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Trending Perspective in Low Vision Management with a Brief Interface on Tele-Rehabilitation of Patients from a Tertiary Eye Care Centre

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Abstract: ***Background: Trending perspective in Low Vision Management with a brief interface on Tele-Rehabilitation of patients from a Tertiary Eye Care Centre. Methods: Using Snellen's Chart form after Log MAR analysis, the measured visual acuities were collected independently. With regard to their PH vision, distance, and near correction assessments, the binocular best corrected visual acuities were taken into consideration. The total group of 25 patients included patients from both urban and remote regions. Along with the age range and gender ratio, the address underwent a demographic analysis. Intake of low vision devices is used to assess the economic picture, whether it is poor or fair. Results: According to the data, a number of patients who fell under the "remote location" group did not receive follow-up care for a variety of clear reasons. If another channel of communication between the patient and the doctor had been available, this group of patients may have easily been converted to frequent visitors. Very logically, the Tele-Ophthalmological component—currently known as Telerehabilitation- could therefore serve as a significant relief. If telerehabilitation is able to resolve the concerns of distance, there are significant chances that the remaining patient % will interact for the LV examinations and practises. In the end, the whole population can effectively inspire more desired low vision practise. Thus, the term "telerehabilitation" describes the provision of rehabilitation services through information and communication technology. Conclusions: We can now draw the firm conclusion that, in light of the data collected on a pilot scale, telerehabilitation's interference can boost low vision practise and follow-ups at a rate that is considerable. Since socioeconomic position did not have a significant impact, as was previously noted, the apparent limitations in the development of poor vision practise were mostly the remote places. So far, the only option to get around the difficulties of Low Vision practise management is through telerehabilitation. Thus, this study covers the developments made to date in telerehabilitation applications in the disciplines of eye care, including ophthalmology and optometry.***

Keywords: Low vision rehabilitation, Low vision aid, Low vision, Blindness, Telerehabilitation

1. Introduction

Blindness is among the most prevalent disabilities worldwide, making visual impairment a serious public health issue [1, 2]. An estimated 285 million individuals worldwide, including 19 million children, are visually impaired. Despite the fact that it may not appear like a significant number of cases, childhood blindness is the second-leading cause of blind years worldwide (following cataract) [3, 4, 5]. Depending on the kind and extent of the visual handicap, low vision has a significant influence on the person's emotional, physical, and quality of life. Low eyesight significantly impedes learning and development, particularly in children.

In order to maximise the use of the remaining sight, low vision rehabilitation (LVR) should seek to increase a visually impaired person's functionality and independence. Despite recent technological advancements in the field of LVR, a significant obstacle to the adoption of low vision services is still practitioners' ignorance of low vision management. As a result, we evaluate the current management choices for poor vision in-accordance with Tele Rehabilitation in this review in light of the shifting trends in the management of low vision.

Through the use of suitable optical and non-optical devices, environment adjustments, specialised mobility, and instruction in the use of low-vision aids, low-vision rehabilitation aims to enable the individual to restart or continue performing daily living activities (LVA) [6, 7]. The quality of life is significantly impacted by low vision because it increases the need for or dependent on caretakers for activities of daily living, raises the incidence of depression, increases the danger of multiple falls, and prevents social engagement. The type of vision loss must be taken into account while designing a rehabilitation programme, and the person's preferences or expectations may also change it. The most typical issue for patients who have impaired vision is reading [8, 9]. Numerous studies using optical aids have indicated improvements in reading for both distant and near [10, 11, and 12].

2. Method

The Eye Clinics received a total of 25 patients who met the necessary Inclusion Exclusion criteria and were treated with Low Vision evaluations. These patients were examined retrospectively and included in our study. Patients of all ages were considered, regardless of the reason of their visual impairment, and binocular BCVA was used in the analysis as the inclusion criterion.

Additionally, the exclusion criteria required the exclusion of one-eyed patients in order to facilitate statistical analysis and prevent deviation error in graphical depictions. According to the aforementioned criteria, 50 eyeballs from 25 patients were chosen in total.

