

Research Article

Impact of Digital Patient Education & Support Group in Glaucoma

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Introduction

Glaucoma is a chronic condition requiring long-term adherence to treatment. Only 7% of patients require surgical intervention. The major focus of a Glaucoma surgeon is always usually to improve their surgical outcome. One of the most important factors in glaucoma progression is adherence to treatment. Poor adherence is often related to poorer clinical outcomes [1,2]. Poor adherence to treatment is usually a result of low health literacy which is associated with worse vision-related quality of life [3]. The use of printed Patient-education materials as a supplement to verbal communication has been prevalent since long. Many clinicians give institutional patient-informational leaflets at the end of a clinical visit and some have been known to prepare patient-oriented webpages. These information materials often convey complex information at an advanced reading level [4]. Most of these glaucoma patient -education materials are written above the recommended reading level which leads to lower patient engagement and worse clinical outcomes [5].

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Abstract

Purpose: To assess the impact of digital patient education resource related to glaucoma diagnosis and treatment.

Methods: We assessed the patient engagement with and response to the digital patient education resources. We compared the two clinical outcomes: before the development of this digital patient education resource in 2011 and after its introduction in 2019, the year preceding the Covid 19 pandemic. We compared the rate of need for new certification of visual impairment and any definitive glaucoma surgeries needed between these two 12-month tenures.

Result: The google analytics showed a very enthusiastic acceptance of the digital patient education by the population of Worcestershire. There were very high rates of website hits, downloads and video views. This study showed a slight decline in the rate of CVI registration from average of 40.6 in 2011 to 38.3 in 2019. This study also showed a significant reduction in the numbers of trabeculectomy surgery from 92 in 2011 to 37 in 2019. The overall glaucoma surgical rates decreased from 131 in 2011 to 121 in 2019, which was despite an increased demand and early-intervention surgical procedures being developed (? Offered/available).

Conclusion: There is a possible weak correlation between implementation of digital patient education and positive clinical outcomes in the reduced need for both Glaucoma surgery and the Certification of visual impairment. Literature review shows this to be the first ever study showing the impact of digital patient education on the Glaucoma surgical rates. There was a remarkable acceptance of the technology by the local population of Worcestershire despite the older age group patient-population.

We developed a reliable, reasonably simple glaucoma information system presented by our glaucoma support nurse, simple easy-to-understand information leaflets and above all short video clips educating patients on drop application techniques, lid hygiene and some other aspects of their care to improve patient outcomes. Our unique platform combining glaucoma support groups and digital patient-education resources has been the ongoing practice in Worcestershire Acute Hospitals NHS Trust since 2012. In this article we aim to share the impact of this unique programme on our patients and their clinical outcomes.

Methods

Worcestershire Acute Hospitals NHS Trust developed a network of glaucoma support nurses and then started conducting regular patient support group meetings from 2009. Further in

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2012, we launched a glaucoma support group website which included Information leaflets regarding Glaucoma laser and surgical procedures and simple educational video clips each lasting less than 3 minutes. Patients were able to see these videos on their personal computers, tablets and smart phones with ease. Patient was also allowed to download the detailed information leaflets as needed. All patients attending our Glaucoma clinics were encouraged to use the website and watch the video clips. The surgical videos were also used successfully for informed-consent process as patients were able to watch the related videos at their leisure.

The feedback given by the patients for these videos was analysed in details. We used the google analytic function to assess total number of website hits, information downloads, videos watched and the geographical distribution of our website users. Also analysed were the Glaucoma patients who needed to be registered visually-impaired in our trust in the years 2011 and 2019 (before the beginning of the CoVID pandemic). Further, we also compared the total number of glaucoma surgical procedures performed in 2011 and 2019. The appropriate approval for data analysis and publication was taken from the ophthalmology directorate.

