percent (N = 15)

Question	Number Yes	Percent
1. When wearing regular glasses are you able to read newspaper headlines?	7	46.7%
2. When wearing regular glasses are you able to read newspaper print?	0	
3. When wearing regular glasses are you able to recognize the features of people when they are within two or three feet?	9	60%
4. When wearing regular glasses are you able to recognize a friend walking on the other side of the street?	0	

Subjects were asked to provide information about special help they had received for their vision problem. All subjects (n=15) were seeing the optometrist who specializes in low vision problems so all had received assistance through his assessment and evaluation for special lenses. In addition, six (40%) had been visited by a counselor from the Michigan Commission for the blind and two (13.3%) had attended a low vision rehabilitation center. Eight of the subjects reported that they had special lenses they could wear and most of the subjects used hand held magnifying glasses. Eleven subjects reported that they used a variety of self-help devices to aid in their ability to manage around the house. Those reported included special lighting, a reading machine that magnifies material, talking watches, large print dials on phones, special markings on the stove dials, a needle threader and the radio reader and talking books service.

In summary, the subjects for this study were 15 older adults, referred by an optometrist in a midwestern urban community. The three men and twelve women were between 67 and 89, with visual acuity between 20/60 and 20/450 (best corrected, in the better eye), and all living independently in the community and surrounding rural area. Six were married and nine either widowed or divorced. The subjects ranged from grade school graduates to those with some college education and most had been employed in office or factory work. The majority reported an annual income between $5,000 and $14,999 per year. Although most subjects felt their health was average, they reported as many as six chronic illnesses, some with serious effect. All but one reported that Macular Degeneration was the cause of their low vision and most of them rated their vision as poor.

Research Questions

Results presented to represent impact of low vision include individual items from the Sickness Impact Profile, the 12 subscales of the SIP, the two dimensions of the SIP and the total score of the SIP as well as the information obtained through the open ended interview. First, the Sickness Impact Profile, the instrument used in this study, will be discussed with respect to correlations between the subscales, dimensions and the total. Following that, each of the three research questions are listed with data presented to answer those questions.

Sickness Impact Profile

Pearson Correlation was used to analyze the subscales of the SIP. Of the 66 subscale combinations that were evaluated, only six were correlated positively with $r > .5$ and $p < .03$. Because so few significant relationships were found between the subscales, they were each assumed to measure distinct aspects of impact.

In addition the relationship between the subscales and the dimensions and the subscales and the total were analyzed. Table 7 shows those relationships. The subscales Mobility (M), Ambulation (A), and Body Care and Movement (BCM) are combined to form the Physical Dimension. The subscales Emotional Behavior (EB), Social Interaction (SI), Alertness Behavior (AB) and Communication (C) are combined to form the Psychosocial Dimension. The total SIP score is a representation of the combination of all SIP scores.

Further, Pearson Correlation Coefficient was used to analyze the relationship between the two dimensions and the total scores. The physical and psychosocial dimension were shown to be related ($r = .56$, $p < .02$). Both

dimensions were strongly related to the total (Physical dimension; r = .72, p < .001: Psychosocial dimension; r = .77, p < .001).

Table 7: Pearson r Correlation between the SIP Subscales, Dimension and Total scores

SIP Subscale	Physical Dimension	Psychosocial Dimension	Total
Sleep Rest	.26	-.07	.30
Emotional Behavior	.17	.48*	.23
Body Care and Movement	.39	.37	.19
Home Maintenance	.30	.45*	.72**
Mobility	.84**	.49*	.60**
Social Interaction	.23	.57*	.42
Ambulation	.89**	.43	.68**
Alertness Behavior	.66**	.83**	.64**
Communication	.11	.56*	.62**
Recreation and Pastimes	.47*	.20	.67**

* = p< .05 ** = p< .01

Research Question One

What common and unique areas of impact of low vision are identified by the subjects?

Common areas of impact are identified by analyzing the mean and standard deviation of the subscale, dimension and total scores for the SIP, the number and percent who responded to individual items, and by examining the type and frequency of answers in the interview. Unique areas of impact are identified by examining the range of scores for the subscale, dimension and total scores for the SIP and the unique answers provided in the interview.

Table 8 shows the relative scores in the SIP. The data is organized so that the dimension scores and the total appear at the bottom. The subscale

scores are arranged in approximate rank order of mean scores according to the number of subjects who responded in that subscale.

TABLE 8 Mean, Standard Deviation and Range of SIP Scores

SIP Category	Mean Scores*	S. D.	Range	
Recreation/Pastimes (n = 14)	36.18	23.53	0.00	80.10
Home Management (n = 14)	24.81	14.08	0.00	45.06
Communication (n = 11)	10.75	9.17	0.00	30.35
Alertness Behavior (n = 8)	13.69	18.47	0.00	57.92
Emotional Behavior (n=6)	6.28	11.21	0.00	41.14
Mobility (n = 8)	6.47	7.40	0.00	21.98
Social Interaction (n = 10)	5.43	5.72	0.00	18.00
Ambulation (n = 7)	6.42	8.69	0.00	24.23
Body Care and Movement (n = 6)	2.40	3.56	0.00	12.28
Work (n = 2)	30.58	7.55	25.24	35.92
Sleep and Rest (n=2)	1.39	3.46	0.00	9.82
Eating (n = 0)	0.00	0.00	0.00	0.00
Physical Dimension (n = 10) (BCM, M, A)	5.10	5.12	0.00	14.33
Psychosocial Dimension (n = 13) (EB,SI, AB, C)	9.04	7.27	0.00	26.21
Grand Total (n = 15)	9.82	5.28	0.00	22.63

*All scores were calculated by dividing the subjects score by the maximum score in that category and then multiplying by 100.

It is seen that the largest number of subjects (n = 14) responded to items in the Recreation/Pastimes and Home Management subscales. The mean in these areas was also the highest recorded (R/P: X = 36.18, S.D. = 23.53 and HM: $\overline{X}$ = 24.81, S.D. =14.08). Other relatively high areas of impact included Communication (n = 11, $\overline{X}$ = 10.75, S.D. = 9.17), Social Interaction (n = 10, $\overline{X}$ = 5.43, S.D. = 5.72) and Alertness Behavior (n = 8, $\overline{X}$ = 13.69, S.D. = 18.47). In all subscales except work, there was at least one subject who did not identify any impact (Min = 0.00). The Maximum score varied from 9.82 (Sleep and Rest) to 80.10 (Recreation and Pastimes). None of the subjects responded to items in the Eating subscale and only two of the subjects indicated any impact on Sleep and Rest.

The work subscale was only applicable to subjects who indicated they were still working and other subjects were not asked questions in this subscale. Consequently only two subjects responded, yet the mean is shown as relatively high. One of the subjects had retired from factory work but continued to work part time on his son's farm and one of the subjects was a self employed beautitian who continued to work part time in her home.

The Physical dimension consists of the subscales of Body Care and Movement, Mobility and Ambulation. Psychosocial dimensions scores are a combination of Emotional Behavior, Social Interaction, Alertness Behavior and Communication. The impact of low vision was greater in the Psychosocial dimension (n = 13, $\overline{X}$ = 9.04, S.D. = 7.27) than in the Physical dimension (n = 10, $\overline{X}$ = 5.10, S.D. = 5.12). The range of scores was also greater in the Psychosocial dimension (0.00 to 26.21).

The Sickness Impact Profile consists of 136 items. The subjects in this study responded to only 40% of these items (55). Thus 81 items in the

SIP were not selected by these subjects with low vision. The list of all items selected by the subjects in this study is found in Appendix E. Table 9 shows the frequency and percentage of responses to those individual items on the SIP that were selected by 40% or more of the subjects.. There were only ten items on the scale that were selected by 40% or more of the subjects in this study. Twenty eight items were only selected by one or two subjects and may be viewed as unique areas of impact in some subjects.

Each subject was invited to talk about any areas of impact in an open interview conducted after completing the SIP. As the interview progressed they were given cues regarding the categories of the SIP to stimulate their

TABLE 9: Most Selected Items from the Sickness Impact Profile in Rank Order by Frequency and Percent(N =15)

SIP Item		Number	Percent
(RP 2)	I am going out for entertainment less often.	12	80%
(RP 6)	I am doing fewer community activities	12	80
(C1)	I am having trouble writing or typing.	11	73.3%
(RP 3)	I am cutting down on some of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading.	11	73.3%
(HM 7)	I have difficulty doing handwork, for example turning faucets, using kitchen gadgets, sewing, carpentry.	10	66.7%
(HM 10)	I have given up taking care of personal or household business affairs, for example, paying bills, banking,working on the budget.	9	60%
(SI 6)	I am doing fewer social activities with groups of people.	8	53%
(SI 1)	I am going out less to visit people.	7	46%
(HM 2)	I am doing less of the regular daily work around the house than I would usually do.	6	40%
(AB 2)	I have more minor accidents, for example, drop things, trip and fall, bump into things.	6	40%

thinking about impact. The researcher listened to these tape recorded interviews and typed quotations which represented the ideas presented in the interview. These quotations were then sorted according to the SIP categories. The number of separate responses is shown in Table 10 and the total list of responses appears in Appendix F.

Several approaches were taken to insure that relevant data was selected from the interview tapes and that it was sorted into the correct SIP categories. In the interview guide the subjects were prompted by the researcher by mentioning the categories of the SIP. The researcher would say, "Do you have any comments about how your vision affects your emotions?". Responses immediately following that, then were related to the subject's perception of the emotional impact.

In examining the interview data, the researcher also looked for key words to guide the sorting of the data. Since the authors of the Sickness Impact Profile did not publish conceptual definitions of these 12 subscales, the researcher relied on the content in items in the SIP instrument as a guide for the definition of those subscales. For example, because there was an item in the Alertness Behavior subscale about minor accidents like dropping things, tripping and falling, or bumping into things, and this general topic did not appear anywhere else, the researcher placed all comments by the subjects regarding making mistakes into this subscale category.

Furthermore, since these subscales all consist of topics with common clinical definitions and the items in the subscales are consistent with those common definitions, the researcher relied on her own professional clinical judgement to determine the classification of the subject's statements. Some items were placed in more than one category. For example: if the

subject was talking about problems they were having with cooking and then stated "I get so frustrated", the item was placed in both Home Maintenance (HM) and in Emotional Behavior (EB).

The data analysis process took place in several stages. First, the quotations were typed from the tapes. Then the items were sorted into the 12 SIP categories. Finally the items were sorted within those categories to identify subclassifications. Home Maintenance items, for example, became subdivided into shopping, cooking, housecleaning, yard and garden work, fixing things and personal business activities.

At each stage of the sorting, the typed data was examined by another Clinical Nurse Specialist/researcher for general fit of the items to the subscale or category and the results were verified as generally consistent for these categories. The second researcher was familiar with the SIP and consequently had a working knowlege of the definitions of the subscale categories. This person read the entire list of typed quotations after it had been prepared, then read it again after it had been sorted according to the SIP subscales. She indicated agreement with the placement of quotations into the subscales and categories. Key words, and common clinical knowlege was used in this process.

There were 47 different statements from 13 of the subjects reporting some impact on emotional behavior. A wide variation in words were used to describe the emotional impact. A few reported feeling depression, sorrow, or sadness in connection with their vision loss (n = 5). One woman stated, "That's why I got so depressed when I first started having the problem. There were so many things I couldn't do and that depressed me." Others (n = 3) reported feeling like they could cry easily. Several stated that they felt discouraged or felt sorry for themself (n = 4).

Table 10: Number of subjects and Frequency of Interview responses according to the SIP Subscales

SIP Subscale	N Subjects	Percent of Subjects	N Responses	Percent of Responses
Emotional Behavior (EM)	13	87%	47	21%
Recreation and Pastimes(RP)	12	80%	36	16%
Home Maintenance (HM)	12	80%	36	16%
Mobility(M)	15	100%	32	14%
Alertness Behavior(AB)	8	53%	22	9%
Body Care and Movement(BCM)	10	67%	21	9%
Social Interaction(SI)	11	73%	15	7%
Eating (E)	5	33%	6	3%
Communication(C)	4	27%	5	2%
Ambulation(A)	2	13%	2	<1%
Work(W)	1	7%	1	<1%
Totals	15	100%	223	100%

Six subjects used words like "feeling upset", "makes you disguisted", "frustrated", "aggravating", "makes you sick" when describing their feelings in specific situations. One said, "I feel very embarrassed when I do not know people". An other stated, " you think you've got something on your fork and you don't. When you eat out that is embarrassing". Six of the subjects described situations or events in which they felt embarrassment. Seven of the responses seemed to be related to changes or fears about self-image. One woman, for example, reported feeling worried that her house might be dirty and people would have a bad opinion of her as a housekeeper. One person talked about feeling useless and another discussed a situation in which there was decreased pleasure in activities. Several (n = 4) talked about a fear of hurting themself or hurting others. Two people talked about feeling afraid for their own future referring to a fear of losing the ability to take care of themself. One subject stated, "I keep thinking about it...What am I going to do when I can't see what I can now."

In six of the interviews, subjects talked in a positive way about the effect on themself. One person said, "Sometimes I get down on myself, but then when you think about other people you can't feel so down. There's always someone worse off than you". Another stated, "I like to think that is what I overcame...the power of losing my independence and not being able to do what I used to do".

Twelve subjects responded with 36 separate statements in the area of recreation and pastimes. Subjects talked about decreasing or stopping favorite activities due to their decreased vision. The activities listed included reading for pleasure, watching TV, having pleasure from traveling, playing cards or bingo, singing or playing the organ (due to inability to read the music), teaching sunday school, doing oil paintings, knitting, crocheting, sewing, doing latch hook rugs, and playing ping pong.

Home maintenance was another area which subjects discussed at length during the interview. There were six responses that were related to difficulty with shopping. They ranged from problems finding things in the store to inability to read their shopping list to difficulty in making change. Eight people responded in 14 separate statements regarding the impact on their ability to cook. Difficulty was experienced in reading recipes or package instructions, reading the oven and stove temperature settings, measuring ingredients and inability to see the progress of their cooking. A subject stated, "The main thing is the cooking. I like to cook but I have trouble. It bothers me that I can't see how it is going. I miss some things, like I might stir the potatoes and flip some out on the stove and not know they are there."

Another area of Home Maintenance was the area of house cleaning (subjects = 5, responses = 6 . Although many women felt they were still

able to continue to do the cleaning, most worried about whether they were missing areas. A person stated " I worry about not seeing my dishes when I wash them. I have a friend who they tell me they go to her house and her dishes are so dirty". Several of the men expressed a concern about being unable to continue with repair work around the house. Four of the subjects discussed the impact on their ability to take care of their yard and garden. Major problems seem to be difficulty in mowing the grass because they have trouble seeing the line between what has been mowed and what hasn't, and a problem with pulling out plants when trying to weed the garden. Although one of the items in the SIP related to ability to carry our personal business affairs four people also talked about that during the interview.

Mobility was viewed as a big problem by the subjects. All 15 subjects talked about the impact of low vision on their ability to drive and that was frequently the first thing mentioned in the interview. Of the subjects in this study, 13 had stopped driving and 2 had severely limited their driving. A subject stated "The biggest problem is not being able to drive anymore. You're giving up a lot when you can't drive." Many subjects viewed driving as very important because it meant that they lost independence. It also is the means for them to interact socially, shop and take care of themselves. One woman stated, "It's frustrating. I spend more time down in that lobby waiting for people to pick me up."

Mobility is also a concern in connection with safety. Seven subjects discussed concerns about seeing traffic in order to safely cross the street or their ability to see steps and cracks in the sidewalk. One subject stated, "I used to go out and walk around a lot and I can't do that because I can't see the cars coming and so I can't get across a busy street." Another said "Even with boots on I am so afraid of falling because I don't see a little ice or

cracks".

Alertness behavior was affected in eight subjects (responses = 22). There were six reports of minor accidents related to their low vision. "I couldn't see how close my fingers were to the curling iron and so I burnt myself 3 or 4 times so I can't do that anymore". There were 12 reports of various kinds of mistakes. For example a man reported, "We went to Meijers for gas. I went in to pay for it and when I came out I tried to get into another car." Another person said, "It's hard to pour things. It goes down the side every time". One person talked about not knowing what time it was and feeling confused. Another talked about getting lost while shopping. As a result of low vision, some subjects seem to lose the ability to trust themselves. A subject stated "I find myself checking the (stove) settings over and over".

There were ten subjects who responded 21 times in the area of Body Care and Movement. Women (n = 5) talked about having difficulty fixing their hair because they couldn't see it in the mirror while men (n = 3) talked about similar problems with shaving. Three subjects mentioned that they had stopped wearing makeup because they couldn't see to put it on. Three talked about difficulty with nail care. Two people talked about problems in seeing skin lesions. They either knew they had a lesion but couldn't tell whether to worry about it, or one subject (a diabetic) reported not knowing she had a lesion because she couldn't feel it and couldn't see it. Self Care for medical conditions is also a problem in Body care and Movement. One subject reported not being able to keep track of her weight because she couldn't see the scales. Surprisingly, no one talked about proper identification of medications. Three subjects mentioned difficulty in selecting clothing when they were dressing because they could not match

colors properly.

