



The Hashemite Kingdom of Jordan
Ministry of Health

Non-Communicable Diseases Directorate

National Registry of End Stage Renal Disease
(ESRD)

12th Annual Report
2019

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Jordan

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2019

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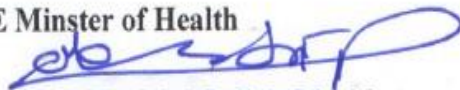
Foreword

It is my pleasure to present to you the eleventh report of the Jordan National End Stage Renal Diseases Registry (ESRDR) for the year 2019, hoping that this report will assist health care providers , public health officers and NGO's in their work to prevent and control renal disease in Jordan.

The data presented in this report constitutes an organized and systematic data of ESRD registry, it provides prevalence, incidence and burden of ESRD in Jordan, and it will provide readers with information on the epidemiology of ESRD in Jordan and its distribution by age groups, gender and governorates. It also assists researchers, renal diseases experts and policy makers in identifying priorities for developing national strategies and programs for renal diseases early detection as well as prevention programs.

I express my gratefulness and appreciation to everyone who helped in the preparation and dissemination of this report, and assures all of you that the Ministry of Health will continue to support National End Stage Renal Diseases Registry by all available resources to make its mission ongoing and of greatest benefit .

H.E Minister of Health



Pro. Dr. Nathir Mefleh Obeidat

Part one

Back ground

- The first kidney transplantation done in Jordan was on 18/05/1972 at the same main Military Hospital. It was the first to be done in the Middle East.

1981- The establishment of renal dialysis unit at Jordan university Hospital. The machine type was REDY “Sorbs system”. It was portable, moving to Khaldi and Islamic Hospitals.

1982- The first renal dialysis Unit was established in private sector, it was at Al-Khaldi Hospital.

1984- The first kidney transplantation was done in private sector at Islamic Hospital, then at Al- Khaldi Hospital.

2009- The first kidney transplantation in Jordanian public hospital was done at Prince Hamza Hospital in October 2009 according to The Jordanian National Program Of Renal Transplantation of the JMOH.

So dialysis was introduced in Jordan in 1968. Ever since, there has been a continuous expansion of the dialysis centers in terms of the geographic coverage and capacity. The economic prosperity helped building the services all over the country.

Modern hemodialysis machines were installed in the vast majority of units, which allowed for the performance of bicarbonate dialysis, controlled ultra filtration, and sodium profile modeling. Also a wider choice of biocompatible dialyzers has become available during the last few years.

Recently, there has been an emerging concern about the projection of the increasing number of patients on dialysis and the future cost. Therefore, close observation of the development of dialysis has been a demand of the Jordan center for organ transplantation. Preparing annual reports about all the modalities of RRT has become a demand activity.

National ESRD Registry, which is based on center and patient forms, is a useful tool to assess the quality of dialysis services and activities used to improve the adequacy of hemodialysis.

Jordan has had a growing number of persons developing CKD leading to ESRD. It is important to have a national registry in order to define the cause of ESRD, and to be able to perform (Inter) National comparisons in renal epidemiology.

Such a registry will monitor the causes, incidence, and prevalence of ESRD and any emerging trend.

A national ESRD registry will allow the determination of the burden of disease as well as planning and policy formulation in the health care sector. As the Registry develops, data will become available for patients with ESRD, as is reported here.

Finally, it is a great achievement to establish the National ESRD Registry, a new achievement in renal events in Jordan.

National Registry of End Stage Renal Disease:

The National Registry of End Stage Renal Disease was created in May 3rd, 2007 under the jurisdiction of the Ministry of Health by the order of his Excellency the Minister of Health.

Objectives of the National Registry of End Stage Renal Disease:

- Establish a national database system about patients of ESRD.
 - Determine the burden of that disease, on country basis.
 - Determine governmental payment on dialysis.
 - Provide data about patients and their suitability to be transplanted, on a basis of priority.
 - Stimulate beginning studies and researches about ESRD.
 - Improve facilities of diagnosis and treatment for ESRD patients.
- Moreover, train dialysis technicians and national registry employees.

Methodology:

The National Registry of End Stage Renal Disease was created in 2007 and supported by the Ministry of Health. It is a database-system that collects data and information about almost all patients undergoing Renal Replacement Therapy (RRT), i.e. either dialysis (hemodialysis and peritoneal dialysis) or Kidney transplantation.

This is the 12th national ESRD Registry report. Data were received from all (87) dialysis units in Jordan. It is assumed that those undergoing treatment in these units represent the number of all ESRD cases, because all cases are treated on the expense of the government and even the patients undergoing home peritoneal dialysis.

Data about all ESRD patients (all nationalities) who are receiving treatment in all dialysis units in Jordan (governmental, military, private and university hospitals) (RRT) during the year 2019 from 1st Jan -31 Dec -2019 were collected from all dialysis units in the hospitals and then analyzed using special software statistical analysis (SPSS), Epi Info 7 and Excel.

Two questionnaires (forms) used for data collection from hospitals. The first one is for the dialysis units: including number of beds, type of insurance of patient, nationality (Annex1).

The second form is for the patients, this form consists of demographic data, clinical data, source of treating facility, follow up and vital status of the patients and all these data will be entered on special software for ESRD patients (Annex2). Patients who are not on Renal Replacement Therapy (RRT) and those who only received urgent dialysis or died shortly afterwards (less than 90 days) were not included in this report.

Method of Data Collection:

Data was collected from all renal dialysis units in Jordan, through the following methods: two types of data collection methods were applied:

- 1- Passive Data Collection: in this system forms filled by dialysis units technicians and send to national renal registry - MOH/NCDs Directorate.
- 2- Active Data Collection: In this system the head of Renal Registry Unit visited the dialysis units and fills the forms on the unit and complete all the variables from medical record of those patients. This to ensure more complete and accurate data

All forms were reviewed at the Renal Registry Unit and filtered and checked for any duplication and also document follow up data if the patient still alive or dead cause of death dates of last dialysis.

Data entered to special software designed for data of renal patients, Data analysis was done by using statistical package for the social sciences SPSS . Epi info 7 , and Microsoft excel .

Incidence and prevalence calculations in this report are based on the population by Department of Statistics (DOS) 2019

Table (1) Population of Jordan 2019

Age Group	male	Female	Total
>5	520726	494291	1015017
6 _ 9	363434	347522	710956
10 _ 15	409635	385651	795286
16 _ 19	390372	364323	754695
20 _ 24	372664	340811	713475
25 _ 29	297852	280081	577933
30 _ 34	256102	259516	515618
35 _ 39	235434	238672	474106
40 _ 44	213898	216822	430720
45 _ 49	189827	188029	377856
50 _ 54	144594	143551	288145
55 _ 59	101038	101937	202975
60 _ 64	71580	70136	141716
65 _ 69	56740	59246	115986
70 _ 74	46449	41910	88359
75 _ 79	29354	28267	57621
80 +	22301	23235	45536
Total	3722000	3584000	7306000

