

Seasonal Variation In Cataract Surgery: A Myth or Reality?

Shekhar Mankad, Bennet Chacko Mathew, Dhaivat Shah

Department of Ophthalmology, Choithram Netralaya, Indore, Madhya Pradesh, India.

Introduction: Mass cataract surgeries are organised throughout India all over the year to achieve the target set by Vision 2020 programme to eliminate blindness. The heavy workload during winters led to the observation that more cataract surgeries were performed during winter season. This causes problems with efficiency, quality and resource allocation. This study aims to analyse if seasonal variation exists and to determine the factors which can help in better planning for optimal utilisation of resources.

Methods: A retrospective study was conducted on surgeries conducted during 2015- 2019, dividing into summer, rainy and winter seasons. 100 patients each, from the winter season and summer season respectively, were asked to fill in a questionnaire to analyse the reason for selection of the particular season for cataract surgery.

Abstract Results: Of the 64,205 cataract surgeries performed during the study period, 61.44% of surgeries were done in the winter season. While community based surgeries were mostly done in winter (63.51%), the trend among paid patients showed a shift towards equal distribution throughout the seasons. 41% of patients attending in the winter season believed that the surgery was safer during winter while 49% patients attending in the summer season underwent surgery because of diminished vision.

Conclusions: Seasonal variation is a reality in cataract surgeries in India. Various contributing factors to seasonal variation involve hearsay beliefs of patients, cost of surgery and cultural beliefs. If these can be addressed then resource allocation and utilization can be improved.

Delhi J Ophthalmol 2021; 31; 52-55; Doi <http://dx.doi.org/10.7869/djo.656>

Keywords: Seasonal Variation; Cataract; Camps

Introduction

Cataract is the major cause of blindness and visual impairment in developing countries. India has one of the largest blind populations in the world with around 50 lakhs of which 66.2% is due to cataract.¹ In the states of Central India, especially Madhya Pradesh the prevalence of cataract stands at a staggering 63% of the total blind patients which almost equals the national level.²

Eye care services in Central India are provided by NGOs as well as government sponsored programmes by District Blindness Control Society (DBCS) under National Programme for Control of Blindness (NPCB) and Ayushman Bharat Yojana Scheme.

Mass cataract surgeries are organised by eye care centres all over the country throughout the year to achieve the target set by Vision 2020 programme. An interesting observation made by ophthalmologists was that a larger proportion of cataract surgeries were performed during the winter season. The factors associated with seasonal variation in cataract surgeries in India have not been studied before. This is a unique study carried out in a tertiary eye hospital in Madhya Pradesh, aiming to assess the magnitude of seasonal variation in cataract surgeries, analyse the possible causes and provide recommendations to mitigate the issue.

Materials And Method

A 5 year retrospective study was carried out in a tertiary eye care hospital in Indore, Madhya Pradesh from 1st January to 31st December for the calendar years 2015- 2019. The numbers of cataract operations performed each month were documented. The surgical statistics were divided into 3 seasons (in accordance with the seasonal geographical division in Madhya Pradesh) as:

- Winter months: November- February
- Summer months: March- June
- Rainy months: July- October

The study included both patients operated under Community department free of cost under government schemes as well as patients who underwent surgery at their own expenses. The total number of surgeries conducted per month, per season were documented and tabulated. Seasonal cataract surgery percentages were also tabulated and graphically represented.

Hundred randomly selected patients undergoing surgery for cataract in the high volume winter season and 100 randomly selected patients in the low volume summer season were asked to fill in a standard questionnaire to document various demographic and socio-economic data. At a univariate level, age, religion, marital status, occupation, socioeconomic status and cost of surgery were noted and documented among the randomly chosen individuals. Both the groups of patients were required to mention the reason for attending cataract surgeries in winter or summer season.