Reported impact on Social Interaction (subjects = 11, responses = 15) was related to inability to get out as well as to feelings resulting from not being able to recognize people. A subject stated, "I can't go visiting my family because I'm not driving". Many told anecdotes about not recognizing people. ""Someone will come up to me in the store and say hello and I don't know who they are."

Eating problems mentioned (subjects = 5, responses = 6) often were related to eating in restaurants. Subjects talked about inability to read a menu, difficulty seeing food in a buffet and food that falls off the fork or the plate. "I have trouble seeing what's on my plate when I eat. Eating salads is bad because you can't get it on your fork. It goes down the front of you."

Problems with communication (subjects = 4, responses = 5) were related to reading and writing. Subjects reported inability to read telephone numbers, reading mail or writing letters.

In summary, common areas of impact of low vision as, identified by the SIP, are primarily in the area of Recreation and Pastimes and Home Maintenance. The most common areas of impact can also be seen by examining the ten most frequently selected items (see Table 9). The responses to the interview were most frequently found to be in the are of Emotional Behavior, with Recreation and Pastimes and Home Maintenance following. There appear to many unique areas of impact demonstrated by these subjects as well. There were 28 SIP items (51% of the items selected) that only were selected by one or two subjects. In addition the participants in the study discussed many specific areas when interviewed.

Research Question Two

Is there a relationship between the patients' tested visual acuity, their self-rated vision and their description of impact on function?

The subjects' measured visual acuities as listed in Table 4 are used as the measure of objective visual function. In order to quantify self-rated vision, the subject's general self-rating of vision (see Table 5) and the four questions to identify perceived vision (see Table 6) were analyzed. Of the four questions about perceived vision, two were eliminated since all subjects answered "no" to them. The remaining two were correlated with the answers given to the general self-rating of vision. The general self-rating question was strongly related ($r = .63$, $p < .006$) to the question of whether the subject could read headlines. The general self-rating question did not relate significantly to the question of whether the subject could recognize the features of a person two or three feet away. Consequently a combination of the scores of the general self-rating of vision (Table 5) and the score of the single question about reading headlines (Table 6, No. 1) were combined to define self-rated vision. Using that measure of self-rated vision, visual acuity was shown to be moderately related to self-rated vision ($r = .44$, $p < .05$).

Calculation of Pearson product moment correlations between visual acuity and the SIP subscales and self-rated vision and the SIP subscales revealed very few areas in which there was a significant relationship. Table 11 shows these results. Although there was a significant relationship shown between visual acuity and the Sleep Rest subscale ($r = .47$, $p < .04$), this is insignificant since only 2 subjects had responded in that subscale. There were significant relationships between two of the subscales and self-rated vision (Home Maintenance: $r = .57$, $p < .02$; Recreation and

Pastimes: r = .51, p < .03). These relationships are significant since 14 of the subjects responded in each of these subscales.

Table 11: Pearson correlation between Visual Acuity, Self-rated Vision and the SIP Subscales, Dimensions and Total

SIP Category	Visual Acuity	Self-rated Vision
Sleep Rest	.47*	.32
Emotional Behavior	-.14	.18
Body Care and Movement	-.25	-.19
Home Management	.20	.57*
Mobility	.20	.39
Social Interaction	-.31	.06
Ambulation	.33	.32
Alertness Behavior	-.15	.02
Communication	-.04	.40
Recreation/Pastimes	.33	.51*
Physical Dimension	.23	.32
Psychosocial Dimension	-.23	.22
Total	.15	.54*

* = p< .04

When Pearson Correlation Coefficients were calculated between visual acuity and self-rated vision and the two dimensions and the total, the only area with a significant relationship was between self-rated vision and the total (r = .53, p = .02). The work category was omitted when these correlations were calculated since the majority (n = 13) of the subjects were retired and only 2 subjects were asked the items in that subscale. Eating was also eliminated since there were no responses in that category.

The relationship between the total, visual acuity and self-rated vision was analyzed. Using multiple regression, self-rated vision was determined to be a better predictor of the total SIP score than visual acuity,

however more than 70% of the variation in the SIP scores is unaccounted for by the two measures of vision. Twenty eight percent of the variation in SIP scores can be accounted for by self-rating of vision.

In summary, in analyzing the relationships between the two measures of vision and the SIP, it was found that there were significant relationships between the subscales Home Maintenance and Recreation and Pastimes and the subjects self-rated vision. Self-rated vision and the total SIP score also was significantly related. Using multiple regression it was found that self-rated vision was a greater predictor if impact of low vision than was measured visual acuity.

Research Question Three

Are there relationships between selected sociodemographic characteristics and perceived impact on function?

In answering this question, the SIP subscale scores, dimension scores and total were calculated in relation to sex, age, self-rated health, number of reported chronic illnesses, number of illnesses with serious impact, education and income. There was no significant relationship between age and SIP scores, self-rated health and SIP scores, number of chronic illnesses and SIP scores or number of illnesses with serious impact and SIP scores.

Only three of the subjects were male and all of them were married. Consequently, to analyze the relationship between sex and the scores, only the scores of married males (n = 3) and married females (n = 3) were used. When looking at the relationship between marital status and the scores, only females' scores were used (married = 3, widowed = 6, divorced = 3). Table 12 shows the mean scores comparing married men to married women.

In most of the subscales, the married women scored higher than the married men. According to this trend, for these six subjects, it appears that married women experience a greater impact of low vision than do married men. When comparing women who are married, divorced and widowed there do not seem to be any consistent patterns of response indicating any relation between marital status and the SIP scores.

Table 12: Comparison of Mean Subscale SIP Scores for Married Men and Married Women

SIP Category	Married Men (n = 3)	Married Women (n =3)
Sleep Rest	.00	.00
Emotional Behavior	2.17	12.00
Body Care and Movement	1.36	3.26
Home Management	30.64	32.49
Mobility	0.00	14.00
Social Interaction	3.66	3.03
Ambulation	.00	11.05
Alertness Behavior	3.21	36.72
Communication	21.10	13.33
Recreation Pastimes	39.89	33.73
Physical Dim	.45	9.44
Psychosocial Dim	7.54	16.27
Total SIP	8.50	13.30

There did not appear to be any consistent trends noted with respect to education, income, number of illnesses or number of illnesses reported as serious, when analyzing SIP subscale scores. The total scores indicated that the perceived impact was worse for those who had graduated from High School ($\overline{X}$ =11.58) and had some college ($\overline{X}$ = 10.87) than for those with only a grade school education ($\overline{X}$ = 3.60) or with some grade school ($\overline{X}$ = 7.32). Perceived impact was worse for those with an income between $15,000 and

$24,999 (n = 3, $\overline{X}$ = 15.19) than for those whose income was between $5,000 and $14,999 (n = 10, $\overline{X}$ = 8.42). Perceived impact seemed to be worse for those living in a house (n = 10, $\overline{X}$ = 10.53) than for those in an apartment (n = 5, $\overline{X}$ = 7.37).

In summary, when analyzing data from 15 subjects, there do not appear to be significant relationships between age, self-rated health, number of reported chronic illnesses, number of illnesses with serious impact, marital status, education and income and the SIP scores. When comparing scores there appeared a trend for married women to experience a greater impact than married men, but this only involved three men and three women. When examining score comparisons, the impact seemed worse for those living in a house than those in an apartment, and slightly worse for the more educated of the subjects.

Summary

The statistical analysis of data has been presented in Chapter V. Descriptive information was presented on the sociodemographic characteristics of the sample, the participants perceived general health, chronic illnesses, eye disorders, measured visual acuity and self-rating of vision. The three major research questions are answered in this chapter. The data presented included the statistically analyzed results of the SIP as well as descriptive data from the open-ended interview. In Chapter VI the findings will be discussed and interpreted. Discussion will address the implications for nursing practice, education and research.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Introduction

The interpretation of the research findings and a discussion of the implications for the nursing profession are presented in Chapter VI. Included in this chapter will be a discussion of the results of the study as they relate to sociodemographic characteristics of the participants and in relation to the research questions. Implications for further research, for nursing practice and for education will be discussed. Finally, conclusions will be presented.

Summary of the Problem

A descriptive study was designed to obtain information about the perceived impact of low vision in older adults. There is a prevalance of visual impairment in old age (Havlick, 1986). In reviewing the literature it was found that numerous research studies have contributed to an understanding of the age-related changes in the eye structures, in specific visual functions which decline as people age and in the changes in the perceputal processes in old age (See Chapter II). There remained a need for research regarding the impact of deteriorating vision as it is experienced by the older adult (Kline, Sekuler & Dismukes, 1982). It has been the intent of this researcher to obtain self-reported descriptive information about how low vision, identified by the traditional measurement techniques, affects the elderly person's ability to function.

The study was designed within a holistic paradigm as is presented by Erickson, Tomlin and Swain (1983). Individuals are viewed, in this

paradigm, as both similar to one another and unique from one another. Nurses use an interactive, interpersonal process to help the client identify their unique characterisitics and further to enable growth and development of the client in a facilitative manner. The Sickness Impact Profile (Gilson, Gilson, Bergner, Bobbitt, Dressel, Pollard & Vesselago, 1975), a valid and reliable instrument which uses self-reports in an array of 12 subscales was used as a basis for identifying impact on function. Subjects were also provided an opportunity to further describe the unique impact during an open interview.

Fifteen subjects between the ages of 68 and 88 were referred by an Optometrist in a midwestern urban community. All participants had a measured visual acuity of 20/60 or worse in the better eye with best optical correction with conventional lenses. After insuring confidentiality and following recommended procedures to obtain consent, data was obtained by interview in the subjects home. A questionnaire covering sociodemographic characteristics and perceived health and vision status was filled out. Data was obtained by administering the Sickness Impact Profile and through the tape recorded open interview. Interpretation of data was done through statistical analysis and description of interview findings.

Sociodemographic Characteristics

The convenience sample used for this study consisted of 15 participants who had sought help for their vision problem from an Optometrist in the community. From a statistical standpoint, because of this small sample, results of this study are not to be assumed to apply to the general population. Results are described only with respect to the study sample. In nursing, however, one is concerned with each individual's

response to health problems and interventions are planned based upon these individualized observations. Thus, it seems logical that many of the findings, both the SIP results and the data from the individual interviews gives direction to nursing research, education and practice. Although not statistically significant, many findings in this study have practical significance.

Sociodemographic characteristics of this sample are similar to national trends in some areas and vary in others. Again, because a small convenience sample was used, it was expected that differences would result because of the sampling procedure.

The age range of subjects in this study was between 68 and 88 years. Although there was a wide distribution of ages, there was a relatively small number of subjects under 70 (n = 2, 13.3%). Since we know that the prevalance of visual impairment tends to increase with age (Nelson, 1987) it is not surprising that subjects seeking help for a low vision problem might tend to be older.

The sex ratio in this study is similar (more women than men) to national trends and very close to those in another study. Of the 15 subjects in this study, 3 (20%) were men and 12 (80%) were women. Jacobs (1981), in a study of low vision in older people had a sample of 18.5% men and 81.5% women. This is compared with the reported sex ratio in people over 65 of 41% men and 59% women (American Association of Retired Persons, 1988). The sex ratio changes for each decade in age due to a higher death rate in men, so that by 85 and over there are only 43.7 males for each 100 females (30% males and 70% females) (Rosenwaike, 1985).

There are several suggested explanations for the sex ratio in this group of subjects. In this study there were only two subjects under 70 and

six over 80 so one would expect a higher percent of females than are reported for the general population over 65. It may also be that more women than men are willing to seek help for a low vision problem. In addition, we know that more men than women are likely to be married and having the assistance of a spouse, might not feel as great a need to seek optical help for their low vision problem.

All of the men in this sample were married in contrast with national statistics which show that in the group over 65, 77% of men are married (A.A.R.P., 1988). In this sample, 25% of the women were married, 50% were widowed and 25% were divorced. In Profile of Older Americans (A.A.R.P., 1988), it is reported that over 65, 41% of women are married, 49% widowed and 4% divorced.

There was very little variation in the income of subjects in this study. Ten (66.6%) of the subjects in this study reported their income to be in the range of $5,000 to $14,999. Jacobs (1981) found that 40.4% of her subjects were in this category, with 50% below $5,000 and only 2.1% over $20,000. Nationally 58.2% of single individuals and 28.9% of families with the head of the household over 65 report income in the $5,000 to $14,999 range (A.A.R.P., 1988).

In both Jacobs' study and the nationally reported statistics for the elderly, income information is obtained in categories of $2,000 or $3,000. The income question in the demographic questionnaire in this study was broken down into $10,000 categories. In order to obtain more useful information in future studies with the elderly, smaller categories will need to be used.

In this study 40% of the subjects had graduated from High School and only 26.7% attended college. There were no college graduates. This is

compared with national statistics in which 51% are High School Graduates and 10% had four or more years of college (A.A.R.P., 1988).

According to A Profile of Older Americans (A.A.R.P., 1988), most people over 65 have at least one chronic condition and many have multiple conditions. All of the subjects in this study had at least one chronic illness, many had two and some subjects had up to six chronic illnesses. In spite of this, 26.7% rated their health as either good or very good, and 60% rated their health as average. This health rating is not unexpected, since according to Graney & Zimmerman (1980-81) many older people rate their health as favorable in spite of illness or reduced vigor.

The incidence of report of selected illnesses was slightly higher in this group of subjects than in the national average. The national incidence compared with incidence in this study for four diseases is seen in Table 13. This might be anticipated since this sample had a larger number of older subjects.

Table 13: Comparison of Percent of Chronic Illnesses in Subjects to Nationally Reported Incidence of Chronic Illness in persons over 65

Illness	Percent incidence in subjects	Percent incidence nationally *
Arthritis	40%	48%
Hypertension	53%	39%
Heart Disease	40%	28%
Diabetes	33%	10%

* from Profile of Older Americans (A.A.R.P., 1988)

Most discussions of vision loss in older adults indicate that loss of visual acuity in old age can be attributed to four diseases: senile cataracts, diabetic retinopathy, glaucoma and senile macular degeneration (Kahn et al.,

1977; Hyman, 1987). Macular degeneration was the diagnosed eye condition in 14 (93%) of the study subjects in this study. Several explanations are offered for the high number of subjects with this one diagnosis.

According to Pizzarello (1987), macular degeneration is seen in the United States as the leading cause of visual impairment in people over 65 and, since it is not significantly treatable, tends to increase in incidence as the population ages; so therefore we might expect a high number of subjects to have this disease. Participants in this study were referred from an Optometrists office. When medical treatment is no longer realistic, patients are referred for optical help to try to make the most of their remaining vision. Since patients with macular degeneration may have small areas of the retina that are viable and have peripheral vision intact, some help can often be offered optically. If a variety of clinical sites had been used, there might have been more variety in types of eye diseases.

In the United States, although the incidence of cataracts is high, the number of people who have surgery and lens implants is also high, so that this is a somewhat correctable cause of low vision (Hyman, 1987). Likewise, if detected early, glaucoma may be treated to prevent severe visual loss. In Type I diabetics, diabetic retinopathy may emerge and result in blindness earlier than age 60, but still contribute to the statistics regarding incidence of blindness in those over 65. Consequently, based upon the procedures used in this study to obtain subjects and to certain characteristics regarding the incidence and treatment of these eye diseases, it is logical that almost all of the subjects in this study were diagnosed with macular degeneration.

Research Questions

There were three major research questions asked in this study. Data was obtained to answer those questions. The instrument used in the study, Sickness Impact Profile will be discussed. In addition, each question will be discussed with regard to major findings and the comparison of those findings with results of other research .

Sickness Impact Profile

The Sickness Impact Profile was selected for use in this study because it represented a systematic approach to the collection of data regarding an individual's perception of the impacts of illness on his usual daily activities. The instrument had been thoroughly tested and revised in a series of large field trials and has been used in numerous studies (Bergner & Rothman, 1987).

In this study correlation data was obtained between the subscales, the subscales and the dimension scores and the dimension scores and the total. Of the 66 subscale combinations that were evaluated only six pairs showed a significant positive correlation ($r = > .5$ and $p = < .03$). Because of this small number of significant relationships between subscales it is assumed that they measure distinct areas of impact.

In explaining the relationships between subscales, it is helpful to examine the items in those subscales. One would expect Ambulation and Mobility to be significantly related ($r = .59$, $p < .01$) since they represent similar areas. Alertness Behavior(AB) and Ambulation(A) were significantly related ($r = .65$, $p < .01$). The AB item selected most often was related to minor accidents, tripping and falling, and bumping into things. Perhaps, when faced with the experience of having more accidents as a result of low vision, the subjects then responded by decreasing their activity, seeking

assistance with walking and using of handrails on stairs.

Ambulation (A) and Recreation and Pastimes (RP) were another combination that was positively related ($r = .58$, $p < .02$). The most frequently selected items in the RP area were related to going out for entertainment and community activities and these definitely can be viewed as requiring ambulation. Another area in which a positive relationship was demonstrated was Home Maintenance (HM) and Communication (C) ($r = .51$, $p < .03$). The item in the HM subscale that was selected by 60% of the subjects and thus contributed to the score was one about giving up taking care of personal household business affairs. Logically, difficulty taking care of personal business is due to a decreased ability to communicate in writing, one of the most frequently selected items in the Communication subscale.