Figure (1) Population Pyramid – Jordan 2019

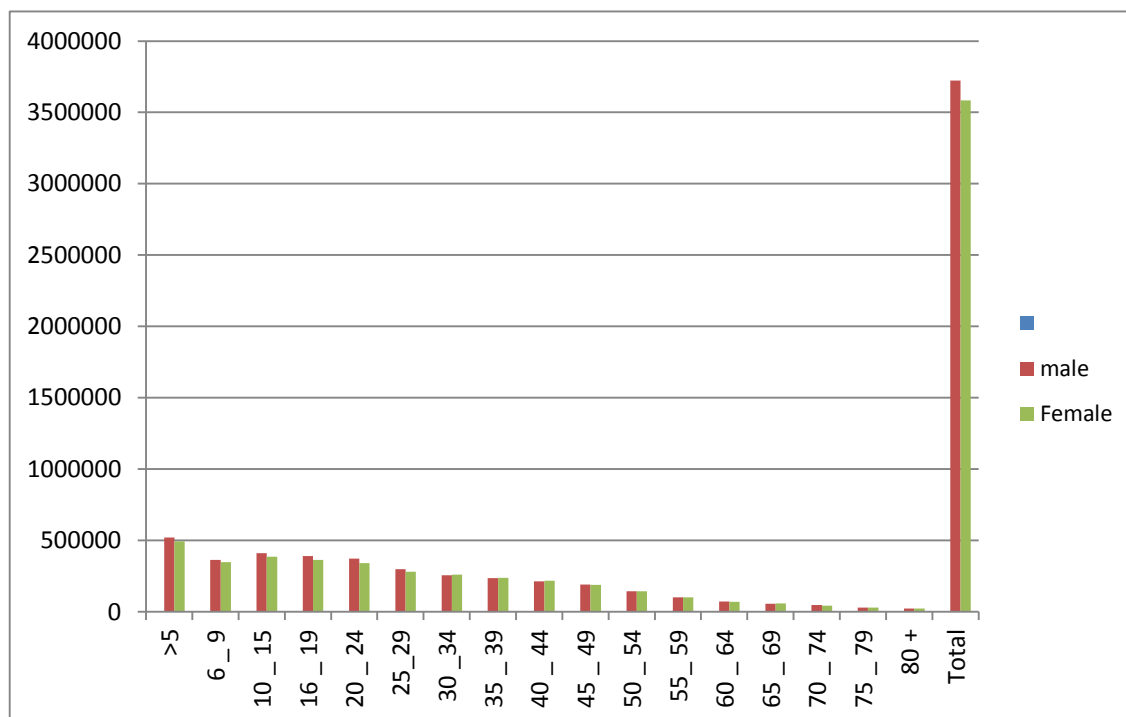


Table (2) Population distribution by Governorate and Gender, 2019

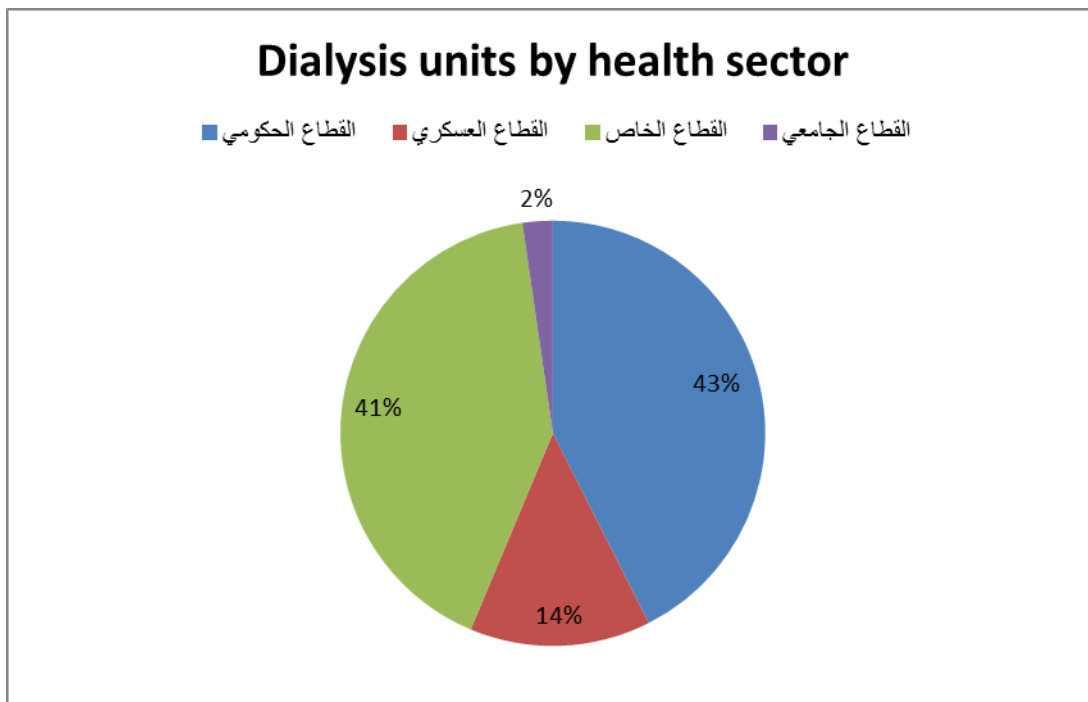
Governorate	Male	Female	Total
Amman	1431900	1390500	2822400
Balqa	222200	216300	438500
Zarqa	522900	497500	1020400
Madaba	88400	84800	173200
CENTRAL REGION	2265400	2189100	4454500
Irbid	743600	710800	1454400
Mafrq	177800	169300	347100
Jarash	95100	90300	185400
Ajloun	88400	85200	173600
NORTH REGION	1104900	1055600	2160500
Karak	151800	149200	301000
Tafilah	50900	48600	99500
Maan	72100	69300	141400
Aqapa	76900	72200	149100
SOUTH REGION	351700	339300	691000
Total	3722000	3584000	7306000

Part Two

Dialysis Units in Jordan

There were 87 working Dialysis Units distributed all over the country. 37 units (43%) administered by Ministry of Health (MOH), 12 units (14 %) administered by Royal Medical Services (RMS), 2 units (2 %) administered by university hospitals: one administered by Jordan University Hospital, one by King Abdullah University Hospital (KAUH) and 36 units (41%) administered by Private Sector (PS),(Figure 2).

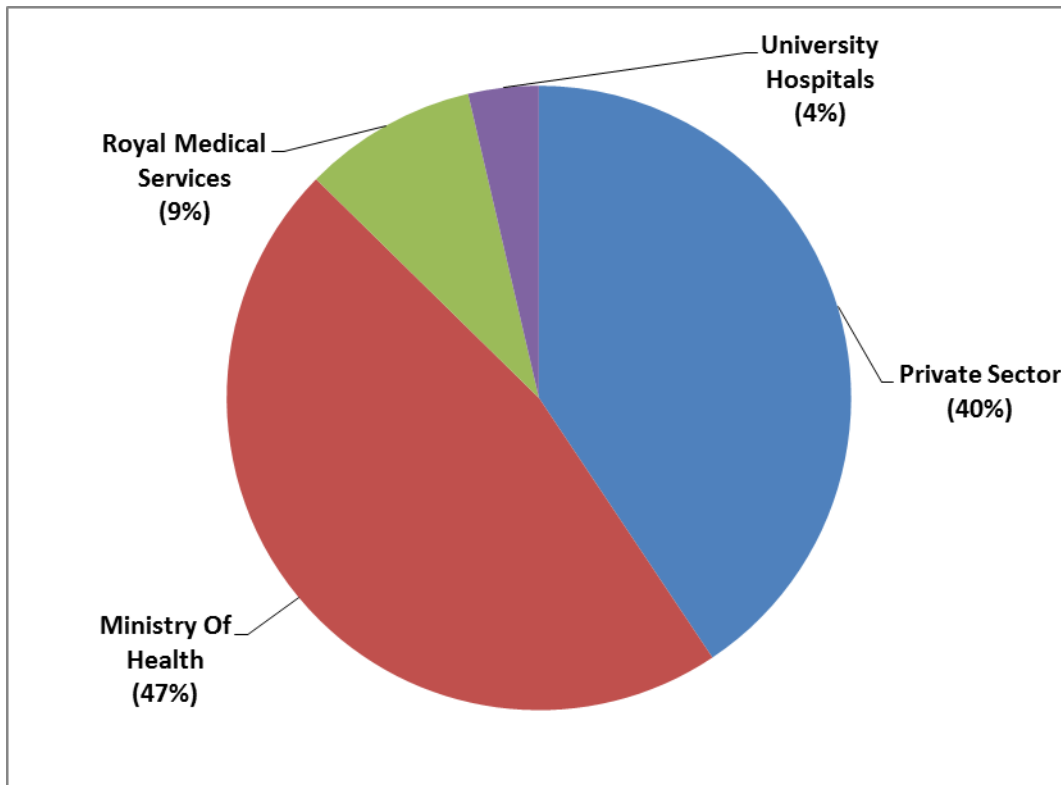
Figure (2) Distribution of dialysis units by health sector, Jordan 2019



