

# TREATMENT ADHERENCE AMONG PATIENTS UNDERGOING HEMODIALYSIS: scenario in Nepal

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# OVERVIEW

# OVERVIEW

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- ❑ Chronic Kidney Disease: a major complication of Diabetes Mellitus (DM)
- ❑ 30% of Type 1 DM patients and 10-40% of type 2 DM patients develop renal failure (National Kidney Foundation, 2015)
- ❑ Hemodialysis: The most common method of management of renal failure in developing countries like Nepal.
- ❑ Treatment Adherence is the crucial factor in determining the morbidity and mortality of hemodialysis patients
- ❑ Four important domains: Hemodialysis Schedule, Fluid Restriction, Diet Restriction and Medicine Adherence

# OBJECTIVES OF THE STUDY

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- ❑ To assess the treatment adherence (hemodialysis schedule, fluid restriction, dietary restriction and medicine adherence) among the patients undergoing hemodialysis.
- ❑ To find out the association between selected demographic variables and adherence among the patients undergoing hemodialysis.
- ❑ To assess the clinical measures of non-adherence in the patients undergoing hemodialysis.

# RESEARCH METHODOLOGY

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## **Research Design**

- Descriptive Cross sectional study
- Quantitative Study Method

## **Research Setting**

- National Kidney Center, Kathmandu, Nepal

## **Study Population**

- Clients undergoing maintenance hemodialysis

## **Sample**

- Those clients attending NKC for hemodialysis and meeting eligibility criteria during the data collection period.

## Sample Size

Sample size calculated for the study was **166** taking the following values:

- two sided confidence level=95 percent
- $d = 8\% = 0.08$  (allowable error)
- Prevalence of treatment adherence: 58.8% (Paudel & Gurung, 2009)

## Sampling

Purposive Sampling Technique

# EXCLUSION CRITERIA

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- ❑ Patients undergoing hemodialysis for less than 3 months.
- ❑ Patients below the age of 18 years.
- ❑ Those who had been admitted for treatment within last 3 months.
- ❑ Those who were sick and not able to participate.
- ❑ Those who weren't willing to participate voluntarily.
- ❑ Those who had the history of renal transplantation.

# RESEARCH INSTRUMENT

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- **Semi structured interview based** questionnaire was developed based on the review of literature and consultation with experts.
- The questionnaire consisted of the following parts:
  - ▣ Section A: Demographic Characteristics and General & Clinical Information
  - ▣ Section B: Questions related to Hemodialysis Schedule
  - ▣ Section C: Questions related to Dietary Restriction
  - ▣ Section D: Questions related to Fluid Restriction
  - ▣ Section E: Questions related to Medicine adherence
  - ▣ Section F: Clinical Information (IDWG, serum potassium, serum phosphorus and co morbid diseases)



# DATA COLLECTION PROCEDURE

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- ❑ Ethical clearance was obtained from Institutional Review Board, IOM after the proposal was approved by the Research Committee, Maharajgunj Nursing Campus.
- ❑ Written permission was obtained from National Kidney Center, Kathmandu.
- ❑ Informed consent was obtained from each respondent before the collection of data.

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- ❑ Clients undergoing HD were interviewed during their HD session and immediately stopped if any complications aroused.
- ❑ Confidentiality was maintained by coding the filled questionnaires.
- ❑ Repetition of respondents was avoided by noting the names and patient number in a separate sheet.
- ❑ Respondents found to be non adherent to treatment were informed about the importance of adherence.

## **Adherent**

- Not skipped hemodialysis in last one month
- Shortened hemodialysis session due to medical reasons like cramps, low BP, vomiting and headache.

## **Non Adherent**

- Hemodialysis session skipped at least one session.
- Shortening of hemodialysis  $>10$  minutes for at least 1 session or shortening  $\geq 10$  minutes for more than 1 session in last one month

# DIET AND FLUID RESTRICTION

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- Adherent - Respondents who always followed the dietary/fluid recommendations (all of the time) in last one week.

## MEDICINE ADHERENCE

- Adherent - Respondents who did not miss any dose of medicine in last one week.