Communication and Recreation and Pastimes were found to be related ($r = .51$, $p < .03$). Another item in the RP subscale selected frequently was one about reduced activities in areas of card playing, TV watching and reading. A subject who was having enough difficulty with vision to be having difficulty with writing would also have difficulty with reading, watching TV or playing cards.

Body Care and Movement (BCM) and Social Interaction (SI) were also found to be related ($r = .56$, $p < .02$). Although there are some items in the BCM that relate to personal grooming, many of the items are related to ability to move about, or to stand and those were the items selected most by these subjects. The items in the Social Interaction subscale that were selected most were related to going out to socialize with others and this would be highly related to a persons ability to walk and move. Thus it appears that these subscales are somewhat interrelated and not entirely mutually exclusive.

In this study, the scores in the physical dimension were shown to be related to the psychosocial dimension scores ($r = .56$, $p < .02$). It appears, therefore that they may not measure distinct aspects of impact in these subjects. This is not surprising, since an individual's physical status can affect their emotions and consequent social activity. Likewise their emotional reactions then can further affect their motivation to perform physical activities. This finding is consistent with the holistic model for the impact of low vision developed for the study.

Both the dimension scores were strongly related to the total score (Physical dimension; $r = .72$, $p < .001$: Psychosocial dimension; $r = .77$, $p < .001$). Of course, each dimension score does contribute to the total score. In further utilizing these results, however, it appears that the total scores are a more useful indicator of impact for this study than are the separate dimension scores, again a finding consistent with the holistic model for impact of low vision.

Scoring of the Sickness Impact Profile is complex (See scoring directions in Chapter IV and Appendix D). The range of possible scores in each subscale, each dimension and the total are 0 to 100 and comparisons can therefore be made based upon recognition that the maximum possible in every category is 100.

In general, in this study, the scores on the SIP were fairly low. Based upon a maximum of 100, mean scores for the subjects in this study were all 36 and below, with most of them below 10 (See Table 8). Furthermore, subjects in this study selected only 55 out of the 136 possible items on the SIP (See Table 9 and Appendix E). Twenty seven of those items were only selected by one or two subjects. In addition, when given an opportunity to talk about their low vision, subjects brought up a number of other, more

specific areas of impact. For example, in the area of Emotional Behavior, subjects talked about feeling discouraged or feeling sorry for themself, feeling embarrassed by things that happen, feeling afraid of hurting others, having decreased pleasure with usual activities and with concern about their self image. None of these topics were covered by items in the EB portion of the SIP. The conclusion is that the SIP is a useful instrument for examining the general impact of low vision, but is not sensitive enough to fully identify all areas of impact.

The SIP was developed to reflect the full spectrum of functional impairment, including the patient with a total inability to care for themself. Lareau and Larson (1987) found when working with patients with chronic airflow limitation, that the SIP was appropriate for indicating general functional impairment, but not considered sensitive enough to show small amounts of response to therapy. Likewise it is possible that the SIP may be appropriate to describe general impact on function in the client with problems with low vision, but not sensitive enough to reflect differences in impact at varying levels of visual acuity. Further research with larger numbers of subjects and with a broader range of visual acuities is needed to establish the usefulness of the SIP with clients with low vision.

The SIP does seem to be meaningful when comparing the subjects with low vision to those with other clinical problems. Mean scores in this study were compared with those for the general population, and with results from studies of clients with Myocardial Infarction (M.I.), Rheumatoid Arthritis and End Stage Renal Disease on Dialysis (Table 14). When comparing these results, it is noted that subjects with low vision experience an impact of their illness on their ability to carry out their daily activities that is greater than that of the subject with an M.I. but not as severe as the client

with either Renal Disease or Rheumatoid Arthritis. Scores for all four of these clinical conditions were higher than for the general public. These comparisons can be carried further when looking only at total scores (Table 15). The conclusion is that the use of the SIP for patients with low vision can reflect the impact relative to that of subjects with other disease conditions.

Table 14: Comparison of SIP Scores between Subjects with Low Vision, the General Population, and subjects with Rheumatoid Arthritis, Renal Disease on Hemodialysis, or with a Myocardial Infarction

SIP Subscale	Mean (S.D.) General Pop.[a]	Mean (S.D.) Low Vision	Mean(S.D) M.I.[b]	Mean(S.D.) R.A.[c]	Mean Hemodialysis[d]
Dimension I: Physical	*	5.1(5.1)	4.0(6.5)	14.0(10.0)	10.3
Ambulation	3.1(7.0)	6.4(8.7)	7.7	21.0(13.8)	16.3
Body Care and Movement	*	2.4(3.6)	2.4	12.7(10.1)	7.7
Mobility	2.7(7.3)	6. 5(7.4)	4.2	10.4(12.1)	10.4
Dimension II: Psychosocial	*	9.0(7.3)	5.6(9.5)	11.3(9.6)	9.7
Emotional Behavior	3.8	6.3(11.2)	6.1	13.2(12.9)	8.5
Social Interaction	*	5.4(5.7)	6.3	11.7(11.6)	11.4
Alertness Behavior	4.0(8.7)	13.7(18.5)	6.5	13.0(17.8)	11.2
Communication	1.1	10.7(9.2)	2.9	6.9(8.5)	5.7
Independent Categories					
Work	8.5(19.4)	30.6(7.6)	17.0	46.5(31.4)	45.0
Sleep and Rest	7.2(13.2)	1.4(3.5)	11.5	17.6(14.9)	21.7
Eating	1.6(3.3)	0.0(0.0)	6.8	3.5(5.5)	10.2
Household Management	5.4(12.5)	24.8(14.1)	12.1	26.3(21.0)	24.0
Recreational Activities	10.2(15.8)	36.2(23.5)	15.2	26.7(19.3)	23.7
Overall SIP	3.6(5,3)	9.8(5.3)	6.9(7.8)	15.6(9.0)	13.9

[a] From the final development and testing of the SIP (Follick, Smith & Ahern, 1985, p. 71)
[b] (Bergner, Hallstrom, Bergner, Eisenberg & Cobb, 1985, p. 1321))
[c] (Deyo, Inui, Leninger & Overman, 1982, p. 880)
[d] (Hart & Evans, 1987, p. 121S)

* Data not available
**The possible range of scores for the SIP is 0 to 100.

The scores for these subjects with low vision seem to be lower than one might expect. When examining the SIP instrument, it is noted that there are many items that relate to physical mobility. For example, the subscale for Body Care and Movement has 15 out of 23 items that relate to moving

Table 15: Comparison of Low Vision Total SIP Scores with Other Studies

Clinical Condition	Mean Total SIP**	Source
General Population	3.6	(Follick, Smith & Ahern, 1985, p. 71)
Myocardial Infarction	6.9	(Bergner, Hallstrom, Bergner, Eisenberg & Cobb, 1985, p. 1321)
Low Vision	9.8	
After Cardiac Arrest	10.3	(Bergner, Hallstrom, Bergner, Eisenberg & Cobb, 1985, p. 1321)
Hyperthyroidism	13*	Rockey, Briep, 1980, p. 1196)
Rheumatoid Arthritis	15.6	(Deyo, Inui, Leninger & Overman, 1982, p. 880)
Low Back Pain	18.7	(Deyo & Diehl, 1988, p. 638)
Chronic Low Back Pain	23.8	(Follick, Smith & Ahern, 1985, p. 71)
Total hip replacement (Immed. post-op)	30.0*	(Bergner, Bobbitt, Carter & Gilson, 1981, p. 800)

* Data estimated from a graph or bar graph.
**Range possible = 0-100

about and standing. Only two items on that subscale relates to bathing, and there are none related to other self care activities like caring for the hair or nails or self care for medical conditions. The scale, therefore seems to be weighted so that people with fatigue, weakness or musculoskeletal problems will score relatively high. For this reason the SIP may not truely demonstrate the relative impact of low vision.

In summary, the Sickness Impact Profile is an instrument that has been thoroughly tested and used with many groups of subjects. In this study, correlation results indicate that the subscales do measure distinct areas of impact. A logical connection is seen between the 6 pairs of subscales that do show a significant relationship. It appears that the dimenisons are interrelated so that they may not measure distinct aspects of impact in these subjects. Futher, the total scores are a more useful indicator of impact for this study than are the separate dimensions scores. These findings are consistent with the holistic model used for this study. When comparing the results with other studies using the SIP, it appears that the SIP can reflect the impact of low vision relative to that of other clinical conditions.

Research Question One

What common and unique areas of impact of low vision are identified by the subjects?

According to Erickson et al (1983) each person is holistic with many interacting subsystems. In understanding and working with people, it is necessary, using this model, to accept two sets of presumptions. One is that there are ways in which all humans have similarities. The second is that we are each unique.

In this study, the similarities of the subjects (common areas of impact) have been identified through the calculation of the frequencies, percentages and means on the SIP (See Table 8). In reporting the areas of greatest impact, based on these scores, the similarities of the subjects are apparent. Further, in counting the number of responses and number of subjects responding with certain types of responses in the interview, we

can also see areas of similarity (See Table 10).

The uniqueness of these subjects is apparent upon examination of the range of the SIP scores (See Table 8). Further, in observing the list of items selected (See Table 9 and Appendix E) it may be seen that there were many items selected by only one, two or three participants. These reflect the uniqueness of the subjects. If the SIP scores were reported individually for each subject this would also indicate the uniqueness of each individual. A review of the actual responses in the interview (See Appendix F) also provides information about the unique responses of these subject. When examining all data in this study, it is apparent that the SIP alone is not adequate to fully identify each subject's unique impact response to low vision since there were a number of subject areas not covered in this instrument.

According to both the Sickness Impact Profile subscale scores and the interview data the greatest areas of impact of low vision occur in the areas of Recreation and Pastimes and in Home Management. In those individuals who were not retired, there was also a high impact in the area of Work. These findings are consistent with those of Jacobs (1981) who asked subjects what activities they could no longer do. She found that 68.5% of the subjects listed hobbies and 40% listed activites of daily living. When asked to describe the ways in which their lives had changed, 46.3% cited a limitation in activites, 14.8% noted changes in hobbies and recreation and 13% cited changes in home and daily living tasks. Kaarlela (1978) found that 78% of her subjects found that shopping was one of the most difficult tasks and 60% found they could not carry out most activities they wanted to. Both of these researchers constructed their own questionnaires and neither used a systematic approach to defining impact on function, yet

results are generally consistent with those found in this study.

It is logical that Home Management and Recreation and Pastimes are cited by the older adult as areas of high impact. The older retired adult, spends much of their time taking care of themself and their household affairs. Shopping, cleaning, cooking, taking care of personal business, repairing household items and yard work are common activities and all require vision to carry them out. Likewise, the older adult probably spends more time pursuing recreation and hobbies than does the younger adult. Many of the hobbies listed by the subjects during the interview required visual competence. These findings have practical significance and provide direction for clinical rehabilitation activities.

Although the SIP responses in the Emotional Behavior subscale were fairly low ($n = 6$, $\bar{X} = 6.3$, S.D. = 11.207), the largest number of the responses in the interview seemed to fall into the emotional area (subject n = 13, response n = 47). In other words, the SIP did not completely reveal the extent of the emotional impact for these subjects. The SIP items in the Emotional Behavior subscale included items about suicide, hopelessness, nervousness and other major kinds of emotional impacts. It is possible that these strongly worded statements were somewhat intimidating to the subjects who preferred to reveal their emotions in gentler terms. Some of the subjects specifically focused on their emotions in the interview but many others used phrases indicating the emotional impact when discussing more concrete activities of daily living. These responses varied from expressions of depression and sorrow, to frustration, embarrassment, impact on self image and fear of hurting others. While the SIP results were not strongly significant from a statistical viewpoint, they have practical significance, since one's emotional state can affect all other areas of

functioning. This is an area that needs to be addressed in clinical practice.

The impact of low vision would be expected to affect the older adult's emotions since a serious vision change does represent a loss. For many people, this is a time when many losses are anticipated or experienced and independence is threatened. Gillman, Simmel and Simon (1986), in a study of elderly subjects in a public housing unit found that 30% of visually impaired persons reported low morale compared to 9 percent of the non-visually impaired group. Jacobs(1981) found that 72.2% of the subjects in her study reported depression. Hiljbourne (1983) found that 37% of the subjects in his study cited "social embarrasment" as the reason for seeking professional help for their vision problem. When discussing a rehabilitation program for older visually impaired persons, Hill and Harley (1984) discussed many emotional feelings that these older clients express about their reaction to the visual handicap.

The SIP has two subscales that include items related to the ability to move about within one's home or outside in the community. Mobility ($\overline{X}$ = 6.47) and Ambulation ($\overline{X}$ = 6.42) were areas with moderate scores. Neither of these subscales, however, includes an item asking about driving. During the interview, all subjects made reference to the loss of ability to drive. This was seen as a major impact and represented a major loss is self esteem, independence, ability to socialize, or even to take care of their home. Again, this is a finding with practical significance in the care of the older adult. Indications were that the realization that their vision was seriously impaired occurred for most of the subjects when they recognized that they would no longer be able to drive.

The subjects in this study reported a reduction in walking often related to a fear of falling. Individuals who had previously walked in their

neighborhood had stopped doing so out of a concern for their safety. These findings, again have practical significance, since a moderate amount of exercise is seen as useful in assisting people to maintain basic health an stamina. The limiting of activity that might result from low vision, would then have far reaching consequences in the older adult.

Havlik (1986), reporting preliminary results of the 1984 United States National Health Interview Study found that people with visual impairments reported a significantly greater problem with walking and getting outside. At age 85 years and older 39% of the normal population reported difficulty walking and 52.9% of the visually impaired reported difficulty walking. In Jacob's study (1981), 22.2% of the visually impaired people found they experienced mobility changes as a result of their low vision. Tobis, Reinsch, Swanson, Byrd and Scharf (1985), in a controlled study, found that visual cues were very important in maintaining balance so that mobility is greatly affected by visual changes.

The subjects scored relatively high in the area of Alertness Behavior (n = 8, $\overline{X}$=13.69). The items selected primarily related to making mistakes, having minor accidents, forgetfulness and having difficulty making decisions. Many of the subjects further elaborated on those areas during the interview and there were 22 separate responses in that area. It does not appear that other researchers examined this area in connection with low vision even though this certainly would logically become a clinical concern. During the interview subjects also talked about feeling like they couldn't trust themselves and also relayed some stories about getting lost. Although it was apparent to the researcher that most of the subjects were very cautious about opening the door until they had verified who was there by voice, no one expressed fears for personal safety. Because of the structure

of the interview, it was not possible to ask about this area.

Communication behavior was another area in which subjects relative scores were high. The items most commonly selected were related to ability to write. Other items in this scale included items related to verbal communication. But, again, the SIP instrument was found lacking with no items related to reading as an aspect of communication. During the interview, subjects talked about difficulty using the telephone, problems reading the phone directory and missing the experience of communicating with others by mail. Reading, like driving, is another area of impact that results in major changes in many areas of living. The older person is limited in carrying out hobbies, in shopping, in carrying out their business affairs and even in feeling oriented to time and place when they cannot read. Hilbourne (1983) found that 39% of the subjects in his study sought professional help when faced with reading difficulty. The score on the SIP communication subscale does not reflect this great impact.

According to the SIP scores, Social Interaction was an area of relatively low impact ($n = 10$, $\bar{X} = 5.43$). The items most often selected related to going out for social activities. The items in this scale that were not selected related to the persons desire for social activity or to their behavior when in a social situation. The person with low vision, it appears, continues to have interest in socialization, but because of their limited mobility cannot carry that out. The most common area brought out in the interview was the concern people felt because they could not recognize other people when they were in a social situation. Several people felt concern at their decreased ability to be helpful to others. Jacobs (1981) found that 11.1% of the subjects in her study felt that their lives had changed by limitation in social and civic affairs. Those results are similar

to this study in which the impact socially is modest.

According to results of the SIP, the impact in the area of Body Care and Movement was very small (n = 6, $\overline{X}$ = 2.40). Many of the items in that subscale were related to the ability of the person to move about, position themself and stand. Very few were related to personal grooming, and none were related to self care for health problems, items that might be important for the visually impaired person. Although the response to the SIP was small, there were many more responses in this area during the interview (subjects n = 10, responses n = 21). There again were a number of specific areas not addressed in the SIP items. Specific responses were made relative to ability to care for the hair, nails, and skin. Subjects had difficulty with dressing because of problems selecting the color of their clothing. It is of serious concern that only a few health related items came up. One was related to being able to see skin changes in order to decide if professional help was needed, and another related to being able to weigh oneself. It was of interest that none of the subjects mentioned the ability to correctly identify their medications. Since many older adults have multiple prescription drugs, the issue of safety in medication administration needs to be explored further in future studies.

