Level of adherence & prescribing pattern of glaucoma medication among glaucoma patients in Lamahi Eye Hospital, Nepal: A Cross-sectional study

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Introduction

- 2nd leading cause of irreversible blindness in the world
- About 80million peoples in world and 1.80% of prevalence in Nepalese people.
- Effectiveness of treatment heavily relies on patient adherence to prescribe medications.
- Adherence to medication is crucial for good clinical outcomes and prevention of disease complication.

Objectives

- To determine the level of adherence & prescribing pattern of glaucoma medication among glaucoma patients

- To determine the association between medication related factors and medication adherence

Method

- **Study design:** Cross-sectional were used in this study
- **Study site:** Lamahi Eye Hospital, Dang district, Nepal
- **Study Population:** To diagnosed with glaucoma and undergoing follow-up visit at OPD of Lamahi Eye Hospital.
- **Sample size:** 379 glaucomic patient of newly and follow-up were selected by consecutive sampling**.**

Sample size & Sampling technique

- Calculated sample size**: n=379**
- Consecutive sampling was used to select the sample
- Inclusion criteria
  - Patients aged 18 years and above having medical history of glaucoma and undertaking glaucoma medication.
- Exclusion criteria
  - Patients who had undergone laser or surgical glaucoma therapy and mentally impaired patients.

Data collection process

After ophthalmologist diagnosis of glaucoma patients, were selected in our study.

Pts glaucoma were selected by consecutive sampling method in OPD in Lamhi eye hospital

Before data collection, written consents were obtained from each pts.

Demographics & other required information were collected from Pts OPD card.

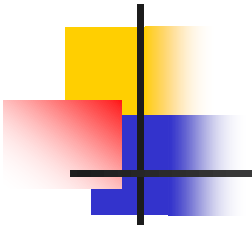
Data collection process cont…

Level of adherence were identified using Nepali version of 8 items Morisky Medication adherence Scale (MMAS-8). .

- "High/medium adherence"(MMAS-8 score ≥ 6)=0
- "Low adherence (MMAS-8 score < 6) =1"

Demographic and other information were enter into MS Excel and transformed in to SPSS .

To analyzed to perform of : mean and standard deviation (SD), Chi-square test, logistic regression.



RESULT

Demographic details of glaucoma patients

Characteristics	No. of pts (n=379)	(%)
Age-wise distribution(years)		
Less than 20	12	3.2
21-30	42	11.1
31-40	38	10.0
41-50	63	16.7
51-60	71	18.7
61-70	96	25.3
Greater than 70	57	15.0
Gender-wise distribution		
Male	189	49.9
Female	190	50.1

Demographic details of glaucoma patients cont...

Characteristics	No. of pts	(%)
Education wise distribution		
Primary	56	14.8
Secondary	122	32.2
Higher education	68	17.9
Illiterate	127	33.5
Informal	6	1.6
Races wise distribution		
Brahmin	73	19.3
Chhetri	76	20.1
Newar	5	1.3
Mongolian	66	17.4
Tharu	93	24.5
Others	66	17.4

Demographic details of glaucoma patients cont...

Characteristics	No. of pts	(%)
Occupation-wise distribution		
Farmer	76	20.1
Housewife	122	32.2
Business	99	26.1
Service	43	11.3
Others(Student, Retired)	39	10.3
Marital status		
Unmarried	48	12.7
Married	331	87.3

Demographic details of glaucoma patients cont..

Characteristics	No. of pts	(%)
Types of Glaucoma		
Primary Open Angle Glaucoma	326	86.0
Primary Angle Closure Glaucoma	24	6.3
Normal Tension Glaucoma	26	6.9
Congenital Glaucoma	3	0.8
Duration of Glaucoma		
Newly diagnosed	27	7.1
Less than 1 year	143	37.7
1-5 Years	202	53.3
Greater than 5 years	7	1.8
Visual acuity		
Normal	210	55.4
Low	169	44.6

Therapeutic classification of glaucoma prescribed drug

Therapeutic categories	Classes of drugs		No of drugs	Total no of drugs (n=674)
Drug acting on ANS	Miotics	Pilocarpine	1(0.14%)	466 (69.1%)
	α-agonist	Brimonidine	226(33.53%)	
	β-blocker	Timolol	239(35.45%)	
Autacoids and related drugs	Antihistamine	Olopatidine	1(0.14%)	142 (21.1%)
	Prostaglandin analogues	Bimatoprost	137(20.32%)	
		Latanoprost	2(0.29%)	
	NSAID	Ketorolac	1(0.14%)	
		Flubiprofen	1(0.14%)	
Hormones and related drugs	Cortico-steroids	Prednisolone	4(0.59%)	7 (1.0%)
		Fluoro-metholone	2(0.29%)	
		Dexamethasone+ Chloram-phenicol	1(0.14%)	