# CLINICAL MEASURES OF NON-ADHERENCE

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Clinical Measures	Acceptable	Not acceptable
IDWG (Interdialytic weight gain)	$\leq 5.7\%$ of dry weight	$> 5.7\%$ of dry weight
Serum Potassium	$\leq 6.0$ mEq/L	$> 6.0$ mEq/L
Serum Phosphorus	$\leq 4.8$ mg/dL	$> 4.8$ mg/dL



# MAJOR FINDINGS

TABLE 1

Socio-demographic Variables of the Respondents

n=166

Characteristics	Frequency	Percentage
<b>Age group (in years)</b>		
below 20	2	1.2
20-39	63	38.0
40-59	59	35.5
above 60	42	25.3
Mean ± SD: 46.73±16.62		
Range: 18-84		
<b>Sex</b>		
Male	125	75.3
Female	41	24.7
<b>Residence</b>		
Inside valley	74	44.6
Outside valley	92	55.4

# TABLE 1 contd..

n=166

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Characteristics	Frequency	Percentage
<b>Educational Status</b>		
Illiterate	19	11.4
Can read and write	33	19.9
Primary Level	26	15.7
Secondary Level	40	24.1
Higher Secondary Level and above	48	28.9
<b>Marital Status</b>		
Married	134	80.7
Unmarried	23	13.9
Widow/ Widower	8	4.8
Divorced/ Separated	1	0.6
<b>Current Employment Status</b>		
Unemployed	121	72.9
Employed	30	18.1
Retired	15	9.0



**TABLE 2****Accessibility to Hemodialysis treatment****n=166**

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	Frequency	Percentage
<b>Monthly expenditure for hemodialysis (In Rupees)</b>		
less than 10,000	24	14.5
10,000- 30,000	47	28.3
more than 30,000	95	57.2
Mean± SD: 28,147.59±17,101.06		
Range: 2,000-80,000		
<b>Adequacy of monthly income for HD treatment</b>		
Yes	89	53.6
No	77	46.4
<b>If no, other sources for expenditure (n=77)</b>		
Financial help from others	28	36.4
Ancestral property	22	28.5
Loan	21	27.3
Others (Agriculture, Pension, Foreign employment, Donation)	6	7.8

**TABLE 2 contd..****n=166**

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	Frequency	Percentage
<b>Transportation to come to HD center</b>		
Bus	92	55.4
Taxi	28	16.9
Private transport	27	16.3
By walk	19	11.4
<b>Time to reach the HD center</b>		
less than 30 min	100	60.2
31 to 60 min	44	26.5
61 to 120 min	18	10.8
more than 120 min	4	2.4
<b>Companion to come to the center</b>		
Myself	65	39.2
Spouse	42	25.3
Son/ Daughter	36	21.7
Brother/Sister	9	5.4
Mother/Father	7	4.2
Others (Friends, Personal Assistant, Driver)	7	4.2

# TABLE 3

## Hemodialysis treatment (Duration and Frequency)

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n=166

Information of HD treatment	Frequency	Percentage
<b>Duration of HD treatment</b>		
below 12 months	50	30.1
12 to 36 months	65	39.2
36 to 60 months	30	18.1
more than 60 months	21	12.7
Mean $\pm$ SD: 27.36 $\pm$ 23.72		
Range: 3-120 months		
<b>Frequency of HD in a week</b>		
1 day	6	3.6
2 days	143	86.1
3 days	17	10.2
<b>Treatment time in a HD session</b>		
3 hours	8	4.8
3 and half hours	16	9.6
4 hours	142	85.5

**TABLE 4**  
**Treatment Adherence**

**n=166**

<b>Domains of Adherence</b>	<b>Adherers</b>	<b>Non adherers</b>
Hemodialysis Schedule	122 (73.5%)	44 (26.5%)
Diet restriction	54 (32.5%)	112 (67.5%)
Fluid restriction	66 (39.8%)	100 (60.2%)
Medication adherence	131 (78.9%)	35 (21.1%)