In analyzing the interview results, one other area became apparent. Many of the subjects focused on positive rather than negative statements about their visual impairment. Even though they were responding to SIP statements about what they could not do, people would talk about how they had adapted. Often the subjects expressed pride in their accomplishment in living with the low vision problem. In a survey of older blind persons, Jacobs (1981) found that 42.6% of the subjects voiced acceptance of their situation. Many of the respondents in her study (48.1%) utilized emotional

or spiritual mechanisms to work through feelings about blindness. When she asked her participants how their lives had changed, 9.3% felt that there were changes that were emotionally positive. Santangelo, Overbury and Land(1986) in a study of life satisfaction with people with various disabilities, found that there were no differences in life satisfaction between the visually impaired and the non visually impaired subjects. The indication is that future research should be done which includes measures to identify the positive impacts of low vision.

In summary, there were many ways in which low vision was reported to impact the older person's ability to function. Results of the Sickness Impact Profile and the most frequently reported items in the interview identify the typical or average areas of impact. According the the SIP subscale scores, the greatest areas of impact of low vision occur in the areas of Recreation and Pastimes and in Home Management. The largest number of responses in the interview seemed to fall into the area of Emotional Behavior. Although the responses were lower, there were findings of practical significance in the areas of Ambulation, Mobility, Alertness Behavior, Communication, Social Interaction and Body Care and Movement. Even those SIP items selected by only one subject, or interview comments made by only one or two subjects, reveal areas of practical clinical significance. When discussing their low vision problem in the interview, many of the the subject's discussed it in positive rather than negative terms. Knowlege of all of these areas of impact can be useful to the nurse in assessment of client's unique problems and in the mutual planning of solutions to these problems.

Research Question Two

Is their a relationship between the patients' tested visual acuity, their self-rated vision and their description of impact on function?

In this study visual acuity was shown to be moderately related to self-rated vision ($r = .44$, $p < .05$). Self-rated vision in this case was a combination of a rating of vision (very good, good, average, poor, and very poor) and one question about whether the subject could read newspaper headlines.

Hilbourne (1983) using a single question about rating of vision (good, average, moderately impaired and very much impaired) failed to find a relationship between the measured visual acuity and the self-ratings of vision. The relationship between self-rated vision and measured visual acuity in this present study is slightly stronger than that found by Haase and Bryant (1973). They asked the subjects questions about what they could or could not see and compared those answers with visual acuity data. They found a weak association (0.35) using Pearson's phi coefficient to obtain the correlation.

As Haase and Bryant (1973) point out, how a person perceives he can see is related to a variety of factors of which the physical capability for vision is only a part. The subject's basic coping style as well as some aspects of their environment may enter in to their rating of vision. Measured visual acuity and self perception of vision might be expected to be somewhat but not entirely related. Both measures represent phenomen of interest and both contribute to our knowlege of their status.

These findings are consistent with the conceptual model for this study. According to Erickson et al (1983), individuals are holistic and are an integration of their biophysical, psychological, cognitive, social selves, also

possessing certain genetic base and spiritual drives. In this model, all these components affect the other, and the whole is greater than the sum of the parts. One would expect then that measured visual acuity and self perception of vision might be different aspects of the same phenomenon so that they might be expected to be partially but not wholly related.

When comparing the two measures of vision with the SIP results it was noted that there were very few areas in which there was a significant relationship. Self-rated vision was significantly related to two of the subscales (Home Maintenance: $r = .57$, $p < .02$; Recreation and Pastimes: $r = .51$, $p < .03$). These two subscales are also the areas in which the mean scores were the highest, and to which the largest number of subjects ($n = 14$) responded. It appears, then, that when people feel that their vision is poor, it affects their ability to carry out two very important kinds of activities in their life, caring for their home and personal affairs and occupying themself with recreation.

In addition, self-rated vision was significantly related to the Total SIP score ($r = .53$, $p < .02$). When multiple regression was used to analyze this data it was determined that self-rated vision was a better predictor of the total SIP score than was measured visual acuity.

As each individual develops, they assume a set of personality traits which, if known, can predict how they will view their life's experiences and how they will handle problems that occur for them. Therefore, a person who develops low vision will perceive this problem in a way that is consistent with their personality and their previous methods of viewing life and adapting to life's problems. Thus, each person will react uniquely to the physical changes of low vision. Their view of the severity of their vision problems, then, will also have an effect on the extent to which they believe

the vision problem has an impact on their ability to carry out their daily activities. It is logical that there would be a stronger relationship between self-rated vision and self-reported impact on function than between measured visual acuity and impact.

This is a new finding and is clinically significant in the planning of care for the older adult with low vision. Knowlege of clients' self-rating of their vision may be more important than knowlege of the client's tested visual acuity in helping the Clinical Nurse Specialist to identify the impact of vision on the client's ability to carry out their daily lives. This finding, in turn will give direction to planning interventions. These findings are of interest since other studies, to date, have not sought to correlate self-rated vision with impact data.

In summary, in this study self-rated vision and measured visual acuity were found to be moderately related. When comparing the two measures of vision with the SIP results it was found that the only significant relationships were between Home Maintenance, Recreation and Pastimes, the total SIP score and self-rated vision. Further, it was determined that self-rated vision was a better predictor of the total SIP score than was measured visual acuity. These results are consistent with the conceptual model for the study, indicating that actual vision includes measured visual acuity but also is affected by other aspects of that individual persons being. The total impact of low vision is thus most affected by the person's perception of their vision.

Research Question Three

Are there relationships between selected sociodemographic characteristics and perceived impact on function?

Very few trends or relationships were noted when comparing the SIP

results with age, self-rated health, number of chronic illnesses , number of illnesses with a serious impact, education, or income. These findings are difficult to interpret with the small number sample size in this study.

When examining the SIP scores for married men compared with married women (See Table 12) it appeared that in nine out of thirteen calculations (subscales, dimension scores and total), the women's scores were higher than the men's indicating a greater impact for the women. These results were based on only three women and three men. Furthermore, we do not take self-rated or measured visual acuity into account in this comparison. These scores, however, could be discussed with reference to traditional sex/role stereotypes in this cohort. Perhaps the men are "taken care of" by their wives, thus not experiencing as severe an impact and the women are "expected to take care of" the husbands in areas of cooking and other household activities.

Data trends indicate that the impact was worse for those living in a house than those in an apartment. This could be explained based upon the amount of work involved in the care and maintenance of a house. Conclusions cannot be drawn regarding the relationship between these sociodemographic variables and the SIP results based upon the small sample in this study.

In summary, very few trends were noted when comparing SIP results with the sociodemographic data. In general, the scores for the married women seemed to be higher than scores for the married men. The impact seemed to be greater for those living in a house than in an apartment. Because of the small number of subjects, it is not possible to draw conclusions from these data.

Summary of Research Findings

Findings in this research study are reported in relation to the Sickness Impact Profile instrument, and each of the three research questions. The SIP was found to be a useful instrument in measuring the impact of low vision as compared with other clinical conditions. Correlation results indicate that the SIP subscales do measure distinct areas of impact but the dimensions are interrelated so that they do not measure distinct areas of impact. The total scores are a more useful indicator of impact for this study.

Many common and unique areas of impact were identified by the subjects in this study. According to the SIP scores and the interview, the greatest areas of impact are in Household maintenance, Recreation and Pastimes and Emotional Behavior. Many areas of practical significance were reported in the areas of Mobility, Ambulation, Alertness Behavior, Communication, Social Interaction and Body Care and Movement. Many subjects discussed the impact in positive rather than negative terms.

In this study, measured visual acuity was shown to be moderately related to self-rated vision. Self-rated vision was significantly related to the scores in Household Maintenance, Recreation and Pastimes and to the Total SIP scores. Using multiple regression, self-rated vision was found to be a better predictor of the total SIP score than was measured visual acuity. These findings have important practical significance in guiding the assessment and planning by the Clinical Nurse Specialist.

Very few trends or relationships were noted when comparing the Sickness Impact Profile scores with the sociodemographic characteristics of the subjects. Conclusions cannot be drawn in this area of the study.

Strengths and Limitations

The purpose of this research has been to describe the impact of low vision in the older adult and to identify the relationship between that impact and visual acuity self-rated vision and selected sociodemographic characteristics of the subjects. The strengths and limitations of this study are described in this section.

Strengths

A major strength of this study is that it was designed to systematically obtain information about the impact of low vision in the older adult. Although a number of studies have been done to look at these areas of impact, none of them have been based upon a clearly stated conceptual model or obtained data about impact in a systematic manner (See Chapter III). In collecting data, an instrument was used which has been thoroughly tested with large groups of subjects in a variety of research settings (Bergner & Rothman, 1987).

Another strength of this study is that data was obtained to examine correlations between data reflecting impact of low vision and both measured and self-rated vision. This data is of interest since other studies, to date, have not sought to correlated self-rated vision with impact data.

In addition to using the SIP instrument, data was also obtained with an open interview, thus allowing subjects freedom to bring up any other areas of impact. An examination of the results makes it clear that this approach provided data that would not have been known if only the SIP had been used. Since an instrument to measure impact of low vision was not available, the dual approach to collecting the data was clearly a strength in this study.

Limitations

The study used a convenience sample of older adults with low vision, obtained from an optometrist's practice. This results in a number of limitations. First, the responses from these subjects may differ from those of a random sample of subjects with low vision. Second, only subjects were used who agreed to participate and may be different from those who refused to participate. Third it is possible that people who seek help from an optometrist may be different in some way from those who do not. In effect, all of the subjects, because they had been receiving the optometrists services has received some low vision rehabilitation.

Because of the small sample in this study, it was not possible to draw conclusions that can be applied to the general population. The small sample also was similar to, but not the same in sociodemographic characteristics as the general population of older adults. Thus, the analysis of impact as it related to selected sociodemographic characteristics is of limited value.

All but one of the participants in this study had macular degeneration. It is not known, for example, whether the experience of low vision may be different in people with cataracts. It is likely that the results of the study may have been different if the participants had other eye diagnoses.

A portion of the data was obtained by open interview, with the researcher following a script with guidelines for the interview. The results of this portion of the data collection were dependent upon the personality of the participant and the interaction with the interviewer. Some subjects tended to appear much more introspective than others. Some appeared much more talkative than others and some seemed to pay more attention to the details of their lives than others. These factors created variation in the data collected in the interview. If the researcher could have suggested

areas of impact, more data might have been obtained. For example, it was apparent that may subjects were very careful about opening the door to the researcher, yet nobody talked aobut fears for personal safety when opening the door. Validity and reliability of the interview schedule was not established for this study.

The researcher did not control for variables which could have affected the subjects' responses. Some of these variables include social support, coping mechanisms, life satisfaction, spiritual characterisitics and morale.

Conclusions

Study results have been presented, interpreted and discussed. The major contribution of this study has been to systematically identify the areas in which low vision impacts the older adult. The major conclusions for this study have been discussed and are listed below.

1. The Sickness Impact Profile is a useful instrument for examining the impact of low vision in older adults, but is not sensitive enough to fully identify all areas of impact.

2. The greatest areas of impact of low vision identified in these subjects, using both the SIP and an open interview, are in the areas of Home Maintenance, Recreation and Pastimes and Emotional Behavior.

3. When combining the SIP results and the results of the interview, much individual variation is seen between subjects in the descriptions of impact of low vision.

4. When interviewing the subjects, both positive and negative impacts of low vision were reported.

5. There is a weak relationship between measured visual acuity and self-rated vision.

6. Self-rated vision is a better predictor of impact of low vision than visual acuity.

7. There do not appear to be significant relationships between age, sex, marital status, income, living situation, education, self-rated health, number of illnesses or number of illnesses with serious effect and the scores on the SIP.

Recommendations for Research

A great deal of research is still needed in the area of impact of low vision. Much of the research on vision has been done in environments of controlled testing and the relationship between that and the experiences in the real world are not well known (Fozard, et al., 1977; Ordy & Brizzee, 1979; Kline & Schieber, 1985).

It would be useful if this study were replicated using a much larger sample obtained from a variety of sites. Subjects could be obtained from general practice clinics as well as opthalmology and optometry clinics with the idea that there would be a larger variety of eye diseases represented and a wider range of visual acuities. Perhaps subjects should be selected with a best corrected visual acuity of 20/40 in the better eye so that there is a wider range of visual acuities represented. Since low vision services are provided by the federal government for people who meet the criteria for legal blindness, it would be interesting to determine if there is a significant impact identified by subjects whose vision is above legal blindness (20/40 to 20/200), thus documenting a need for services for those individuals.

All of the subjects in this study had availed themselves of some low vision rehabilitation assistance (since the optometrist who referred them

had provided them with special lenses or other optical aids). It would also be of interest to examine comparisons of impact between a group who had not received low vision rehabilitation services and those who had. Another approach would be to administer the SIP to subjects before low vision rehabilitation services were initiated and then at a suitable interval after those services had been provided to identify whether rehabilitation changed the perceived impact for these subjects.

There is a definite need for the development and testing of an instrument specifically designed to measure the perceived impact of low vision. Although the SIP was useful in obtaining data regarding the impact of low vision, it appears to be limited in some areas and definately not powerful enough to fully describe all areas of impact of low vision. There were many questions on that instrument to which none of the subjects responded. Many of the questions obviously do not relate to the anticipated problems in low vision. Furthermore, as a result of the interview there emerged some critical areas not covered on the SIP. Consequently an instrument has been designed which incorporates only those SIP items selected by the subjects in this study. Additional items were written which reflect areas of impact identified through the interview. A draft of a tool which meets these criteria, the Low Vision Impact Scale, is found in Appendix G. This new instrument, then needs to be tested using appropriate procedure for establishing validity and reliability. This measurement tool should be used in multiple clinical sites, with subjects with a variety of eye diagnoses and with subjects with a broad range of visual acuities.

According to Erickson, Tomlin and Swain (1983) each individual has knowlege of themself and is able to mobilize resources to solve their own problems. The nurse is able, through an interpersonal and interactive

process to assist the client to identify their self knowlege and then to support that person in achieving their potential. Clients who are unable to mobilize their own resources for this process are referred to as impoverished. In other words, the individual who is either temporarily or permanently not competent to accurately identify their own needs or work to achieve their potential is impoverished. In the case of the client with low vision it might be an individual who has adapted slowly to their vision changes and is unaware of some of the safety problems that are occuring, or the person who, in an effort to continue to live independently is not acknowleging some of the problems they are having. In nursing, we need, at times to be able to recognize when a client is impoverished. At this point, assesment data may be collected from family members and decisions will be made by the nurse and the family for that client.

It may be useful to collect data about perceived impact of low vision from both the subject and from a family member and compare those results. In some instances visual changes may occur slowly and the client may adapt to those changes so that they do not recognize the extent of impact, particularly in areas of personal safety. A study of this kind may help to identify when a patient with low vision should be viewed as impoverished and in need of more direct intervention.

In this study, multiple regression analysis was used to examine the relationship between visual acuity, self-rated vision and the SIP scores. It was identified that 70% of the variation in the SIP scores was unaccounted for by the two measures of vision. There did not appear to be any trends indicating that SIP scores were influenced by number of other illnesses, severity of those illnesses, living situation, income, or education. Other research studies need to be designed, therefore, to identify the effect of

other variables on the perceived impact of low vision. For example, Oppegard et.al. (1983) studied the relationship between vision and anxiety and depression. For those subjects with low social support there was a negative correlation between anxiety and vision ($r = -.39$, $p =< .01$) and between depression and vision ($r = -.32$, $p = <.05$) but for those subjects with high social support the correlations were negligable. It is suggested, for example, that measures of social support, morale, coping style or life satisfaction might be used in a future study of the impact of low vision to try to identify those variables which most determine perceived impact of low vision.

Recommendations for Practice

The Clinical Nurse Specialist in Gerontology will see many older adults who are experiencing multiple health problems. In order to provide comprehensive care to those clients it is important that the CNS be aware of the normal changes in vision experienced by all older people, the incidence of visual impairment in the aging population, the incidence of the most common eye diseases in older adults and some of the characteristics of those diseases.

The Clinical Nurse Specialist, in practice, uses both standard medical assessment practices and some that are special in the practice of nursing in primary care. In assessing clients, the CNS needs to utilize standard measures of visual acuity and visual field in basic screening exams. Furthermore the CNS needs to encourage the older adult to seek more specialized eye exams by an Optometrist and/or Opthalmologist for screening and early detection of Glaucoma, Cataracts and Macular Degeneration. When identified early, and treated appropriately some

deterioration in vision can be prevented.

In this study, self-rated vision was determined to be a better predictor of the SIP scores than was measured visual acuity. It follows, then that the Clinical Nurse Specialist should ask all clients to rate their present vision. Those who rate their vision as poor or very poor should be asked further questions to identify perceived impact of low vision and interventions should be planned based upon the answers to those questions. Furthermore, practicing nursing following the paradigm Modeling and Role Modeling, the CNS would be interested in obtaining information about perceived impact of low vision from clients in order to develop a model of that client's world and that model would be used as the basis for role modeling, the planning of interventions. An assessment guide has been developed to assist in this nursing assessment of self care knowlege regarding vision. A draft of this assessment guide appears in Appendix H.