Therapeutic classification cont……

Therapeutic categories	Classes of drugs		No of drugs	Total no of drugs
Diuretic	Carbonic anhydrase inhibitor	Dorzolamide	18 (2.67%)	31(4.6%)
		Acetazolamide	13 (1.92%)	
Supportive and Symptomatic Therapy	Lubricants	Carboxymethyllcellulose	24 (3.56%)	28(4.2%)
		Polyethylene glycol +Propylene Glycol	2 (0.29%)	
		Polyvinyl alcohol +Povidone	2 (0.29%)	

Therapeutic category of common of antiglaucoma medication

Therapeutic category	Name of drug	No of drugs (N=636)
β-blocker	Timolol	239(37.6)
Prostaglandin analogues	Bimatoprost	137(21.5)
	Latanoprost	2(0.3)
α-agonist	Brimonidine	226(35.5)
Miotics	Pilocarpine	1(0.2)
Carbonic anhydrase inhibitor	Dorzolamide	18(2.8)
	Acetazolamide	13(2.0)

Assessment of medication adherence by using MMAS- 8 Scale in Glaucomic Pts

MMAS-8 measuring item descriptions	Adherence response Level (n%)		Mean (±Score)
	Yes	No	
Do you sometimes forget to take your Glaucoma medication(s)?	124 (32.7%)	255 (67.3%)	0.67 ± 0.47
People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your Glaucoma medication(s)?	23 (6.1%)	356 (93.9%)	0.94 ± 0.24
Have you ever cut back or stopped taking your glaucoma medication(s) without telling your doctor, because you felt worse when you took it?	05 (1.3%)	374 (98.7%)	0.99 ± 0.11
When you travel or leave home, do you sometimes forget to bring along your Glaucoma medication(s)?	189 (49.9%)	190 (50.1%)	0.50 ± 0.5

Assessment of medication adherence by using MMAS- 8 Scale in Glaucomic Pts cont……

MMAS-8 measuring item descriptions		Adherence response Level (n%)		Mean (±Score)
		Yes	No	
Did you take your Glaucoma medication(s) yesterday? (Or the last time you were supposed to take it?)		360 (95%)	19 (5.0%)	0.95 ± 0.22
When you feel like your Glaucoma is under control, do you sometimes stop taking your medication(s)?		07 (1.8%)	372 (98.2%)	0.98 ± 0.13
Taking glaucoma medication(s) every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your Glaucoma treatment plan?		29 (7.7%)	350 (92.3%)	0.92 ± 0.27
How often do you have difficulty remembering to take all your medication(s)?	Naver/Rarely		257 (67.8%)	0.84 ± 0.22
	Once in a while		12 (3.2%)	
	Usually,		105(27.7%)	
	All the time		5 (1.3%)	
Overall MMAS-8 mean score				**6.79 ± 0.30**

Relationship between demographic characteristics & medication adherence

Variable	Patients No N (%)	Medication adherence		p-value
		Good adherence	Poor adherence	
Age				
18-20	12(3.2)	12 (100.0)	0	**<0.001****
21-30	42(11.1)	41(97.6)	1(2.4)	
31-40	38(10.0)	33(86.8)	5(13.2)	
41-50	63(16.6)	45(71.4)	18(28.6)	
51-60	71(18.7)	46(64.8)	25(35.2)	
61-70	96(21.1)	67(69.8)	29(30.2)	
>70	57(19.3)	35 (61.4)	22(38.6)	
Gender				
Male	189 (49.9)	143(75.7)	46(24.3)	0.367
Female	190 (50.1)	136 (71.6)	54(28.4)	

Relationship between demographic characteristics & medication adherence cont…

Variable	No. Pts N (%)	Medication adherence		p-value
		Good adherence	Poor adherence	
Education Level				
Primary	56 (14.8%)	35 (62.5%)	21(37.5%)	**<0.001****
Secondary	122(32.2%)	98(80.3%)	24(19.7%)	
Higher	68(17.9%)	60(88.2%)	8(11.8%)	
Illiterate	127(33.5%)	82(64.6%)	45(35.4%)	
Informal	6 (1.6%)	4 (66.7%)	2(33.3%)	
Marital status				
Unmarried	48 (12.7%)	46 (95.8%)	2(16.7%)	**<0.001****
Married	331 (87.3%)	233 (70.4%)	98(29.6%)	

Relationship between demographic characteristics & medication adherence cont...