Result

A total of 64,205 cataract surgeries were conducted in the study period of which 58,832 (91.63%) were done free of cost and 5373 (8.37%) were paid surgeries (Chart 1). The statistics showed that the winter season still holds major share in cataract surgeries done at 39,457 (61.44%) surgeries, while rainy season had 14,317 (22.30%) and summer had 10,437 (16.26%) (Table 1). While community based surgeries showed a massive inclination towards winter surgeries (63.51%), the trend among paid patients showed a shift towards equal

Table 1: Number of cataract surgeries in different seasons annually

	SUMMER	RAINY	WINTER
2015	1131	827	3935
2016	1157	1049	4926
2017	1452	2427	7179
2018	2107	5260	10034
2019	4590	4754	13377
TOTAL	10437	14317	39451
PERCENT	16.26 %	22.30 %	61.44 %

season responded that the reason was a belief that surgery was safer and less painful in winter as they believed that the cold season would contribute towards alleviating pain; while among those attending in the summer season 49% said they underwent surgery because of diminished vision (Chart 3).

Discussion

Ophthalmologists have been overworked throughout the course of the past 3 decades in leading the race to reduce the visual blindness in the country, a large chunk of which is cataract. Cataracts still continue to be the leading cause of

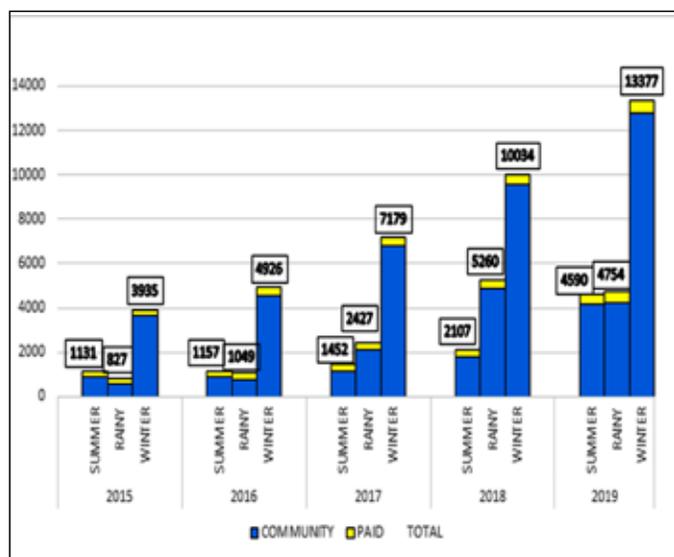


Chart 1: Number of surgeries in Paid section & Community section

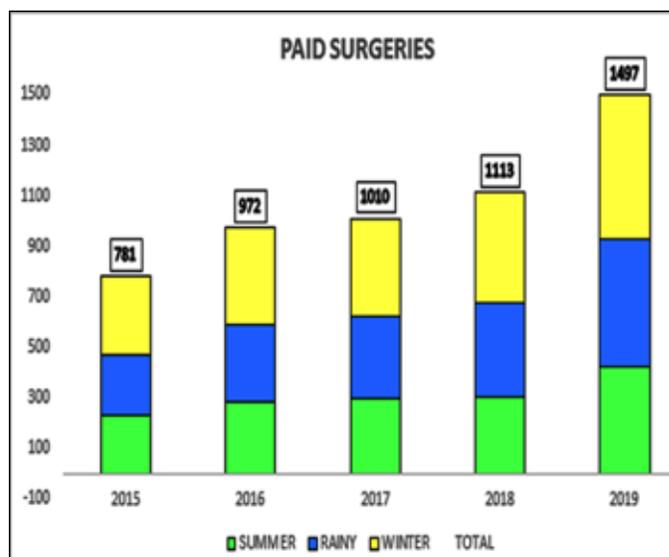


Chart 2: Seasonal variation in Paid Surgeries

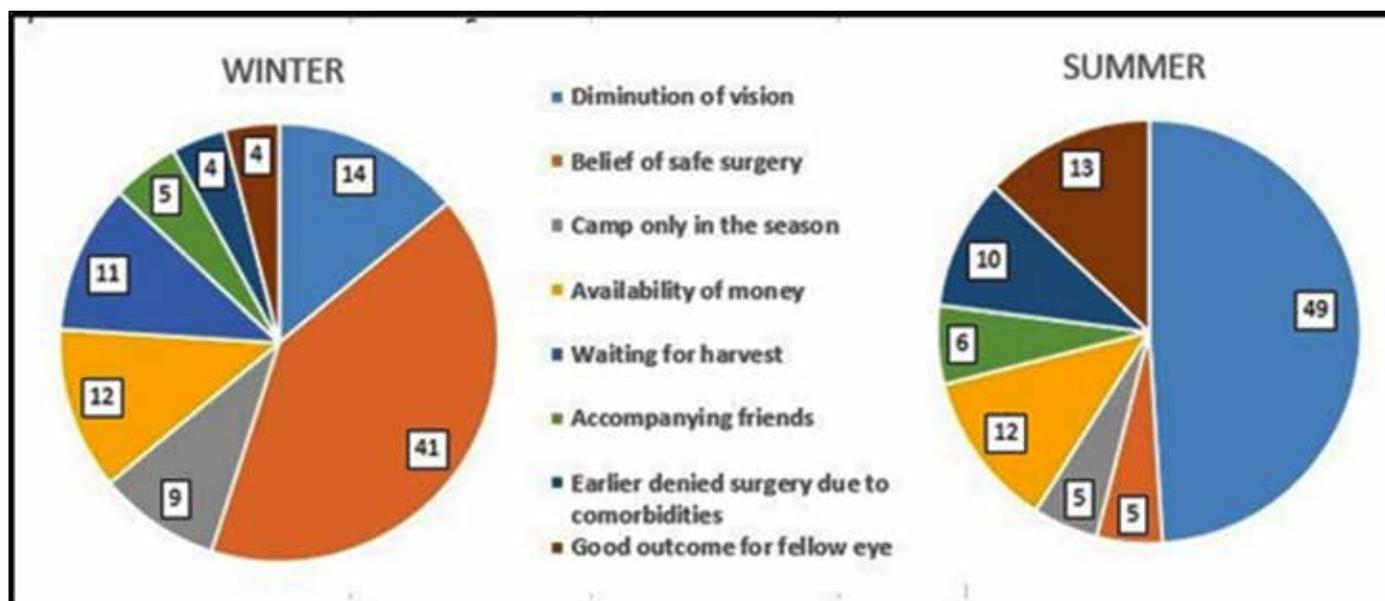


Chart 3: Patient factors in selection of particular season

distribution throughout the seasons with winter having 38.93%, rainy season having 32.72% and summer still least at 28.35% (Chart 2).