Distribution of Dialysis Machines by Health Sector, Jordan 2019.

The total number of dialysis machines (932) in all units was distributed as followed: 435 (46.7%) machines in MOH units, 84(9.0%) machines in RMS, 34(3.6%) machines in universities hospitals and 379 (40.6%) machines in private sector hospitals, (Figure 3).

Figure (3) Distribution of Dialysis Machines by Health Sector, 2019



The focal points in all 87 Dialysis Units filled the special form of data collection and send it to National ESRD Registry located in the Ministry of Health. (Annex1), data about ESRD patients was received from all hospitals.

Part three

ESRD patients in Jordan

Prevalence of ESRD patients in Jordan (2019)

The total numbers of patients treated and registered in the Jordan Renal Registry by the end of 2019 was 6708 patients; of them 6316 were Jordanians (94 %) and 391 were non Jordanians (6 %) .

This part of the report only includes Jordanian patient –prevalence 2019

The number of Jordanian patients that registered in ESRD and treated in hospitals for the year 2019 was 6316 patients, while the number of new cases of ESRD for the year 2019 was 750 patients , out of them 719 patients (95.8 %) were Jordanians , 31 (4.2 %) were non Jordanians.

Prevalence of ESRD Patients in Jordan, 2019

The total number of ESRD patients during the year 2019 was 6316 patients who are receiving hemodialysis or peritoneal dialysis in the hospitals from all sectors.

Distribution of ESRD patients according to age groups and gender, 2019

Table (3) shows the distribution of ESRD patients according to the age groups and gender,. The median age of patients was (56) years, (54 years for males and 57 years for females).

Table (3) also shows the distribution of ESRD cases by prevalence rate per million populations (PPM), the overall prevalence per Million Populations in Jordan was (864.5 /1,000,000).

**Table (3) Distribution of ESRD according to age groups and gender and
Prevalence Rate per million (PPM), 2019**

Agegroup	Male		Female		Total		
	No	PPM	No	PPM	No	PPM	%
0-10	53	14.2	32	8.9	85	11.6	1.35
10_20	119	32.0	106	29.6	225	30.8	3.56
20-30	230	61.8	154	43.0	384	52.6	6.08
30-40	352	94.6	194	54.1	546	74.7	8.64
40-50	558	149.9	272	75.9	830	113.6	13.14
50-60	871	234.0	405	113.0	1276	174.7	20.20
60-70	800	214.9	613	171.0	1413	193.4	22.37
>70	731	196.4	563	157.1	1294	177.1	20.49
Missing	167	44.9	96	26.8	263	36.0	4.16
Total	3881	1042.7	2435	679.4	6316	864.5	100.00

Socio demographic characteristics of ESRD prevalent patients:

Figure (4) shows the distribution of patients who underwent dialysis treatment in renal dialysis units in all Jordanian hospitals during the year 2019 according to gender. The number of patients treated in the Dialysis Units was 6316 patients, out of them 3881 were male patients which accounted (61 %) , and 2435 were female patients accounted (39 %) , with male to female ratio 1.5:1.

Figure (4) Distribution of ESRD patients by Gender 2019

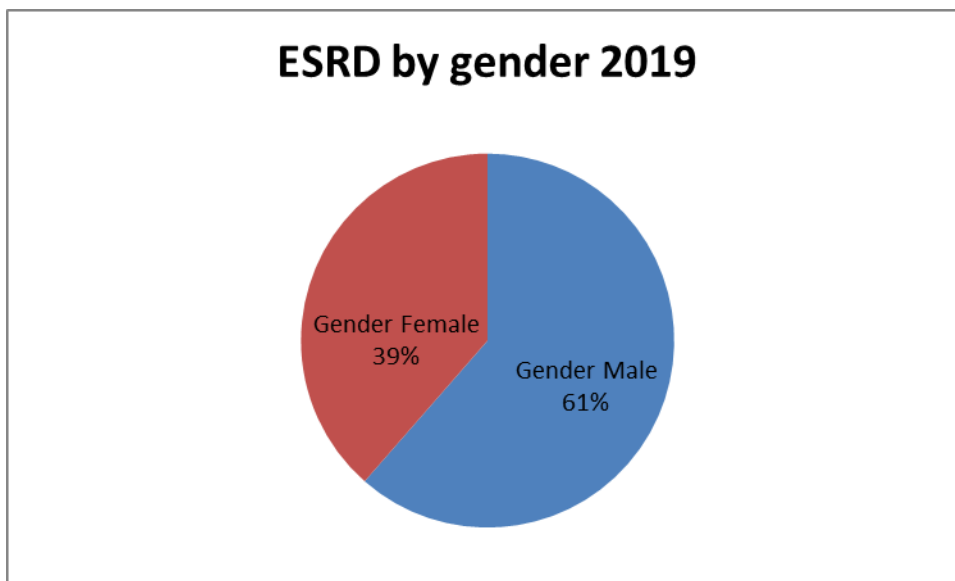
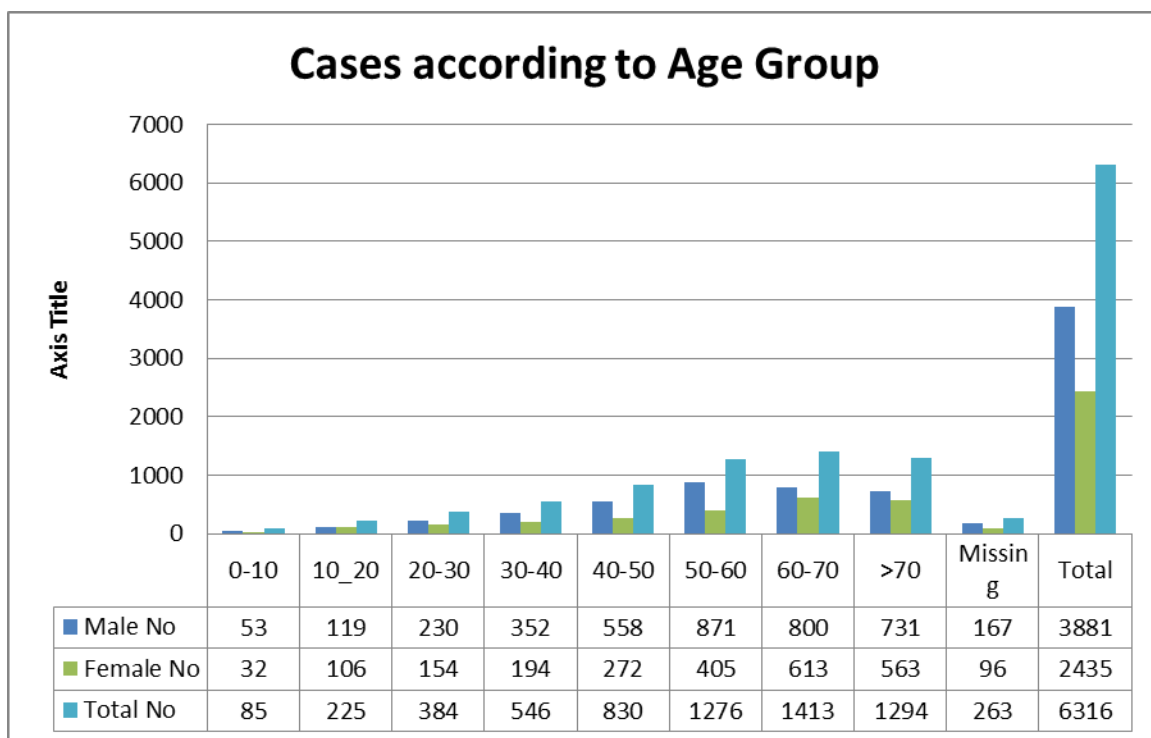