When clients have been identified who have problems with the impact of low vision, the CNS needs to be aware of the range of interventions available to those clients. In addition to making appropriate referrals to Opthalmologists for treatment of the client's eye conditions, the CNS needs to be aware of community or area Optometrists who specialize in Low Vision care. Those specialists are better able to perform a more specialized assessment and can offer a wider range of types of low vision aids. The CNS also needs to be aware of referral sources for those clients whose vision meets federal standards for legal blindness and of the community services available to those clients.

With a trend toward an increase in numbers of older people with low vision, the demand for assistance in adaptation to low vision will increase. The people whose visual acuity does not meet the standards for legal

blindness will be in need of teaching, counseling and referrals appropriate for their needs. There are many interventions which can be suggested which improve the older person's ability to remain independent at home and the CNS needs to be able to provide that kind of assistance to clients.

From a statistical standpoint, the results of this study cannot be applied to the general population, since the study was done using a very small convenience sample. Nursing, however, is a practice discipline and, following the holistic paradigm, nurses need to plan interventions based upon individual responses, rather than "statistical averages". According to a discussion by Walsh (1988), the nurse needs to translate research findings into individualized practice using the broader scope of clinical significance. rather than purely statistical significance. With this in mind, many of the findings in this study can be identified, which give direction to clinical assessment and practice. Individual comments made during the interview may be used as a basis for interaction and planning with clients. For example, only two of the subjects mentioned having difficulty using the telephone directory. This is not a statistically significant finding, yet the nurse may need to routinely ask client's about what kind of assistance they need in keeping a record of important telephone numbers or in being able to dial those numbers correctly.

According to the results in this study, the emotional impact of low vision is very significant. Many older adults reported feeling depressed, frustrated and embarrassed by their low vision problems. It is not know to what extent their emotional state then affects the impact in other areas. The CNS needs to be able to assess the emotional impact in clients and, using knowlege of loss and grief, counsel clients as they adapt to this loss. Emerson (1981) described the beneficial effects of group therapy with older

adults with low vision in helping those people to adapt to their loss. Galler (1981) described the successful use of a support group and the further development of a peer support network. The CNS can become actively involved in initiating and leading a support group for clients with low vision, recognizing the mediating effects this may have on the emotional impact of this problem.

Recommendations for Education

There are many areas in which education is needed in low vision. Education is needed for clients and their families, nurses, other health professionals and various members of the community.

The CNS in Gerontology can play an important role in the prevention or early detection of low vision through education of people of all ages. Knowlege of eye safety, basic knowlege of eye function and dispelling myths about eyes and vision are some of the areas in which public education may take place. In younger adults it is important to teach people the signs of vision problems that will benefit by early detection and treatment.

The Clinical Nurse Specialist in primary care can assist clients with low vision through education. Often clients have been told about their diagnosis, but do not adequately understand what that means. The nurse can provide the client and family with helpful information about the ways their activities can be adapted to allow them to continue to live independently.

Many nurses have little knowlege of eye care and the range of referrals and interventions which might be available to people with low vision. The CNS can be available for consultation by institutions providing basic nursing education or for inservice programs for practicing nurses. The CNS can provide up-to-date information and references regarding eye diseases, eye

care and the care of the client with low vision.

People in other health professions often need information regarding low vision problems in the elderly. For example clients are often told by the Opthalmologist that there is no further help for their eye problem but are not necessarily offered referrals to sources of optical help, rehabilitation or support for independent living. Although it may be true that the disease can no longer be treated, cure is not possible, or their vision cannot physiologically be improved, the client needs at that point to be referred for specialized optical assistance or be told of the rehabilitation possibilities in that community. The CNS may provide local Opthalmologists with information about these referral sources and the importance of directing their clients to these sources of information. Furthermore, a CNS specializing in low vision care could provide educational and case management services to the Opthalmologist and his low vision clients.

Elderly people are often cared for by dentists, dietitians, physical therapists, pharmacists, clergy and many other professionals. Often these professionals lack knowlege of normal aging changes in vision and the impact this has on the older person's functioning. Dietary instructions, for example, are sometimes provided in print too small for the older person with mild visual defects to read without a magnifying glass. Likewise, pharmacy labels are printed in relatively small print and without adequate contrast. The nurse in advanced practice can be an advocate for the needs of older people in these areas, both through formal education programs and through informal teaching.

The CNS can also provide education about low vision through various roles in community service. There are many political arenas in which advocacy for the needs of the older person are important. Through service

on boards of directors, letter writing to public officials or formal work through community agencies, the CNS can assist in public education about low vision. For example the CNS, acting in these roles can improve the use of lighting in public places, increase accessability to transportation for the visually impaired, or initiate programs to provide volunteers to assist people with shopping.

Summary

The interpretation of the research findings have been discussed in Chapter VI. Discussion has included the sociodemographic characteristics of the sample, the Sickness Impact Profile, and the research questions in the study. Results have been presented in relation to the conceptual model developed for the study. Ideas were presented for further research, nursing practice and education.

APPENDICES

APPENDIX A

PERMISSIONS

THE JOHNS HOPKINS UNIVERSITY
School of Hygiene and Public Health

Health Services Research and
Development Center

624 North Broadway
Baltimore, Maryland 21205
Tel. (301) 955-6562

August 15, 1988

Catherine F. Bennett, R.N.
College of Nursing
Michigan State University
East Lansing, Michigan 48824-1317

Dear Ms. Bennett:

This letter grants you permission to use the Sickness Impact Profile in your research. In return, I would appreciate receiving a detailed description of the research you will be doing and a final report of the results when it is completed.

To the best of my knowledge, there are no studies of function in those with impaired vision though there is considerable interest in examining the effects of therapy for those with poor vision. Your research would be an important first step in this area.

I do not have an up-to-date list of references of research using the SIP nor do I know of a way to obtain such a list. The only mechanism you can use is a key word search of Medline which yields much that you will not want. Sorry I can't help more. Good luck.

Sincerely yours,

Marilyn Bergner, Ph.D.
Professor

MB:ad

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May 18, 1989

Catherine F. Bennett, R.N.
MSN Candidate
College of Nursing
Michigan State University
East Lansing, MI 48824-1317

Dear Ms. Bennett:

Re: Attached request

Permission is granted to reproduce Fig. 11-1 on p. 224 of the second edition, 1981, which also appears as Fig. 11-1 on p. 231 of the third edition, 1986, of Malasanos et al.'s Health assessment in your masters thesis entitled "Perceived Impact of Low Vision in Older Adults." Please include the following credit line to the latest edition (subject to modification in accordance with style preference) at the end of the legend:

> Reproduced by permission from Malasanos, Lois, Barkauskas, Violet, Moss, Muriel, and Stoltenberg-Allen, Kathryn: Health assessment, ed. 3, St. Louis, 1986, The C. V. Mosby Co.

Permission also is granted to reproduce Fig. 6-10 on p. 654 of the first edition, 1986, of Thompson et al.'s Clinical nursing, which also appears as Fig. 6-10 on p. 578 of the second edition entitled Mosby's Manual of clinical nursing, 1989. Please include the following credit line to the latest edition at the end of the legend:

> Reproduced by permission from Thompson, June M., McFarland, Gertrude K., Hirsch, Jane E., Tucker, Susan M., and Bowers, Arlen C.: Mosby's Manual of clinical nursing, ed. 2, St. Louis, 1989, The C. V. Mosby Co.

Best wishes.

Sincerely,

Anastasia Broderick

Anastasia Broderick, Manager
Library Services and Permissions

AB:mm
Attachment

MICHIGAN STATE UNIVERSITY

COLLEGE OF NURSING

EAST LANSING • MICHIGAN • 48824-131

April 24, 1989

Prentice Hall

Michelle Johnson
Permissions Editor
Englewood Cliffs, New Jersey
07632

Dear Ms. Johnson;

As a graduate student in the Gerontological Clinical Specialist Program at Michigan State University I am completing my masters thesis entitled, "Perceived Impact of Low Vision in Older Adults" In developing the background theory for this thesis I am discussing Modeling and Role Modeling developed by Erickson, Tomlin and Swain. In that chapter I would like to use the figure illustrating the holistic model.

I am requesting permission to reproduce a diagram from the Prentice-Hall book Modeling and Role Modeling, 1983 edition. The diagram is Figure 3-2 from page 45 of the book. I will give credit in both the legend of the diagram and in the reference list for the thesis. A copy of the thesis will be placed in the university library. At no time will the content including this diagram be commercially published.

I thank you for consideration of this request.

Sincerely,

Catherine F. Bennett

Catherine F. Bennett R.N. M.S.
MSN Candidate

* 201-592-2380

592-2000

PERMISSION GRANTED

Jean B Wilson

6/6/89

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APPENDIX B

UCRIHS APPROVAL

MICHIGAN STATE UNIVERSITY

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING
HUMAN SUBJECTS (UCRIHS)
206 BERKEY HALL
(517) 353-9738

EAST LANSING • MICHIGAN • 48824-1111

November 10, 1988

IRB# 88-419

Catherine F. Bennett
A-217 Life Sciences

Dear Ms. Bennett:

Subject: "PERCEIVED IMPACT OF LOW VISION IN OLDER ADULTS **IRB# 88-419**"

The above project is exempt from full UCRIHS review. I have reviewed the proposed research protocol and find that the rights and welfare of human subjects appear to be protected. You have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to November 7, 1989.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

John K. Hudzik, Ph.D.
Chair, UCRIHS

JKH/sar

cc: B. Given

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APPENDIX C

SCRIPT, LETTER AND CONSENT FORMS

SCRIPT

INITIAL CONTACT AND RELEASE OF INFORMATION AT THE CLINICAL SITE

(The subject may be contacted while they are visiting the clinic or they may be contacted by telephone by a staff person from the clinic. The following will be read out loud to the subject. In addition they will be given or mailed a statement prepared in very large print)

I am talking with you (calling you) to let you know about a research study on low vision in older adults being conducted by a nurse who is a graduate student in the Gerontological Clinical Nurse Specialist Program at Michigan State University. The nurse, Cathy Bennett, is interested in interviewing older people with low vision to learn more about how vision affects their ability to carry out their daily lives. In order to provide the best nursing care to older people, it is important for nurses to understand about the experience of decreasing vision and how it affects one's daily life. The purpose of this conversation is to see if you are interested in the study and willing to give permission to participate in the study.

The information for the study will be gathered through an interview. Part of the interview will be a questionnaire which will take approximately forty five minutes. In addition there will be time for you to converse about your feelings about how your vision has affected you. That part will take thirty minutes.

Participation in the study is voluntary. Any information you provide will be kept confidential as the answers will be processed by a computer and only reported in group form. You would be free to withdraw from the study at any time. Participation in the study or withdrawl from the study would in no way affect the care that you and your family is now receiving.

If you give permission for me to give your name, telephone number and information from your clinical records to the researcher, Cathy Bennett, then she will telephone you to explain more about the study and to plan a time when she can come to talk with you.

(If permission is obtained, the subject will be asked to sign the release form or the person talking to them will sign the release form in the lines provided indicating that verbal permission has been given. The subject will be given or mailed the large print letter and authorization form.)

Catherine F. Bennett, R.N.
Clinical Nurse Specialist in Gerontology
Graduate Student
College of Nursing
Michigan State University

LETTER TO SUBJECTS

I am a graduate student in the Gerontological (study of aging) Clinical Nurse Specialist Program at Michigan State University. I am doing research on how older adults with low vision view the impact of low vision on their daily lives. In order to provide the best nursing care to older people, it is important for the nurse to learn about the experience of decreasing vision and how it affects one's daily life. I am interested in obtaining your permission to participate in the study.

The information for the study will be gathered through an interview. Part of the interview will be a questionnaire which will take approximately forty five minutes. In addition I would like to converse with you about your feelings about how your vision has affected you and that will take about thirty minutes.

Participation in this study is voluntary. The

information you provide will be kept confidential as the answers will be processed by a computer and only reported in group form. You would be free to withdraw from the study at any time. Participation in the study or withdrawl from the study would in no way affect the care you or your family is now receiving.

If you give permission I will telephone you to explain more about the study and to plan a time to come and talk with you. Thank you very much for your consideration of this project. Your help will be greatly appreciated.

Sincerely,

Catherine F. Bennett, R.N.
Clinical Nurse Specialist
Graduate Student
Michigan State University
College of Nursing

RELEASE OF NAME

I, _____authorize

_____to release my name,

telephone number, and clinical records to Catherine Bennett so that I may be contacted for further discussion of the research study.

_____

(signature)

_____

(date)

_____

(telephone number)

CONSENT FORM

In order for you to understand your rights as a participant in a research study and to insure confidentiality, it is important for you to understand and agree to the following points.

1) I freely consent to participate in a study conducted by a graduate student in the Gerontological Clinical Nurse Specialist Program in the College of Nursing, Michigan State University.

2) The purpose of the study is to obtain information about the effect of low vision in the daily lives of older adults. The study has been explained to me and I have had an opportunity to have my questions answered.

3) I am free to withdraw from the study at any time even though I had earlier consented to participate, and withdrawl will in no way affect my care in the clinic.

4) I understand that the results of the study will remain confidential and any publication of results will be done in group form and my name will remain anonymous.

5) I give my consent to allow the research investigator to review my records at the _____(clinic).

6) I give my consent to have the final 30

minutes of the interview tape recorded.
7) I understand that my agreement to participate in the study will not affect my services at the _____(clinic).
8) I understand that I will not be paid for participation in the study. The results of the study will be made available to me if I request.

_____

(signature of participant)

_____

(date)

(or) if the participant is unable to see well enough to sign.
I certify that_____
was read the above information and freely gave verbal consent.

_____

(witness-other than the researcher)

_____

(date)

APPENDIX D

DATA COLLECTION INSTRUMENTS

DATA FROM MEDICAL RECORDS

1. Diagnoses of eye conditions and "vision related" disease.

   A. General:

   B. Eyes

Left Eye	Right Eye

2. Visual Acuity (Best Corrected with conventional lenses)

Left Eye	Right Eye

3. When was vision first reported as worse than 20/60 in the better eye?

4. Screening Data:

   Date of Birth_____ Sex_____

   Living Independently in Community ___Yes ___No

   Explain_____

   No obvious mental or thinking impairment_____

   Able to hear well enough to be interviewed_____

   Involved with Low Vision counseling or Rehabilitation Program?_____

   Describe_____

DEMOGRAPHIC DATA (Questions to be read by the interviewer) #_____

I am going to begin by reading you some general questions about your background, your general health and your vision. Please answer them to the best of your knowlege.

1. What is your date of birth?_____

2. What is your marital status? Are you...
   _____(1) Married
   _____(2) Single
   _____(3) Widowed
   _____(4) Divorced
   _____(5) Separated

3. I will read some items related to living situation. Please let me know all of those which apply to you. (Interviewer checks all that apply)
   _____(1) I live alone
   _____(2) I live with my spouse
   _____(3) I live with my son or daughter (adult child)
   _____(4) I live with my brother or sister
   _____(5) I live with a friend
   _____(6) I live in a house
   _____(7) I live in an apartment
   _____(8) I live in a room
   _____(9) Other _____

4. What is your highest level of education?
   _____(1) College degree or graduate degree
   _____(2) Some College
   _____(3) High School Graduate
   _____(4) Some High School
   _____(5) Grade School Graduate
   _____(6) Less than 8th grade

5. What is your total household income for the past 12 months. I will read some categories of income. Please let me know which applies to you.
   _____(1) 0-------4,999
   _____(2) 5,000--14,999
   _____(3) 15,000-24,999
   _____(4) 25,000-34,999
   _____(5) 35,000-44,999
   _____(6) 45,000 - and above
   _____(7) No answer

6. What is your occupation? (or) If you are retired, what was your former occupation?

   _____

7. Please tell me your present employment or activity status. Is it...
   _____(1) Employed full time outside the home
   _____(2) Employed part time outside the home
   _____(3) Retired
   _____(4) Stopped work due to disability
   _____(5) Volunteer Work
   _____(6) Other _____

8. Is English the first language you learned as a child?
   _____(1) Yes
   _____(2) No

9. Next I would like to ask you to rate your general health. Is it...
   _____(1) Very Good
   _____(2) Good
   _____(3) Average
   _____(4) Poor
   _____(5) Very Poor

10. I will read a list of Chronic Diseases. Please indicate all of the chronic conditions you are presently being treated for. (The interviewer will write yes or no in the first column below) (1)-yes (2)-No Are there any other Chronic disease that you are presently being treated for. (The interviewer will list on the lines that are provided.

11. Do any of the conditions you just named seriously affect your ability to carry out your daily life? (The interviewer will then name each of the diseases to which the subject responded yes.) The response to this question will be recorded as (1)-yes or (2)-No and placed in the second column below.