The 200 random patients selected for answering the questionnaire were asked as to why patients came in the particular season, 41% of patients attending in the winter

visual impairment and blindness in developing as well as underdeveloped countries contributing to more than 90% of the total disability adjusted life years.³

The prevalence of cataract has come down from 1.1% according to NPCB survey 2006-07 to 0.36% in 2018-19.⁴ A paradigm shift has occurred in the surgical techniques

Table 2: Number of camps organised for free of cost surgeries

	SUMMER	RAINY	WINTER
2015	75	53	193
2016	73	66	243
2017	106	154	377
2018	137	329	510
2019	279	308	681
TOTAL	670	910	2004
PERCENT	18.69%	25.39%	55.92%

Table 3: Monthly division of cataract surgeries 2015-19

	2015	2016	2017	2018	2019
JAN	1493	2103	3178	3999	4709
FEB	631	171	810	524	3170
MAR	416	399	627	599	1729
APR	268	214	287	387	907
MAY	171	222	219	425	782
JUN	276	322	319	696	1172
JUL	212	229	603	1124	1788
AUG	119	244	624	1128	863
SEP	128	407	794	1652	1251
OCT	368	169	406	1356	852
NOV	406	333	370	1775	1850
DEC	1405	2319	2821	3736	3648

utilised for delivering cataract services and the outcomes are on a positive shift in some countries compared to the scenario a decade ago. However, in underdeveloped countries, it still continues to be a challenge. Apart from this, the issues related to ongoing supply of consumables and human resources continue to be a challenge in these countries.⁵ Overworked medical personnel and hospital resources overused for few months and being underused for rest of the year puts up the problem of maintenance as well as efficient resource allocation.

