Internship Training

at

DCDC Health Services Pvt. Ltd.

"Adherence to Hemodialysis and Associated Factors among End Stage Renal Disease Patients at Dialysis unit, Civil Hospital, Bahadurgarh: A Descriptive Cross-Sectional Study"

by[1]

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TABLE OF CONTENT

~~Table of Contents~~

~~List of Figures~~

List of Tables

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Section 1

Organisational Profile

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1. **ORGANIZATION PROFILE**

1.1. About DCDC Kidney care:

DCDC is one of the most trusted institutions in ~~D~~dialysis care delivery in Delhi / NCR and rapidly expanding to establish wide network in all formats.

As an epitome of trust and compassionate care, the chain of ~~D~~dialysis care always strives to excel with world class technology and expertise and aspires to bring to the community largest network of state of the art ~~H~~haemodialysis facilities, dialysis centres sans comparison in India, under the banner of DCDC.

With standardized dialysis protocol, well trained renal professionals and backend technology procedures, 'DCDC' brings reliable, safe and effective dialysis with meticulously designed services.

Teamed with state of the art equipment, RO system and support on life style management, up-keeping the tradition of patient centricity and care, it provides quality treatment in shorter time without any compromises. Add to this a hygienic, homelike environment ~~to~~ makes it the best in renal care.

Along with Dialysis, DCDC also endeavours to bring forward special services to support patients in organizing their lives better.

DCDC is the first dialysis institute in the country to offer home hemodialysis to patients at an affordable cost and with no initial investment. Evidence from well-planned research studies clearly proves that home hemodialysis patients live longer than patients treated in a dialysis centre. There is also good evidence that the quality of life of these patients is much better.

1.2. About the Dialysis Unit:

Dialysis unit at Civil Hospital , Bahadurgarh is outsourced to DCDC Health Services Pvt. Ltd.~~TD~~ since 28th November, 2018. The unit is equipped with eight~~8~~ hemodialysis machines. ~~and one ?~~. The unit runs one shifts a day, six days a week.

1.3. Key Roles and Responsibilities:

As the Centre Manager of the dialysis unit at Civil Hospital–, Bahadurgarh, the responsibility of optimum functioning of the unit was bestowed upon me.

Following were my key roles and responsibilities:

1. To manage stock and carry out inventory planning
2. To manage the staff and their roster
3. To keep a track of the dialysis patients and prepare their treatment schedule
4. To keep track of the billing process and maintain the dialysis numbers
5. To ensure satisfaction of the staff as well as the patients
6. To upkeep the unit in terms of maintenance of the facility, the machines and the RO plant
7. To participate and plan expansion of the unit
8. To collaborate with the hospital in order to align the goals of DCDC and Civil Hospital , Bahadurgarh
9. Maintaining registers and complete documentation
10. To maintain and improve the quality of operations
11. Resolve day to day issues hampering the functioning of the unit

1.4. Conclusive Learning:

1. The internship gave me a chance to learn about the overall management of the dialysis unit.
2. It gave me the opportunity to handle all the aspects of management i.e. operations, quality and HR.

Section 2

Dissertation Report

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End Stage Renal Disease (ESRD) is a known increasing public health concern globally. The irreversible advanced CKD leads to End Stage Renal Disease (ESRD), where there is permanent loss of kidney function causing extreme mortality rates, among this population. The increasing prevalence of ESRD is similar to the increasing prevalence of type 2 diabetes mellitus, which further complicates into ESRD as the total number of people with diabetes is expected to grow from 336 million in 2012 to 522 million in 2030. The increase of ESRD patients necessitates management on dialysis for better outcomes, thus making adherence to prescribed treatment essential. Although kidney transplantation is the best choice of treatment of renal failure, resource constraints and shortage of kidney donations remain an issue. Nevertheless, hemodialysis is also expensive, but the preferred modality of treatment of ESRD patients in Civil hospital, Bahadurgarh.

Demographic Health Survey data showed a projected total population of 11,274,221 people with approximately 84 percent of them living in rural area. It is also evident that there is little or nothing known about the proportion of people living with ESRD or requiring RRT in Bahadurgarh. From the national statistics, the majority of the people live in rural areas and yet the majority hemodialysis services for them are available in urban setting of Bahadurgarh. There are approximately eight working machines in this dialysis units. This makes it difficult for far away rural populations in other provinces to access hemodialysis services, forcing the majority of the patients with ESRD to go to urban dialysis centers.

