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The power of hope: being a doctor is more than relying solely on the numbers

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Accepted 23 March 2008

ABSTRACT

Aims: To ascertain whether a physician's positive or negative attitude significantly impacts the quality of life of ophthalmic patients.

Methods: A standardised, validated, time trade-off, utility instrument was administered to consecutive vitreoretinal patients by interview to assess the quality of life associated with their current ocular health state (baseline scenario). Each was then given a scenario for the exact same health state with the same long-term prognosis in which their doctor emphasised the possible negative consequences (bad-news scenario) and one for the same health state in which their doctor emphasised the positive consequences (good-news scenario).

Results: Among the 247 patients enrolled were 140 women (57%) and 107 men (43%) with a mean age of 66 years and a mean educational level of 13.8 years after kindergarten. The mean baseline utility for 247 patients was 0.87 (SD = 0.19; 95% CI 0.84 to 0.89). The mean bad-news scenario utility was 0.80 (SD = 0.22, 95% CI 0.78 to 0.83), a 70% diminution in quality of life compared with the mean baseline utility ($p = 0.0009$). The mean good-news scenario utility was 0.89 (SD = 0.18, 95% CI 0.86 to 0.91), an insignificant difference compared with the mean baseline utility ($p = 0.26$).

Conclusion: Ocular patients had a considerably poorer quality of life when their physician emphasised the possible negative consequences associated with their eye disease(s), as opposed to a more positive approach. While at times necessary, a negative emphasis approach can theoretically result in a considerable loss of life's value.

As per Martí-Ibáñez:[1]

> A hematological determination, a roentgenogram, an electroencephalogram may supply vital information on the organic working of the body, but it is even more vital never to forget that, behind all such reports and data, there is a human being in pain and anguish, to whom you must offer something more than an antibiotic, an injection, or a surgical aid; you must, with your attitude, your words, and your actions, inspire confidence and faith and give understanding and consolation.

The heart of medicine lies in a physician's power to achieve one or two goals: (1) improve a patient's quality of life and/or (2) improve their length of life.[2] These are accomplished by preventing disease, promoting health, healing illness, and providing the highest quality of care possible. This study attempts to determine the importance of a typically unmeasured component of a patient's care: the physician's approach and attitude in describing their health state.

It is the belief of the authors herein that a physician's attitude has a direct and significant impact upon a patient's quality of life. While honesty regarding the implications of the patient's condition is paramount, some variant of enthusiasm, optimism, and encouragement is equally as important in affecting the patient's quality of life. Recent studies have shown that patient optimism has a direct impact on quality of life, as well as recovery time and postoperative pain.[3–5]

While optimism has been shown to have a beneficial effect upon quality of life, we are unaware that this benefit has been quantified using a preference-based, health-related quality-of-life instrument. The use of a preference-based instrument allows the potential improvement in quality of life to be quantified, as well as compared with the quality-of-life improvement conferred by interventions across all of healthcare.[2 6]

Studies suggest that a time trade-off utility analysis is an effective way to incorporate all contributing variables that comprise quality of life into one outcome measure.[5–9] Time trade-off utilities have been validated across national borders, gender, age, income, level of education, ethnicity and the presence of comorbidities.[6 7] They have also been demonstrated to have good to excellent test–retest reliability.[8]

The upper utility anchor of 1.0 is associated with normal health (vision) permanently, whereas the lower utility anchor of 0.0 is associated with death. The closer the utility is to 1.0, the better the quality of life associated with a health state, and the closer the utility is to 0.0, the poorer the associated quality of life.

PATIENTS AND METHODS

The utility questions were approved by the Wills Eye Hospital Institutional Review Board.

Inclusion citeria

Included were consecutive adult patients from the practice of one author (GCB) who were undergoing treatment for ocular disease(s). Refractive errors alone were not considered representative of an ocular disease.

Exclusion criteria

The presence of Alzheimer's disease or some other form of dementia was the major exclusion criterion. Patients were assumed to have dementia by either history, the use of drugs to treat dementia or obvious dementia as judged by the interviewer.

Enrolment occurred between December 2006 and February 2007.

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Each patient underwent a complete ocular examination, and the major ophthalmic abnormalities present were recorded. Vision was measured using Snellen visual acuity. All patients were asked whether they had a history of systemic comorbidities, including systemic arterial hypertension, cardiac disease, pulmonary disease, diabetes mellitus, neurological disease, arthritis, renal disease, gastrointestinal disease or other systemic abnormality. Systemic aterial hypertension was assumed to be present by either history or the use of anti-hypertensive medications.