Figure (5) ESRD cases according to Age groups and gender-2019



Distribution of ESRD patients according to marital status and gender

Table (4) shows that the majority of ESRD patients were married (**74 %**), while (**14 %**) of the ESRD patients were singles, (**1 %**) of the patients were divorced , missing data accounted for (**4 %**) .

**Tables (4) Distribution of ESRD patients according to marital status
2019**

Marital Status	male		female		total	
	no	%	No	%	No	%
Married	3106	80	1563	64	4669	74
Single	517	13	352	14	869	14
Divorced	27	1	54	2	81	1
Widow	77	2	393	16	470	7
Missing	154	4	73	3	227	4
Total	3881	100	2435	100	6316	100

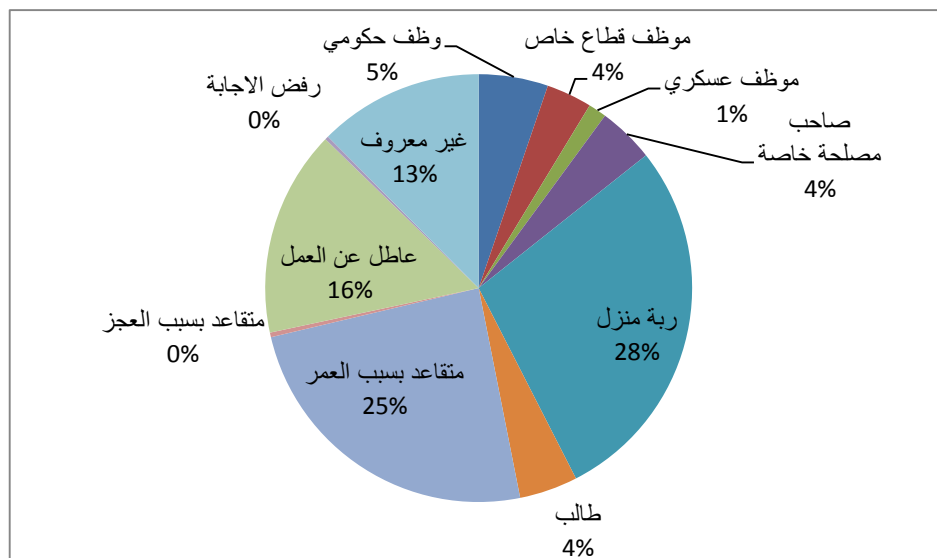
Distribution of ESRD patients according to employment status and gender

Table (5) shows the distribution of the ESRD patients according to their employment status for both genders. House wife's accounted (28.1 %) , (11.2%) of the patients were employed either governmental or non-governmentally and military services , (24%) were retired, and (4.4%) were students, (15.6%) of the patients were unemployed, missing data about employment was (12.5%). Fig. (6)

Table (5) Distribution of ESRD patients by employment status 2019

Employment	male		female		total	
	no	%	No	%	No	%
موظف حكومي	282	7.3	50	2.1	332	5.3
موظف قطاع خاص	204	5.3	14	0.6	218	3.5
موظف عسكري	82	2.1	5	0.2	87	1.4
صاحب مصلحة خاصة	264	6.8	5	0.2	269	4.3
ربة منزل	0	0.0	1776	72.9	1776	28.1
طالب	152	3.9	127	5.2	279	4.4
متقاعد بسبب العمر	1481	38.2	62	2.5	1543	24.4
متقاعد بسبب العجز	21	0.5	1	0.0	22	0.3
عاطل عن العمل	845	21.8	140	5.7	985	15.6
رفض الاجابة	9	0.2	8	0.3	17	0.3
غير معروف	541	13.9	247	10.1	788	12.5
Total	3881	100.0	2435	100.0	6316	100.0

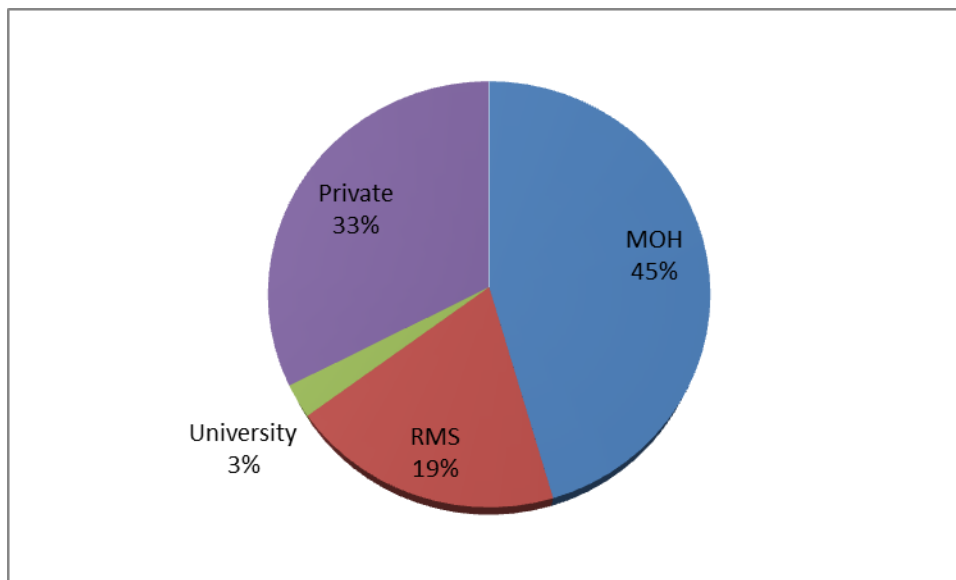
Table (6) Distribution of ESRD patients by employment status 2019



Distribution of prevalent ESRD patients by health sector

Out of the all 6316 prevalent ESRD patients 2871 patients (45.5%) were treated in MOH Dialysis Units , 1226 patients (19.4%) treated in RMS Dialysis Units, 162 patients (2.6 %) treated in university hospital Dialysis Unit, and 2054 patients (32.5 %) treated in Private Sector Dialysis Units.(Figure 7)

Figure (7) Distribution of prevalent ESRD patients by Health Sector, 2019



Distribution of ESRD cases according to the type of insurance

Table (6) shows the distribution of ESRD patients according to insurance type. (98%) of patients were insured by one of the various types of health insurance. (39.1%) of the patients were insured by Kidney Patients Fund in health insurance directorate in Ministry of health. (0.4%) were not covered by any type of insurance.