Cataract and various aspects of cataract like demographic burden, management, complications and modern methods of cataract surgeries have been exclusively researched upon in the past few decades. However a lack of significant studies about the seasonal variation in cataract surgery, especially in a developing country like India, where the cataract load is huge.

Our study showed a predominantly winter dominated surgical status at 61.44% surgeries conducted over the 4 month period over the past 5 years. It was interesting to note that the free of cost surgeries, which dominated the surgical numbers, were maximum conducted during the winter months (63.50%). Even though domination was seen in winter surgeries (38.93%) even in the Paid section, we could notice a steady shift in trend towards an even distribution of surgeries across the seasons, which is encouraging.

A consistent seasonal variation in cataract surgery numbers over the last 5 years was observed in the study. The mean number of surgeries conducted in the busiest month January was 3096 surgeries while that in the least busy month of May was 364 surgeries (Table 3). An 8 fold variation was observed in monthly numbers between the busiest and least busy months. This raises a huge the problem of planning resources for efficient service provision to the patient.

A similar study was conducted in Nepal in 2011- 13 by Bastola P et al.⁶ whose study had similar observations regarding predomination of winter surgeries. He observed a 7 fold variation between the busiest and least busy months. A deeper look into the root causes of winter predomination of surgeries could mark a few pointers towards the rectification of the problem. The higher number of camps organised by the hospital during winter season was found to be one of the leading factor. Of the total camps organised, 55.92% were during winter season (Table 2). As the years have gone by, there is a slightly better distribution among the seasons but still a wide gap between camps organised in summer and winter seasons exist. The major factors that promote organisers for winter camps are the favourable temperature for travel as well as stay of patients from long distances in comparison to the summer and rainy seasons.

Another factor to be taken into account is the climate of the Particular place Madhya Pradesh being one of the 8 states through which the Tropic of Cancer passes in India, the summers face extreme heat with the average of state standing above 29.4C.⁷ The percent of total population of Madhya Pradesh living in rural areas stand at 72.37 %. The major source of income among the rural population is still agriculture. Agro-climatic diversity and topographical variations enable the state to be the largest producer of soybean, wheat, grams and oilseeds. Agriculture is the main source of employment for over 65 percent of the population and constitutes about 60- 75 percent of the rural income.⁸ Summer and rainy months are extremely productive for people engaged in agriculture. The patients whose livelihood is dependent on farming being occupied in summer and rainy seasons affects the number of patients attending camps per seasons. The patients prefer to get surgeries done when they are devoid of any work during the winters. As far as paid surgeries are concerned, this impacts a winter predilection because patients prefer to do surgeries after harvests in order to facilitate money for the surgery.

People, especially villagers of rural India, have been harbouring a strong suspicion and belief that getting eye operated in winter months is more beneficial for optimum healing of wound as well as visual outcome.

The analysis of the reasons for patients choosing summer/winter seasons for surgery was done by questioning 100 patients in both seasons. As the results revealed, the major reasons for patients selecting winter months were belief of safe surgery (41%) and diminution of vision (14%). Among the patients getting operated in summer months, the leading

reason was diminution of vision (49%) followed by a good outcome in fellow eye leading the patient to get other eye operated in the same hospital (13%). Other reasons influencing the decision of patients included availability of money, waiting for harvest, accompanying friends and camps in their area only in particular season. The 100 patients each questioned in summer and winter, were randomly chosen individuals and may not be representative of all patients coming in the both the seasons. Thus we deferred from analysing the factors affecting choices like age, sex, socioeconomic status, occupation, religion and cost of surgeries. A larger proportion of patients undertaking the questionnaire could expand the scope of this study.

