

Nephrologists' Satisfaction about Chronic Kidney Disease Patients Referred from Primary Health Care system

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Abstract—Chronic kidney disease (CKD) risk factors have been increased in the Saudi population. Therefore, primary health care physicians play a major role in controlling these risk factors, and prevent further kidney damage. Sometimes, Nephrology consultation is needed to provide them with an ideal medical care as soon as the diagnosis is made. **Purpose:** The aim of the study is to assess the level of satisfaction among nephrologists towards primary health care referral system. **Methods:** A cross-sectional study was carried out in Riyadh city, Saudi Arabia. Participants were nephrologists who work in major hospitals. A designed questionnaire was used for data collection consisted of demographic data of the participant, causes of referral, quality of referral forms, and patients' care prior referral. **Results:** A total of 89 nephrologists were recruited in the study, most of them were males and non-Saudi physicians. Confirming the diagnosis and providing recommended treatment for the patients are the most common causes for referral. Most of the participants were satisfied about quality of referral and prior referral care. There was no difference in the satisfaction level among consultants compared to specialists. Whereas, private sector nephrologists were more satisfied. **Conclusion:** Governmental hospitals have to work harder to improve their health system, as they are the main source for most of Saudi citizens' health problems. Providing a nephrologist with good referral letter, and good communication between primary care physicians and other medical specialties provides a better health care to the patients.

Index Terms— End Stage Kidney Disease, Chronic Kidney Disease, Referral letter, Referral system, Primary Health care center, Nephrologists Satisfiacton, Kidney failure.

1 INTRODUCTION

Chronic kidney disease (CKD), is one of the most common non-communicable diseases affecting the globe [1]. It is a progressive disease associated with considerable morbidity and mortality. However, early stages in CKD is usually silent and without obvious symptoms, patients may not be aware of their disease. Hence, primary health care physicians have an important role in the identification and early management of CKD patients. Additionally, some patients need an early nephrologist evaluation to improve their quality of life and prevent possible serious complications.

Pre-ESRD nephrology care, which is known as early referral of patients with CKD to specialized renal services [2]. Furthermore, each CKD patient has his own medical condition which has a different management, some of those patients can be managed by primary care physicians. On the other hand, some need a nephrologist consultations due to his complicated disease or initiation of kidney dialysis. As a result, each patient should get his optimal medical care as soon as his or her diagnosis is made.

Recently, Saudi Center for Organ Transplantation (SCOT), has reported that more than 16 thousand patients are suffering from CKD in Saudi Arabia, of those, more than 15 thousand

are on hemodialysis. [3] Furthermore, there are around 198 nephrology consultants and 308 nephrology specialists in all hospitals sectors. [4] The purpose of this study is to assess the level of satisfaction of nephrologists towards primary health care referral system, in terms of causes of referral, quality of referral forms, pre-referral care, and timing of referral.

2 MATERIALS AND METHODS

2.1 Study design and setting

This is a cross-sectional study was carried out in Riyadh city, Saudi Arabia. This study was approved by the Institutional Review Boards of Al-Imam Muhammad ibn Saud Islamic University in Riyadh. The study was carried out in nephrology department at: King Faisal Specialist Hospital & Research Center, Prince Sultan Military Medical City, King Abdulaziz Medical City, King Fahad Medical City, Security Forces Hospital, King Saud Medical City, Prince Mohammad Bin Abdul Aziz Hospital, King Salman Hospital, Dr. Sulaiman AlHabib Medical Complex, Dallah Hospital.

2.2 Study Population

Inclusion criteria

A randomly selected sample consisted of nephrologists in Riyadh city, who works in major hospitals. Eligible Participants are adult, and pediatric nephrology consultants, and specialists.

Exclusion criteria

All nephrology physicians outside Riyadh city, general internist consultants, internal medicine specialists, internal medicine residents, and medical interns, were excluded.

2.3 Data Collection

A questionnaire was designed to be answered by a nephrologist, that could be completed in approximately 10 minutes. A five point Likert scale questionnaire (1= not at all satisfied, 5=extremely satisfied) with 34 items was used.