Each patient was presented with the time trade-off utility scenario listed below. The time trade-off utilities were obtained by one author (ANG) during an interview using a standardised and validated technique.[5–9] Patients who were unable to answer the questions listed below were excluded from the study.

TIME TRADE-OFF UTILITY EVALUATION

The time trade-off evaluation was as follows:

I'm going to ask you some purely theoretical questions that require careful thought. Please take your time in answering.

1. How many years do you expect to live?
2. Suppose there was a technology that could permanently return your vision to normal in each eye. The technology always works, but decreases your survival. In essence, it theoretically increases your quality of life, but decreases the length of time you live. What is the maximum amount of (your theoretical remaining) time—if any—you would be willing to give up if you could receive this technology? *(baseline scenario)*
3. Now, please assume your disease and prognosis remain exactly the same as for the first question, but your doctor emphasises the possible negative outcomes associated with your problem. Would this change the time you would trade in return for permanent normal vision? If the patient answered "yes," then the following question was asked: If yes, how much time would you be willing to trade instead? *(bad-news scenario)*
4. Suppose again that your disease and prognosis remain exactly the same as for the first question, but your doctor emphasises the possible positive outcomes associated with your problem. Would this change the time you would trade in return for permanent normal vision? If the patient answered "yes," then the following question was asked: If yes, how much time would you be willing to trade instead? *(good-news scenario)*

STATISTICAL ANALYSES

Sample size

A sample size calculation was performed to determine the number of patients needed. Using a two-sided α of 0.05 and 93% power, approximately 240 patients were needed to detect a 7% difference in mean utility between two groups. Patient utilities and variances were taken from the previous literature.[5–11]

In regard to subgroup analyses, a total of 90 patients in comparative groups gave an 84% chance of detecting a 10% difference in mean utility between two groups. Power calculations were made using Sample Power 2.0 (SPSS, Chicago).

Data analysis

Data were evaluated by calculating mean utilities, standard deviations, and 95% confidence intervals for the groups. A two-sided, paired t test was utilised to compare the mean utilities of the standard group and the bad-news group, as well as the standard group and the good-news group.

The chi-square test was utilised to assess the significance of categorical variables.

Statistical significance was presumed to occur at the 0.05 level, and analyses were performed using Microsoft Excel 2002 software (Microsoft, Tacoma, WA).

The study group was then divided into two separate groups, those with either an ocular disease or a systemic ailment as their most disabling health condition. The means of these groups were compared using a two-sided, unpaired (heteroscedastic) t test, as were the means of those who were legally blind and those who were not.

RESULTS

Among the 257 patients sceened, there were three with dementia who were excluded. Among the 254 patients remaining in the total study cohort, five women and two men, with a mean age of 78 years, were unable to answer the study questions for religious reasons, leaving a final overall cohort of 247. The mean age of those excluded for religious reasons (78 years) was significantly older ($p = 0.02$) than the mean age of the remaining patients (67 years).

We will call the overall remaining cohort the Complete Study Group. Within this cohort of 247 patients, there were 140 women and 107 men. The mean age was 66 years (SD, 15 years; 95% confidence interval (CI), 65 to 68 years), and the median age was 68 years, with a range from 20 years to 90 years. The mean number of years of education was 13.9 (SD, 2.5 years; 95% CI 13.6 to 14.2 years). Of the 247 patients, 204 (83%) had at least one systemic comorbidity. Vision varied from 20/15 to 20/800 in the better-seeing eye. The mean decimal vision in the better-seeing eye was 0.55, or slightly better than 20/40. A list of the clinical features of the Complete Study Group is shown in table 1.

The mean utility for the baseline scenario was 0.87 (SD, 0.19; 95% CI 0.84 to 0.89). When presented with the bad-news scenario, the mean utility was 0.80 (SD, 0.22; 95% CI 0.78 to 0.83), a 70% further diminution in quality of life compared with the mean baseline utility ($p = 0.0009$).