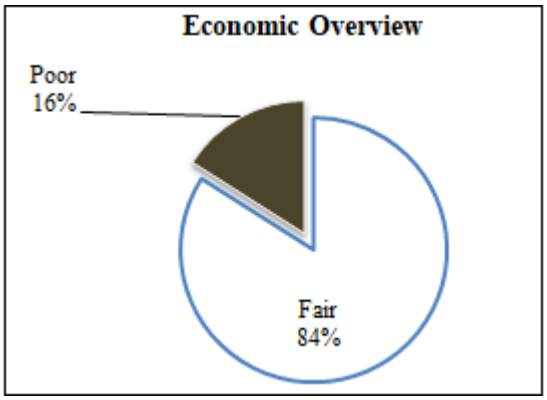
Using Snellen's Chart form after Log MAR analysis, the measured visual acuities were collected independently. With regard to their PH vision, distance, and near correction assessments, the binocular best corrected visual acuities were taken into consideration. The total group of 25 patients included patients from both urban and remote regions. Along with the age range and gender ratio, the address underwent a demographic analysis. The majority of the patients pictured here are low vision people with visual impairment (in accordance to WHO definition of low vision patient). Due to the data gathered, it was possible to estimate the propensity of the patient group to continue using low vision aids and to have regular follow-up visits for those living in remote and metropolitan areas. The economic overview should be generally assessed in terms of the proportion of low vision devices consumed, i.e., whether the patient is demonstrating a willingness to continue using low vision aids and purchasing them on hospital property.

Thus, each patient's particular low vision treatment can be carried out with predictability. Ultimately, the percentage of patients who are willing to participate in rehabilitation follow-ups, adequate economic stability, but a remote regional location, would describe the urgent need for and potential for Telerehabilitation in those rural areas, and further can be statistically accounted for. Thus, it would describe in detail the potential side effects of poor vision telerehabilitation in particular remote places. Additionally, collaborate as a pilot tally census to explore potential approaches for broadly enhancing poor vision practise.

3. Results

Between consecutive months, 25 subjects were enrolled, (with arranged regional locations for both the groups). Socio-economic evaluation of patient groups:

1) Follow up Time Interval



Region of Treatment Intervention

Figure 1: Statistic evaluation of economic overview of the entire mentioned patient group

2) Regional Distributions in-accordance to treatment intervention :

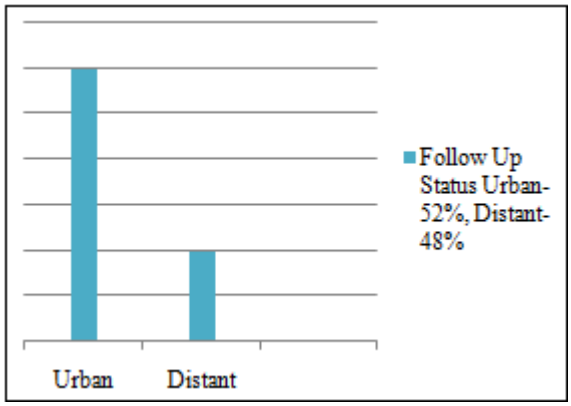
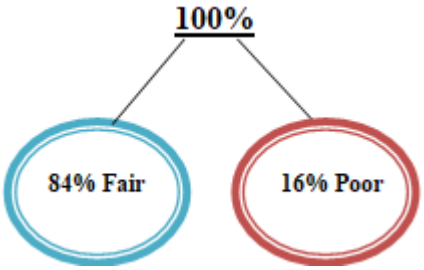


Figure 2: Representation of follow-up coequal graphics of the urban-distant region distribution in accordance to region of time intervention

Predictable Analysis Concept (Chart Module)

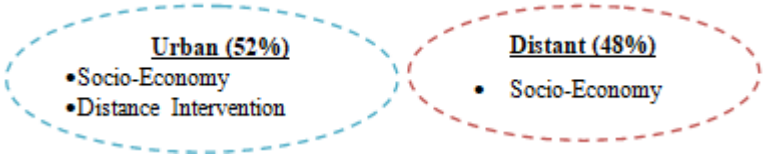
Depicting the Total Patient Count to be in Percentile form i.e., 25 = 100%
Now, in terms of the Socio-economic evaluation, if we distribute in Percentile form, [Figure 2].



Apparently, Patient count turns out to be 25 - 16% (4) = 21 No.s / 84%. i.e., (Current Patient Count). [Note: 21 No.s falls under Fair Position]

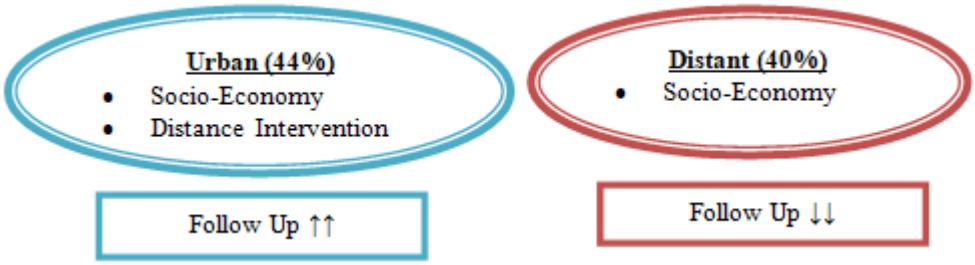
Now, Assume For simplification, 84% + 16% i.e. 21= 100%. [Suppose].