	Has Disease (10)	Serious Effect on Life (11)
Arthritis		
Cancer		
Chronic Lung Disease		
Diabetes		
Heart Disease		
High Blood Pressure		
Kidney Disease		
Stroke		
Other		
Other		

12. Next I would like to ask you to rate your present vision. Is it...
_____(1) Very Good
_____(2) Good
_____(3) Average
_____(4) Poor
_____(5) Very Poor

13. When wearing regular glasses are you able to read newspaper headlines?
_____(1) Yes
_____(2) No

14. When wearing regular glasses are you able to read newspaper print?
_____(1) Yes
_____(2) No

15. When wearing regular glasses are you able to recognize the features of people when they are within two or three feet?
_____(1) Yes
_____(2) No

16. When wearing regular glasses are you able to recognize a friend walking on the other side of the street?
_____(1) Yes
_____(2) No

17. What kind of special help have you received for your low vision problem?
_____(1) Low Vision Counselor visited me at home
_____(2) Attended a Low Vision Rehabilitation Center
_____(3) Have special magnifying lenses I can wear
_____(4) Other _____

_____

INTERVIEW

We have completed the formal questionnaire. In the next 30 minutes, I wonder if there are some specific comments you would like to make regarding the effect of your vision on your ability to carry out your life's activities? I have just turned on the tape recorder so that I am able to record your comments.

(Following are 3 questions that will be asked by the interviewer during this interview. They will be timed to allow enough time for the subject to answer.

A. Do you have comments about how your vision affects your ability to take personal care of your body, move about at home, eat, sleep, take care of your (home, apartment, room) and take care of your personal affairs.

B. Do you have any comments about how your vision affects your ability to get around away from home, to get along socially and to take part in recreation or pastimes?

C. Do you have comments about how your vision affects your ability to communicate to others, your alertness and thinking, or your emotions?

(As the subject talks, other responses by the interviewer will be as follows:)

1. The interviewer may repeat all or part of A., B., or C. if the subject requests.
2. Listening responses: "yes", "UhHuh", "I Understand) (examples)
3. Reflective responses: This refers to the repeating of a phrase just stated by the subject, just as they stated it.
4. Clarifying responses: This is a response to try to seek clarification "You are referring to when you are away from home?"

After 25 minutes the interviewer will say:
We have only 5 minutes left to talk. I wonder if there is anything important you want to be sure to talk about in the last 5 minutes?

At the conclusion of the 30 minutes the interviewer will say:
I'm going to turn my tape recorder off now. We've been talking for 30 minutes. I thank you very much for participating in this study. The information you have given me will be very helpful for me in this study.

Sickness Impact Profile

Copyright © 1977

HARILYN BERGNER

SIP-10030
SD I-03564
SD II-03657

Please note: For this study, the instructions for the interviewer-administered questionnaire and the instructions at the beginning of each section of the Sickness Impact Profile were revised to read "related to your state of health as it is affected by your vision".

CALCULATION OF CATEGORY SCORE, DIMENSION SCORES, AND OVERALL SIP SCORE*

The score for each category is calculated by adding the scale values for each item checked within the category and dividing by the maximum possible dysfunction score for that category. This figure is then multiplied by 100 to obtain the category score.

Two dimension scores may be calculated. The physical dimension score is obtained by adding the scale values for each item checked within categories BCM, M, and A, dividing by the maximum possible dysfunction score for these categories, and then multiplying by 100; the psychosocial dimension score is obtained by adding the scale values for each item checked within categories EB, SI, AB, and C, dividing by the maximum possible dysfunction score for these categories, and then multiplying by 100. The scores for the remaining categories are always calculated individually.

The overall score for the SIP is calculated by adding the scale values for each item checked across all categories and dividing by the maximum possible dysfunction score for the SIP. This figure is then multiplied by 100 to obtain the SIP overall score.

In the attached SIP booklet the scale values are coded to one decimal as follows:

1. Following the checking line for each item, the item number and scale value are shown, e.g., 070-083 indicates item 70 has a scale value of 8.3.

2. Following each category code in the upper right-hand corner of the page, the total possible scale value for that category is shown, e.g., SR-0499 indicates a total possible scale value of 49.9 for category SR.

3. On the title page of the booklet in the lower right-hand corner appears SD I-03564 and SD II-03657. These indicate a total possible scale value of 356.4 for the physical scoring dimension, and a total scale value of 365.7 for the psychosocial scoring dimension. These are the denominators for calculating the respective dimension scores.

4. Also on the title page of the booklet in the lower right-hand corner appears SIP-10030 indicating a total possible scale value of 1003.0 for the entire SIP. This is the denominator for calculating the overall SIP score.

Please note that there are two special considerations in scoring Category W Work:

(1) When a subject answers <u>YES</u> to either,

"If you are retired, was your retirement related to your health?" or

"If you are not retired, but are <u>not</u> working, is this related to your health?",

he is instructed to skip Category W - Work. However, in editing the questionnaire prior to coding or scoring, for subjects who answered <u>YES</u> to either of these questions, <u>item 100 should be checked</u>.

(2) Item 100, the first item, has been coded 100-361, indicating an unusually high scale value. The scale value for this item has been statistically adjusted to take into account the fact that when item 100 is checked no other item in category W can be checked.

VISION

THE FOLLOWING INSTRUCTIONS ARE FOR THE INTERVIEWER-ADMINISTERED QUESTIONNAIRE.

INSTRUCTIONS TO THE RESPONDENT

Before beginning the questionnaire, I am going to read you the instructions.

You have certain activities that you do in carrying on your life. Sometimes you do all of these activities. Other times, because of your state of health, you don't do these activities in the usual way: You may cut some out; you may do some for shorter lengths of time; you may do some in different ways. These changes in your activities may be recent or longstanding. I am interested in learning about any changes that describe you today and are related to your state of health as it is affected by your vision.

I will be reading statements that people have told us describe them when they are not completely well. Whether or not you consider yourself sick, there may be some statements that will stand out because they describe you today and are related to your state of health. As I read the questionnaire, think of yourself today. I will pause briefly after each statement. When you hear one that does describe you and is related to your health as it is affected by your vision, please tell me and I will check it.

Let me give you an example. I might read the statement "I am not driving my car" If this statement is related to your health as it it affected by your vision and describes you today, you should tell me. Also, if you have not been driving for some time because of your vision and are still not driving today, you should respond to this statement.

On the other hand, if you never drive or are not driving today because your car is being repaired, the statement, "I am not driving my car" is not related to your health and you should not respond to it. If you simply are driving less, or are driving shorter distances, and feel that the statement only partially describes you, please do not respond to it.

I am now going to begin the questionnaire. Please tell me if you want me to slow down, repeat a statement, or stop so that you can think about one. Also let me know any time you would like to review the instructions. Remember we are interested in the recent or longstanding changes in your activities that are related to your health specifically as it is affected by your vision.

(SR-0499)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

1. I spend much of the day lying down in order to rest _____ (070-083)

2. I sit during much of the day _____ (062-049)

3. I am sleeping or dozing most of the time - day and night _____ (063-104)

4. I lie down more often during the day in order to rest _____ (066-058)

5. I sit around half-asleep _____ (065-084)

6. I sleep less at night, for example, wake up too early, don't fall asleep for a long time, awaken frequently _____ (069-061)

7. I sleep or nap more during the day _____ (071-060)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(EB-C7C5)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

---

1. I say how bad or useless I am, for example, that I am a burden on others _____ (274-087)

2. I laugh or cry suddenly _____ (272-068)

3. I often moan and groan in pain or discomfort _____ (269-069)

4. I have attempted suicide _____ (281-132)

5. I act nervous or restless _____ (284-046)

6. I keep rubbing or holding areas of my body that hurt or are uncomfortable _____ (262-062)

7. I act irritable and impatient with myself, for example, talk badly about myself, swear at myself, blame myself for things that happen _____ (273-078)

8. I talk about the future in a hopeless way _____ (283-089)

9. I get sudden frights _____ (278-074)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(BCM-2003)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

---

1. I make difficult moves with help, for example, getting into or out of cars, bathtubs _____ (168-084)
2. I do not move into or out of bed or chair by myself but am moved by a person or mechanical aid _____ (170-121)
3. I stand only for short periods of time _____ (155-072)
4. I do not maintain balance _____ (146-098)
5. I move my hands or fingers with some limitation or difficulty _____ (152-064)
6. I stand up only with someone's help _____ (165-100)
7. I kneel, stoop, or bend down only by holding on to something _____ (171-064)
8. I am in a restricted position all the time _____ (158-125)
9. I am very clumsy in body movements _____ (148-058)
10. I get in and out of bed or chairs by grasping something for support or using a cane or walker _____ (169-082)
11. I stay lying down most of the time _____ (162-113)
12. I change position frequently _____ (147-030)
13. I hold on to something to move myself around in bed _____ (143-086)
14. I do not bathe myself completely, for example, require assistance with bathing _____ (310-089)
15. I do not bathe myself at all, but am bathed by someone else _____ (312-115)
16. I use bedpan with assistance _____ (292-114)
17. I have trouble getting shoes, socks, or stockings on _____ (305-057)
18. I do not have control of my bladder _____ (290-124)

19. I do not fasten my clothing, for example, require assistance with buttons, zippers, shoelaces _____ (298-074)

20. I spend most of the time partly undressed or in pajamas _____ (302-074)

21. I do not have control of my bowels _____ (295-128)

22. I dress myself, but do so very slowly _____ (300-043)

23. I get dressed only with someone's help _____ (297-088)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(HM-3668)

THIS GROUP OF STATEMENTS HAS TO DO WITH ANY WORK YOU USUALLY DO IN CARING FOR YOUR HOME OR YARD. CONSIDERING JUST THOSE THINGS THAT YOU DO, PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE <u>SURE</u> DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

1 I do work around the house only for short periods of time or rest often _____ (117-054)

2 I am doing <u>less</u> of the reguiar daily work around the house than I would usually do _____ (119-044)

3. I am not doing <u>any</u> of the regular daily work around the house that I would usually do _____ (120-086)

4. I am not doing <u>any</u> of the maintenance or repair work that I would usually do in my home or yard _____ (001-062)

5. I am not doing <u>any</u> of the shopping that I would usually do _____ (106-071)

6. I am not doing <u>any</u> of the house cleaning that I would usually do _____ (116-077)

7. I have difficulty doing handwork, for example, turning faucets, using kitchen gadgets, sewing, carpentry _____ (107-069)

8. I am not doing <u>any</u> of the clothes washing that I would usually do _____ (111-077)

9. I am not doing heavy work around the house _____ (115-044)

10. I have given up taking care of personal or household business affairs, for example, paying bills, banking, working on budget _____ (105-084)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(M-0719)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH, AS IT IS AFFECTED BY YOUR VISION.

1. I am getting around only within one building _____ (134-086)

2. I stay within one room _____ (128-106)

3. I am staying in bed more _____ (130-081)

4. I am staying in bed most of the time _____ (131-109)

5. I am not now using public transportation _____ (140-041)

6. I stay home most of the time _____ (133-066)

7. I am only going to places with restrooms nearby _____ (125-056)

8. I am not going into town _____ (124-048)

9. I stay away from home only for brief periods of time _____ (139-054)

10. I do not get around in the dark or in unlit places without someone's help _____ (121-072)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(SI-1450)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH, AS IT IS AFFECTED BY YOUR VISION.

1.	I am going out less to visit people	_____ (028-044)
2.	I am not going out to visit people at all	_____ (029-101)
3.	I show less interest in other people's problems, for example, don't listen when they tell me about their problems, don't offer to help	_____ (003-067)
4.	I often act irritable toward those around me, for example, snap at people, give sharp answers, criticize easily	_____ (015-084)
5.	I show less affection	_____ (007-052)
6.	I am doing fewer social activities with groups of people	_____ (012-036)
7.	I am cutting down the length of visits with friends	_____ (027-043)
8.	I am avoiding social visits from others	_____ (034-080)
9.	My sexual activity is decreased	_____ (039-051)
10.	I often express concern over what might be happening to my health	_____ (018-052)
11.	I talk less with those around me	_____ (002-056)
12.	I make many demands, for example, insist that people do things for me, tell them how to do things	_____ (038-088)
13.	I stay alone much of the time	_____ (023-086)
14.	I act disagreeable to family members, for example, I act spiteful, I am stubborn	_____ (249-088)
15.	I have frequent outbursts of anger at family members, for example, strike at them, scream, throw things at them	_____ (240-119)
16.	I isolate myself as much as I can from the rest of the family	_____ (237-102)

17. I am paying less attention to the children _____ (238-064)

18. I refuse contact with family members, for example, turn away from them _____ (256-115)

19. I am not doing the things I usually do to take care of my children or family _____ (242-079)

20. I am not joking with family members as I usually do _____ (255-043)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(A-0e42)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH, AS IT IS AFFECTED BY YOUR VISION.

1. I walk shorter distances or stop to rest often _____ (050-048)

2. I do not walk up or down hills _____ (046-056)

3. I use stairs only with mechanical support, for example, handrail, cane, crutches _____ (042-067)

4. I walk up or down stairs only with assistance from someone else _____ (044-076)

5. I get around in a wheelchair _____ (057-096)

6. I do not walk at all _____ (052-105)

7. I walk by myself but with some difficulty, for example, limp, wobble, stumble, have stiff leg _____ (049-055)

8. I walk only with help from someone _____ (053-088)

9 I go up and down stairs more slowly, for example, one step at a time, stop often _____ (040-054)

10. I do not use stairs at all _____ (041-083)

11. I get around only by using a walker, crutches, cane, walls, or furniture _____ (047-079)

12. I walk more slowly _____ (051-035)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(AB-0777)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

1. I am confused and start several actions at a time _____ (223-090)

2. I have more minor accidents, for example, drop things, trip and fall, bump into things _____ (234-075)

3. I react slowly to things that are said or done _____ (228-059)

4. I do not finish things I start _____ (227-067)

5. I have difficulty reasoning and solving problems, for example, making plans, making decisions, learning new things _____ (224-084)

6. I sometimes behave as if I were confused or disoriented in place or time, for example, where I am, who is around, directions, what day it is _____ (231-113)

7. I forget a lot, for example, things that happened recently, where I put things, appointments _____ (222-078)

8. I do not keep my attention on any activity for long _____ (220-067)

9. I make more mistakes than usual _____ (225-064)

10. I have difficulty doing activities involving concentration and thinking _____ (217-080)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(C-0725)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

1. I am having trouble writing or typing _____ (191-070)

2. I communicate mostly by gestures, for example, moving head, pointing, sign language _____ (177-102)

3. My speech is understood only by a few people who know me well _____ (179-093)

4. I often lose control of my voice when I talk, for example, my voice gets louder or softer, trembles, changes unexpectedly _____ (197-083)

5. I don't write except to sign my name _____ (188-083)

6. I carry on a conversation only when very close to the other person or looking at him _____ (178-067)

7. I have difficulty speaking, for example, get stuck, stutter, stammer, slur my words _____ (176-076)

8. I am understood with difficulty _____ (200-087)

9. I do not speak clearly when I am under stress _____ (201-064)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

THE NEXT GROUP OF STATEMENTS HAS TO DO WITH ANY WORK YOU USUALLY DO OTHER THAN MANAGING YOUR HOME. BY THIS WE MEAN ANYTHING THAT YOU REGARD AS WORK THAT YOU DO ON A REGULAR BASIS.

DO YOU USUALLY DO WORK OTHER THAN MANAGING YOUR HOME?

_____ YES _____ NO

➡ IF YOU ANSWERED YES, GO ON TO THE NEXT PAGE.

➡ IF YOU ANSWERED NO:

ARE YOU RETIRED?

_____ YES _____ NO

IF YOU ARE RETIRED, WAS YOUR RETIREMENT RELATED TO YOUR HEALTH?

_____ YES _____ NO

IF YOU ARE NOT RETIRED, BUT ARE NOT WORKING, IS THIS RELATED TO YOUR HEALTH?

_____ YES _____ NO

➡ NOW SKIP THE NEXT PAGE.

(W-0515)

IF YOU ARE NOT WORKING AND IT IS NOT BECAUSE OF YOUR HEALTH, PLEASE SKIP THIS PAGE.

NOW CONSIDER THE WORK YOU DO AND RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH. (IF TODAY IS A SATURDAY OR SUNDAY OR SOME OTHER DAY THAT YOU WOULD USUALLY HAVE OFF, PLEASE RESPOND AS IF TODAY WERE A WORKING DAY.)

1. I am not working at all _____ (100-361)

   (IF YOU CHECKED THIS STATEMENT, SKIP TO THE NEXT PAGE.)

2. I am doing part of my job at home _____ (094-037)
3. I am not accomplishing as much as usual at work _____ (096-055)
4. I often act irritable toward my work associates, for example, snap at them, give sharp answers, criticize easily _____ (088-080)
5. I am working shorter hours _____ (095-043)
6. I am doing only light work _____ (086-050)
7. I work only for short periods of time or take frequent rests _____ (090-061)
8. I am working at my usual job but with some changes, for example, using different tools or special aids, trading some tasks with other workers _____ (092-034)
9. I do not do my job as carefully and accurately as usual _____ (097-062)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(RP-3422)

THIS GROUP OF STATEMENTS HAS TO DO WITH ACTIVITIES YOU USUALLY DO IN YOUR FREE TIME. THESE ACTIVITIES ARE THINGS THAT YOU MIGHT DO FOR RELAXATION, TO PASS THE TIME, OR FOR ENTERTAINMENT. PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION..