Non-adherence to hemodialysis on the other hand, remains a major obstacle in the management of End Stage Renal Disease (ESRD) population. Documented literature reveals that approximately 50 per cent% of individuals with ESRD undergoing hemodialysis (HD) were not adhering to their prescribed treatment regimen.

According to Duong et al., nonadherence to treatment plan among patients with ESRD was problematic with approximately half of patients missing their sessions. Eleven percent (11

%) of the patients required extra treatment and 12 % had shortened their sessions. Negative patient outcomes and increased health care expenses as well as workload of the hemodialysis unit are consequences of non-adherence behaviors in ESRD population. Numerous studies have also revealed that non adherence is the cause of mortality, frequent hospitals visits, and hospital admissions. According to Abo et al., missed and shortened dialysis treatment time resulted in physical problems such as hypotension, cramps, fatigue, and clots in access site.

3. GENERAL OBJECTIVE

The aim of this study is to determine the level of Adherence to Hemodialysis and Associated Factors among End Stage Renal Disease Patients in DCDC health services Pvt Ltd , Dialysis unit, Civil Hospital, Bahadurgarh.

4. SPECIFIC OBJECTIVES

- To study the demographic characteristics of ESRD participants
- To study variables which effect the adherence to hemodialysis among ESRD participants
- To study the variables which are associated factors of adherence to hemodialysis among ESRD participants

5. METHODOLOGY

5.1. Research Approach

This study used a quantitative approach to quantify the level of adherence to hemodialysis and the associated factors to adherence among ESRD population.

5.2. Study Design

This was a descriptive cross-sectional design in which the researcher collected and analysed quantitative data to determine the level of adherence to hemodialysis and associated factors among End Stage Renal Disease patients.

5.3. Study Sites

The study was conducted at DCDC health services Pvt Ltd , Dialysis unit, Civil Hospital, Bahadurgarh.

5.4. Study Time Period

~~3~~Three months (18 Feb 2019- 18 May ~~April~~ 2019)

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5.5. Study Population

Population is defined as all elements, such as individuals, events, or objects that meet the sample criteria for inclusion in a study, sometimes referred to as a target population. The target population was patients attending hemodialysis at the Dialysis unit, Civil Hospital, Bahadurgarh~~-~~. The accessible population were~~as~~ patients attending hemodialysis at the time of the study.

5.6. Eligibility Criteria

The eligible respondents were those adults, conscious patients who agreed to participate and had been on hemodialysis for more than 2 months as well as available at the time of the study. Respondents who were on Continuous Ambulatory Peritoneal Dialysis

(CAPD), with Acute Kidney Injury (AKI) on hemodialysis, not in attendance at the time of the study, and critically ill and admitted were excluded from the study. There were some ESRD participants who were eligible, but did not complete the interview schedule nor signed the informed consent form and thus were excluded from the study.

5.7. Sample Size

Quantitative researchers should select the largest sample possible so that it is representative of the target population. Only those patients weare considered from the hospital, who met the eligibility criteria and consented to participate in the study; hence a total sample size of 41 was used.

5.8. Sample Strategy

The ccovenience~~purposive~~ sampling was adopted to select a total population of study participants from dialysis units. This is whereby the entire population that meets the criteria is included in the research being conducted. The number of ESRD patients on hemodialysis wase~~re~~ limited; hence the researcher used the total population. The researchers sampled all the hemodialysis patients from three selected units that met the inclusion and exclusion criteria.

5.9. Research Instrument

The instrument for quantitative was developed using components of ERSD adherence questionnaire and literature. The English instrument was translated into Hindi instrument . Back translation into English version of the instrument. Self-reported method of collecting data was used. It was the structured interview guide that consisted of two sections, namely, demographics and level of adherence to hemodialysis. The demographic section captured

the personal descriptive data of ESRD participations. The second section asked questions that revealed the extent of adherence to hemodialysis among ESRD patients.

The instrument was designed to measure adherence to hemodialysis on a scoring system using a Likert scale. The minimum possible total score for adherence to hemodialysis was ten (10) and the maximum possible score, signifying perfect adherence to hemodialysis was thirty-four (34). Dividing the attained score on this section by the maximum possible attainable score (34) and multiplying by a hundred to come up with a percentage calculated adherence to hemodialysis. Adherence to hemodialysis of 90% to 100% was classified as high, 80% to 89% was classified as moderate, and adherence to hemodialysis below 80% was considered low.

5.10. Data Analysis

In this study, descriptive statistics were used to describe the extent of adherence to hemodialysis among ESRD patients. Inferential statistics of chi-square were used to test if there is any association between demographic variables and level of adherence to hemodialysis among End Stage Renal Disease patients.