TABLE 5

## Association of HD Schedule and HD accessibility factors

n=166

Accessibility Factors	HD Attendance		Total	$\chi^2$ Value	p-value	OR (95% CI)
	Adherent	Non adherent				
<b>Duration of HD</b>						
less than 12 months	30 (60.0)	20 (40.0)	50	7.817	0.050*	Ref
12 to 36 months	54 (83.1)	11 (16.9)	65			0.469 (0.148-1.484)
37 to 60 months	22 (73.3)	8 (26.7)	30			1.534 (0.464-5.069)
more than 60 months	16 (76.2)	5 (23.8)	21			0.859 (0.237-3.121)
<b>Companion to come to the center</b>						
Companion	80 (79.2)	21 (20.8)	101	4.323	0.038*	2.086 (1.036-4.199)
Alone	42 (64.6)	23 (35.4)	65			Ref
<b>Time to reach the center</b>						
More than 30 minutes	55 (83.3)	11 (16.7)	66	5.445	0.020*	2.463 (1.140-5.319)
30 minutes and less	67 (67.0)	33 (33.0)	100			Ref
<b>Type of Transportation</b>						
Private	21 (77.8)	6 (22.2)	27	10.853	0.004*	Ref
Public	93 (77.5)	27 (22.5)	120			4.812 (1.331-17.405)
By walk	8 (42.1)	11 (57.9)	19			4.736 (1.731-12.958)
Pearson Chi Square ( $\chi^2$ ) Test      *: p value significant at $\leq 0.05$ level						

**TABLE 6**  
**Association of Fluid Restriction and Socio Demographic Variables**

n=166

Socio Demographic Variables	Fluid Restriction		Total	$\chi^2$ Value	p-value	OR (95% CI)
	Adherent	Non adherent				
<b>Marital Status</b>						
Others	18 (56.2)	14 (43.8)	32	4.501	0.034*	2.304 (1.053-5.038)
Married	48 (35.8)	86 (64.2)	134			Ref
<b>Duration of HD</b>						
less than 12 months	28 (56.0)	22 (44.0)	50	10.165 <sup>b</sup>	0.017*	Ref
12 to 36 months	23 (35.4)	42 (64.6)	65			5.409 (1.591-18.395)
37 to 60 months	11 (36.7)	19 (63.3)	30			2.327 (0.700-7.743)
more than 60 months	4 (19.0)	17 (81.0)	21			2.461 (0.658-9.195)
<b>Treatment Expenditure</b>						
Adequate	43 (48.3)	46 (51.7)	89	5.864	0.015*	2.195 (1.156-4.167)
Not adequate	23 (29.9)	54 (70.1)	77			Ref

**Pearson Chi Square ( $\chi^2$ ) Test**  
**b: Likelihood Ratio**  
**\*: p value significant at  $\leq 0.05$  level**

TABLE 7

Association of Medicine Adherence and Socio Demographic Variables

n=166

Socio Demographic Variables	Medicine		Total	$\chi^2$ Value	p- value	OR (95% CI)
	Adherence					
	Adherent	Non adherent				
<b>Age</b>						
>47	67 (87.0)	10 (13.0)	77	5.659	0.017*	2.617 (1.165-5.880)
≤47	64 (71.9)	25 (28.1)	89			Ref
<b>Residence</b>						
Outside Valley	78 (84.8)	14 (15.2)	92	4.269	0.039*	2.208 (1.031-4.725)
Inside Valley	53 (71.6)	21 (28.4)	74			Ref
<b>Duration of HD</b>						
less than 12 months	44 (88.0)	6 (12.0)	50	8.492	0.037*	Ref
12 to 36 months	51 (78.5)	14 (21.5)	65			5.500 (1.633-18.523)
37 to 60 months	24 (80.0)	6 (20.0)	30			2.732 (0.959-7.786)
more than 60 months	12 (57.1)	9 (42.9)	21			3.000 (0.865-10.407)

**TABLE 8**  
**Association of IDWG and Socio Demographic Variables** n=165

Socio Demographic Variables	IDWG		Total	$\chi^2$ Value	p- value	OR (95% CI)
	$\leq 5.7\%$	$> 5.7\%$				
<b>Age</b>						
>47	49 (64.5)	27 (35.5)	76	10.373	0.001*	2.800 (1.486-5.277)
$\leq 47$	35 (39.3)	54 (60.7)	89			Ref
<b>Religion</b>						
Hindu	69 (55.6)	55 (44.4)	124	4.479	0.034*	2.175 (1.050-4.501)
Others	15 (36.6)	26 (63.4)	41			Ref
<b>Ethnicity</b>						
Advantaged Group	62 (57.9)	45 (42.1)	107	6.028	0.014*	2.255 (1.171-4.339)
Disadvantaged Group	22 (37.9)	36 (62.1)	58			Ref

