Referrals for cataract surgery: variations between different geographic areas within a Welsh Health Authority

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CLINICAL STUDY

Abstract

Aim The aim of the study was to identify variations in cataract presentation within three different eye units in a single health authority and to identify any correlation between cataract presentation and social deprivation indices. We also compared our patient profile and results with the UK National Cataract Audit statistics.

Methods It was a prospective multicentre questionnaire-based project involving three hospitals: Cardiff Eye Unit—University Hospital of Wales (UHW), Royal Glamorgan Hospital—Llantrisant (RGH), and Prince Charles Hospital—Merthyr Tydfil (PCH). Demographic, clinical, and socioeconomic data were collected in patients undergoing cataract surgery. Patients were also asked to fill in the questionnaire based on the Berth-Petersen Visual Function Index (VF-14) indicating difficulty in performing daily living activities.

Results A total of 112 patients were recruited in the study. Demographics were similar to National Cataract Audit. However, the percentage of patients with poor visual acuity (less than 6/60) at the time of surgery was greater at all the three hospitals compared to the national statistics. Among the three hospitals at South Wales, PCH had the lowest visual acuity in both listed and fellow eye and the lowest VF-index. Both the outpatient and surgery waiting times were longest at PCH. The population at PCH also visited their optician least frequently.

Conclusion Our results show significant variation in cataract presentation between the three eye units within a single Health Authority. These variations correlate well with social deprivation indices and poor use of

Optometric services. Local policies are needed to redress these inequalities and raise public and professional awareness of causes of poor sight in the elderly population.

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Introduction

Cataract extraction is the most frequently performed surgical procedure in ophthalmic care. There have been several studies in the past, which have shown variation in the indication for cataract surgery. These variations have been seen both between one country and another,^{1,2} and between different geographic regions within the same country.³ These variations have been attributed to multiple factors including age and sex of patients, concentration of optometrists, variations in surgical practice, and variations in administrative practices of health regulatory bodies.

The aim of this study was (a) to collect demographic, clinical, and social data of patients undergoing cataract surgery in three eye units within a single health authority; (b) to identify any variations in cataract presentations between the three units; (c) to compare patient profile with the UK National Cataract Audit statistics; (d) to identify any correlation between cataract presentation and social deprivation indices.

Material and methods

The study was designed as a prospective multicentre questionnaire-based project.

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Consecutive patients presenting to cataract preassessment clinic over a 2-month period (Jan–Feb 2000) were included in the study. The centres included were Cardiff Eye Unit—University Hospital of Wales, Royal Glamorgan Hospital—Llantrisant, and Prince Charles Hospital—Merthyr Tydfil. Ethical approval was obtained from the Local Research Ethics Committee. The inclusion and exclusion criteria are listed in Table 1. All patients fulfilling the inclusion criteria were invited to fill in a questionnaire. Written informed consent was obtained. Data were collected according to a predetermined set of evaluation forms. Visual acuity was recorded as distance Snellen visual acuity with correction. The Snellen acuity was then converted to the Bailey–Lovie logMAR scale for the purposes of statistical analysis.^{4,5} Other data that were collected are shown in Table 2. The doctor at the preassessment clinic helped the patient fill in the questionnaire based on the Berth–Petersen Visual Function Index (VF-14).⁶ Patients were asked if they had experienced any difficulty performing 14 specific vision-dependent daily living activities when performed with appropriate spectacle correction. If yes, they were asked to indicate the amount of difficulty ranging from ‘4’ for ‘no difficulty’ to ‘0’ for ‘unable to do’. The total score was divided by 14 to determine the mean score and then multiplied by 25 to give the VF-14 index score. The VF-14 Index score could range from ‘0’ indicating inability to perform any task for which vision is required to ‘100’ indicating no difficulty in performing any of the said tasks. The questionnaire did not reveal the identity of the patient. The SPSS software was used for data analysis. A difference of 0.1 on logMAR visual

acuity or 5 on the VF – 14 Index was considered to be significant. It was determined that to detect a difference in 0.1 on logMAR visual acuity with 95% power, the sample size had to be 30.

Results

A total of 112 eligible patients were recruited into the study. These consisted of 45 patients from University Hospital of Wales–Cardiff (UHW), 36 from Royal Glamorgan Hospital, Llantrisant (RGH), and 31 from Prince Charles Hospital, Merthyr Tydfil (PCH).

Figure 1 illustrates patient demographics that are similar to National Cataract Audit figures. Ocular and systemic comorbidity was also similar between the South Wales and national population (Figure 2). Tables 3 and 4 show the mean visual acuity in operated and fellow eye at the time of listing with and without ocular comorbidity. There was no significant difference between the three centres. Table 5 shows the percentage of patients presenting with visual acuity less than 6/60 and better than 6/12 in three eye units compared with the national data. The visual function index was similar in three centres (Table 6). Table 7 shows that waiting time in one of the centres was significantly longer than the other two. The number of visits to the community optician was graded into 1 = never visited, 2 = > once in 2 years, 3 = every 2 years, 4 = yearly, and 5 = < yearly. The mean scores were 3.0 ± 1.2 at UHW, 2.7 ± 1.2 at RGH, and 2.6 ± 1.3 at PCH.

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Age > 50 years	Any previous surgery on first eye
Senile cataract	Combined procedure
First eye	Traumatic or inflammatory cataract
Patient able to consent	

Table 2 Additional data collected

Age
Sex
Ocular comorbidity
ARMD, glaucoma, diabetic retinopathy, amblyopia, corneal opacity/decompensation, others
Systemic comorbidity
Diabetes mellitus, hypertension, ischaemic heart disease, COAD, stroke, arthritis, others
Waiting time for outpatients appointment
Waiting time for surgery
Frequency of optometrist visit
Social deprivation statistics

Figure 1 Age (years) and sex distribution.