Table 1 Clinical features of the patient cohort in the Complete Study Group (n = 247)

	Amount or mean (whichever applies)	SD (95% CI)
Gender		
Female	140 (57%)	
Male	107 (43%)	
Comorbidities (≥1)	204/247 (86%)	
Mean age (years)	67	15 (65 to 69)
Mean years of education (after kindergarten)	13.8	2.5 (13.5 to 14.1)
Primary ocular disease		
Diabetic retinopathy	82 (33%)	
Macular degeneration	61 (25%)	
Retinal detachment/tear	27 (11%)	
Cataract	20 (8%)	
Central/branch retinal vein occlusion	19 (8%)	
Macular pucker	13 (5%)	
Macular hole	10 (4%)	
Uveitis	4 (2%)	
Macular oedema	1 (<1%)	
Glaucoma	1 (<1%)	
Other	9 (4%)	

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When presented with the good-news scenario, the mean utility was 0.89 (SD, 0.18; 95% CI 0.86 to 0.91), 0.02 greater than the mean baseline utility of 0.87 (SD, 0.19; 95% CI 0.84 to 0.89). The difference in mean utility between the baseline and good-news scenarios was not significant (p = 0.26). The comparisons are shown in table 2.

SUBGROUP ANALYSES

In order to further examine the results, the overall cohort was divided into two groups. The Ocular Disease Group claimed ocular disease as their most disabling health problem, while the Systemic Disease Group claimed a non-ocular ailment as their most disabling health problem.

The Ocular Disease Group comprised 158 patients, 93 women and 65 men. The mean age was 66 years, with a median of 68 years and a range from 20 years to 89 years. Of the 158 patients, 121 (77%) had at least one systemic comorbidity.

The Systemic Disease Group comprised 89 patients, 47 women and 42 men. The mean age was 67 years, with a median of 68 years and a range from 32 years to 90 years. The most disabling systemic conditions included: diabetes mellitus in 34 patients (38%), cardiac disease in 20 (23%), arthritis in 13 (15%), stroke in 12 patients (14%), neuropathy in three (3%), emphysema in two (2%), and cancer (1%), Parkinson's disease (1%), biliary cirrhosis, sarcoidosis (1%) and HIV infection (1%) each in one patient.

The subgroup utilities are summarised in table 3.

Ocular Group/Systemic Group baseline utilities

The mean baseline utility for the Ocular Disease Group was 0.85 (SD, 0.20; 95% CI 0.82 to 0.89), and the mean baseline utility for the Systemic Disease Group was 0.90 (SD, 0.19; 95% CI 0.86 to 0.94). The difference between these utility means was significant (p = 0.045).

Ocular Group/Systemic Group Bad-News Utilities. In regard to the mean bad-news group utility, that of the Ocular Disease Group was 0.79 (SD, 0.22; 95% CI 0.76 to 0.82), and that of the Systemic Disease Group was 0.83 (SD, 0.23; 95% CI 0.78 to 0.87). The difference between the utility means of these two groups was not significant (p = 0.22).

The difference between the mean baseline utility of 0.85 (SD, 0.20; 95% CI 0.82 to 0.89) and bad-news mean utility of 0.79 (SD, 0.22; 95% CI 0.76 to 0.82) for the Ocular Disease Group was significant (p = 0.0000004), as was the difference between the Systemic Disease Group mean baseline utility of 0.90 (SD, 0.19; 95% CI 0.86 to 0.94) and mean bad-news utility of 0.83 (SD, 0.23; 95% CI 0.78 to 0.87) (p = 0.000002)

Ocular Group/Systemic Group good-news utilities

The mean good-news utility for the Ocular Disease Group was 0.87 (SD, 0.19; 95% CI 0.85 to 0.90), and the mean good-news utility for the Systemic Disease Group was 0.91 (SD, 0.18; 95% CI 0.87 to 0.94). The difference in mean utility between these two groups was not significant (p = 0.19).

The difference between the mean baseline utility of 0.85 (SD, 0.20; 95% CI 0.82 to 0.89) and mean good-news utility of 0.87 (SD, 0.19; 95% CI 0.85 to 0.90) for the Ocular Disease Group was not significant (p = 0.22), as was the case for the mean baseline utility of 0.90 (SD, 0.18; 95% CI 0.86 to 0.94) and mean good-news utility of 0.91 (SD, 0.18; 95% CI 0.87 to 0.94) for the Systemic Disease Group (p = 0.60).

Utilities in the following subgroups are summarised in table 4.