The questionnaire has four parts:

- I. Demographic data of the participant nephrologists.
- II. Causes of referral from the primary health care system.
- III. Satisfaction about quality of referral forms and satisfaction towards referral form contents, the legibility of handwritten referral form, ability to communicate back with his primary care physician.
- IV. Satisfaction about prior referral care which includes: timing of referral, history taking and physical examination of the patient, laboratory and radiological studies prior referral, diagnosis and initial management of the patient.

2.4 Data Analysis

The completed questionnaires were checked for completeness and consistency by the investigators. Collected data were managed in strictly confidential way and only researchers have the right to access data. Data was entered, cleaned and analyzed using Statistical Package for the Social Sciences (SPSS) application for Windows. Cronbach's Alpha value was used to assess the validity of the questionnaire "Table1".

Table 1

No of questions	Reliability of questions
34	0.912

3 RESULTS

A total of 89 nephrologists were recruited in the study, who met the inclusion criteria. The demographics of the participants were studied. Of those, 78 (87.6%) were males. Most of them were Non-Saudi physicians (60.7%). Furthermore, about 57.3% of the participants were consultant with more than 10 years of experience in the field. The highest percentage of hospital sector was governmental hospitals (71.9%) "Table 2".

Table 2

Variable	N (%)
Gender	
Male	78 (87.6)
Female	11 (12.4)
Age	
26-35 years	14 (15.7)
36-45 years	27 (30.3)
46-55 years	35 (39.3)
56> years	13 (14.6)
Nationality	
Saudi	35 (39.3)
Non-Saudi	54 (60.7)
Nephrology Degree	
Consultant	51 (57.3)
Specialist	38 (42.7)
Specialty	
Adult Nephrology	64 (73)
Pediatric Nephrology	24 (27)
Years of experience as nephrologist	
<5years	10 (11.2)
6-10 years	19 (21.3)
11-20 years	43 (48.3)
>20 years	17 (19.1)
Hospital Sector	
Governmental	64 (71.9)
Private	25 (28.1)

In addition, general questions were written in the questionnaire to know how often nephrologists receive cases referred from primary care centers. To illustrate it, they were asked about 'The percentage of cases referred from primary care system of his/her total CKD patients'. Around 30% of their total patients are referred from primary care centers "Table 3".

Table 3

Percentage of your total CKD patients	Ratio (%)
<10%	42.7
11%-30%	41.6
31%- 60%	12.4
61%-90%	1.1
>90%	2.2

Also, they were asked on weekly basis 'How many CKD patients are referred to you from primary health care system?'. Most of the participants receive one CKD patient per week "Table 4".

Table 4

No. of patients	No. of participats
1	44
2-4	33
5-7	9
7-10	3
> 10	0

In addition, we investigated most common causes of referral to nephrology clinics. "Table 5".

Table 5

Items	Very Frequently		Frequently		Occasionally		Rarely		Never	
	fre	%	fre	%	fre	%	fre	%	fre	%
Establish or confirm the diagnosis	25	28.1	38	42.7	15	16.9	9	10.1	2	2.2
Provide recommended treatment	22	24.7	35	39.3	22	24.7	8	9	2	2.2
Primary investigation (blood tests- urinalysis - radiographic studies)	30	33.7	23	25.8	15	16.9	13	14.6	8	9
Advanced interventions (biopsy -immune suppressant agents - etc.)	9	10.1	15	16.9	32	36	23	25.8	10	11.2
Urgent Dialysis	14	15.7	14	15.7	31	34.8	20	22.5	10	11.2
Prepare the patient for kidney replacement thereby	5	5.6	24	27	28	31.5	23	25.5	9	10.1
Follow up for advanced complications of CKD	17	19.1	32	36	24	27	11	12.4	5	5.6

The quality of referral forms was assessed by questions regarding referral letter contents, clarity of referral cause, handwriting legibility, and ability to communicate with primary care physicians who refer the patient "Table 6,7".

