

Vision Related Quality of Life Among Urban Low-Income Black Seniors Participating in an Eye Care Program: Effect After New Spectacles

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ABSTRACT

Purpose. This study evaluates the effect of prescribing and updating spectacle correction on visual function using the 25-item National Eye Institute Vision Function Questionnaire (VFQ-25) in low-income African-American seniors dwelling in public housing.

Methods: Seventy-three residents were recruited from the community and received a comprehensive eye and vision care evaluation. The VFQ-25 was administered after the initial examination and again after spectacles were dispensed. Additional data was obtained using a retrospective record review.

Results: As might be suspected, the majority of those individuals evaluated initially complained of blurry vision. Those classified as 'not visually impaired at distance or near' increased by 27% after receiving a refractive correction. Fifty-nine of the subjects (77.9%) completed both administrations of the National Eye Institute Vision Function Questionnaire. A statistically significant increase in the mean score was found for the second administration of the composite score and the general health, general vision, ocular pain, distance activities, and near activities, as well as, social functioning, color vision, peripheral vision, and mental health subscales compared to first administration.

Conclusions: After new spectacles were received, a positive change in VFQ-25 scores was noted. Many factors may have contributed to these results. These findings illustrate the large impact a pair of spectacles can have on a population facing barriers to obtaining eyecare.

Keywords: African-American, low-income population, National Eye Institute Vision Function Questionnaire-25, public housing residents, quality of life, refraction, seniors, spectacles

Introduction

The National Eye Institute Vision Function Questionnaire (VFQ-25) has been administered to patients with a wide variety of ocular disease including cataracts, age-related and macular degeneration (ARMD), as well as reduced vision, diabetes and glaucoma. This questionnaire is often used to assess patients' day-to-day functioning and sense of well being.¹⁻⁸ The VFQ-25 has been shown to be an adjunct to aid in the assessment of vision function as well. Traditional methods for assessing visual acuity (VA) do not always highly correlate with patient's perceptions of how well they see especially as it relates to everyday tasks. Patients' VFQ-25 responses have been shown to be altered as VA changes.^{4,7,9,10} Improvement in VA due to a change in and an update of refractive correction has previously been shown to positively influence the VFQ-25 scores and therefore, the quality of life of the individual.^{7,9,10}

There are many factors that can influence how and when eye care is utilized and the individual's ability to obtain spectacles that include the cost for eye care services and/or the spectacles.¹¹⁻¹⁴ Racial disparities have been found to play a consistent role in the probability of the ability to receive an eye examination. Specifically, African-Americans (AA) in the United States have been shown to be less likely

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to seek the use of an eye care provider compared to Caucasians.¹³

The attending optometric physicians and faculty at the Illinois Eye Institute/Illinois College of Optometry (IEI/ICO) anecdotally recognized that many low income seniors could not afford eye care and/or spectacles even though they had health insurance coverage (i.e. Medicare). This was because they could not manage to pay for the out-of-pocket expenses associated with the eye care and/or eye glasses. Public housing residents have been noted to be in poorer health than their community dwelling counterparts and often face barriers due to the significant costs associated with obtaining health care.¹⁵

To assist the residents of public housing with managing these cost/access issues, the IEI/ICO collaborated with the Chicago Housing Authority (CHA). The CHA provides subsidized housing to approximately 10,000 low-income seniors who meet the federal regulations for age and income. Through this alliance, the Sight for Seniors (SFS) program was developed which provided primary eye care services, eye glasses and health education to low income, primarily minority seniors who lived in a CHA senior development housing facility.

During the initial SFS planning discussions, great skepticism about the program's legitimacy and purpose was noted by the CHA senior development representatives. To help allay these concerns the SFS program employed a peer health promoter (known as the community liaison (CL)) to promote the SFS program and administer the VFQ-25. The VFQ-25 was administered to evaluate the effect of updated spectacles on vision function/quality of life among low-income African-American seniors dwelling in public housing. The protocol for administering the VFQ-25 was selected in part to address the concerns expressed by the CHA representatives.