Table 2 Comparison of the mean baseline utility, mean bad-news utility and mean good-news utility groups (n = 247)

	Mean	SD (95% CI)	p Value (compared with the baseline utility)
Baseline utility	0.87	0.19 (0.84 to 0.89)	
Bad-news utility	0.80	0.22 (0.78 to 0.83)	0.0009
Good-news utility	0.89	0.18 (0.86 to 0.91)	0.2556

Diabetic retinopathy

When the data from the 81 patients with diabetic retinopathy were analysed, the mean baseline utility was 0.83 (SD, 0.20; 95% CI 0.78 to 0.88) significantly greater (p = 0.00005) than the mean bad-news utility of 0.78 (SD, 0.21; 95% CI 0.73 to 0.83) and not significantly different (p = 0.54) from the good-news utility of 0.86 (SD, 0.19; 95% CI 0.81 to 0.91).

Macular degeneration

When the data from the 61 patients with macular degeneration were analysed, the mean baseline utility was 0.81 (SD, 0.25; 95% CI 0.74 to 0.88), significantly greater (p = 0.00007) than the bad-news utility of 0.71 (SD, 0.27; 95% CI 0.64 to 0.78) and not significantly different (p = 0.42) from the good-news utility of 0.83 (SD, 0.23; 95% CI 0.77 to 0.89).

Vision

Thirty-five patients had ⩽20/200 vision in the better-seeing eye (legal blindness), while 212 had vision >20/200 in the better-seeing eye. Among the legally blind cohort, the mean baseline utility was 0.77 (SD, 0.19; 95% CI 0.70 to 0.84), while in the >20/200 cohort, the mean baseline of 0.93 (SD, 0.10; 95% CI 0.89 to 0.97) utility was significantly different (p = 0.0000000001).

In the legally blind cohort, the bad-news utility of 0.74 (SD, 0.23; 95% CI 0.66 to 0.82) differed significantly (p = 0.003) from the mean baseline utility of 0.77 The good-news mean utility of 0.84 (SD, 0.18; 95% CI 0.78 to 0.90) also differed significantly from the mean baseline utility (p = 0.02).

In the >20/200 cohort, the mean baseline utility of 0.93 differed significantly (p = 0.0000000001) from the mean bad news utility of 0.88 (SD 0.15; 95% CI 0.86 to 0.90), but did not differ significantly (p = 0.11) from the mean good-news utility of 0.94 (SD 0.13; 95% CI 0.92 to 0.96).

DISCUSSION

The present study found that the baseline scenario, time trade-off utility of the average patient drops significantly after that patient was presented with the bad-news scenario. There was generally not a significant difference, however, when comparing the mean baseline utility with the mean good-news utility. Because time trade-off utilities have been shown to be a reliable indicator of the quality of life associated with a health state,[2 6–10] it is reasonable to conclude that patients' preference-based quality of life is diminished when they are presented with primarily a bad-news scenario during their visit. Thus, conveying the feeling of maintenance or improvement in patient hope by a physician or other healthcare professional maintains or improves quality of life and reduces the negative consequences associated with visual loss.

We cannot say with certainty why the good-news scenario did not generally result in a significant improvement in quality of life.

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Table 3 Comparison of the mean utilities in the Ocular Disease and Systemic Disease Groups

	Ocular Disease Group (n = 158)	Systemic Disease Group (n = 89)	p Value
Baseline utility	0.85 (0.82 to 0.89)*	0.90 (0.86 to 0.94)**	0.05
Bad-news utility	0.79 (0.76 to 0.82)*	0.83 (0.78 to 0.87)**	0.22
Good-news utility	0.87 (0.85 to 0.90)	0.91 (0.87 to 0.94)	0.19

Confidence intervals are shown in parentheses.
*p = 0.0000004.
**p = 0.000002.

Nonetheless, we suspect that the bias of the treating physician (GCB) in emphasising the more positive aspects of disease, rather than the more negative aspects, may have played a role.

Although the Ocular Disease Group had a lower mean baseline utility than the Systemic Disease Group, both groups consistently demonstrated a significantly lower utility when presented with the bad-news scenario. It thus appears that patient preference-based quality of life worsens when presented with a bad-news scenario, regardless of whether ocular disease or a systemic disease is considered the most disabling.

Optimism has been shown to be a critical factor for healing, with those under greater stress, with lower optimism and higher serum cortisol levels, having slower wound healing than those with higher optimism and lower serum cortisol levels.[11] Optimism has also been shown to be a motivator for recovery[12] as well as an important factor in improving quality of life for oncological patients undergoing palliative care.[13] The study herein quantitatively confirms the more subjective feelings of optimism referred to in each of these articles. The 70% diminution in quality of life associated with the lack of optimism in the current study demonstrates the considerable difference optimism can make.