Proposing Distance Intervention Distribution in accordance to follow-ups, upon Current Patient Count: [Figure 3].



[Considering the Distance Intervention distribution graph]
Since, from above we get, 16% + 84% = 100% = 21 No.s

Therefore, Urban (52%) - 8%= 44% & Distant (48%) - 8% = 40% [8%+8%= 16%]



So, the percentage stands at Urban **44 %** and **Distant 40 %.**

Now, Let, 21(84%) - 40% = **44% i.e, 12.6 be 11 No.s**, &

21(84%) - 44% = **40% i.e, 11.7 be 10 No.s**, for symmetrical calculation.

Now, since, distant group lacks the distant intervention factor, we assume null-low vision follow-ups from that region [HYPOTHETICAL PREDICTABILITY].

Overall Patient Drop =>
(Poor Socio Group + Distant Group) = (16% + 40%) = 56%,
i.e., (4+10) = 14 No.s.

Final Patient Count =>
100% - 56% = 44% (Urban / Final Patient Count)
i.e., 25 – (4 + 10) = 25 – 14 = 11 No.

[Note: Furthermore, we didn't consider factors including Counselling, Patient's immobility (paralytic conditions), cause that would even more decrease the predicted percentile].

According to the above module, Overall Patient count drops from 25 No.s to predictability 11 No.s [Due to Socio-economic & Distance intervention].

Ultimately, the patient follow-up decreases and hence the low vision practice as well.

So, if the telerehab concept is introduced, then, there are higher possibilities for the rise of low vision practice globally.

Instance: Final Patient Count (11 No.s, 44%) + Distant Group (10 No.s 40%) = 21 / 84% i.e, 100 % predictabily (excluding the poor socio group).

So, overall LV Practice might increase, under hypothesis.

The average age of the subject(s) was in between 31-35 years of age, in accordance to the data incorporated.

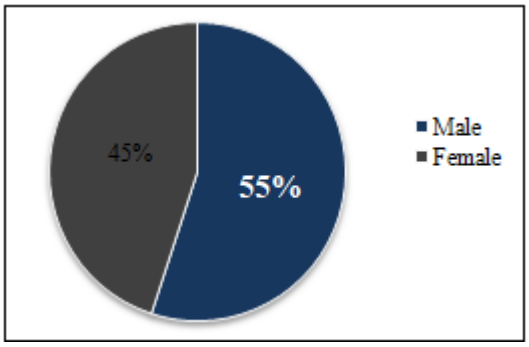


Figure 3: Representation of Male-Female subjective groups respectively

This served as the review's protocol. The goal was to thoroughly review the research on telerehabilitation's efficacy (current perspectives) for enhancing patients with low vision's vision-related quality of life. A secondary goal was to assess the likelihood of low vision training in areas without it, in line with the idea of tele-rehab. The distributed regional percentage was 44% for urban areas and 40% for remote areas (Figure 3). Contrarily, the socioeconomic statistics indicate that, of the remaining 84% of the group, just about 16% had problems with LV Aids intervention (Figure 2). On the basis of LV Aids intake vs optical premises and fictitious eagerness for the follow-ups, this was distinguished. Since there was no earlier abstract available, the complete statistical analysis was performed on predictable hypothetical grounds. To serve as a sort of pilot review for the stated objective, this was done. The anticipated percentage of patients with the highest likelihood of low vision follow-ups was therefore obtained among the patient group on which we operated. Since the patient population was not significantly impacted by economic factors, there was nevertheless divergence between the two groups, according the data above. The follow-ups' remote intervention is the sole aspect that is still present. According to the data, several patients who fell into the group of patients from distant regions did not receive follow-up care

for a variety of clear reasons. If there had been another channel of communication between the patient and doctor, this group of patients may have easily become regular visitors. Reasonably speaking, the Tele-Ophthalmological component—currently termed as Telerehabilitation—could thus provide a significant alleviation. Patients from disadvantaged remote regions could readily be included in routine follow-ups, improving the general low vision practise there. If telerehabilitation can solve the problem of distance, there are great chances that the remaining percentage of patients will interact for the LV tests and practises. The proportion shows that the majority of patients in this location are men (Figure 3).