**Table (6) Distribution of ESRD patients by type of insurance and gender
2019**

Insurance Type	male		female		total	
	no	%	No	%	No	%
حكومي	911	23.5	524	21.5	1435	22.7
قطاع خاص	42	1.1	19	0.8	61	1.0
عسكري	1164	30.0	796	32.7	1960	31.0
ص. مرضى الكلى	1530	39.4	939	38.6	2469	39.1
جامعة	93	2.4	73	3.0	166	2.6
وكالة الغوث	3	0.1	2	0.1	5	0.1
فقراء	22	0.6	22	0.9	44	0.7
لا يوجد تأمين	19	0.5	8	0.3	27	0.4
غير معروف	81	2.1	40	1.6	121	1.9
missing	16	0.4	12	0.5	28.00	0.4
Total	3881	100.0	2435	100.0	6316	100.0

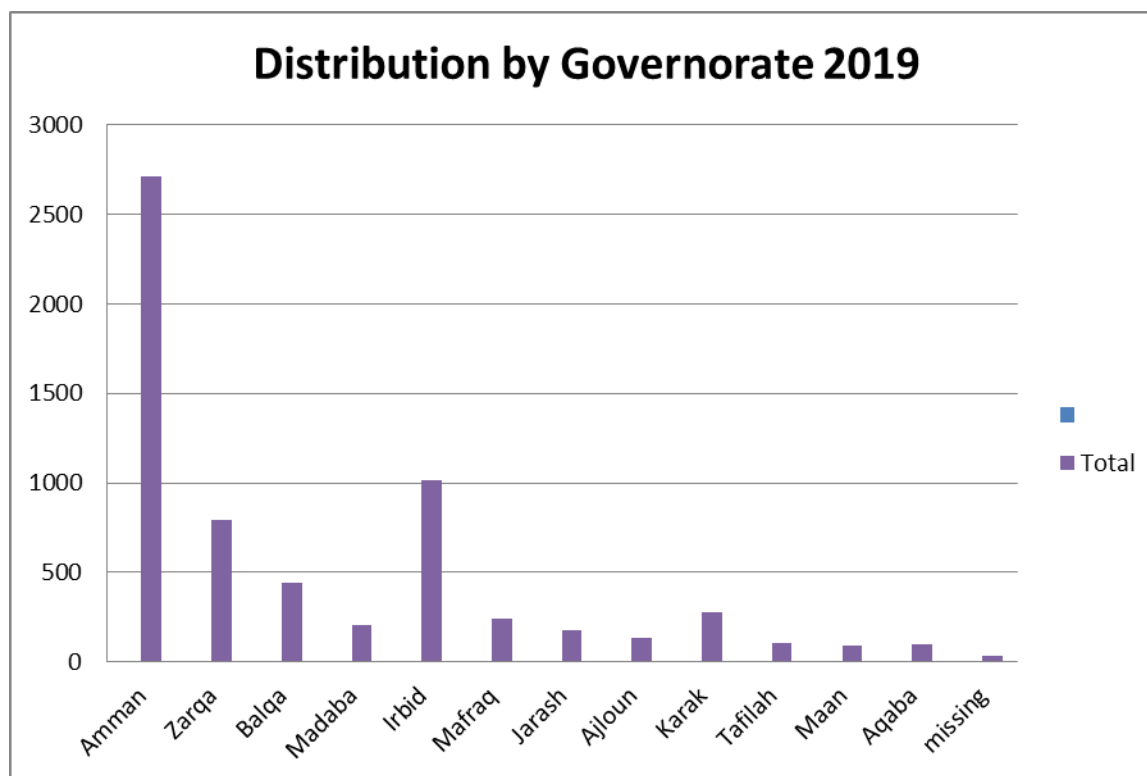
Distribution of ESRD patients by Governorate

The overall prevalence per Million Population in Jordan is (864.5/1,000,000), the highest percent was found in Amman governorate (42.9%) followed by Irbid governorate (16.1 %) Zarka governorate (12.5) Balgah governorate (7 %) and Karak governorate (4.4 %) . Table (7) and Fig. (8)

Table (7) Distribution of ESRD patients by Governorate 2019

Governorate	Male	Female	Total	%
Amman	1697	1011	2708	42.9
Zarqa	480	312	792	12.5
Balqa	257	182	439	7.0
Madaba	124	82	206	3.3
Central Region	2558	1587	4145	65.6
Irbid	599	418	1017	16.1
Mafrq	151	88	239	3.8
Jarash	113	63	176	2.8
Ajloun	84	47	131	2.1
North Region	947	616	1563	24.7
Karak	169	107	276	4.4
Tafilah	62	45	107	1.7
Maan	54	36	90	1.4
Aqaba	67	32	99	1.6
South Region	352	220	572	9.1
missing	24	12	36	0.6
Total	3881	2435	6316	100

Fig. (8) Distribution of ESRD patients by Governorate 2019



Distribution of ESRD prevalent patients by primary cause

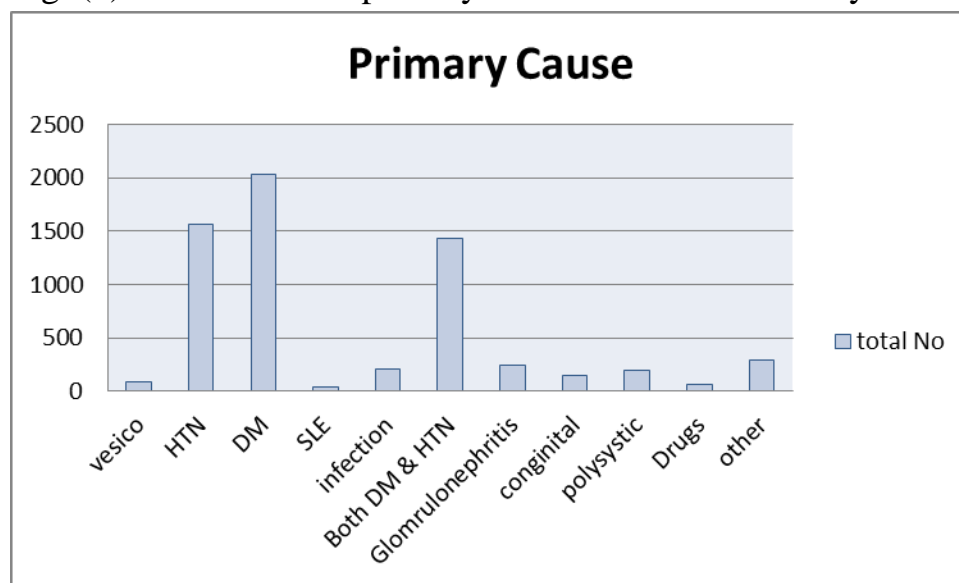
Table (8) and Fig.(9) shows the main primary causes of ESRD:

The most common primary cause is Diabetes Mellitus (32.2 %), followed by Hypertension (24.7 %), Diabetes Mellitus and Hypertension (22.7%), Glomerulonephritis (4%), Infection (3.3%), Polycystic kidney disease (3%) and congenital causes (2.3 %),

Table (8) Distribution of primary causes of ESRD for the year 2019

causes	male		female		total	
	no	%	No	%	No	%
vesico	50	1.3	35	1.4	85	1.3
HTN	978	25.2	585	24.0	1563	24.7
DM	1304	33.6	732	30.1	2036	32.2
SLE	10	0.3	26	1.1	36	0.6
infection	131	3.4	77	3.2	208	3.3
Both DM & HTN	854	22.0	581	23.9	1435	22.7
Glomerulonephritis	148	3.8	102	4.2	250	4.0
congenital	81	2.1	64	2.6	145	2.3
polycystic	113	2.9	79	3.2	192	3.0
Drugs	40	1.0	30	1.2	70	1.1
other	172	4.4	124	5.1	296	4.7
Total	3881	100	2435	100.0	6316	100.0

Fig. (9) Distribution of primary causes of ESRD for the year 2019



Co-morbidity and some risk factors with ESRD

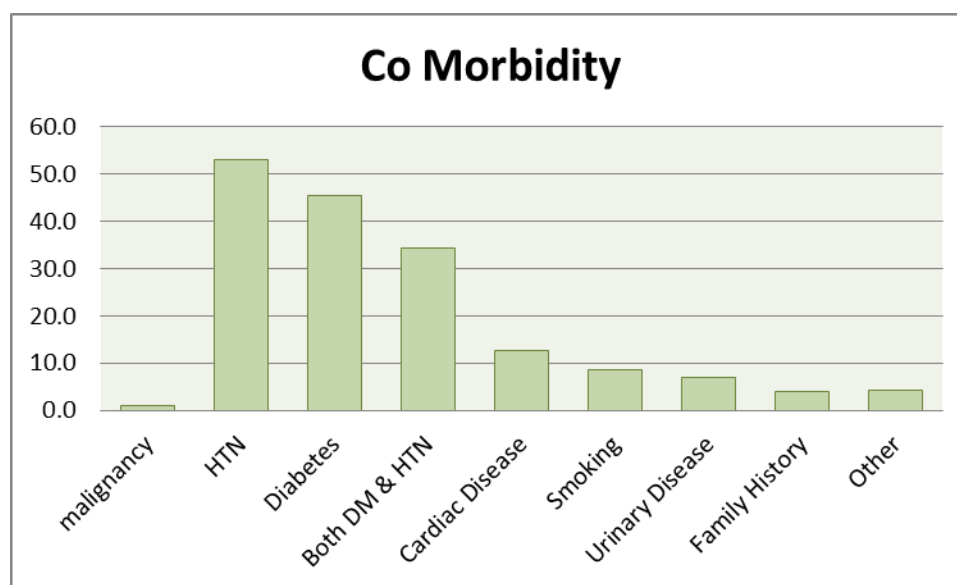
The data showed the presence of other medical conditions coexisting with the ESRD condition itself.

The prevalence of co-morbidity in ESRD patients showed that (52.9 %) of patients were hypertensive, (45.5%) Diabetes , while cardiovascular diseases were found in (12.6%) of ESRD patients. Smoking in ESRD was (8.7%) and (4%) of the patients had family history of renal diseases, Table (9). And Fig.(10)

Table (9) Prevalence of co-morbidity and some risk factors with ESRD 2019

co morbidity	Total	%
malignancy	62	1.0
HTN	3344	52.9
Diabetes	2874	45.5
Both DM & HTN	2175	34.4
Cardiac Disease	798	12.6
Smoking	551	8.7
Urinary Disease	441	7.0
Family History	250	4.0
Other	271	4.3

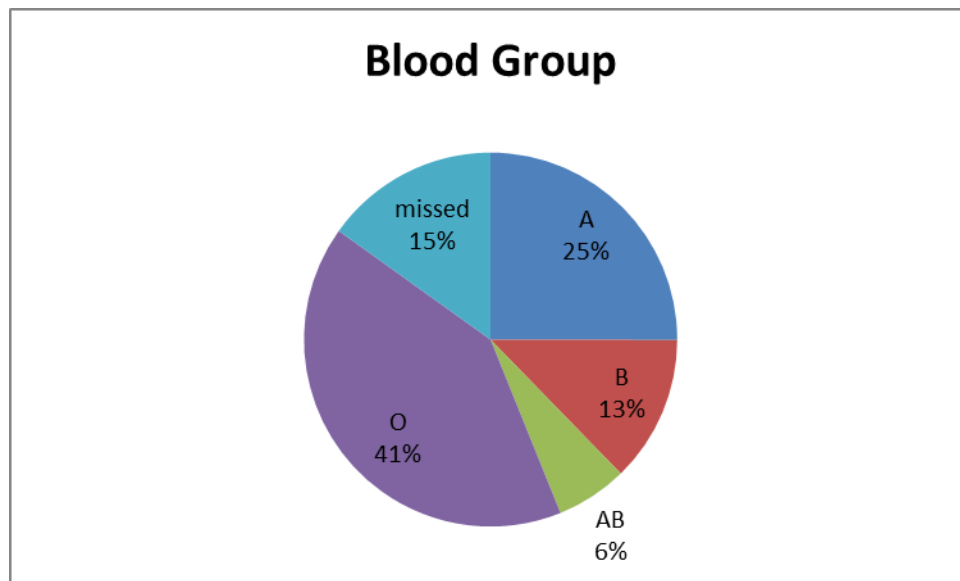
Fig (10) Prevalence of co-morbidity and some risk factors with ESRD 2019



Distribution of ESRD patients according to Blood Group

Figure (11) shows that 2589 (41%) were blood group O , and 1581 (25%) were blood group A , 801 (13%) were blood group B , and 390 (6 %) were blood group AB .Data was not available for 955 ESRD patients which constitutes (15 %), of the ESRD patients.

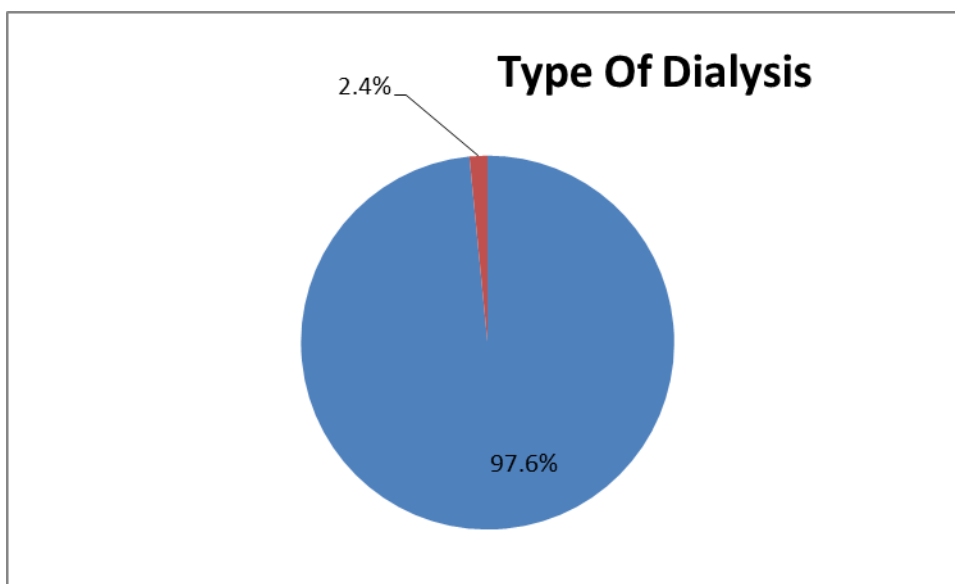
Figure (11) Distribution of ESRD patients according to Blood group



Distribution of ESRD patients according to type of Dialysis

Figure (12) shows that 151 patients (2.4 %) were treated by peritoneal dialysis, while 6165 patients (97.6 %) were treated by hemodialysis.

