CHAPTER 5
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In this era of modernization and advancement, the low vision services are still inadequate in the northern part of India. This study has been an attempt to see the impact of Low Vision Devices on the QoL of the needy patients that may help the policymakers to improve the services in this part of the country.

In the present study, there were more male patients than females (Table 4.2). This possibly appears to be due to the fact that males are more involved in professional pursuits and in active tasks. It was found to be in accordance with other studies.15, 23, 28, 30

Low vision patients of all age groups are equally important but it was found to be more in younger (16-30 years) and older age groups (45-60 years). The younger age-group patients of 16-30 years were in majority in our study (Table 4.2) and it was in concurrence with the previous studies.20,23,24 It was possibly because this particular group covers the peak age of employability and there are lot many years ahead for visual rehabilitation whereas in older age-group patients, the requirement mainly remains for near tasks like watching television, reading newspapers, playing cards etc.

While going through the comparison of previous studies conducted in a developing country like Nepal and developed country like UK with the present study, it was found that patient’s mean age of the present study was consistent with Nepal study15 and was in contrast to UK (West Glamorgan) based study.16 Nepal and India share similar background as well as almost the same standard of living. So, both studies were by and large comparable. In contrast, there was a gross difference in the mean age of the patients of present study and UK study as enrolled patients in the latter were very old and more in number. It appeared that tertiary eye care services being available to each and every citizen in UK therefore the younger age patients usually do not reach to the stage of requirement of LV care.

The main causes of low vision were found to be Diabetic retinopathy, HMD, glaucoma and AMD, etc in the present study (Table 4.4). Diabetic retinopathy was the main cause of low vision amongst hospital patients (Table 4.5); it was possibly due to the reason that
most of the diabetic patients visit tertiary care hospital for their regular health check-ups which includes eye check-up inclusive of fundus examination. Glaucoma was the prime cause of low vision in case of community based patients (Table-4.6). Probably, the symptoms were being ignored due to lesser awareness in the community. The overall data was more or less consistent with the findings of the relevant studies.\textsuperscript{15,16,20,29,32} In contrast Kim J et al\textsuperscript{25} in Korea and Khan S A\textsuperscript{20} in India reported Optic atrophy and Retinitis pigmentosa to be the major cause of low vision in their studies. Consanguinity in the area appeared to be possible factor in these studies. Nevertheless, retinal diseases and glaucoma remained the major causes of LV in almost all the studies.

In the present study, preferred conventional LVD for near was stand magnifier (6X) in both hospital and community based low vision patients probably due to its higher magnification (Table-4.8). This preference and effectiveness of stand magnifier has been consistent with the report from China by Gao G et. al\textsuperscript{29} However, in another study spectacle magnifiers were preferred and the reported reason was that the hands remained free for other work.\textsuperscript{20} Gyawali et. al\textsuperscript{15} in Nepal included ‘refractive correction only’ as a LVD which actually could not be regarded as a LVD, thus possibly could not be considered for comparison with other studies.

In distance, (Table-4.7) monocular hand held Galilean Telescope (3X) due to its ease of usage, cost effectiveness and suitability to the patient were being largely accepted in our study which was in concurrence to Pakistan based study of Shah M et.al\textsuperscript{26} The choice of LVD is dependent on the cause of low vision also. The retinal diseases require higher magnifying LVDs like stand magnifiers, hand magnifiers, etc. while diseases affecting optic nerves require less magnification but wider field like prismatic spectacles, etc.

Only three patients were lost during the follow up and 97\% overall (95\% in hospital & 100\% in community based) completed their follow up successfully. It was found to be much more than the reported follow-up 52.2\% by Gyawali et. al\textsuperscript{15} and 56.8\% by Renieri G et. al.\textsuperscript{35} This higher rate of successful completion of follow-up was achieved by constant reminders leading to lesser drop-out rate.