Figure 2 Ocular and Systemic Comorbidity

Table 3 Mean VA operated eye

	UHW	RGH	PCH
Preop VA	0.76 (0.45)	0.77 (0.47)	0.85 (0.48)
Preop VA (without ocular comorbidity)	0.78 (0.48)	0.77 (0.48)	0.92 (0.52)

Table 4 Mean VA fellow eye

	UHW	RGH	PCH
Preop VA	0.48 (0.31)	0.54 (0.32)	0.55 (0.42)
Preop VA (without ocular comorbidity)	0.47 (0.26)	0.52 (0.33)	0.48 (0.37)

Table 5 Overview of visual acuities

	UHW	RGH	PCH	National
VA < 6/60	20%	17%	32%	15%
VA ≥ 6/12	16%	22%	19%	31%

Table 6 VF index

	UHW	RGH	PCH
VFI	72 (19)	66 (25)	66 (27)
VFI without ocular comorbidity	74 (17)	69 (25)	64 (29)
VFI > 90	16%	22%	25%

Discussion

The National Cataract Surgery Survey was conducted in 1990 as a prospective cross-sectional survey of National Health Service patients who had had surgery for age-related cataract in the UK.^{3,7,8} Data collected included pre and postoperative clinical data, clinical outcomes,

Table 7 Waiting times (weeks)

	UHW	RGH	PCH
Outpatient	30	39	43
Surgery	30	24	38

Outpatient waiting times: UHW *vs* PCH ($P=0.002$), UHW *vs* RGH ($P=0.03$).

Surgery waiting times: RGH *vs* PCH ($P=0.001$), UHW *vs* PCH ($P=0.08$).

waiting times, and the level of visual impairment at the time of first assessment, at listing, and at the time of surgery. Waiting times included both times from initial referral to listing and from listing to surgery. This study was repeated in 1997.⁹ However, neither of these two studies assessed the functional status of the patients. The three centres chosen for our study are representative of a University teaching hospital (UHW), a large district general hospital (RGH), and another district general hospital (PCH) where outreach clinics and day case cataract surgery are provided by surgeons from RGH.

Patients presenting at PCH had a lower visual acuity in both listed and the fellow eye compared to other centres although the difference was not statistically significant. The percentage of patients with less than 6/60 vision were greater at PCH compared to the UHW, RGH, and national data. We feel that the most likely cause for this is the infrequent visit to the optician by the population of PCH and decreased density of optometrists in this region. The ratio of optometrist to population was 1:7600 in the catchment area for UHW, 1:7500 for RGH, and 1:10 000 for PCH. Welsh Multiple Deprivation Index Scores (Figure 3) have indicated that the catchment area for PCH, namely Merthyr Tydfil and Cynon Valley, ranks as the most deprived area with a score of 4.00. The area around RGH, namely Taff-Ely and Rhondda Valleys, are ranked second from bottom with a score of 16.55. The catchment area for UHW, namely Cardiff and Vale of Glamorgan, ranks 13th with a score of 60.37.¹⁰ This difference is of even more relevance because RGH and PCH are only 15 and 25 miles away, respectively, from UHW. The above statistics indicate that there is a strong correlation between provision and utilisation of Primary and Secondary ophthalmic health services and the level of social deprivation. The waiting times from listing to surgery nationally is 32 weeks. This compares favourably with UHW and RGH, but is significantly longer at PCH.

Visual acuity is a simple but important method of assessment of visual status. However, other factors like glare, contrast sensitivity, employment, ability to pursue one's profession or hobbies, general health, patients' demand linked with the surgeons own assessment of coexistent ocular conditions dictates the decision as to when to offer cataract surgery. We assessed objectively

Figure 3 Welsh Index of Deprivation 2000 Health Deprivation and Disability Domain.

the functional status of our patients using the Bernth-Petersen VF – 14 Index. The VF14 Index has been shown to be a reliable, valid, reproducible, and internally consistent measure and has been recommended for international comparisons.^{11,12} The population of PCH had the lowest VF index in keeping with visual acuity. An interesting finding, however, was that although the visual acuity was poorest at PCH the percentage of patients rating the highest functional capacity (VF-index > 90) was highest at PCH (Table 6). This is in keeping with the earlier findings of Stienberg *et al* that the visual acuity and visual function in daily life are poorly linked, and that there are other factors that determine functional capacity.¹³ It also indicates that functional evaluation should complement visual assessment.¹⁴ The outcome measures of cataract surgery have generally been documented in terms of improved monocular visual acuity. It would be interesting to

examine the change in VF-14 Index before and following surgery in future studies.

In conclusion, our results show a significant variation in cataract presentation between the three eye units in Bro Taf Health Authority. These variations correlate well with social deprivation and poor use of Optometric services in the community. Local policies are needed to redress these inequalities. Ongoing discussions with the relevant Local Health Groups are intended to utilise this information to form an action plan to raise public and professional awareness of the causes of poor sight in older people.

An integral part of the action plan is to increase general practitioner referral rates to the Optometrist for assessment as part of the 'Extended Eye Examination' initiative launched from the 1st of May 2002 and funded by the National Assembly for Wales (<http://www.wales.nhs.uk/documents/landmark-day-for-eye-care-e.htm>). We hope that our results will assist the providers and purchasers of ophthalmic health care in predicting future requirements and in the allocation of resources.

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