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Patient Medication Adherence to Hypertension therapy in Tertiary care Hospital of Tropical western Region of Nepal

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Abstract: *Background:* The study was carried out to obtain socio-demographic profile of hypertensive patients and to measures the medication adherence using Morisky Medication Adherence Scale (MMAS-8). *Methodology:* The study was carried out in Out Patient Department (OPD) of Medicine in Universal College of Medical Sciences, Bhairahawa, Nepal. The random samples of 673 patients were enrolled in the study those who were already using Hypertension Medicines. The data were collected primarily by self-administered questionnaires and pre and post adherence were compared using Morisky Medication adherence scale. *Results:* The results showed that the elderly patients of age 51-60 years and smokers were hypertensive. The post test has improved medication adherence than the pre test experimental. The missed pills, the bad perception regarding disease, medicines use will be corrected by counseling. The results shows that forget to bring medications while travelling is improved to 100 % after counseling and motivation. It also showed that the patients stopped medication without telling doctors improved adherence from 1.040 to 0.297 after counseling. *Conclusion:* Our study concluded that elderly people with drinking alcohol regularly, non vegetarian's life style has not only the risk of hypertension and cardiovascular diseases but also leads to poor adherence to the therapy. Counseling has good impact for these patients. All the eight factor of Morisky adherence scale has improved after counseling and motivation in the study.

Keywords: Adherence, Hypertension, Blood pressure, Morisky Medication Adherence Scale, Western Nepal

Introduction

Medication adherence is defined by the World Health Organization as "the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider [1]. The success of the treatment is determinants of patient adherence. Failure to adherence is the major problem in the country which leads to substantial worsening of disease, death and increased health care costs [2].

The chronic illness like hypertension, diabetes mellitus, heart diseases etc. requires long term Pharmacotherapy. There are various factors contributing to poor medication adherence. They are patient related factors like the patient's ability to read and understand medication instructions. Patients with low literacy may have difficulty understanding instructions; this ultimately results in decreased adherence and poor medication management [3]. Physician related factors like the report of the study revealed that 40-60% of patients could not correctly report what their physicians expected of them 10-80 minutes after they were provided with the information this leads to the discouragement of the use of medication and leads to poor adherence [4-5] and health care systems which includes lack of proper counseling and motivation for the effective use of medicines specifically include poor provider-patient communication, inadequate knowledge about a drug and its use, not being convinced of the need for treatment, fear of adverse effects of the drug, long term drug regimens, complex regimens that require numerous medications with varying dosing schedules which are the important factors that results in poor adherence [6].

Hypertension is defined conventionally as a sustained increase in blood pressure ≥140/90 mm Hg, a criterion that characterizes a group of patients whose risk of hypertension-related cardiovascular disease is high enough to merit medical attention [7]. Globally Hypertension is the most common non-communicable diseases which results in more than 26% of

the adult populations have been diagnosed as having hypertension globally and the prevalence of hypertension is seen in elderly as in the increases with age [8]. Hypertension is also one of the major causes of premature death and 7.1 million of people die from hypertension related diseases annually [9].

A study in Nepal has reported a prevalence of hypertension ranging from 18.8% to 41.8% reported from 1981 to 2006 in the Bhadrabas village area of Kathmandu valley. Due to their inability to afford the long-term treatment poor people are most vulnerable to the burden of hypertension and other Non Communicable Diseases. Due to Hypertension, one of the major risk factors for CVD, was estimated to be present in 27.8% of Nepalese adults aged 25 years and above. Due to these reasons rapid enactment of an integrated national policy, and effective prevention and control of hypertension is required. This demands appropriate training and mobilization of the health workforce including community -based health volunteers [10].

Hypertension in Nepal: Nepal is an extreme topography, with flat lands in the south and mountains in the north, which pose a challenge to development efforts. Due to growth of population the non communicable diseases burden is increasing day by day. Regarding hypertension which is one of the major risk factors for cardiovascular diseases (CVD) which was estimated to be present in 27.8% of Nepalese adults aged 25 years and above. Because of the lack of reliable national data, these are World Health Organization (WHO) estimates using data from other countries and country-specific characteristics. Due to limited prevalence of hypertension studies from Nepal in the past decade indicate a comparable prevalence and agreement with the general trend of increase in CVD and its risk factors over the years. Hence the high prevalence of a major cardiovascular diseases (CVD) risk factor poses unique challenges to the current health-care system in Nepal [11].