On logMAR chart, statistically significant improvement of 0.62 log units (Table-4.14) in average distance VA was found in overall low vision patients of present study. However, the improvement in average distance VA reported by Gyawali et. al\textsuperscript{15} was 0.04 log units which was significantly lesser than the findings of the present one. When compared, the
improvement of average distance VA in both hospital (0.63 log units) and community (0.62 log units) based low vision patients was comparable and not statistically significant. During visual assessment with the prescribed LVD, three to four lines increase in near VA was statistically insignificant on comparison with one another in case of overall, hospital and community based low vision patients (Table-4.15) whereas only one line improvement was seen in Nepal study. This less improvement in near VA was most likely due to the fact that the ‘refraction correction only’ was prescribed as LVD by Gyawali et. al\textsuperscript{15} (Nepal study) whereas better magnifying LVDs were prescribed in the present study.

Maximum positive statistically significant (p<0.05) change in the various sub-scale scores after 1 month of prescribing of low vision devices was found in mental functioning (17.7 ± 10.9) and thereafter in near activities (13.2 ± 11.5) and followed by role limitations (13.1 ± 10.9) (Table-4.9). Increased level of self confidence, independency and mental balance were observed due to the increase in efficiency and capacity of the near activities like reading newspaper and documents etc. Similar significant changes were also seen in the hospital and community based data (Table-4.10 & 4.11). It was found to be in accordance to the report of Fintz A C et. al.\textsuperscript{34} The mean of the sub-scale-1 (general health) scores was exactly same during pre and post low vision services which could be due to the reason that the low vision devices had no direct impact on general health. Also a span of 1 month seemed too short for any significant change in health to occur. The Peripheral vision subscale mean score showed no significant change as peripheral vision enhancing LVDs are neither readily available nor practically useful. In addition, these devices are not beneficial for central vision while most of the time patients are concerned about their proper reading activities. Another insignificant change was observed in the mean score of driving subscale as most of the visually impaired patients had quit or lost interest in driving due to poor vision. Also they were probably not in a position to pass the driving proficiency test with the visual gain achieved through prescribed LVDs. As far as telescopes were concerned, these could not contribute to increase in driving skills rather led to decreased visual field. Most of the patients reported in their questionnaire that they have never driven any car (key factor: due to non-availability and non-affordability). Hence, there was no statistically significant change in all these sub-scales: general health, peripheral vision and driving. However, there were statistically significant changes in the rest of the nine subscales in the present study (Table-4.9).
Composite mean score of the present study (64.8±16.8) was found to be relatively higher than the Nepalese study (49.5±14.1). All sub-scale scores apart from driving sub-scale of the present study were higher than the corresponding scores of the Nepal study whereas the peripheral vision sub-scale scores (present study, 61±26.8; Nepal study, 63.6±21.9) were quite similar.\(^{15}\)

On the basis of the above discussion, the endeavour was made to explain the hypothesis so framed in section 1.9 of the Introduction chapter. The results of the study were very much consistent with the first hypothesis that significant improvement has been observed in the quality of life of low vision patients. The statistically significant (p<0.05) positive change was observed in nine out of twelve sub-scales and also in the composite scores after the introduction of low vision services at one month follow-up. Due to the dynamic nature of quality of life, its relationship with factors like general vision, near activities, distance activities, role limitations, etc. was expected to change over the time because each low vision patient had different adaptation period for getting used to any particular newly acquired LVD.

As far as the second hypothesis is concerned, the results were again consistent with the null hypothesis of hardly any difference in the quality of life (QoL) of low vision patients after undergoing hospital or community based low vision services. This was possibly due to the reason that the low vision patients had equal chance to visit either Government Medical College Hospital or its community health centres hence more or less similar improvement in the quality of life was observed in the two groups.

Although the people of Chandigarh have a better quality of life due to highest per capita income (US $ 9,345) on PPP (Purchasing Power Parity)\(^{46}\) in the region and ease of accessibility to all the basic and sophisticated health facilities but it was found that low vision patients in Chandigarh were possibly not aware of low vision services and thus they were devoid of the good quality of life which was however, possible by availing existing low vision services.

One of the limitations of the study was the adoption of non-probability sampling procedure. It was comparable to all previous studies where the same (consecutive sampling) was followed as the number of patients visiting the clinic cannot be predicted and limited. However, because of the specified set of inclusion/ exclusion criteria and source of the sample, probability sampling was not possible. The second limitation may
be that the follow up interview based questionnaire was asked a month later of getting low vision service/device which may be assumed as a relatively short span for following the instructions and getting used to the low vision device.