Table 6

Items	Extremely Satisfied		Very Satisfied		Moderately Satisfied		Slightly Satisfied		Not at All Satisfied	
	fre	%	fre	%	fre	%	fre	%	fre	%
Satisfied about the clarification and explanation of the cause of referral	13	14.6	44	49.4	20	22.5	10	11.2	2	2.2
Satisfied about the validity of the cause of nephrology referral and consultation	16	18	48	53.9	17	19.1	6	6.7	2	2.2

Table 7

Items	Extremely Satisfied	Very Satisfied	Moderately Satisfied	Slightly Satisfied	Not at All Satisfied
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	fre	%	fre	%	fre	%	fre	%	fre	%
Satisfied about the template of referral form and its contents	16	18	31	34.8	19	21.3	19	21.3	4	4.5
Satisfied about the handwriting legibility and clarity of the referral letter	5	5.6	36	40.4	25	28.1	21	23.6	2	2.2
Satisfied about the accessibility of the electronic referral and its contents	20	22.5	38	42.7	19	21.3	9	10.1	3	3.4
Satisfied about my ability to communicate with the physician who refer the patient to me	10	11.2	36	40.4	12	13.5	22	24.7	9	10.1

Satisfaction about prior referral care were assessed as well, it includes satisfaction about referral time, timing of referral, history taking and physical examination written in the referral letter, laboratory tests and radiological investigations prior referral, and initial management of the patient "Table 8,9,10,11,12". Also, we assessed the level of agreements of the participants towards the importance of timing of referral, history taking, physical examination, and investigations was done to the patient "Table 13".

Table 8

Items	Extremely Satisfied		Very Satisfied		Moderately Satisfied		Slightly Satisfied		Not At All Satisfied	
	fre	%	fre	%	fre	%	fre	%	fre	%
Satisfied about the timing of referral of CKD patient	9	10.1	44	49.4	22	24.7	11	12.4	3	3.4

Table 9

Items	Very Early		Early		Appropriate time		Late		Very Late	
	fre	%	fre	%	fre	%	fre	%	fre	%
Timing of referral of CKD patient from primary care system to me is usually:	4	4.5	27	30.3	38	42.7	17	19.1	3	3.4

Table 10

Items	Extremely Satisfied		Very Satisfied		Moderately Satisfied		Slightly Satisfied		Not At All Satisfied	
	fre	%	fre	%	fre	%	fre	%	fre	%
Satisfied about patient's history taking in general	17	19.1	36	40.4	16	18	19	21.3	1	1.1

Satisfied about patient's medical and surgical history	14	15.7	36	40.4	36	24.7	15	16.9	2	2.2
Satisfied about patient's drug history	16	18	43	48.3	17	19.1	9	10.1	4	4.5
Satisfied about patient's family history	16	18	34	38.2	18	20.2	17	19.1	4	4.5
Satisfied about patient's social history	15	16.9	30	33.7	22	24.7	17	19.1	5	5.6
Satisfied about patient's physical examination	13	14.6	35	39.3	27	30.3	11	12.4	3	3.4

Table 11

Items	Extremely Satisfied		Very Satisfied		Moderately Satisfied		Slightly Satisfied		Not At All Satisfied	
	fre	%	fre	%	fre	%	fre	%	fre	%
Satisfied about the interpretation of patient's lab tests results prior referral	14	15.7	41	46.1	19	21.3	13	14.6	2	2.2
Satisfied about the interpretation of patient's radiological studies prior to referral	4	4.5	35	39.3	30	33.7	15	16.9	5	5.6

Table 12

Items	Extremely Satisfied		Very Satisfied		Moderately Satisfied		Slightly Satisfied		Not At All Satisfied	
	fre	%	fre	%	fre	%	fre	%	fre	%
Satisfied about patient's Initial management prior referral	14	15.7	30	33.7	32	36	12	13.5	1	1.1
Satisfied about patient's psychological preparation for kidney replacement thereby prior referral	8	9	23	25.8	29	32.6	21	23.6	8	9
Satisfied about patient's health education about his case and reason prior referral	15	19.6	24	27	26	29.2	19	21.3	5	5.6