Material and Methods

Study Design: This study was carried out in Universal College of Medical Sciences, Teaching Hospital Bhairahawa, Rupendehi. The study was carried out in the Outpatient Department (OPD) of Medicine Department. The research was approved by Instutional Review Committee (IRC). The survey method was the basis for the determination of the characteristics of the population. The random samples of 673 patients were enrolled in the study those who are already using Hypertension Medicines.

The sample was estimated as per Cost basis approach. The data were collected primarily by self-administered questionnaires. The eligible patients were invited to complete a self-administered questionnaire as per Patient information form. The questionnaires were developed in simple Nepalese language and the validation was done as peer the past events. The self administered questionnaires includes basic socio-demographic profile, self-perceived health status, the details about the medication, drinking/smoking habits and self-reported medication adherence. The medication adherence was measured as per Morisky's Medication adherence scale [12].

All the patients diagnosed with hypertension and under medication with one or more antihypertensive agents of age above 20 years were the inclusion criteria in the study. Both male and female patients were participated in the study. The medication adherence was carried out in randomized pre and post test adherence [13]. The psychometric properties of an eight item medication adherence were measured. After the pre test, Need Assessment survey was done, counseling and motivation was given to the patient to evaluate the improved results of adherence and post test adherence was measured after need counseling. As the patients lack any one factors of eight item Morisky medication adherence all the patients enrolled requires counseling and motivation. The results were calculated and they were compared. The patients after the counseling and motivation were called after 15 days. During the study process 68 patients were not available for post test due to large distance from home to hospital. Those 68 patients were educated above SLC level so after counseling, need assessment survey showed that there is no need of post test.

Medication adherence measurement tools: Patient's information form was developed to obtain socio-demographic profile, self-perceived health status, the details about the medication, drinking/smoking habits and self-reported medication adherence. The questionnaires were arranged in the open ended questionnaire form. Morisky Medication adherence scale scale was used to measure the pre adherence and post adherence. Counseling was done based on the American society of health system pharmacists guidelines on pharmacist conducted patient education and counseling.

Statistical analysis: The collected data was reviewed, coded, verified and statistically analyzed using the Statistical Package for Social Sciences (SPSS) version 17. Descriptive statistics for all studied variables and chi-square test was used. A p-value of < 0.05 was considered significant throughout the study. The reliability of the 8 item scale was derived and statistical procedure described by Cronbach [14].

Results

Basic characteristics of the study population: A total of 673 patients were enrolled in the study and it found out that majority of the patients 41.30% were in the age group of 51-60 year, followed by 27.6% were 41-50 year, 61-70 year 16.05% and 71+ year 9.21 %, 31-40 year 3.27 and 21-30 year 2.53%. And the mean age of the patient was found to be 52.90±16.365 years.

Table-1: Socio -demographic characteristics of Hypertensive patients (Mean age of the study population = 52.90±16.365 years)

Variables	Frequency	%age
Age range of patients in(years)		
21-30	17	2.53
31-40	22	3.27
41-50	186	27.6
51-60	278	41.30
61-70	108	16.05
71+	62	9.21
Gender of the patient		
Male	289	42.94
female	384	57.09
Race of the patient		
Brahman	123	18.28
Chhetri	162	24.07
Newar	56	8.32
Mongolian	244	36.26
Madhesi	54	8.02
Tharu	34	5.05
Occupation of the patient		
Unemployed	105	15.60
Private Job holder	144	21.39
Government Job holder	308	45.76
Housewife/man	116	17.23
Education of the patient		
Uneducated	44	6.54
Under S.L.C.	79	11.74
S.L.C.	248	36.84
Above S.L.C.	302	44.87
Marital status of the patient		
Married	141	92.2
Unmarried	12	7.8
Drinking habit of the patient		
No alcoholic	66	9.81
Regular alcoholic	438	65.08
Occasional alcoholic	32	4.75
Former alcoholic	137	20.36
Smoking habit of the patient		
Non Smoker	525	78.01
Smoker	148	21.99
Food habit of the patient		
Vegetarian	634	94.21
Non Vegetarian	39	5.79