5.2 Summary & Conclusion

The study was conducted with an objective to know the impact of hospital and community based low vision services on the quality of life of low vision patients. In this prospective study, 111 overall low vision patients (66 hospital based and 45 community based) were consecutively enrolled and were subjected to low vision devices and services and also to NEI-VFQ-25 questionnaire during their first visit and at one month follow-up visit. The results were compared with paired ‘t’ test. The major findings of the study are summarised as below:

1. Maximum numbers of low vision patients were in 16-30 years age group in overall and in hospital based sample. However, in community based sample, patients in 46-60 years age group dominated.
2. There were 63 (57%) males & 48 (43%) females overall while 41 (62%) males & 25 (38%) females in hospital and 22 (49%) males & 23 (51%) females in community based sample.
3. The mean age overall was 47.2 ± 23.8 yrs. while in hospital & community based sample, it was 46.9 ± 24.5 yrs. & 47.6 ± 22.6 yrs. respectively.
4. Majority of overall patients were having Diabetic maculopathy (20, 18%) likewise major cause of low vision in hospital and community based sample was Diabetic maculopathy (13, 19.7%) and Glaucoma (8, 17.8%) respectively.
5. Optical LVDs were prescribed to majority 101 (overall), 60 (hospital) & 41 (community) low vision patients.
6. The preferred distance LVD was Monocular Galilean Telescope (hand-held) in overall (39), hospital (23) & community (16) based low vision patients. While the preferred near LVD was Stand magnifier 6X in overall (61), hospital (39) & community (22) based patients.
7. Compliance rate of the low vision patients was 97% in overall while 95% in hospital & 100% in community based low vision patients.
8. Overall maximum increase in the subscale mean score post LV service was in SC-7 (mental functioning) and it was found to be statistically significant in all sub-
scale scores except SC-1 (general health), SC-10 (driving) & SC-12 (peripheral vision).

9. In both hospital and community based patients, maximum change in sub-scale mean score post LV service was in SC-7 (mental functioning). Statistically significant (p<0.05) improved mean sub-scale score was in all sub-scales except SC-1 (general health), SC-10 (driving), SC-11 (colour vision) & SC-12 (peripheral vision) in hospital whereas in all except SC-1 (general health), SC-16 (social functioning), SC-10 (driving) & SC-12 (peripheral vision) in case of community based low vision patients.

10. Composite mean scores were increased significantly (p<0.05) in overall, hospital & community based low vision patients.

11. On LogMAR, average distance VA improvement was statistically significant (p<0.05) in respective overall (0.62 log units), hospital (0.63 log units) & community (0.62 log units) while it was statistically insignificant (p>0.05) when compared with one another. Three to four lines statistically significant (p<0.05) improvement in near VA was in overall, hospital & community based low vision patients.

Based on analysis of data and the results in the study following conclusions were drawn:

1. Low vision services were quite effective in improving the quality of life of low vision patients.

2. Low vision services (with proper publicity) had similar impact on the quality of life of hospital and community based low vision patients.

3. Conventional LVDs like Stand magnifier, monocular Galilean telescope (hand-held), etc. were equally effective and user friendly.

4. Patient counselling & rehabilitation were very important elements for the effectiveness of low vision services.

5. Patient’s compliance and response were equally important factors for the effectiveness of low vision service.

On the basis of above conclusions, it may be suggested that there is an urgent need of availability of organised low vision services through the central agency NPCB with logistic support of government institutions and NGOs not only in teaching hospitals but also at district level hospitals. Low vision practice amongst eye care professionals (especially Optometrists) must be encouraged and more and more Optometrists should be
trained in this speciality. Also, there is a need of proper publicity of the existing low vision services by highlighting its availability through media. The other important matter is to improve the accessibility of LVDs at affordable low cost to the needy low vision patients. This is likely to make a significant improvement in the quality of life of all the indicated visually impaired patients in India which will further help in achieving goals of NPCB and Vision 2020.