4. Discussion

We conducted a systematic analysis of the literature on the current view of Teleophthalmology on Low Vision assessment for enhancing patients' quality of life in relation to their vision [13]. The main goal of this project paper was to provide information and support to practitioners in order to help them deliver efficient and secure services that are based on client demands, the most recent empirical research, and available technologies. In accordance with the tele-rehab concept, a secondary goal was to assess the likelihood of low vision practise in the locations lacking it. Thus, a recent and emerging area of tele-health is telerehabilitation, which involves the delivery of rehabilitation services remotely via communication technologies [14]. The success of telerehabilitation, which was first designed to grant fair access to people who live in remote areas and to those who are economically and physically challenged, can also be used to raise the standard of rehabilitation healthcare [15, 16]. As opposed to what is frequently not achievable within the confines of face-to-face treatment protocols in contemporary healthcare systems, online delivery of rehabilitation allows the rehabilitation therapist to adjust the timing, intensity, and duration of therapy.

5. Conclusion

We may now draw the ultimate conclusion that, in light of the pilot-scale data, low vision practise and follow-ups can be enhanced in substantial rates if telerehabilitation is encouraged at the grassroots level. The exhibited limitations in the rise of low vision practise were mostly the distant places because socioeconomic level did not have much of an impact, as was previously noted. As a result, the only method to get over the difficulties in Low Vision practise management at this time is through telerehabilitation. Thus, this study covers the developments made to date in telerehabilitation applications in the disciplines of eye care, including ophthalmology and optometry.

Disclaimer

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References

[1] Murthy GV, Gupta SK, Bachani D, Jose R, John N. Current estimates of blindness in India. British Journal of Ophthalmology. 2005 Mar 1;89(3):257-60.
[2] Shamanna BR, Dandona L, Rao GN. Economic burden of blindness in India. Indian journal of ophthalmology. 1998 Sep 1;46(3):169.
[3] Khandekar R, Epi PD. Visual disabilities in children including childhood blindness. Middle East African journal of ophthalmology. 2008 Jul;15(3):129.
[4] Bhatnagar K. Childhood blindness: a priority eye disease. Medical Journal of Dr. DY Patil University. 2016 Jul 1;9(4):455-.
[5] Onakpoya OH, Adegbehingbe BO, Omotoye OJ, Adeoye AO. Causes of blindness in a special education school. West African journal of medicine. 2011;30(1):47-50.
[6] Minto H, Butt IA. Low vision devices and training. Community eye health. 2004;17(49):6.
[7] Lee SM, Cho JC. Low vision devices for children. Community eye health. 2007 Jun;20(62):28.
[8] Brown JC, Goldstein JE, Chan TL, Massof R, Ramulu P, Low Vision Research Network Study Group. Characterizing functional complaints in patients seeking outpatient low-vision services in the United States. Ophthalmology. 2014 Aug 1;121(8):1655-62.
[9] Virgili G, Acosta R, Bentley SA, Giacomelli G, Allcock C, Evans JR. Reading aids for adults with low vision. Cochrane Database of Systematic Reviews. 2018(4).
[10] Lovie-Kitchin JE, Whittaker SG. Prescribing near magnification for low vision patients. Clinical and Experimental optometry. 1999 Nov 12;82(6):214-24.
[11] Leat SJ, Karadsheh S. Use and non-use of low vision aids by visually impaired children. Ophthalmic and Physiological Optics. 1991 Jan;11(1):10-5.
[12] Gopalakrishnan S, Muralidharan A, Susheel SC, Raman R. Improvement in distance and near visual acuities using low vision devices in diabetic retinopathy. Indian journal of ophthalmology. 2017 Oct;65(10):995.
[13] Bittner AK, Yoshinaga PD, Wykstra SL, Li T. Telerehabilitation for people with low vision. Cochrane Database of Systematic Reviews. 2020(2).
[14] Gupta SC, Sinha SK, Dagar AB. Evaluation of the effectiveness of diagnostic & management decision by teleophthalmology using indigenous equipment in comparison with in-clinic assessment of patients. The Indian Journal of Medical Research. 2013 Oct;138(4):531.
[15] John S, Sengupta S, Reddy SJ, Prabhu P, Kirubanandan K, Badrinath SS. The Sankara Nethralaya mobile teleophthalmology model for comprehensive eye care delivery in rural India. Telemedicine and e-Health. 2012 Jun 1;18(5):382-7.
[16] Prathiba V, Rema M. Teleophthalmology: a model for eye care delivery in rural and underserved areas of India. International journal of family medicine. 2011; 2011.