Table-2: Antihypertensive medicine related characteristics of the study population

Anti-hypertensive drug used by the patient	Frequency	%age
Amlodipine	101	15.007
Losartan Potassium+hydrochlorthiazide	148	21.991
Amlodipine+ Atenolol	255	37.890
Amlodipine+hydrochlorthiazide	120	17.830
Atenolol	7	1.040
Metoprolol	12	1.783
propranolol	4	0.594
Losartan potassium	6	0.891
Enalapril	30	4.457

The gender distribution of the study found out that 57.09% patients were female and 42.94% patients were male. Among the races enrolled in the study 18.28% were Brahmans, 24.07 % were Chhetri, 8.32 % were Newar, 36.26 % were Mongolian, 8.02 % were Madhesi and 5.05 % were Tharu. The occupation status of the patient, the study found that unemployed patients were 15.60 %, government job holder were 45.76, private job holder were 21.39 % and housewife patients were 17.23. Regarding the educational status the patient enrolled in the study 6.54% were found to be uneducated, 44.87% were educated above S.L.C., 11.74 % were educated under S.L.C and 36.84 % were educated upto S.L.C. Regarding the marital status of patient 92.2% was married and 7.8 %were unmarried. In context of drinking habit of the patient, this study found that 65.08 % were regular alcoholic, 20.36 % were former alcoholic, 4.75 were occasional alcoholic and 9.81 % were not consuming alcohol. The study also found that 78.01 % of the patients were non smoker and 21.99 % were smoker whereas 94.21 % patients were non vegetarian and 5.79 % of the patients were found to be vegetarian.

Table-3: Comparison of Medication adherence before intervention and after intervention

Characteristics N=673	Before Intervention Percentage	After Intervention Percentage	P value
Missed pills by patients			0.000188
Never	76.08	93.91	
Once	14.41	5.19	
Twice	8.32	0.45	
Sometimes	1.19	0.45	
Patient perception to the therapy			0.00165
Well	84.39	97.77	
Not well	8.77	2.23	
Any side effects observed by the patient			0.000235
No	96.58	96.58	
Yes	3.42	3.42	
Patients able to understand label in medicine			0.00158
Yes	71.03	98.37	
No	28.97	1.63	
Patient remember the pills to take in time			0.0123
Yes	76.08	93.91	
No	23.92	6.09	
Patient refills in time			0.0000197
Always	90.94	99.55	
Sometimes	9.06	0.45	

Table-4: Morisky Medication Adherence scale (MMAS-8) Pre and Post intervention			
Character /MMAS-8	**Corrected item to total correlation (Pre test)**	**Corrected item to total correlation (Post test)**	**P value ANOVA**
Do you sometimes forget to take your high blood pressure pills?	0.594	0.149	0.00049
Over the past two weeks, were there any days when you did not take your high blood pressure medicine?	0.89	0.149	0.00001437
Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it?	1.040	0.297	0.0000188
When you travel or leave home, do you sometimes forget to bring along your medications?	0.297	0	0.000165
Did you take your high blood pressure medicine yesterday?	0	0	0.00156
When you feel like your blood pressure is under control, do you sometimes stop taking your medicine?	0.446	0.297	0.00000109
Taking medication everyday is a real inconvenience for some people. Do you ever feel hassled about sticking to your blood pressure treatment plan?	1.337	0.594	0.00163
How often do you have difficulty remembering to take all your blood pressure medication?	0.297	0.149	0.00035
Alpha reliability is 0.86			

Results are expressed as Mean ± SEM. Indicates P value less than 0.005. Indicates P value is less than 0.005 when compared to standard set (Highly significant).