5.11. Ethical Consideration

The permission was requested from hospital and DCDC health services ~~p~~P vt L~~t~~td for carry out the study. Patient's rights were respected which include right to refuse or to withdraw from the study at any time without any consequences and they were prevented from discomfort and harm. Privacy and confidentiality were also observed. The purpose of the study was explained to the participants. Informed consent and participant's authorization were sought.

6. RESULTS

6.1. Demographic Data

Table 1 shows the demographic characteristics of ESRD participants. Forty-one participants (Response Rate = 63%) with ESRD were selected and completed the study. Five (12%) were aged between 18 and 30 years, 9 (22%) were aged between 31 and 40 years, 6 (15%) were aged between 41 to 50 years, 11 (27%) were aged between 51 and 60 years, and 10 (24%) were aged greater than 60 years. The majority of the participants with ESRD were males [24 (59%)]. Regarding marital status, the majority, 28 (68%), were married. Four (10%) were not educated, 13 (32%) completed primary education, 16 (39%) were secondary educated, and 8 (20%) frequented colleges or universities. In terms of employment, 31 (76%) were unemployed, 6 (15%) were self-employed, and 4 (10%) were public servants. For 31 (76%) participants, the yearly income was less than Rs.50000, 3 (7 %) were having a yearly income between Rs.50000/- and Rs.100000/- , 3 (7 %) had more than Rs.100000/- and Rs.200000/- of yearly income, and 4 (10%) were having a yearly income of more than Rs.200000/-. Eleven (27%) had ESRD for a period between three months and one year, 4 (10%) for one to two years, 6 (15%) for two to three years, 8 (20%) for three to five years, and 12 (29%) for more than five years.

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Table 1: Demographic characteristics of ESRD participants (N = 41).	
Variable	**Frequency (%)**
Age	
18-30 years	5 (12%)
31-40 years	9 (22%)
41-50 years	6 (15%)
51-60 years	11 (27%)
Greater than 60 years	10 (24%)
Gender	
Male	24 (58%)
Female	17 (42%)
Marital status	
Married	28 (68%)
Single	7 (17%)
Separated	1 (2%)
Widowed	5 (12%)
Level of education	
Not educated	4 (10%)
Primary	13 (32%)

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Secondary	16 (39%)
College/university	8 (20%)
Occupation	
Self-employed	6 (15%)
Public servant	4 (10%)
Unemployed	31 (75%)
Year~~Month~~ly income (in rupees)	
Less than 50000	31 (75%)
50000-100000	3 (7%)
More than 100000 to 200000	3 (7%)
More than 200000	4 (10%)
Duration of ESRD	
3 months to 1 year	11 (26%)
More than a year to 2 years	4 (10%)
More than 2 years to 3 years	6 (15%)
More than 3 years to 5 years	8 (20%)
More than 5 years	12 (29%)
Mode of payment for hemodialysis	
Self-sponsored (cash)	8 (19%)

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Ration card (Pink colour)	7 (7%)
Income certificate	20 (49%)
Below poverty line card	6 (15%)
Schedule Caste certificate	4 (10%)

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6.2. Adherence to Hemodialysis among ESRD Participants

Regarding the number of dialysis sessions received per week in ESRD participants, 14 (34%) were receiving two dialysis sessions, 27 (66%) were receiving three sessions per week (Table 2). According to the number of hours for each dialysis session, all 41 (100%) of ESRD participants remained on dialysis for 4 hours for each of the dialysis sessions (Table 2). With regard to the convenience of dialysis schedule for ESRD participants, 39 (95%) respondents agreed that the dialysis schedule was convenient for them while 2 (5%) participants expressed that the dialysis schedule was a burden to them (Table 2). With regard to the importance of not missing a hemodialysis session, 1 (2%) participant reported that he was never told the importance of not missing any dialysis session, 1 (2%) reported that he was told the importance of not missing a dialysis session for more than a month ago, 1 (2%) was told the importance of not missing a dialysis session for one month ago, 2 (5%) were told the importance of not missing a dialysis session for the past one week, and the majority [36 (88%)] were told the importance of not missing dialysis session during the week they were interviewed (Table 2).