---

1. I do my hobbies and recreation for shorter periods of time _____ (215-039)

2. I am going out for entertainment less often _____ (214-036)

3. I am cutting down on some of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading _____ (207-059)

4. I am not doing any of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading _____ (208-084)

5. I am doing more inactive pastimes in place of my other usual activities _____ (211-051)

6. I am doing fewer community activities _____ (216-033)

7. I am cutting down on some of my usual physical recreation or activities _____ (210-043)

8. I am not doing any of my usual physical recreation or activities _____ (209-077)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(E-070S)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH AS IT IS AFFECTED BY YOUR VISION.

---

1. I am eating much less than usual _____ (085-037)

2. I feed myself but only by using specially prepared food or utensils _____ (073-077)

3. I am eating special or different food, for example, soft food, bland diet, low-salt, low-fat, low-sugar _____ (081-043)

4. I eat no food at all but am taking fluids _____ (077-104)

5. I just pick or nibble at my food _____ (083-059)

6. I am drinking less fluids _____ (080-036)

7. I feed myself with help from someone else _____ (074-099)

8. I do not feed myself at all, but must be fed _____ (075-117)

9. I am eating no food at all, nutrition is taken through tubes or intravenous fluids _____ (076-133)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

APPENDIX E

SICKNESS IMPACT PROFILE ITEMS SELECTED BY SUBJECTS WITH LOW VISION

SICKNESS IMPACT PROFILE ITEMS SELECTED BY SUBJECTS WITH LOW VISION

SIP Item		Number	Percent
(RP 2)	I am going out for entertainment less often.	12	80%
(RP 6)	I am doing fewer community activities	12	80%
(C1)	I am having trouble writing or typing.	11	73.3%
(RP 3)	I am cutting down on <u>some</u> of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading.	11	73.3%
(HM 7)	I have difficulty doing handwork, for example turning faucets, using kitchen gadgets, sewing, carpentry.	10	66.7%
(HM 10)	I have given up taking care of personal or household business affairs, for example, paying bills, banking,working on the budget.	9	60%
(SI 6)	I am doing fewer social activities with groups of people.	8	53%
(SI 1)	I am going out less to visit people.	7	46%
(HM 2)	I am doing <u>less</u> of the regular daily work around the house than I would usually do.	6	40%
(AB 2)	I have more minor accidents, for example, drop things, trip and fall, bump into things.	6	40%
(BCM 4)	I do not maintain balance.	5	33.3%
(M 10)	I do not get around in the dark or in unlit places without someone's help.	5	33.3%
(A 12)	I walk more slowly.	5	33.3%
(RP 7)	I am cutting down on <u>some</u> of my usual physical recreation or activities.	5	33.3%
(EB 5)	I act nervous or restless	4	26.7%
(HM 5)	I am not doing <u>any</u> of the shopping that I would usually do.	4	26.7%
(SI 13)	I stay alone much of the time.	4	26.7%
(A 3)	I use stairs only with mechanical support, for example, handrail, cane, crutches.	4	26.7%
(A 9)	I go up and down stairs more slowly, for example, one step at a time, stop often.	4	26.7%
(C 5)	I don't write except to sign my name.	4	26.7%
(RP 1)	I do my hobbies and recreation for shorter periods of time.	4	26.7%
(RP 5)	I am doing more inactive pastimes in place of my other usual activities.	4	26.7%

(HM 4)	I am not doing <u>any</u> of the maintenance or repair work that I would usually do in my home or yard.	3	20%
(SI 10)	I often express concern over what might be happening to my health.	3	20%
(AB 5)	I have difficulty reasoning and solving problems, for example, making plans, making decisions, learning new things.	3	20%
(AB 7)	I forget a lot, for example, things that happened recently, where I put things, appointments.	3	20%
(AB 9)	I make more mistakes than usual.	3	20%
(SR 2)	I sit during much of the day.	2	13.3%
(EB 1)	I say how bad or useless I am, for example, that I am a burden to others.	2	13.3%
(HM 1)	I do work around the house only for short periods of time or rest often.	2	13.3%
(M 6)	I stay home most of the time.	2	13.3%
(M 9)	I stay away from home only for brief periods of time.	2	13.3%
(SI 7)	I am cutting down on the length of visits with friends.	2	13.3%
(A1)	I walk shorter distances or stop to rest often.	2	13.3%
(AB 3)	I react slowly to things that are said or done.	2	13.3%
(RP 8)	I am not doing <u>any</u> of my usual physical recreation or activities.	2	13.3%
(EB 2)	I laugh or cry suddenly.	1	6.7%
(EB 7)	I act irritable and impatient with myself, for example, talk badly about myself, swear at myself, blame myself for things that happen.	1	6.7%
(EB 8)	I talk about the future in a hopeless way.	1	6.7%
(EB 9)	I get sudden frights.	1	6.7%
(BCM 1)	I make difficult moves with help, for example, getting into or out of cars, bathtubs.	1	6.7%
(BCM 7)	I kneel, stoop, or bend down only by holding on to something.	1	6.7%
(BCM 10)	I get in and out of bed or chairs by grasping something for support or using a cane or walker.	1	6.7%
(HM6)	I am not doing <u>any</u> of the house cleaning that I would usually do.	1	6.7%
(HM 8)	I am not doing <u>any</u> of the clothes washing that I would usually do.	1	6.7%
(HM 9)	I am not doing heavy work around the house.	1	6.7%

(M 1)	I am getting around only within one building.	1	6.7%
(M 8)	I am not doing into town.`	1	6.7%
(A2)	I do not walk up and down hills.	1	6.7%
(AB1)	I am confused and start several actions at a time.	1	6.7%
(AB 4)	I do not finish things I start.	1	6.7%
(AB 6)	I sometimes behave as if I were confused or disoriented in place or time, for example, where I am, who is around, directions, what day it is.	1	6.7%
(AB 10)	I have difficulty doing activities involving concentration and thinking.	1	6.7%
(C 6)	I carry on a conversation only when very close to the other person or looking at him.	1	6.7%
(RP 4)	I am not doing <u>any</u> of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading.	1	6.7%

APPENDIX F

INTERVIEW RESULTS
SORTED INTO THE SICKNESS IMPACT PROFILE CATEGORIES

INTERVIEW RESULTS SORTED INTO THE SICKNESS IMPACT PROFILE CATEGORIES

SLEEP AND REST (SR)

EMOTIONAL BEHAVIOR (EB)

Depression, Sorrow, Sadness

*"That's why I got so depressed when I first started having the problem. There were so many things I couldn't do and that depressed me."
*"I was so depressed. I sure hope I never get that depressed again."
*"And I can't see those beautiful roses in detail like I used to. That's been a sorrow."
*"That's been a sad problem because I've always liked to walk"
*"I felt pretty bad when I found out I was going to lose my vision."

Crying easily

*"I get nervous once in a while and I cry more easily"
*"My emotions are affected---just let me sit back and I'll cry, but then I don't do it, but I could easily"
*"That's one time when you get teary eyed is when you relize you can't do things."

Discouraged, felt sorry for myself

*"Every now and then It hits me and I get real discouraged about it"
*"You get discouraged" All your waking hours you're reminded of it."
*"You can't help but feel sorry for myself. You can't see snapshots that people show you"
*"Sometimes I get down on myself..."

Feeling upset, disguisted, frustrated, aggravated, "makes you sick"

*"I tried to sew something and couldn't. I forgot I couldn't do it. It makes me upset"
*"It makes you disguisted to think you would do these things"
*"One of the things that is the hardest for me. I use packaged mixes and when the printing is on red I can't read the instructions for the mixes. That's kind of frustrating"
*"It's aggravating and It takes me longer than usual" (to cook)
*"You're just disgusted with yourself that you can't do what you know you can do"
*"I can't drive any more That really bothers me as much as anything. It makes me sick to think I can't drive. In the summer I was mowing the lawn and ran out of gas and couldn't go out to buy gas."

Embarrassment in situations

*"It embarrasses me"(referring to not recognizing people)
*"I feel very embarrassed when I do not know people. It's hard for me to let people know I can not see"
*"You think you' ve got something on your fork and you don't. When you eat out that is embarrassing."
*"It's embarrassing in restaurants. I ran into a latticework one time when we came in from the light to the dark."
*"I don't like to go out anymore with strangers. I just never know when I'm going to make a mistake like tipping over my water. That bothers me to no end."

*"Sometimes I don't have the nerve to let people know I don't know who they are"

Self image

*"I worry about not seeing my dishes when I wash them. I have a friend who they tell me they go to her house and her dishes are so dirty."
*"I worry that people won't want to come to my house because of it being dirty."
*"I guess I must look normal because of people are not aware that I am handicapped"
*"I pick something up and forget that I can't see and then I have to put it down again"
*"I'm not sure how I look"
*"Also, so I've been told, I should be sure and tell everybody that I have a vision problem or else they will think I'm a snob, because I do not know people until they are within 2 or 3 feet"
*"I don't like the feeling of asking for help from people"

Feeling useless

*"It makes me feel so useless. There's so little I can do for anybody. What am I hear for, what use am I to anyone."

Decreased pleasure

*" When I'm with people (referring to going shopping) they are so hurried that it isn't any pleasure. If I were alone I think I could find things."

Afraid of hurting others

*"I don't want to drive and not realize that I'm that blind"
*"I didn't want to hurt anyone else and I didn't want to hurt myself."
*"Driving was giving up a big independence. I could have had an accident one dey. A grey car coming and I was making a left turn. I was afraid that I could hurt someone."
*"I feel afraid there will be a step when I'm somewhere where I'm not familiar"

Fear for the future

*"I keep thinking about it....What am I going to do when I can't see what I can now."
*"I want to keep my independence. It worry's me that some dey I may not be able to do anything."

Positive response,Pride in accomplishing /spiritual

*(No quotation) Talked a lot about pride in her accomplishments - in the things she could do.
*"I'm in the same home I've been in for 47 years. And I'm not a hand to change things around much. So I know where everything is. And I kind of live by the maxim ' A place for everything and everything in it's place'. And with my magnifying glass, I try to keep it right here when I'm not using it. I keep things where I know where they are and I won't have to hunt for them"
*"I like to think that is what I like to feel I overcame, the power of losing my independence and not being able to do what I used to do"
*"My attitude is that an important part of my life is being a Christian. This has been a great job. Otherwise I could be very depressed."
*"Sometimes I get down on myself, but then when you think about other people you can't feel so down. There's always someone worse off than you."

*"I suppose it's affected my emotions in a way. There come times when you really want to see something and you say 'Oh darn it why can't I see better' I have a little prayer that I say when things get tough."

Other
"It affects your whole life, more or less"
"My husband has had to sort his own socks"(Role Change)

BODY CARE AND MOVEMENT (BCM)

Care of the hair
*"I can't do my hair like I used to do it. I can't see what it looks like after I"ve shampoed and curled it"
*"The only thing I can't see is my hair."
*"I try to comb my hair and can't see"
*"I could do my hair. When I do it now it gets fuzzy because I don't get the ends in."
*"Fixing my hair is the main thing, I can't do nothing with my hair"

Shaving(men)
*"I told you about shaving. It looks kind of blank when I look in the mirror. "
*"I can't see to shave very well. I have to feel to see if I've missed spots."
*"I'm not sure how I look"

Makeup
*"I can't put makeup on. My sister told me I had too much rouge on"
*"I can't put makeup on right so I don't wear any"
*I've had to cut down on using makeup"

Nail care
*" I tried to do a manicure and couldn't do it"
*"I can't see my fingernails to file them. I do it by the feel"
*"My wife has to be my Podiatrist. I can't see to cut my toenails. I cut my foot when I tried to get some bunions off."

Skin
*"I'm going to a dermatologist for something I cannot see"
*"The only thing I would say--if you get a sore or red spot, if you don't see it you don't know it's there"

Self care for medical conditions
*" I can't see my scales to weigh myself. Being a diabetic, that's important"

Getting dressed/selecting clothing
*"I'll get out socks that don't match. I pick up shoes and they aren't mates"
* "Once in a while my wife will say "you don't want to wear that shirt because it doesn't match"
*"I can't pick out my clothes sometimes, like blue, black, brown."
*"I've had to learn to ask when I'm by myself, to make sure I have the right color"(When buying clothes)

HOME MAINTENANCE (HM)

Shopping

*"I have to have help with my grocery shopping"
*"I make out a shopping list but lately I haven't been able to read it. My granddaughter showed me where things were in the store"
*"I need to have a relative take me shopping. When I'm with people they are so hurried that it isn't any pleasure. If I were alone I think I could find things."
*"I mind the marketing"
*"When I can't find what I want in the store I have to ask. I get somebody to help me"
*"I have trouble making change. I can't tell what I've got in my purse. Some people don't want to wait for you to feel around and decide what change you've got. "

Cooking

*"I can't read recipes anymore. I remember some of my recipes."
*"The main thing is the cooking. I like to cook but I have trouble. It bothers me that I can't see how it's going. I miss some things--it's like I might stir the potatoes and flip some out on the stove and not know they are there. I mess things up more"
*"I just get frustrated when I'm cooking."
*"I can't read my recipes, so I don't try any. "
*"Preparing food is less easy than it used to be. It's difficult for me to see the numbers on the stove and to read the instructions on the package.
*"One of the things that is the hardest for me. I use packaged mixes and when the printing is on red I can't read the instructions for the mixes. That's kind of frustrating"
*"It's hard to tell where the oven is at. I have it marked but it's hard to see where you have put it. "
*"It's aggravating and It takes me longer than usual" (to cook)
*"I used to love to cook. Now I don't like it. Even the simplist meal. Reading recipes. "
*"I have trouble with the numbers on the stove."
*"I made some brownies and come to find out I had broiled them instead of baking them"
*"I have trouble measuring water or pouring it. It goes over where it's supposed to."
*"The other day I burned up some fish sticks pretty bad"
*"I went to use cinnamon and mixed it up with the nutmeg"

House cleaning

*"I'm not sure if my house is clean or not"
*"I worry about not seeing my dishes when I wash them. I have a friend who they tell me they go to her house and her dishes are so dirty."
*"I think my kitchen range could stand a little more eyesight. I have trouble cleaning the kitchen stove or some other places"
*"My daughter came the other day and said there were some cobwebs that I hadn't seen. I know I can't see to clean the windows like I used to"
*"I worry that people won't want to come to my house because of it being dirty."
*"Not seeing cobwebs is a very definite on the list. I don't seem some of the dirt in the house. That bothers me because that was one of my favorite jobs in the house."

Yard and garden

*"I think I'm going to have a problem taking care of my garden. Sometimes I've pulled some plants out that shouldn't come out"
*"Last summer I can't say I did a very good job of my lawn. "
*"Usually when you mow the lawn you can see where you're going from the fresh cutting of grasses so now I need to double up more on the rows cause I can't see where I'm going. It's more difficult."
*"I did run into trouble last summer. I'd go out here and mow and just by the shadow... It was hard for me to mow the lawn"
*"We have a big garden next to our house and it's been a joy to me. Our garden is primarily flowers. These last several years it's getting increasingly difficult for me to weed it and take care of it because I can't see good enough to do a bang-up job."

Fixing things

*"I can't fix things around the house. Especially if it involves finer work. The things I always used to do I cannot do anymore."

Business

*"It's hard for me to take care of my bank book because I wrote over the lines"
*"I can see my bills but not well enough to do my own books and things"
*"I had to give up taking care of my personal affairs. I can't sign checks."
*"I don't do any of the banking or writing checks, or doing a bankard."

MOBILITY (M)

Unable to drive

*"The biggest problem is not being able to drive anymore. You're giving up a lot when you can't drive"
*"Well of course I don't drive the car and that takes care of my independence. "
*"I gave up driving because of my vision. I didn't want to hurt anyone else and I didn't want to hurt myself."
*"I guess everything is the inability to drive, the independence that I have to go and to do the things that I enjoy doing, and be with other people, pick people up. "
*"Not being able to drive is a big thing. It's very frustrating. I spend more time down in that lobby waiting for people to pick me up."
*"I can't drive my car anymore. "
*"The hardest thing was not being able to drive"
*"Not being able to drive is a big thing. It's very frustrating. I spend more time down in that lobby waiting for people to pick me up."
*"Driving was giving up a big independence. I could have had an accident one day. A grey car coming and I was making a left turn. I was afraid that I could hurt someone."
*"I can't drive any more That really bothers me as much as anything. It makes me sick to think I can't drive. In the summer I was mowing the lawn and ran out of gas and couldn't go out to buy gas."
*"Because I can't drive anymore, for one thing"
*"No more driving" "I miss that the very most--not being able to get into my car and go places"
*"I gave up driving about 3 years ago. "
*"It's been four years since I've been able to drive my car"

*"I'm unable to drive, so I'm unable to carry out my volunteer work"

Decreased driving

*"I only do a very short driving and I stay out of traffic. I go down to my brothers down the road. and I get up in the morning and go to a restaurant down the way when they're still using their headlights"

*"I can't always see the signs on the buses to tell which one it is so I have to ask"

Concern for safety in getting around

*"Sometimes I ride the bus all the way around so that I don't have to cross the street. I have to worry about getting across the street. It's worse crossing the street when there isn't a light. I can't see the street light on a sunny day"

*" I used to walk way up to the corner for exercise and I'm afraid to do that now because I don't see car's coming like I did. I don't go down town and go across the street because I don't see that good to cross the street."