Table 13

Items	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
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	fre	%	fre	%	fre	%	fre	%	fre	%
To what extent, do you agree or disagree that timing of referral from primary health care is important in terms of diagnosis and management of CKD patients	43	48.3	32	36	6	6.7	7	7.9	1	1.1
To what extent, do you agree that patient history provided by primary health care is important to you in terms of diagnosis and management of CKD patients	38	42.7	32	36	12	13.5	5	5.6	2	2.2
To what extent, do you agree that physical examination provided by primary health care is important to you in terms of diagnosis and management of CKD patients	40	44.9	33	37.1	9	10.1	5	5.6	2	2.2
To what extent, do you agree that patient's lab tests and radiological studies provided by primary health care is important to you in terms of diagnosis and management of CKD patients:	37	41.6	29	32.6	14	15.7	8	9	1	1.1

The level of satisfaction among nephrologists in our study sample was assessed by t-test analysis in order to compare if there are any important differences regarding nephrologists' level of satisfaction regarding any of study parts (quality of referral forms, timing and reasons for referral, satisfaction about referral and pre-referral care), based on their age of study individuals, nephrology degree (consultant/specialist), nephrology specialty (adult/pediatric), and hospital sector (governmental/private). There was not significantly different based on the age of study individuals, ($p=0.521$, $p=0.521$, $p=0.968$), and based on the nephrologist's degree (consultant or specialist) with a level of significance of ($p=0.47$, $p=0.48$, $p=0.40$).

However, the level of satisfaction among nephrologist was significantly lower in pediatrics than in adults only in (Satisfaction about referral and pre-referral care) ($p=0.062$), ($p=0.932$) ($p=0.014$) "Table 14". As well as, physicians working in private sector were satisfied more than governmental sector ($p=0.004$, $p=0.041$, $p=0.033$) "Table 15".

Table 14

Items	Specialty	Mean	Stander Deviation	Value (T)	P value
Quality of Referral Forms	Adult Nephrology	3.82	0.89	1.68	0.062
	Pediatric Nephrology	3.47	0.68		
Timing and reasons for referral	Adult Nephrology	3.62	0.86	0.085	0.932
	Pediatric Nephrology	3.63	0.65		
Satisfaction about referral and pre-referral care	Adult Nephrology	3.69	0.80	2.51	0.014
	Pediatric Nephrology	3.24	0.57		

Table 15

Items	Hospital Sector	Mean	Stander Deviation	Value (T)	P value
Quality of Referral Forms	Governmental	3.44	0.67	-3.04	0.004
	Private	3.92	0.66		
Timing and reasons for referral	Governmental	3.27	0.94	-1.79	0.041
	Private	3.65	0.66		
Satisfaction about referral and pre-referral care	Governmental	3.58	0.92	-2.16	0.033
	Private	4.02	0.62		

4 DISCUSSION

In our study, we found that confirming the diagnosis is the most common reason for patients' referral to nephrology clinics, followed by providing recommended treatment for the patients. Furthermore, a similar result was found in a study carried out in Jeddah city, that the main reasons for referral was for treatment and diagnosis [5,6].

Furthermore, most of the nephrologists were satisfied about CKD patient presentation time at their clinic, they think they present at an appropriate time. In addition, there are a lot of factors associated with late presentation of CKD patients for specialist evaluation. To illustrate it, a study reported that patients with hereditary renal diseases and glomerular nephropathy usually referred early more often due to its symptoms. On the other hand, hypertensive nephropathy or diabetic nephropathy usually presented at a later stage, especially, patients with type II diabetes usually referred within 6 months

before ESRD. [7]

In regards of quality of referral forms, and nephrologists' ability to communicate with primary care physicians, most of the participant are satisfied, which indicate a good communication between patient's primary care physicians and his nephrologist.

Also, our results showed that physicians who work in a private sector were more satisfied in all aspects of the questionnaire towards CKD patients. We think this is due to a better referral system, and load of CKD patients in governmental sectors compared to private hospitals.

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5 CONCLUSION

This study has provided an interesting insight into the level of satisfaction among nephrologists towards primary health care referral system. Although, governmental hospitals have to work harder to improve their health system, as they are the main source for most of Saudi citizens' health problems. Additionally, good communication between primary care physicians and other medical specialties provide a better health care to the patients. For nephrology evaluation, a nephrologist must be provided with good referral letter, with all important information needed for patient's condition, including important laboratory tests and radiological imaging to support his diagnosis or initiate patient's treatments as soon as possible.

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