The value of this study is enhanced by the fact that it is patient-preference-based. Patients with a disease entity, rather than physicians, administrators, the general public or others, were those who evaluated the quality of life associated with their health state. Studies have shown that surrogate respondents, including treating physicians, often have a poor understanding of the impact of diseases upon a patient's quality of life.[14–17]

As is the case with all studies, the present study has inherent weaknesses. It should be noted that the Complete Study Group was taken from the same clinical population and were all patients of one author (GCB). The mean baseline utility used as the control was undoubtedly impacted by this author's bed-side manner during the patient exam before the survey was asked. Replication of these data in other populations is therefore quite important.

While all patient interviews were performed by one author (ANG) using a validated technique to guard against inconsistency in the method of questioning, other matters do need to be taken into consideration. It has been argued that a minority of patients do not understand time trade-off questionnaires.[17] In order to account for this potential lack of understanding, we eliminated patients from the study group if there was confusion surrounding the questions. Despite any inadequacies of the time trade-off methodology of utility analysis, the technique has been repeatedly validated[6 7 18–24] and is a preferred method for objectively measuring the quality of life associated with health states for the National Institute for Health and Clinical Excellence, the agency which evaluates the comparative effectiveness of healthcare interventions in the UK.[25]

Table 4 Comparison of the mean utilities in the baseline diabetic retinopathy, macular degeneration and vision subgroups with good news and bad news scenarios

	Utility Baseline/bad news (p value)	Utility Baseline/good news (p value)
Diabetic retinopathy (n = 81)	0.83/0.78 (0.0005)	0.83/0.84 (0.54)
Macular degeneration (n = 61)	0.81/0.71 (0.00007)	0.81/0.83 (0.42)
Vision ⩽20/200 (n = 35)	0.93/0.88 (0.0000000001)	0.93/0.94 (0.11)
Vision >20/200 (n = 212)	0.77/0.74 (0.003)	0.77/0.84 (0.02)

Time trade-off utilities have been measured for numerous health states. The mean baseline utility (0.90) in our Complete Study Group is similar to that of the average person with ocular disease and 20/20–20/25 vision in the better-seeing eye, while a diminution to 0.83 in the bad-news scenario is similar to decreasing the vision in the better-seeing eye to the 20/30–20/40 range.[21] The same utility loss is similar to that associated with a myocardial infarction survivor changing from American Heart Association Functional Capacity Classification Class I (Ordinary physical activity does not cause undue fatigue, palpitation, dyspnoea or anginal pain) to Class II (Ordinary physical activity results in fatigue, palpitation, dyspnoea or anginal pain).[22 26] Thus, this change in quality of life can be sizeable.

As people go through life, they accrue value (measured in quality-adjusted life-years (QALYs)), dependent upon their quality of life.[5 27 28] A person who lives at a utility of 1.0 for 1 year accrues $(1.0\times1) = 1$ QALY, while a person who lives at a utility of 0.5 for 1 year accrues $(0.5\times1) = 0.5$ QALY. It is uncertain whether a bad-news scenario stays with a patient until the next visit days away, months away or longer. If it does stay, however, a considerable amount of life's value could be taken from a patient. For example, the loss of utility from 0.90 to 0.83 for 6 months costs a patient approximately the same value (value loss = (utility loss)×(time of loss in years) or $(0.07) \times (0.5) = 0.035$ QALYs) as the overall value conferred by pegaptanib therapy for subfoveal choroidal neovascularisation for 1 year[24] or cataract surgery in a second eye for 4–5 months.[25]

In summary, while physicians must be honest with their patients and present both sides of an intervention, it appears that a positive physician–patient communication has a significant impact upon patient quality of life. Physicians should appreciate the additional patient value they can confer when some form of hope is maintained or restored before a patient leaves the office.

Acknowledgements: None

Funding: The Center for Value-Based Medicine and the Eye Research Institute (ERI), Philadelphia, PA funded the study. Neither organisation had any role in the design and conduct of the study, collection and interpretation of the data, or preparation and approval of the manuscript.

Competing interests: None.

Ethics approval: The patients were advised of the intent of the study and treated in accordance with ethics as put forth by the Declaration of Helsinki of the World Medical Association.

Patient consent: Written informed consent was obtained from each patient.

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Br J Ophthalmol 2008 92: 783-787
doi: 10.1136/bjo.2008.141663

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