*"We walk a lot. I never walk alone, because of the steps or sidewalk droppings or curbs and the yellow lines that they put down, you sometimes take a step and there is not step there, and yet sometimes that marks a step, so you never know."

*"Does everyone else have fear of snow and ice. Even with boots on I am so afraid of falling because I don't see a little ice or cracks."

*"I used to go out and walk around a lot and I can't do that because I can't see the cars coming and so I can't get across a busy street."

*"When I walk down the road I carry a cane so drivers can see me, I don't want to step over and I don't want to fall"

*"I've fallen because I haven't seen a curb sometimes."

*"I can't tell a curb from a ramp"

*"When I'm in strange places I sure have to watch where I'm going. I"m deathly afraid of strange steps."

*"I don't always feel safe to go to the mailbox... I'm always afraid I might fall. It's so bright or sometimes dark I can't see."

*"I'm a little bit more careful about climbing because I don't want to miss steps"

*"I always like to walk and hike and ride the bike. A couple of years ago he wouldn't let me ride the bike. I felt if he went first I could follow, but he was concerned about that."

*"I feel afraid there will be a step when I'm somewhere where I'm not familiar"

*"Places will look even and there will be a step and I could fall easily. I don't go out alone"

Traveling

*"Traveling is driving me up the wall. I can't see anything because we're passing it too fast. I can't read signs. I don't know where I am."

*"When you are getting around away from home like a motel or someone elses home, until someone shows you where everything is, I wouldn't be a able to do it on my own"

*"I can't see the details when we travel. I can still see enough to enjoy myself."

Getting around in the dark

*"The only thing that ever happened was when the lights were off. I went back into the bedroom and I couldn't find the bed or the chest or the dresser. Now I carry a flashlight"

SOCIAL INTERACTION (SI)

Not recognizing people

*"I can't tell what people look like so I don't recognize people. Faces are just a blur"
*"Someone will come up to me in the store and say hello and I don't know who they are"
*"Somebody walks into the room... he's got to talk...for me to recognize him. " (Tells a story about someone in a restaurant who spoke to him but he didn't recognize him).
*"The other day I saw some people at church and I was about 5 feet from her and didn't recognize them. I have to get up very close to people before I can recognize them. They have to say hello to me before I know who they are.
*"I think one of the hardest things for me is not to be able to recognize who people are. It embarrasses me. I'm getting so now I ask people "'Who is that'."
*"I can't see people when I'm at church but people are nice about coming up and telling me who they are."
*"I can be in a room full of people but I can't tell who is there. I have to go by voices a lot."

Helping others

*"I used to rush to help others. Now that I can't drive, I can not give help to other people"
*"I'm unable to drive, so I'm unable to carry out my volunteer work"

Other

*"I can't go visiting my family because I 'm not driving"
*"I guess everything is the inability to drive, the independence that I have to go and to do the things that I enjoy doing, and be with other people, pick people up. "
*"I don't have the transportation to go to church. Once there I can't read anything."
*"I don't go out alone"
*"When I go out--after an hour I'm ready to come home again"
*"I don't like to go out anymore with strangers. I just never know when I'm going to make a mistake like tipping over my water." That bothers me to no end."

AMBULATION (A)

*"At night is the only problem, getting around"
*"Going up and down stairs. Hard to judge the stepping off the curb."

ALERTNESS BEHAVIOR (AB)

Safety when doing things

*"I couldn't see how close my fingers were to the curling iron and so I burnt myself 3 or 4 times do I can't so that anymore"
*"I've gotten burnt quite a few times cooking"
*"The other day I burned up some fish sticks pretty bad"
*"I burned myself once cooking vegetables"
*"My wife has to be my Podiatrist. I can't see to cut my toenails. I cut my foot when I tried to get some bunions off."

*"It's embarrassing in restaurants" I ran into a latticework one time when we came in from the light to the dark."

Making mistakes when doing things

*"I made some brownies and come to find out I had broiled them instead of baking them."
*"When you go to get ahold of something it's either farther away or too close."
*"I have trouble measuring water or pouring it. It goes over where it's supposed to."
*"I went to use cinnamon and mixed it up with the nutmeg"
*"I don't like to go out anymore with strangers. I just never know when I'm going to make a mistake like tipping over my water. That bothers me to no end."
*"I play cards, but I make mistakes"
*"Well I think some (related to alertness and thinking) You look at something and can't tell what it is. It makes me feel confused"
*"We went to Miejers for gas. I went in to pay for it and when I came out I tried to get into another car. How embarrassing."
*"I make mistakes"
*"It's hard to pour things. It goes down the side every time."
*"Sometimes when reaching I accidentally knock over milk or water because I do not see it."
*"I made so many mistakes when I was crocheting that I gave that up."

Not trusting self

*"I find I check my settings over and over"(referring to stove settings)
*"It seems to be that my vision problem has affected my alertness and thinking ability. I can't remember things, and now I can't write notes to myself. I misplace things right out in the open. I think, how could I miss it, but I do. It's aggravating."

Knowing what time it is

*"I couldn't see my watch or clock at night."

Getting lost

*"I have trouble finding my wife at Meijers. We meet and She is partway down the row and I can't tell that she is there"

COMMUNICATION (C)

Telephone use

*"I can't read the telephone directory. I've had to learn to memorize telephone numbers"
*"I can't use the telephone directory."

Mail

*"My family has to read my mail for me."
*"I miss being able to write letters."
*"I've cut out letter writing from what I used to do."
*"I can't address letters anymore. My husband has had to do that for me."

WORK (W)

*"Out in the field (driving tractor) I had trouble seeing the line were I was plowing. I had trouble gauging where the other drag was supposed to go."

RECREATION AND PASTIMES (RP)

Playing Cards and Bingo

*"I used to play Euchre but I can't see the cards right in my hand. "
*"I play cards, but I make mistakes."
*"I haven't played bingo in about a year and a half."
*"I can't attend the bingo ."
*"I stopped playing Euchre because I couldn't see the cards and because of people who might get agitated because I wasn't playing fast enough."
*"I can play cards with my family but I have to hold the cards near my nose and they have to tell me what's been put. I don't go to the senior citizens because I don't want to go through that with someone I don't know."

Sewing, Knitting, Crocheting

*"I can't see anything to sew anymore."
*"I can only do plain knitting now,"
*"There's a lot of little things that happen every day. Threading the sewing machine."
*(After the tape recorder was turned off he talked about doing latch hook rugs and that he couldn't do this any more.)
*"I've tried, but I can't see where to put my stitches when I crochet."
*" I can't do any sewing. I can't seem to thread the needles."
*"I can't knit or crochet any more."
*"I tried to sew something and couldn't. I forgot I couldn't do it. It makes me upset."
*"I can't do sewing. I can't get the thread in the needle."
*"I'm sorry because I can't crochet any more."

Reading for recreation

*"Bout all is reading."
*"I can't read for pleasure any more."
*"I miss not being able to read the comics. I miss not reading the papers."
*"I miss reading so much" "That was one of the things I enjoyed so much
*"I can't read. That was one of my special things that I like to do"
*"I can't read or do crossword puzzles.."
*"I miss reading my paper."

Television

*"I have to get close to the television, and I can't see the sets that are small."
*"I can't see the TV but I listen to it."

Music

*"I haven't been able to play my organ because I cannot read music."
*"I can't see the music to sing."
*"I can't sing in the choir anymore because I can't read the music."

Other

*"I can't teach sunday school because I can't read the lesson anymore."
*"Traveling is driving me up the wall. I can't see anything because we're passing it too fast. I can't read signs. I don't know where I am."
*"I used to do oil paintings and of course I had to give all that up"
*"I don't eat out as much as I used to" It's partially because I do not drive.
*"One of my favorites was ping pong and I can't play that anymore"

EATING (E)

*"If we go to a restaurant I can't tell what things are on the buffet."
*"You think you' ve got something on your fork and you don't. When you eat out that is embarrassing."
*"I have trouble seeing what's on my plate when I eat. Eating salads is bad because you can't get it on your fork. It goes down the front of you."
*"Sometimes, if I'm eating in a restaurant in the dark I have trouble cutting my food or getting it to my mouth."
*"When we go to a restaurant, I have to be sure that someone tells me what the food in the cafeteria is."
*"You go to a restaurant and you can't read the menu."

Misc

"Sometimes I see visions and their aren't there."

* Indicates the beginning of a new item.

APPENDIX G

LOW VISION IMPACT SCALE

LOW VISION IMPACT SCALE

1. I sit during much of the day. _____

2. I act nervous or restless _____

3. I say how bad or useless I am, for example, that I am a burden to others. _____

4. I get discouraged. _____

5. I laugh or cry suddenly. _____

6. I feel sadness much of the time _____

7. I feel embarrassed in many situations. _____

8. I worry about what other people think of me. _____

9. I act irritable and impatient with myself, for example, talk badly about myself, swear at myself, blame myself for things that happen. _____

10. I talk about the future in a hopeless way. _____

11. I feel frightened sometimes. _____

12. I cry easily. _____

13. I feel sorry for myself. _____

14. I feel worried that something I do will hurt someone _____

15. I frequently feel upset, frustrated or aggravated. _____

16. I make difficult moves with help, for example, getting into or out of cars, bathtubs. _____

17. I kneel, stoop, or bend down only by holding on to something. _____

18. I get in and out of bed or chairs by grasping something for support. _____

19. I have problems fixing my hair myself. _____

20. I'm not sure if I am doing a good job in shaving myself _____

21. I have stopped using makeup because I can't put it on right. _____

22. I have difficult taking care of my fingernails and toenails. _____

23. I can't pick out my clothes so that the colors match. _____

24. I have trouble taking medications because I don't know if I have the correct one. _____

25. I am unable to monitor my health problems. _____

26. I do not maintain balance. _____

27. I am doing <u>less</u> of the regular daily work around the house that I would usually do. _____

28. I am not doing any of the regular daily work around the house that I would usually do. _____

29. I am doing less of the house cleaning that I would usually do. _____

30. I am not doing <u>any</u> of the house cleaning that I would usually do. _____

31. I don't always know if I've gotten my house clean. _____

32. I am able to do my shopping only with help. _____

33. I am not doing <u>any</u> of the shopping that I would usually do. _____

34. I am not doing <u>any</u> of the clothes washing that I would usually do. _____

35. I have difficulty cooking without making mistakes. _____

36. I am not doing heavy work around the house. _____

37. I have difficulty doing using kitchen gadgets and appliances. _____

38. I am unable to take care of my personal household business, like paying bills, without help. _____

39. I have given up taking care of personal or household business affairs, for example, paying bills, banking,working on the budget. _____

40. I do work around the house only for short periods of time or rest often. _____

41. I have decreased the amount of home repair work that I can do. _____

42. I make mistakes when working in the yard or garden, like pulling out plants, or not mowing in a straight line. _____

43. I am not doing <u>any</u> of the maintenance or repair work that I would usually do in my home or yard. _____

44. I have difficulty driving in unfamiliar places. _____

45. I do not drive after dark. _____

46. I only drive if I can stay out of traffic. _____

47. I do not drive my car. _____

48. I do not get around in the dark or in unlit places without someone's help. _____

49. I am getting around only within one building. _____

50. I am not doing into town.` _____

51. I stay home most of the time. _____

52. I stay away from home only for brief periods of time. _____

53. I avoid going places where I need to cross the street. _____

54. I feel afraid of missing a curb or crack and falling when I walk. _____

55. I don't go out alone. _____

56. I feel less pleasure when traveling. _____

57. I am doing fewer social activities with groups of people. _____

58. I am cutting down on the length of visits with friends. _____

57. I am going out less to visit people. _____

58. I often express concern over what might be happening to my health. _____

59. I stay alone much of the time. _____

60. I do not recognize people I know when I am out socially. _____

61. I am no longer independent to go out when and where I want to. _____

62. I miss not being able to help others. _____

63. I walk more slowly. _____

64. I do not walk up and down hills. _____

65. I use stairs only with mechanical support, for example, a handrail or cane. _____

66. I walk shorter distances or stop to rest often. _____

67. I go up and down stairs more slowly, for example, one step at a time, stop often. _____

68. I have difficulty reasoning and solving problems, for example, making plans, making decisions, learning new things. _____

69. I am confused and start several actions at a time. _____

70. I have had minor accidents when doing things around the house. _____

71. I do not finish things I start. _____

72. I sometimes behave as if I were confused or disoriented in place or time, for example, where I am, who is around, directions, what day it is, what time it is. _____

73. I make mistakes. _____

74. I have difficulty doing activities involving concentration and thinking. _____

75. I don't trust myself. _____

76. I forget a lot, for example, things that happened recently, where I put things, appointments. _____

77. I get lost when I'm out in public. _____

78. I react slowly to things that are said or done. _____

79. I make more mistakes than usual. _____

80. I have more minor accidents, for example, drop things, trip and fall, bump into things. _____

81. I am having trouble writing or typing. _____

82. I don't write except to sign my name. _____

83. I carry on a conversation only when very close to the other person or looking at him. _____

84. I make telephone calls with difficulty. _____

85. I am unable to communicate by mail. _____

86. I am doing part of my job at home. _____

87. I am not accomplishing as much as usual at work. _____

88. I am working shorter hours. _____

89. I work only for short periods of time and take frequent rests. _____

90. I am working at my usual job but with some changes, for example, using different tools or special aids, trading some tasks with other workers. _____

91. I am cutting down on <u>some</u> of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading. _____

92. I am going out for entertainment less often. _____

93. I am doing fewer community activities _____

94. I am cutting down on <u>some</u> of my usual physical recreation or activities. _____

95. I do my hobbies and recreation for shorter periods of time. _____

96. I am doing more inactive pastimes in place of my other usual activities. _____

97. I am not doing <u>any</u> of my usual physical recreation or activities. _____

98. I am not doing <u>any</u> of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading. _____

99. I have more accidents when eating, like tipping over glasses or food falling off my fork. _____

100. I have difficulty when eating out in a restaurant. _____

Some items in the above instrument has been adapted from the Sickness Impact Profile. The instructions for the interviewer-administered SIP adapted for Vision found in Appendix D should be used with this instrument.

APPENDIX H

VISION ASSESSMENT GUIDELINES

VISION ASSESSMENT GUIDE

Please answer the following five questions.

1. Please rate your present vision. Is it...
   (Circle one) Very good , Good , Average, Poor, Very Poor

2 When wearing regular glasses are you able to read newspaper headlines?
   (Circle one) Yes No

3. When wearing regular glasses are you able to read newspaper print?
   (Circle one) Yes No

4. When wearing regular glasses are you able to recognize the features of people when they are within two or three feet?
   (Circle one) Yes No

5. When wearing regular glasses are you able to recognize a friend walking on the other side of the street?
   (Circle one) Yes No

<u>Notes on Impact</u> (Please use an open interview format, following the guidelines on the following page for cues during the interaction.)

LOW VISION INTERVIEW GUIDE

The following are designed to provide cues during the interview process.
The interviewer should select areas from this list as a guide in interacting with the client.

1. Tell me how your vision problems are affecting you?
2. Tell me what you are doing to cope with these problems?
3. Tell me what kind of help you feel you need to cope with your low vision problems?

A. Household Maintenance

Cooking	Shopping	Cleaning
Repair Work	Yard work	Personal Affairs-Bill Paying

B. Body Care

Bathing	Skin Care	Hair
Nails	Makeup	Shaving

Selecting Clothing
*Medical Self Care (identify medications)

C. Mobility and Ambulation

Driving the car (modifications made)

Walking safely	Maintaining balance when walking
Darkness	Vacations
Crossing the street	Finding your way in public

D. Personal Recreation

What have your recreation activities been in the past?
What do you continue to do with modifications?
What have you stopped doing?
Playing Cards, Watching television, Sewing, Knitting, crocheting, reading, music,

Community Activities	Going out for recreation.

E. Eating

At home	Restaurants
Recognizing food	Finding plate, food
Making mistakes	Pouring liquids

F. Communication

Using telephone	Writing (telephone numbers, lists, signing name)
Mail	Typing

G. Socializing

Recognizing People	Ability to go to visit people
Feeling lonely	

H. Alertness

Get confused	Making mistakes
Accidents (safety)	Getting lost
Knowing time	Trusting self

I. Emotional reaction

Depression Now/When proglems first developed

Crying easily	Discouraged, feel sorry for self
Frustration, aggravation	Embarrassment
Feeling useless	Decreased pleasure

What are your fears?

How does this change the way you feel about yourself?

J. Spiritual

What meaning does this have for you?

What positive reactions do you have to this experience?

How do you cope?

What would make life more pleasant for you?

K. Future Needs

What kind of advice/help do you need?

*Some of the categories in this assessment tool were adapted from the content of the Sickness Impact Profile.

REFERENCE LIST

REFERENCE LIST

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