**Pearson Chi Square ( $\chi^2$ ) Test**      \*: p value significant at  $\leq 0.05$  level



# TABLE 8 contd..

Socio Demographic Variables	IDWG		Total	$\chi^2$ Value	p- value	OR (95% CI)
	$\leq 5.7\%$	$> 5.7\%$				
<b>Hepatitis C infection</b>						
Yes	22 (68.8)	10 (31.2)	32	6.139	0.013*	2.759 (1.213-6.278)
No	59 (44.4)	74 (55.6)	133			Ref
<b>Diabetes Mellitus</b>						
Yes	25 (69.4)	11 (30.6)	36	6.330	0.012*	2.696 (1.225-5.937)
No	59 (45.7)	70 (54.3)	129			Ref
<b>Duration of HD</b>						
less than 12 months	15 (30.0)	35 (70.0)	50	11.347	0.010*	2.897 (1.331-6.305)
12 to 36 months	36 (55.4)	29 (44.6)	65			2.872 (1.111-7.421)
37 to 60 months	16 (55.2)	13 (44.8)	29			4.667 (1.568-13.886)
more than 60 months	14 (66.7)	7 (33.3)	21			Ref

Pearson Chi Square ( $\chi^2$ ) Test

\*: p value significant at  $\leq 0.05$  level

# TABLE 9

## Association of IDWG and Fluid Restriction

n=165

Fluid Restriction	IDWG		Total	$\chi^2$ Value	p- value	OR (95% CI)
	$\leq 5.7\%$	$> 5.7\%$				
Adherent	41 (63.1)	24 (36.9)	65	6.354	0.012*	2.265 (1.193-4.298)
Non adherent	43 (43.0)	57 (57.0)	100			Ref

Pearson Chi Square ( $\chi^2$ ) Test

\*: p value significant at  $\leq 0.05$  level

# CONCLUSION

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- About three fourth of the respondents were adherent to hemodialysis schedule and medicine whereas only about one third of them were adherent to fluid restriction and diet restriction.
- It has been identified that duration of HD, hemodialysis accessibility factors influenced adherence to hemodialysis schedule; marital status, duration of HD and adequacy for treatment expenditure influenced fluid restriction whereas counseling affected dietary adherence and duration of HD influenced medicine adherence.

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- ❑ Similarly, IDWG was found to be influenced by age, co-morbid diseases, duration of HD and fluid restriction.
- ❑ The patients undergoing hemodialysis had to spend more than an average Nepali's income in hemodialysis treatment.
- ❑ Patients did not perceive adherence important other than hemodialysis schedule and fluid restriction because of their immediate effect on their health.

# Contd...

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- ❑ Lack of long term financial support to the hemodialysis patients and unavailability of feasible transport compel them to skip or shorten hemodialysis treatment.
- ❑ Further, lack of reinforcement, motivation and regular counseling to the patients as well as family members in all domains of adherence seem to contribute to lower adherence.

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# THANK YOU

# !!!





# TABLES

# TABLE 2

## Adherence to Hemodialysis Attendance

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**n=166**

<b>HD Attendance</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Missed HD in last one month</b>		
No	130	78.3
Yes	36	21.7
<b>No of sessions missed (n=36)</b>		
1 session	19	52.7
2 sessions	12	33.4
3 sessions	3	8.3
>3 sessions	2	5.6
<b>Cause of missing HD treatment (n=36)</b>		
Festival	17	47.2
Financial constraint	8	22.3
Personal work or emergency	9	25.0
Others (Injured, Didn't feel like to come)	2	5.5

HD Attendance	Frequency	Percentage
<b>Shortening of HD session</b>		
No	138	83.1
Yes	28	16.9
<b>If yes, no of sessions shortened (n=28)</b>		
1	8	28.6
2	11	39.2
3	7	25.0
>3	2	7.2
<b>Average no of minutes shortened (n=28)</b>		
10 minutes or less	3	10.7
11 to 20 minutes	6	21.4
21 to 30 minutes	11	39.3
more than 30 minutes	8	28.6
<b>Cause of shortening of HD (n=28)</b>		
Low BP	7	25.0
Personal problem or emergency	5	17.9
Cramps	5	17.9
Headache	3	10.7
Restlessness	3	10.7
Vomiting	3	10.7
Transportation problem	2	7.1