Methods

The target population for the implementation of the Site for Seniors (SFS) program was a senior housing development that is part of the CHA. To qualify for residence in the CHA senior development, the CHA verified that all residents met the Housing and Urban Development federal income guidelines for classification as low income. All residents were considered as low income based upon CHA income verification. A senior housing development chosen for participation in the SFS program was selected

because of the number of residents and its proximity to the ICO and its clinical division the Illinois Eye Institute (IEI). The senior development chosen housed between 220 to 250 residents with an average household income of about \$9,000 US. This level of income is considerably below the median and mean income for households in Chicago (\$46,767 and \$68,652 respectively).¹⁶ SFS employed a Community Liaison (CL) who recruited patients from the CHA via personal contact and written flyers. The inclusion criteria for the SFS program specified that individuals chosen had to live in the chosen residential facility and was greater than or equal to 62 years of age. CHA senior development residents independently chose to participate in SFS. Through SFS, the patients received eye care, eye glasses and transportation to and from the examination with no out-of-pocket cost to the participant. Non-surgical follow-up eye care was also provided. Surgical referrals were provided. This project was approved by the Institutional Review Board of the Illinois College of Optometry. Further information regarding the SFS program can be found in a previous publication.¹⁷ In this analysis, only AA patients (82% of SFS patients; N=73) were included. All subjects required, prescribed and received new spectacles. (The racial makeup of the other participants in the SFS program included 13 Asian and 4 Caucasian individuals.)

After a comprehensive eye examination, the CL contacted all patients via telephone. The CL administered the English version of the VFQ-25.¹⁸ In addition to the standard 25 questions, appendix items for distance and near activities (questions A3-A8) were administered to more fully investigate these areas. A summary of these questions is listed in Table 1. The CL was trained in VFQ-25 administration by the principal investigator. The CL recorded all patients' answers on a paper recording sheet which was submitted to the principal investigator after VFQ administration. After the CL verified that patients received and had been wearing their spectacles for at least two weeks, the VFQ-25 was again administered following the same protocol. A separate answer sheet was used so that the CL was not aware of any previous responses.

A retrospective medical record review was performed to determine demographic information, self-reported educational level, case history information, and VA results. Visual impairment at distance is defined as VA worse than 20/40 in the better-seeing eye. This level of VA is frequently used

Table 1: Content of Vision Function Questionnaire Administered in SFS Program

Subscale	Items
General health	General health rating
General vision	General vision rating
Near activities	Reading normal newsprint Seeing well up close Finding objects on a crowded shelf Reading small print Reading bills accurately Shaving/styling hair/makeup
Distance activities	Reading street signs Going down stairs at night Going out to movies/plays Recognizing people across the room Participating in sports/outside activities Seeing/enjoying television programs
Ocular pain	Amount eye pain Amount of time of eye pain
Color vision	Difficulty matching clothes
Social functioning	Seeing how people react to things you say Visiting others
Peripheral vision	Noticing objects off to the side
Role differences	Accomplish less because of vision Limited in endurance
Dependency	Stay home because of vision Need help from others Rely on others because of vision
Mental health	Worry about eyesight Worry about embarrassment due to eyesight Feel frustrated because of eyesight Have less control because of eyesight

as it is often the requirement for driving a motor vehicle in the United States.^{19,20} Similarly, near vision impairment was assessed as vision worse than 20/40 in the better-seeing eye. VA improvement at distance was noted as being the greatest number of Snellen lines improvement obtained in either eye based upon entering and best corrected acuity. Improvement in distance VA was classified as ‘1 or 2 Snellen lines’ and ‘3 or more lines’ as was noted in a previous study.²¹

Descriptive statistics, frequencies and proportions were generated on variables of interest and demographic information for SFS patients. Items were combined to determine subset scores and scores for each VFQ-25 item and composite/subscale analysis were calculated using the NEI VFQ-25 scoring algorithm 18. All subscales were scored from 0-100 where 100 was the highest rating (best health/vision; no difficulty). Subjects were included for analysis if they answered all questions relative to the subscale/composite during both the first and second administration of the survey. A sub analysis was performed excluding questions with the lowest response rates. The mean results of VFQ-25 scores were compared. Data were analyzed

Table 2: Classification of Visual Impairment Based on Entering Visual Acuity and Best-Corrected Visual Acuity

