

Original Research Article**Is online medical information an option to effective patient counselling?****ABSTRACT**

AIM: To assess the effects of internet search on patient knowledge regarding ocular conditions, its effectiveness comparable to counselling which considered to be gold standard.

METHODS: We enrolled consecutive patients freshly diagnosed for glaucoma and diabetic retinopathy. We randomized all patients in two groups Internet and Counselling Groups. The patients were asked to fill in a pre- tested questionnaire. One group was given pre-tested keywords for search on Internet and other group was counselled. On next visit, the patients were asked to fill the same questionnaire. All answers were documented in the form of numerical score and studied stastically. Data was analysed using frequency and cross tabulation p value <0.05 considered as significant.

RESULTS: We enrolled 123 individuals including 84(68.3%) males, 39 (31%) females having mean age 58 ± 13.3 . When we compared pre- and post- intervention scores we found significant difference in total as well as in individual groups. ($p=0.040$) When we compared we did not find any stastically significant difference amongst two groups ($p=0.341$)

CONCLUSION: Internet Search is effective tool for public health education. It is as effective as counselling for this purpose.

Key words: Counselling; Google search; Search engine results

29 INTRODUCTION:

30 Public health education is important tool to influence behavioural changes towards
31 health.(1,2) Counselling is very successful method to educate person regarding his/her
32 diseases its effects and benefits by adopting particular behaviour(3,4) Counselling has helped
33 to improve behaviour towards various disorders in various parts of world.(3-7)

34 It is an undeniable fact that both computers and the Internet have become one of the
35 most important achievements of modern society. They bring their own revolution in human
36 daily life (science, education, information, entertainment etc.) eliminating the distances and
37 offering immediate and easily access to information and communication. (8)

38 Today's technology provides new ways in health care. The Internet, especially the
39 World Wide Web, has a wealth of health-related information easily accessible to patients and
40 families. GOOGLE™ search engine listed more than 90% of all web-pages available online
41 on the web. Its popularity has increased, and it has now become a source of patient education
42 and information, although it is unregulated for the quality of its search results. (9)

43 METHOD:

44 The study was approved by the hospital ethics committee. This study was
45 conducted at a tertiary care eye hospital located at central western India. This
46 was a randomised controlled study.

47 We have included patients freshly diagnosed with glaucoma and diabetic
48 retinopathy.

49 A pre-tested questionnaire was filled by all patients, and they were
50 divided in to two groups - Counselling and Internet Search (Google search).
51 This is base score suggesting patient initial knowledge about their medical
52 condition. A qualified counsellor educated the Counselling Group using
53 different graphics and for the Internet Search group various keywords leading to
54 reliable information. After being educated with either of activities, similar
55 questionnaire was filled by the patients, and the forms were evaluated for score
56 and entered in Excel sheet which was exported in to SPSS 22 and analysed
57 using student t-test and cross tabulation. We compared pre- and post-

58 intervention scores for all patients, Counselling Group and Internet Search
59 group.

60 We enrolled 123 persons with mean age 58+/-13.3,
61 out of which 84(68.3%) male and 39 (31%)
62 female, 73(59.3%) enrolled in counselling group
63 and 53(43%) enrolled in google group. (Table-1)

64 We studied pre- and post-intervention score and
65 found stastically significant difference. ($p=0.000$,
66 Table-2)

67 We studied pre- and post-intervention score in the
68 Counselling and Internet Search group and found
69 significant difference. (Tables-3, 4)

70 We compared post intervention score between
71 Counselling , and Internet Search group and did
72 not find any difference explaining that both groups
73 are equally effective. Table-5, $p=0.341$)

74 When we studied post-intervention score with
75 basic education variables we found significant
76 difference. (Table-6 $p=0.040$)

77 We studied other variables such as gender, age,
78 religion, socio economic aspects and did not find
79 any significant difference ($p=0.505$, 0.435 , 0.566
80 and 0.640)

81
82 DISCUSSION: Patient education is a process of influencing behaviour rather
83 than only giving information (10, 11)

Patient education may be done using various methods but counselling has been found to have desirable impact for various conditions and various parts of world. (3-7)

As we have discussed Internet-based search is also a method for public education, which will cause self-learning and behavioural changes in society (8, 9)

An Internet-Google educational intervention is presented here as an alternative to the gold-standard counsellor-patient education. The primary reason being, it would decrease workload of counsellors, provide patients and their caretaker/relatives with increased access to information. (Table-3)

Hoffman et al reported overhydration advice on internet. (9)

We have provided guided key words for internet search for proper information which will ensure quality of information. Other studies reflected concerns regarding quality and reliability of information (9)

We used only Google search engine for this study but Liupu Wang et al has compared various search engines like google, Bing, Ask and Yahoo for their study without any significant difference.(13)

Marianna Diomedes et al reported various social and psychological ill effects of internet use like cyberbullying, cyber suicide, online grooming, internet addiction and scams(8)

Counselling need lots of resources like trained human resources and time to have one-to-one discussion internet based information may save this resources and cover larger population.