Results

We present our main evidence from google analytics and compare the clinical outcomes. The main website at the time of the launch in 2012 was www.worcestershiresupport.co.uk. In 2021, most of the contents were replicated in a much improved website: www.worcesterglaucoma.co.uk. The key videos and information leaflets remained largely unchanged. Table-1 shows a total of 102,000 download of the information leaflets. Of the total 5509 video-clip views, the maximum (1595) were of the drop application technique video-clip. Most of the videos had been accessed via you tube and hence, were not accurately re-

flected in the total count of the website-hits. Despite this the total Website-hits was found to be in excess of 20,000. This could mean that every time our website was visited, it resulted an average of 5 information leaflets downloads. Worcestershire glaucoma support group continued to organise 2-3 face-to-face support group meetings annually. Each meeting was attended by an average of 100-150 people. We believe, that the combination of efficient and supportive Glaucoma clinics along with the use of easily accessible and well-designed digital patient-education system, together led to the enhanced patient satisfaction-rate with our Glaucoma service. There was a significant improvement in charitable donation to our Glaucoma service allowing us to purchase critical equipment and get the latest clinical technology update for our patients. It is estimated that our glaucoma patients directly contributed to purchase of over £250,000 worth of equipment by the trust.

For analysing the clinical outcomes, we calculated the number of Glaucoma patients who needed certification for visual impairment in the years 2011 and 2019. The year 2011 was chosen, as this was the year just prior to the introduction of the digital patient-education resources through the support group websites. The year 2019 was singled out as this preceded the CoVID pandemic and the pandemic’s significant impact on the glaucoma service outcomes in the following few years. As seen in table-2 & Figure-1, there has been slight reduction in the number of patients needing new certification. Further scrutiny into this subject revealed that the certification numbers reduced to less than 40 annually after 2013 (a few months since the introduction of our patient support group and the digital platform) and remained so till the pandemic hit. Although it is difficult to ascertain the significance of number reduced, we still feel it is definitely a welcome reduction.

We also analysed the glaucoma-surgery rates for these two years. In both the years, a single surgeon was responsible for making the surgical decisions and the deciding-criteria also remained the same. There was a new type of surgery introduced in Worcestershire which had the potential to confound the results. Alongside the previous Glaucoma surgeries offered, Trabecular by-pass stents, which is a form of Minimally Invasive Glaucoma surgery (MIGS) was introduced in 2019. In 2011, a total of 131 glaucoma surgeries were carried out. This included 92 trabeculectomies and 39 bleb needling/revision. In 2019, only 37 trabeculectomies were performed while the number of bleb needling/revision remained similar at 38. In 2011, there were no cases of trabecular by-pass surgery, while in 2019, 46 MIGS procedures were performed. There was an overall reduction in the number of all glaucoma surgeries from 131 in 2011 to 121 in 2019. Though this total number may not appear significant, the reduction in trabeculectomies from a total of 96 in 2011 to 37 in 2019 is quite clearly a significant decrease.

The positive feedback messages and compliments regarding our service both, during the support group meetings and posted on the websites exceeded 500. However, no negative feedback /criticism were received. As the feedback received was largely during the face to face meetings, we have excluded them from our study.

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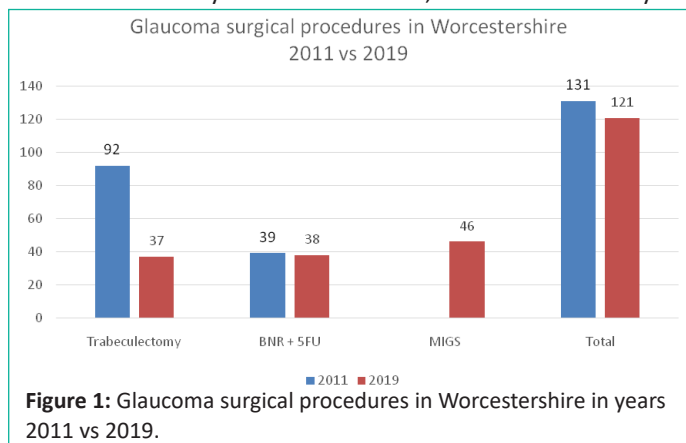


Figure 1: Glaucoma surgical procedures in Worcestershire in years 2011 vs 2019.

Table 1: Google analytics on the use of digital patient Education.

Web activity	Number
Downloads of Information leaflets	102,000
Video view	5509
Drop Technique video	1595
Website hits on Support group website	12,000
Website hit on renewed website in the last 2 years	8,120

Table 2: Clinical outcome in the form of CVI registration.

Description of the clinical outcome	Year	
	2011	2019 (Pre-covid)
New Certification of visual impairment (CVI) rate per 100000 population ⁶ In Worcestershire	40.6	38.3

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