Classification	Entering Visual Acuity		Best-Corrected Visual Acuity	
	%	N	%	N
Distance/near VA ≤20/40	47.6	28	74.6	44
Distance and near VA >20/40	33.9	20	16.9	10
Distance VA >20/40 and near VA ≤ 20/40	0	0	6.8	4
Distance/ near VA >20/40	11.9	7	0	0

using SAS 9.2 software (SAS Institute Inc., SAS 9.1.3 Help and Documentation, Cary, NC: SAS Institute Inc., 2000-2004.). The Wilcoxin signed-rank test was used to determine statistical significance between administrations.

Results

Eye care services were delivered to 73 low-income AA seniors through SFS. All patients required spectacle prescriptions and received new glasses through the SFS program. Of these 59 (77.9%) participated in both administrations of the VFQ-25. Fourteen refused to participate in either administration of the VFQ-25. Mean age of respondents was 71 years (range 62-90 years). The majority (67.8%; N= 40) were female. Sixteen subjects (30.2%) reported that they had completed high school (12th grade). During the case history, the majority (82.1%; N=46/56) of patients complained of blurry vision. When those who complained of blurry vision are compared, most (47.8%; N=22) complained of visual problems at both distance and near, while 28.3% (N=13) complained of blur at distance only and 23.9% (N=11) complained of blur at near only. (Table 2 lists percentage and number of those who were classified as visually impaired at distance and/or near based on entering VA and best-corrected VA.) In general, the percentage with vision impairment was considerably reduced after wearing spectacles for any refractive correction present. The one patient who was classified as visually impaired at distance after refraction had best corrected VA of 20/50. After refraction, the majority (66.2%, N=35) had their distance VA improved by one or two Snellen lines with 22% (N=13) having their VA improved by 3 or more Snellen lines.

Results for both the first and second administrations of the VFQ-25 are listed in Table 3. Due to some items being incomplete, the number of subjects included in each subscale/composite

Table 3: Mean 25-item National Eye Institute Visual Function Questionnaire (NEI-VFQ-25) scores (standard deviation) by first and second administrations and mean difference between administrations

NEI-VFQ-25 Subscale	N	First administration	Second administration	Difference between administrations
Composite *	36	52.0 (6.3)	66.8 (10.39)	14.8
General health*	59	34.7 (23.2)	62.7 (22.4)	28.0
General vision*	59	63.4 (16.2)	82.7 (11.4)	19.3
Social functioning*	40	55.5 (10.5)	74.0 (13.1)	18.5
Near activities	58	57.8 (11.1)	74.4 (12.7)	16.6
Color vision*	55	62.3 (15.1)	76.7 (14.3)	14.6
Distance activities*	39	57.4 (9.5)	71.3 (12.2)	13.9
Peripheral vision*	59	60.8 (14.1)	74.1 (13.1)	13.3
Ocular pain*	55	48.0 (11.7)	61.0 (15.7)	13.0
Mental health*	59	48.7 (16.5)	55.9 (22.4)	7.2
Dependency	59	45.8 (22.3)	50 (31.5)	
Role differences	59	42.2 (22.4)	48.5 (31.5)	

* Scores between first and second administrations significantly ($p < 0.05$) different between first and second administrations.

analysis ranged from 36 to 59. The driving subscale was not analyzed because few patients reported that they were currently driving (N=4). When VFQ-25 administrations were compared, a statistically significant increase in mean score ($p < 0.05$) was found for the second administration of the composite score. The general health, general vision, ocular pain, and distance activities, as well as near activities, social functioning, color vision, peripheral vision, and mental health subscales compared to first administration were also significantly different. No statistical difference was found for dependency and role differences subgroups. Table 3 summarizes the differences between administrations for composite and subscale scores that were statistically significant. The lowest number of responses were obtained for question 13 (N=40) and question 14 (N=39) which were included in the social functioning and distance activities subgroups respectively. When results were reanalyzed for these subgroups, as well as the composite score without these questions, the number of respondents increased to 49 for composite score, 56 for distance activity subscale, and 58 for social functioning subscale. Statistical significance between administrations remained unchanged although the

magnitude for difference between administrations changed to 13.4 for composite score, 13.7 for the distance activity subscale, and to 15.1 for the social functioning subscale.