Variable	N (%)	Medication adherence		p-value
		Good adherence	Poor adherence	
Types of Glaucoma				
Primary Open Angle Glaucoma	326(86.0%)	243(74.5%)	83(25.5%)	0.748
Angle Closure Glaucoma	24(6.3%)	17(70.8%)	7(29.2%)	
Normal Tension Glaucoma	26 (6.9%)	17 (65.4%)	9(34.6%)	
Congenital Glaucoma	3 (0.8%)	2 (66.7%)	1(33.3%)	

Relationship betn demographic characteristics & medication adherence cont…

Variable	N (%)	Medication adherence		p-value
		Good adherence	Poor adherence	
Races				
Brahmin	73 (19.3)	59 (80.8)	14(19.2)	0.392
Chhetri	76 (20.1)	56(73.7)	20(26.3)	
Newar	5 (1.3)	2(40.0)	3(60.0)	
Mongolian	66(17.4)	47(71.2)	19(28.8)	
Tharu	93(24.5)	67(72.0)	26(28.0)	
Others	66 (17.4)	48 (72.7))	18(27.3)	
Duration of Glaucoma				
Newly diagnosed	27 (7.1)	21 (77.8)	6(22.2)	0.558
Less than 1 year	143(37.7)	109(76.2)	34(23.8)	
1-5 years	202 (53.3)	145 (71.8)	57(28.2)	
Greater than 5 years	7 (1.8)	4 (57.1)	3(42.9)	
Visual acuity				
Normal	210 (55.4)	164 (78.1)	46(21.9)	**0.027***
Low	169 (44.6)	115 (68.0)	54(32.0)	

Relationship between medication related factors and medication adherence of patients

Variable	N (%)	Medication adherence		p-value
		Good adherence	Poor adherence	
Medication number				
One	190 (50.1)	148 (77.9)	42(22.1)	0.058
≥Two	189 (49.9)	131 (69.3)	58(30.7)	
Other medication				
Yes	38 (10.0)	26 (68.4)	12(31.6)	0.444
No	341 (90.0)	253 (74.2)	88(25.8)	
Comorbidity				
Yes	134 (35.4)	85 (63.43)	49(36.6)	**<0.001****
No	245 (64.6)	194 (79.2)	51(20.8)	

Multivariable logistic regression analysis of factors associated with medication adherence

Variables	Medication adherence		Univariate Logistic Regression		Multivariable Logistic Regression	
	Good adherence	Poor adherence	COR (95% CI)	P-value	AOR (95% CI)	P-value
Age						
≤50	131(84.5)	24(15.5)	2.803 (1.674-4.694	<0.001	1.591 (0.886-2.856	0.120
>50	148(66.1)	76(33.9)	1		1	
Education level						
Literate	197(78.2)	55(21.8)	1.966 (1.228-3.147)	0.005	1.455 (0.888-2.383)	0.137
Illiterate	82(64.6)	45(35.4)	1		1	
Marital Status						
Single	46(95.8)	2(4.2)	9.674 (2.303-40.637)	<0.001	4.949 (1.109-22.092)	0.036*
Married	233(70.4)	98(29.6)	1		1	

Multivariable logistic regression analysis of factors associated with medication adherence cont……

Variables	Medication adherence		Univariate Logistic Regression		Multivariable Logistic Regression	
	Good adherence	Poor adherence	COR (95% CI)	P-value	AOR (95% CI)	P-value
Visual acuity						
Normal	164(78.1)	46(21.9)	1.674 (1.057-2.652)	0.027	1.189 (0.720-1.965)	0.499
Low	115(68.0)	54(32.0)	1		1	
Comorbidity						
Yes	85(63.4)	49(36.6)	1		1	
No	194(79.2)	51(20.8)	2.193 (1.374-3.500)	<0.001	1.718 (1.054-2.802)	0.030*

COR; Crude odds ratio, AOR; Adjusted odds ratio, CI; Confidence interval
*** indicated p value<0.05**

Limitation

- Firstly, the data of medication adherence and prescribing pattern was taken only from one eye hospital.

- This may not be representative to community pharmacy in Nepal which is the limiting factor for extrapolation of result

Recommendation

- To develop health education and community-based healthcare intervention initiatives.

- To promote disease awareness and improve adherence to therapy in chronic disease patients.

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- To recommend similar research at eye hospital for multiples centers.

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Conclusion

- The study suggested that the level of adherence to the antiglaucoma medication is about sub-optimal (73.6 %).
- Moreover, marital status and comorbidity are associated with better medication adherence.
- whereas the commonly prescribed antiglaucoma drugs was β-blockers (37.6%) followed by α-agonist (35.5%).


Thank You