Internet use for medical information can influence patient's treatment decision, anxiety level, and understanding of their disease. Caregivers must recognize the growing trend of Internet use and should counsel and educate their patients

appropriately based on what they have read to help them accurately appreciate the nature of their disease. (14)

The increased use of medical websites by patients raises important issues regarding the need for quality control, and impacts significantly upon the doctor-patient relationship. (8)

Conclusion: Internet-based online public health education can be an effective method with guided search and proper quality control of accessible data.

- **This study is not presented at any conference or meeting**
- **No conflicting relationship exists for any author.**

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191 TABLE- 1 AGE AND SEX DISTRIBUTION

AGE	GENDER		TOTAL
	FEMALE	MALE	
10 TO 20	0	3	3
21 TO 30	1	2	3
31 TO 40	3	6	9
41 TO 50	4	7	11
51 TO 60	8	26	34
61 TO 70	19	27	46
>70	4	13	17
TOTAL	39	84	123

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TABLE-2 COMPARATIVE STUDY OF PRE AND POST INTERVENTION SCORE

TOTAL SCORE POST_TEST	TOTAL SCORE PRE_TEST									TOTAL
	1	2	3	4	5	6	7	8	9	
6	2	2	1	2	0	0	0	0	0	7
7	0	2	1	0	1	3	2	0	0	9
8	0	2	2	2	5	4	0	0	0	15
9	2	4	4	12	7	21	1	2	1	54
10	0	7	5	5	10	7	4	0	0	38
TOTAL	4	17	13	21	23	35	7	2	1	123

194 P=0.040

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204 TABLE-3 COMPARATIVE STUDY OF PRE AND POST INTERVENTION SCORE IN
205 COUNSELLING GROUP

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TOTAL SCORE POST_TEST	TOTAL SCORE PRE_TEST									Total
	1	2	3	4	5	6	7	8	9	
6	0	1	1	1	0	0	0	0	0	3
7	0	2	1	0	1	3	0	0	0	7
8	0	1	1	1	1	4	0	0	0	8
9	1	3	3	2	3	12	0	2	1	27
10	0	5	4	3	8	3	2	0	0	25
Total	1	12	10	7	13	22	2	2	1	70

207 P=0.000

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210 TABLE-4 COMPARATIVE STUDY OF PRE POST INTERVENTION IN GOOGLE GROUP

TOTAL SCORE POST_TEST	TOTAL SCORE PRE_TEST							Total
	1	2	3	4	5	6	7	
6	2	1	0	1	0	0	0	4
7	0	0	0	0	0	0	2	2
8	0	1	1	1	4	0	0	7
9	1	1	1	10	4	9	1	27
10	0	2	1	2	2	4	2	13
Total	3	5	3	14	10	13	5	53

211 P=0.001

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217 **TABLE- 5 COMPARATIVE STUDY OF POST INTERVENTION SCORE AMONGST**
 218 **GROUPS**

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TOTAL SCORE POST_TEST	METHOD		TOTAL
	COUNSELLED	GOOGLE	
6	3	4	7
7	7	2	9
8	8	7	15
9	27	27	54
10	25	13	38
TOTAL	70	53	123

220 P=0341

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222 **TABLE-6 COMPARATIVE STUDY OF POST INTERVENTION SCORE WITH BASIC**
 223 **EDUCATION**

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TOTAL SCORE POST_TEST	EDUCATION					
	GRADUATE	ILLITERATE	MATRIC	POST GRADUATE	UP TO 5 STD	TOTAL
6	0	1	2	1	3	7
7	2	5	1	0	1	9
8	0	4	5	0	6	15
9	10	9	18	4	13	54
10	11	1	18	3	5	38
TOTAL	23	20	44	8	28	123

225 P=0.01

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233 **Figure-1 QUESTIONNAIRE**

Mark (✓) in appropriate box

	QUESTIONNAIRE	Yes	No	Can't say
1	Is it vision threatening condition?			
2	Glaucoma is same as cataract?			
3	Glaucoma results from (a) Maturity of cataract ☐ (b) uncontrolled sugar level ☐ (c) high <u>intraocular pressure</u> (IOP) and Pressure damage to nerve of vision ☐ (d) its age related things ☐			
4	Risk factors of glaucoma ☐ Obesity ☐ Steroids ☐ Chronic Smoking and Alcohol intake ☐ Family history			
5	Glaucoma has familial predisposition?			
6	What defect it can have if not treated? ☐ None ☐ gradual vision diminution < nothing to worry about> ☐ vision loss <complete blindness> ☐ acute red painful blind eye < a dreadful eye condition> ☐ vit haemorrhage/retinal detachment <problems to retina>			
7	Is blindness (vision loss) can be prevented? Is treatment required?			
8	Is Treatment possible? Is it treatable?			
9	TREATMENT OPTION AVAILABLE: (a) glasses ☐ (b) topical eye drops ☐ (c) surgical procedure ☐ (d) nothing can treat IT ☐			
10	Do you know your condition needs frequent follow up visits / lifelong medication?			