Discussion

SFS patients were a self-selected group of low-income AA seniors living in an urban public housing development. SFS patients completed less formal education than the typical Chicago residents 65 and older (30.2% versus 62.9%) which agrees with the inverse relationship that has been reported with 'percent of the population below poverty rate' and 'level of formal education'.²² When you consider race, income and education level, our subjects have many of the same characteristics of those who face barriers to eye care.

Blurry vision was reported by a large number of individuals (82.1%) and may have been a motivating factor for participation in the program. The percentage whose distance vision improved both '1 - 2' and '3 or more' Snellen lines is greater than previously reported among urban AA and was probably influenced by the self-selecting nature of the SFS program.²¹

Although reports of VFQ-25 scores vary widely, patients' composite and subscale scores on the initial, as well as the second administration seemed lower than previously reported.^{18,23,24} The mean composite scores for the VFQ-25 field test was 91 for the reference sample and ranged between 65- 81 for those with ocular diseases versus 52.0 first administration and 66.8 second administration for SFS subjects.¹⁸ In a population-based study among older (50 and older) individuals, mean the composite score was 89.3 among those with no presenting visual impairments. This score decreased to 77.1 among those with bilateral visual impairment.²⁵ This may, in part, be due to the socioeconomic status and any present co-morbid systemic conditions.^{18,26,27} Patients' scores on both the VFQ-25 composite and most subscales, were significantly higher after receiving and utilizing their new pair of spectacles. A change in VFQ-25 of 4 points in overall score and 5 points on the individual subscale has been considered to correspond with a meaningful clinical change in vision function.⁹

The change in VFQ-25 scores among our subjects (14.8 for composite and between 7.2 and 28.0 for the significant subscales) suggests a significant and positive change in the individual's perception of their quality of life.

The treatment of uncorrected refractive error has been shown to positively influence one's quality of life.^{28,29} A positive change in vision has been associated with a corresponding positive change in health-related quality of life.^{28,30-34} In fact, older nursing home residents have shown a decreased rate of depressive symptoms, lower psychological distress and higher social interaction after receiving new spectacles.^{29,34} This is consistent with the VFQ-25 results for our subjects. This study suggests that a new pair of spectacles had a broad and personally positive impact on visual function of SFS patients.

Unfortunately, only 66% and 68% of our patients answered all questions in the distance and social functioning subscales respectively. This was in part due to question 13 and 14 which ask about "visiting people in their homes, at parties or in restaurants" and "going out to see movies, plays or sports events". Several of the SFS patients reported these activities were not routinely done by them which lead to confusion when answering these questions. When results were re-analyzed without these questions, the trends noted here remained unchanged.

The VFQ-25 protocol was developed in part to address concerns of the CHA residents. By administering the VFQ-25 after the eye examination, the subjects were more familiar with the program and the CL, which hopefully increased the trust of our participants and knowledge of the potential benefits of this program. It was also noted that the CL felt more welcomed at the CHA senior development and patient enrollment became easier as the program progressed.

A shortcoming of the study was that we did not designate a group of participants who would receive their glasses after they had completed the second administration of the VFQ-25 (a control group). It was not practical, however, due to the feedback received from the residents about their participation in this program. Due to the lack of a control group, a placebo effect could have affected our outcomes. Patients were told that their participation/responses on the VFQ-25 would not affect the eye care they received through the SFS program; however, it is possible concern over future follow-up at the IEI had some influence on patient responses.

Conclusions

Initial VFQ-25 composite and subscale scores were lower than previously noted by other reports.

However, a positive change in VFQ-25 scores was seen after new spectacles were received. A wide range of factors may have contributed to this result. Due to the self-selected nature of SFS subjects, our findings may be interpreted with some caution. Even with its noted limitations, this paper clearly demonstrates the potential positive impact of providing eye and vision care and spectacles to low-income AA seniors. It also supports the concept of how a simple pair of glasses can improve not only the quality of life, but also the vision function of an at risk population of individuals.

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Note: URLs and underlined text are functional hyperlinks to Internet addresses.

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