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Table 2: Adherence to hemodialysis among ESRD participants (N = 41).		
Variable	**Frequency**	**Percentage (%)**
Days to receive dialysis		
2 days or less	14	34
3 days	27	66
Hours treated for each Session		
4 hours	41	100
Convenience of dialysis schedule		
No	2	5
Yes	39	95
Last day to be told the importance of not		

missing dialysis session		
Never	1	2
More than a month ago	1	2
One month ago	1	2
Last week	2	5
This week	36	89
Importance of following dialysis schedule		
Moderate important	1	2
Very important	6	15
Highly important	34	83
Difficulty of staying for the entire dialysis session		
A lot of difficulty	6	15
Moderate difficulty	3	7

Little difficulty	11	27
No difficulty	21	51
Missed Dialysis sessions during the three months		
Missed three	2	5
Missed two	5	12
Missed one	9	22
None	25	61
Shortened dialysis session during the three months		
Once	2	5
None	39	95

About the importance of following a dialysis schedule, 1 (2%) participant reported that it was moderately important to follow dialysis schedule, 6 (15%) reported that it was very important, and 34 (84%) agreed that it was highly important to follow a dialysis schedule.

Six (14%) ESRD participants reported having a lot of difficulty in staying for the entire dialysis session, 3 (7%) complained of having moderate difficulty, and 11 (27%) experienced little difficulty, while 21 (51%) reported having no difficulty in staying for the entire dialysis session. The difficulties experienced were mainly treatment related complications which include hypotension, muscle cramps, and pain at the insertion catheter site as well as headaches. On the number of dialysis sessions missed in the past month which was assessed using both self-report and hospital records, the study results showed that 2 (5%) ESRD participants missed 3 dialysis sessions, 5 (12%) missed 2 dialysis sessions, 9 (22%) missed one session, and 25 (61%) did not miss any dialysis session in the three months. Two (5%) ESRD participants shortened dialysis session once, while 39 (95%) did not shorten dialysis session in the three month.

6.3. Adherence Scores among ESRD Participants

Table 3 highlights the total adherence to hemodialysis scores of ESRD participants. The total adherence to hemodialysis score was 34 and the minimum expected adherence was 10 among ESRD participants. The maximum adherence to hemodialysis score obtained in the study sample was 29 out of 34, and the minimum adherence to hemodialysis score was 19 out of 34. The mean, median, and mode adherence to HD score were 26.65, 28, and 28, respectively. Adopted an adherence scale to measure the level of adherence to HD among ESRD participants. Scale used was adopted from Chironda et al., where 80 to 100% was identified as high adherence, 70 to 79% was identified as moderate adherence, and less than 70% was classified as low adherence. Based on the scale, 21 (51%) of ESRD participants scored above 80% meaning high adherence to hemodialysis. Seventeen (42%) scored between 70 and 79%, translating to moderate level of adherence to hemodialysis. Only 3 (7%) scored below 70% meaning that their level of adherence to HD score was low.

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Table 3: Adherence to hemodialysis scores among ESRD participants (N = 41).				
Adherence to HD out of 34	**Adherence score percentage (%)**	**Level of adherence according to the scale**	**Frequency**	**Percentage frequency (%)**
19	56	Low	1	2
22	65	Low	1	2
23	68	Low	1	2
24	71	Moderate	3	7
25	74	Moderate	5	12
26	77	Moderate	6	15
27	79	Moderate	3	8
28	82	High	14	35
29	85	High	7	17
~~Total~~	-	-	~~41~~	~~100~~

Table 4 reveals the factors associated with adherence to hemodialysis in ESRD population. Field Code Changed Results showed that age (p = .038) of participants were statistically significantly associated with adherence to hemodialysis. Other demographic factors such as marital status (p = .971), educational level (p = .338), occupation (p = .375), and monthly income (p = .376) were not significantly associated with adherence to hemodialysis in ESRD population. In addition, frequencies of education by health care workers about importance of not missing dialysis (p = .000), perceived relative importance of hemodialysis (p = .020), and experiencing difficulties during the procedure (p = .004) were significantly associated with adherence to hemodialysis in the study.

Table 4: Associated factors of adherence to hemodialysis among ESRD participants.

Associated factors	**N**	**Mean**	**95% Confidence interval**	**P value**
Age				
18 -30 years	5	26.11	26.76 – 28.84	0.038*
41 – 50 years	9	26.17	25.06 – 27.16	
51 – 60 years	11	25.91	23.24 – 29.09	
Greater than 60 years	10	27.7	26.23 – 29.17	

Frequency of Education from health care workers for importance of not missing dialysis sessions				
Every dialysis session	36	27.22	26.71 – 27.73	0.00**
Once a week	2	23.5	4.44 – 42.56	
Relative importance of following sessions				
Very Important	6	23.67	20.44 – 26.90	0.020*
Highly important	34	27.21	26.65 – 27.76	
Experiencing difficulties during hemodialysis				
A lot of difficulty	6	23.67	20.80 – 26.53	0.040*
Moderate difficulty	3	24.67	21.80 – 27.54	