Figure (12) Distribution of ESRD patients by type of Dialysis 2019



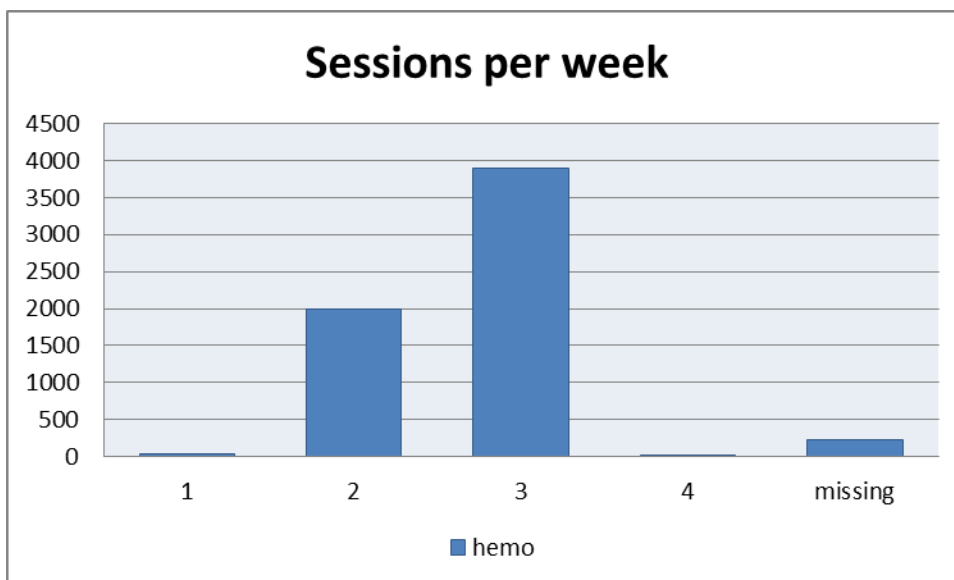
Distribution of Hemodialysis patients by number of sessions /week

Figure (13) shows that 3903 patients underwent Hemodialysis .
thrice a week (63.3 %) , twice a week 1988 (32.2 %) , once a week 35
(0.6 %) , and 10 (0.2%) four times a week, missing data accounts for 229
cases (3.7%)

The average duration of every session is almost four hours.

6165 patients are in hemodialysis

**Figure (13) Distribution of Hemodialysis patients by number of sessions
/week**



Distribution of ESRD cases according to fitness for transplantation

Table (10) and Fig.(14) shows that 2267 (36 %) from both genders were considered candidates for transplantation, and 3543 not candidates for transplantation (56 %), no available data on 506 (8 %) of ESRD patients.

Fig. (14) Distribution of ESRD patients by fitness for transplantation

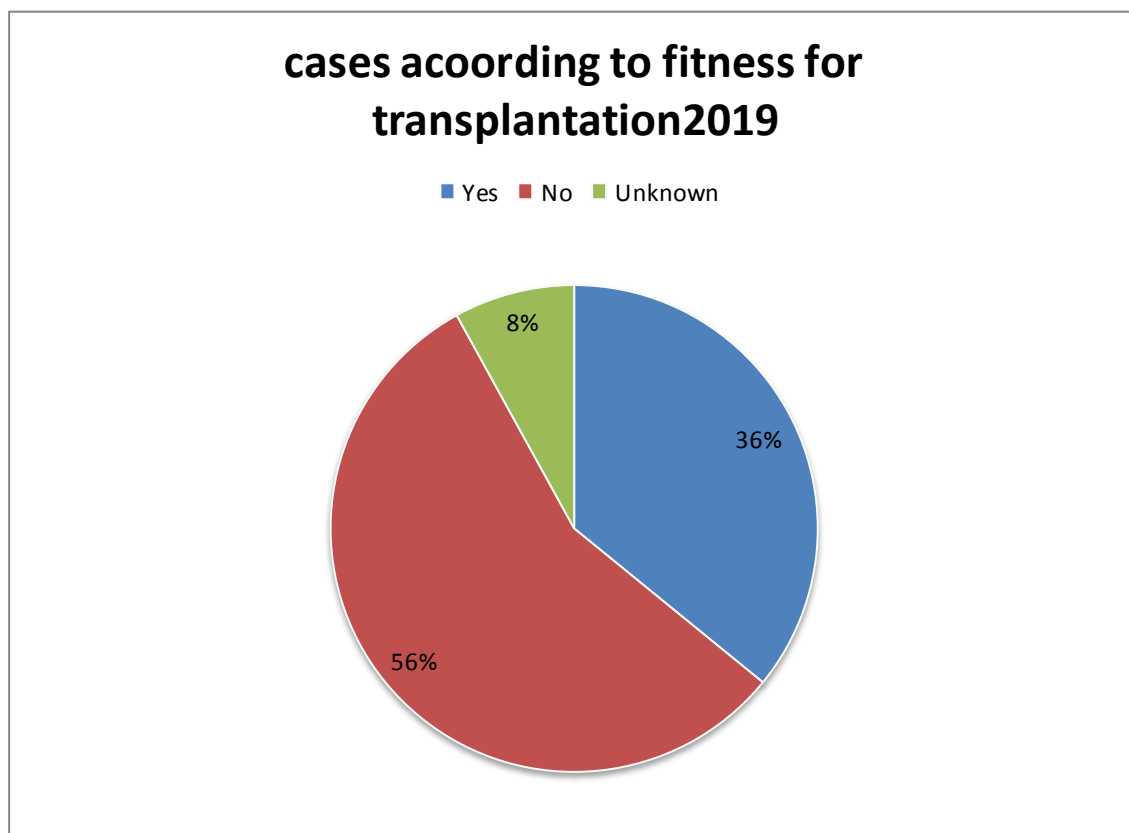


Table (10) Distribution of ESRD patients by fitness for transplantation

Candidate	Gender		Total	%
	Male	Female		
Yes	1391	876	2267	35.9
No	2106	1437	3543	56.1
Unknown	384	122	506	8.0
Total	3881	2435	6316	100.0