**TABLE 3****Information on Adherence to Diet Restriction of the Respondents**  
n=166

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<b>Diet Restriction</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Self-reported non adherence to diet in last one week</b>		
No deviation	54	32.5
Mild non adherence	56	33.7
Moderate non adherence	30	18.1
Severe non adherence	18	10.8
Very severe non adherence	8	4.8
<b>Difficulty in diet restriction</b>		
Yes	94	56.6
No	72	43.4
<b>Cause of difficulty in diet restriction (n=94)</b>		
Need to give up favorite food	27	28.7
Difficulty changing food habit	45	47.9
Weakness	21	22.3
Didn't feel like to restrict	1	1.1
<b>Smoking habit</b>		
Smokers	5	3.0
Non smokers	161	97.0

**TABLE 4****Information on Adherence to Fluid Restriction of the Respondents**

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**n=166**

<b>Fluid Restriction</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Self-reported Non-adherence to fluid in last one week</b>		
No deviation	66	39.8
Mild non-adherence	54	32.5
Moderate non-adherence	27	16.3
Severe non-adherence	19	11.4
<b>Difficulty in fluid restriction</b>		
Yes	110	66.3
No	56	33.7
<b>Cause of difficulty in fluid restriction (n=110)</b>		
Excessive dry mouth and thirst	90	54.2
Can't give up favorite drink	17	10.2
Others	3	1.8

## TABLE 4 contd...

Fluid Restriction	Frequency	Percentage
<b>Importance of weighing daily</b>		
Highly important	13	7.8
Very important	14	8.4
Moderately important	30	18.1
A little important	109	65.7
<b>Number of times weighed outside in last week</b>		
Not even once	154	92.8
Once	3	1.8
Twice	5	3.0
Others (Daily, Thrice)	4	2.4

**TABLE 5****Information on Medicine Adherence of the Respondents**

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**n=166**

<b>Medicine Adherence</b>	<b>Frequency</b>	<b>Percentage</b>
<b>No of daily pills</b>		
<3	3	1.8
3-6	19	11.4
7-9	34	20.5
10-12	43	25.9
13-15	30	18.1
>15	37	22.3
Mean $\pm$ SD: 11.90 $\pm$ 4.66		
Range: 3-29		

## TABLE 5 contd...

Medicine Adherence	Frequency	Percentage
<b>Missed medicine last week</b>		
Yes	35	21.1
No	131	78.9
<b>No of doses missed (n=35)</b>		
1-2 doses	14	40.0
3-5 doses	6	17.1
6-10 doses	4	11.5
>10 doses	11	31.4
<b>Cause of missing medicine (n=35)</b>		
Forgot to take medicine	14	40.0
Financial constraints	8	22.9
Not felt important to take	5	14.3
Difficulty chewing	3	8.5
Forgot to buy medicine	3	8.5
Side effects of the drugs	2	5.8



# TABLE 5 contd...

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Medicine Adherence	Frequency	Percentage
<b>Self reported non adherence to medication</b>		
No deviation	131	78.9
Mild Non adherence	14	8.4
Moderate Non adherence	6	2.4
Severe Non adherence	4	2.4
Very severe Non adherence	11	6.7

**TABLE 6****Clinical Measures of Non adherence of the Respondents**

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Clinical Measures	Frequency	Percentage
<b>Serum Potassium (n=47)</b>		
≤6.0 mEq/L	39	83.0
>6.0 mEq/L	8	17.0
Mean	5.21±0.88	
Range	3.1-7.3	
<b>Serum Phosphorus (n=47)</b>		
≤4.8 mg/dL	12	25.5
>4.8 mg/dL	35	74.5
Mean	5.53±1.51	
Range	3.0-11.5	
<b>Interdialytic Weight Gain (n=165)</b>		
≤5.7% of dry weight	84	50.9
>5.7% of dry weight	81	49.1
Mean	5.52±2.24	
Range	0.00-12.26	

**TABLE 7****Co morbid diseases of the Respondents**

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**n=166**

<b>Co morbid diseases</b>	<b>Frequency</b>	<b>Percentage</b>
Hypertension	166	100.0
Diabetes Mellitus	37	22.2
Hepatitis C	32	19.2
Hypothyroidism	11	6.6
Retinopathy	4	2.4
Coronary Artery Disease	4	2.4
Tuberculosis	2	1.2
Ischemic Heart Disease	2	1.2
Valvular Heart Disease	1	0.6
BPH	1	0.6