Little difficulty	11	27	26.14 – 27.85	
No difficulty	21	27.62	26.88 – 28.36	

7. DISCUSSION

The findings from this study revealed low adherence in 49% of ESRD participants. The findings are consistent with findings from other studies that estimated 50% of patients on hemodialysis not adhering to at least part of their dialysis regimen. Similarly, thirty-nine percent of the study population missed their dialysis sessions at least once. It cannot be overstated that non adherence has significant poor health outcomes and therefore patients with ESRD and undergoing hemodialysis should be encouraged to complete their dialysis sessions as prescribed. It is also noted that the shortening dialysis session in the present study was observed among 5% of the participants. This may be related to the technical problems faced by the dialysis machines, since they need constant servicing.

Additionally, the findings of the study showed that age was statistically significantly associated with adherence to hemodialysis. However, it is noted that the effect of age is clinically quite small despite a statistically significant association that exists. The only difference seems to be in the mean ages between the age groups under 60s and over 60s. In this regard, participants of the ages of 41-50 years were observed to be the majority. The results are not surprising as it is important to note that individuals at this stage of life are beginning to make a significant impact of their lives; some of them have families and adherence is paramount to be able to support their families. Also, in developing countries, ESRD affects the population of under 50 years who are economically productive. The majority of ESRD participants were males rather than females. Gender was not associated with adherence to hemodialysis. Varying levels of education were not significantly associated with the level of adherence to hemodialysis among ESRD population. This shows that ESRD affects both educated and non- educated people meaning that knowledge

alone is not a predictor of adherence to hemodialysis. However, a decreased level of education can contribute to reduced levels of understanding leading to non- adherence and poor level of following medical instructions in favor of ESRD treatment. On the contrary, increased level of education facilitates capturing and conveyance of information regarding concerns of the disease ESRD as well as importance of hemodialysis treatment.

Three-quarters of the participants were unemployed, meaning that they did not have any monthly income. Moreover, there was no significant association between occupation, income, and adherence to hemodialysis among ESRD patients. However, dialysis in low income families is an expensive procedure and it is more likely that patients from low and middle- income families who cannot afford the dialysis sessions will have to skip some sessions of dialysis due to low economic status, considering, presently, that in Civil hospital, Bahadurgarh one session costs approximately Rs. 1233 - Rs 1403 where only few people in need can afford hemodialysis treatment. This is the likely cause of non- adherence of hemodialysis among ESRD patients in Civil Hospital, Bahadurgarh. Nevertheless, 49% of ESRD participants were covered by the fund for low income certificate(panal) families in Civil Hospital, Bahadurgarh which fully caters for all costs for hemodialysis ~~without shortfall~~. However, 19% were self-sponsored(cash), Below poverty line card (panal) were covering 15%, and 10% of the participants were covered by the Schedule Caste certificate (panal) and these do not cater fully for hemodialysis treatment as patients are expected to pay the shortfall. Because of the high cost for hemodialysis treatment and lack of finances, some patients ended up with missing or withdrawing from the treatment.

The duration of ESRD was not associated with level of adherence to hemodialysis.

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8. CONCLUSION

Altered adherence to hemodialysis is still a big concern in Civil Hospital, Bahadurgarh affecting negatively ESRD patients' treatment outcomes, thus causing a huge burden on health care institutions. Age wasere implicated to be significantly associated with adherence to hemodialysis. Health care providers and particularly dialysis technicians, who care for patients and stay with them for longer hours need to advocate for patients with ESRD in view of completing their sessions for compliance and adherence to hemodialysis. Further research is required to identify barriers and promoters of adherence to HD among patients with ESRD in Civil Hospital, Bahadurgarh.

9. LIMITATIONS

Firstly, our study presents a smaller sample size, that is related to the fact that patient number keeps dwindling depending on the financial capacity of the patients to maintain all hemodialysis sessions. Also, the number of patients that report at the hemodialysis centers is small, therefore, making data collection procedures quite challenging.

Our results also face a limitation of bias as we used face to face interview method for data collection. This might have introduced interviewer and information recall biases.

Thirdly, the fact that the study involved respondents on hemodialysis, asking them questions related to their adherence at the time of the interview may not necessarily mean they will adhere throughout the treatment regimen. Interviewers further tried to avoid questions to ascertain the willingness and ability of the patients to stay on hemodialysis.

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