The study reveals the existence of a huge difference between winter and rest of the seasons. On analysing the patient factors, there exists factors like diminution of vision, systemic co morbidities etc. which aren't amenable to meet our seasonal targets. Steps can be taken in areas where hospital as well as administrative policies can be helpful in changing the present scenario. Organisation of camps throughout the year uniformly is a policy update that will directly influence the seasonal trend. The ophthalmic assistants working at the rural level need to be aware and trained to motivate people to attend camps in summer and rainy seasons. The role of primary healthcare workers in educating the patients about eye health, cataract surgeries and the concept of day care surgeries can help eradicate the misconception of safety of surgeries in winter season. Another practical step is, when a patient arrives with a similar grade of immature cataract in both eyes, the doctor can encourage the patient to get the other eye operated in the very next season.

With the cataract burden decreased, now it is time to focus on providing quality eye care to patients without overburdening the surgeons as well as optimal utilisation of resources.

Conclusions

Due to day care surgeries, better operative techniques, base hospital surgery concept, better education, awareness among patients, the cataract surgeries are now performed round the year. In spite of these factors, the necessity of better division among seasons is being highlighted by the study.

The majority of surgeries in winter season are done free of cost. The free hospital based camps should be encouraged to be done in the summer season more. A shift of focus on free surgeries during summer season should encourage patients to change the choice of season and not act as a barrier to access cataract services. The health workers and administration at the ground level should be given more responsibility in spreading awareness as well as organising camps uniformly across seasons.

Understanding the current scenario and flexibility of policy making is necessary to address the problem of seasonal variation in cataract surgeries in India for improvement of resource allocation and utilization in cataract surgeries.

Declaration Of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

References

1. NPCB: National Survey 2015-19: Population and Blindness statistics of India. P:5-6
2. NPCB: State wise targets and achievements 2008-2015. P:32-34
3. Rao GN, Khanna R, Payal A. The global burden of cataract. *Curr Opin Ophthalmol.* 2011 Jan;22(1):4-9.
4. NPCB: National Survey 2006-07: Population and Blindness statistics of India. P:17-18
5. Khanna R, Pujari S, Sangwan V. Cataract surgery in developing countries. *Curr Opin Ophthalmol.* 2011 Jan;22(1):10-4.
6. Bastola P, Bascaran C, Foster A. Seasonal Variations in Cataract Surgery Numbers in Mid Western and Far Western Terrain Belts of Nepal. *JNMC.* 2014 Dec;12(2):24-29.
7. Shukla R, Khare D, Tiwari P, Mishra PK, Sakshi G. Analysis of Long Term Temperature Trend for Madhya Pradesh (1901-2005). *Curr. World Environment.* 2017;12(1):68-79.
8. Sharma HO, Rathi D, Chouhan RS, Meena SC. State of Agriculture in Madhya Pradesh. Ministry of Agriculture, GOI. 2013: 2-3.

Cite This Article as: Shekhar Mankad, Bennet Chacko Mathew, Dhaivat Shah Seasonal Variation In Cataract Surgery: A Myth Or Reality? *Delhi J Ophthalmol* 2021 ; 31 (4) 52 - 55.

Acknowledgments: Nil

Conflict of interest: None declared

Source of Funding: None

Date of Submission: 29 Sep 2020

Date of Acceptance: 09 Oct 2020

Address for correspondence

Dhaivat Shah MS,DNB,FMRF
Department of Ophthalmology,
Choithram Netralaya, Shriram
Talawali, Dhar Road, Indore,
Madhya Pradesh, India.
Email: dranjukochar@yahoo.co.in



Quick Response Code