Similarly Morisky Medication adherence scale (MMAS 8) scale was used to measure the pre adherence and post adherence experiment. The alpha reliability is found to be 0.86. The results of post test showed improved adherence than to that of pre test experiment. All the eight item results express that the counseling has a great impact in the improvement of medication adherence. The missed pills can be improved; the bad perception regarding disease, medicines use will be corrected by counseling. The results shows that forget to bring medications while travelling is improved from 0.297 to 0 after counseling and motivation. It also showed that the patients stopped medication without telling doctor because feeling of worse after taking medication is improved adherence from 1.040 to 0.297 after counseling. So we can say that counseling regarding role of medicines use and disease knowledge should be clearly illustrated to the patients.

Discussion

Various researches have been carried out in medication adherence. Researcher on the adherence of antihypertensive treatment has showed that patient's non adherence to medication is related to Socio-demographic, Races, organizational, psychological and medication-related variables. 23, 24 Hypertension, one of the major risk factors for CVD, was estimated to be present in 27.8% of Nepalese adults aged 25 years and above [15].

In our study the results revealed that majority of the patients 41.30% were in the age group of 51-60 year, followed by 27.6 % were 41-50 year, 61-70 year 16.05% and 71+ year 9.21 %, 31-40 year 3.27 and 21-30 year 2.53%. And the mean age of the patient was found to be 52.90 ± 16.365 years. The results show that the hypertension risk is majorly in the patients of elderly age. So we should concern about the eating, drinking and habits during the elderly age. The studies regarding hypertension show that there is a strong association of alcohol consumption with increase in blood pressure [16]. The studies undergoing the review of 30 cross sectional population there revealed the high risk of hypertension among alcohol drinkers [17].

In our study in context of drinking habit of the patient, it was found that 65.08 % were regular alcoholic, 20.36 % were former alcoholic, 4.75 were occasional alcoholic and 9.81 % were not consuming alcohol. It was reported that eating a vegetarian diet can reduce elevated blood pressure and protect hypertension [18]. Our studies showed 5.79 were vegetarian and 94.21 % were non vegetarians. Regarding the comparison of adherence pre of counseling and post to counseling to the same patient, Morisky Medication adherence scale was used to calculate the medication adherence [19]. The counseling done as per the American society of health system pharmacists guidelines on pharmacist conducted patient education and counseling.

The study also revealed that the level of education and occupation affects a lot in the extent of adherence. The patients below SLC require a details counseling and motivation for the rational use of the drug. Drinking of alcohol not only has high risk of hypertension but also has the risks of missed pills and mis-perception to the therapy. Alcoholics and non vegetarian showed difficulty in remembering to take medication. Private Job holder married patients has high rate of non adherence to the therapy and the reasons for all the patients is due to busy schedule. The patients who forget to take medicines during travelling has corrected the results 100 percentage after understanding the use and needs of medication in the diseases by counseling. Most of the female patients from age 51-60 years stop taking medicines due to feel of blood pressure is under control. It is highly improved by counseling. It is found that most of the patients feel that the dose to be taken at morning hassled about sticking to your blood pressure treatment plan. It is better for switching them to the evening only.

Hence our study revealed that elderly people with drinking alcohol regularly, non vegetarians life leads to poor adherence to the therapy. But the cessation of drinking alcohol, avoid smoking and intake of vegetables rather than non vegetarian decrease the risk of hypertension and cardiovascular diseases as well as the improve adherence to the therapy. The patient education level and occupation should be screen out before counseling to make them understand about the role of therapy and their rationale use. The understanding of the patients to the therapy and its rationality improves a adherence in a great extent. Counseling not only improves the medication therapy but improves the patient's lifestyle, perception to the therapy which improves the way of living and their lifestyle modifications.

Conclusion

The study concluded that elderly people with drinking alcohol regularly, non vegetarian's life style leads to poor adherence to the therapy. The people education level and occupation should be screen out before counseling. Counseling has good impact for these patients. The patients under SLC and private job holder were seen to be poorly adhered to the therapy. All the eight factor of Morisky adherence scale has improved after counseling and motivation in the study.

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