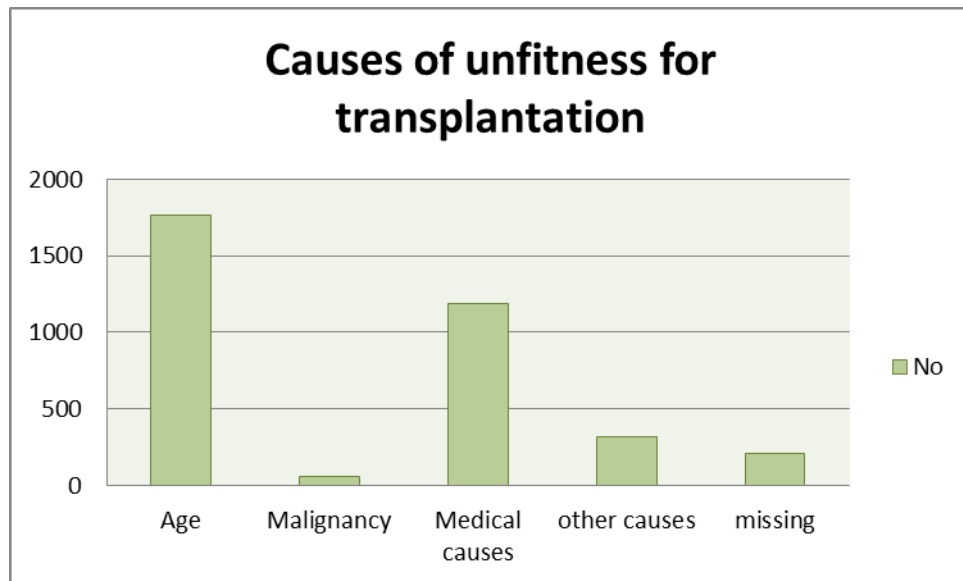
Distribution of ESRD cases according to unfitness for transplantation

Table (11) and Figure (15) show that the main causes of unfitness for transplantation were as followed: age 1766 patients (49.8%), medical causes 1188 patients (33.5 %) of all cases, malignancies in 60 patients (1.7%), while unknown causes for the cases were 212 patients (6%) of all patients.

Table (11) Causes of unfitness for transplantation

cause	No	%
Age	1766	49.8
Malignancy	60	1.7
Medical causes	1188	33.5
other causes	317	8.9
missing	212	6.0
Total	3543	100.0

Figure (15) Causes of unfitness for transplantation



Distribution of fitness of ESRD patients by priority level for transplantation

Figure (16) and Table (13) show the priority level for transplantation for patients who are candidate for transplantation. 963 patients (42.5%) were considered of high priority level for transplantation and 736 patients (32.5 %) considered of medium, and 304 patients (13.4 %) of low priority and 264 (11.6 %) had no data about their priority level.

Figure (16) Distribution of fitness of ESRD patients by Priority level for Transplantation

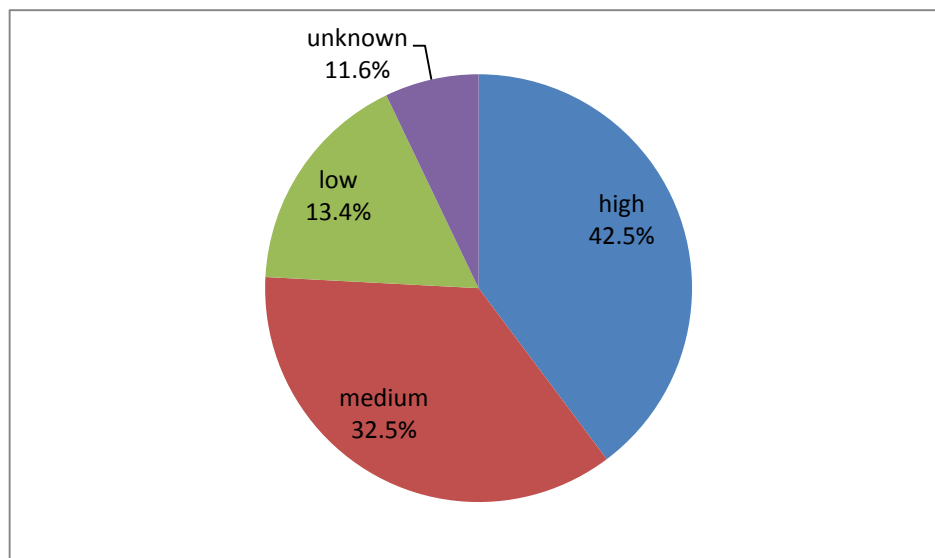


Table (13) Priority level for ESRD patient candidate for transplant-2019

Priority Level For ESRD candidate for Transplant 2018						
Priority level total	Male		Female		Total	
	No	%	No	%	No	%
High	627	45.1	336	38.4	963	42.5
Medium	438	31.5	298	34	736	32.5
Low	165	11.9	103	15.9	304	13.4
Unknown	161	11.6	103	11.8	264	11.6
Total	1391	100	876	100	2267	100

Distribution of ESRD cases according to availability of a donor 2019

Figure (17) shows that 1882 patients (83%) had no available donor, and 338 patients (15%) had available donor, 74 patients (2 %) had no data about available donor, this reflects the burden of ESRD in Jordan.

Figure (17) Distribution of ESRD patients by availability of a donor
Prevalence of Hepatitis B and C in prevalent ESRD patients

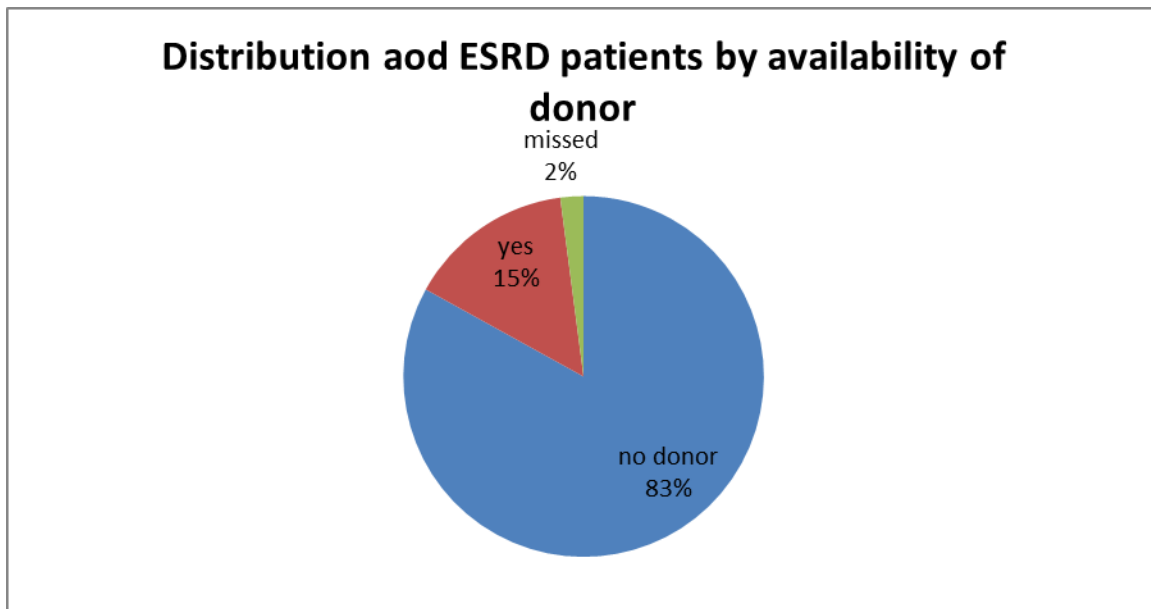


Table (14) Prevalence of Hepatitis B and C in ESRD patients

Hepatitis	B				C			
Gender	Male	female	total		Male	female	total	
	No	No	No	%	No	No	No	%
positive	34	22	56	0.9	88	33	121	1.9
negative	3595	2257	5852	92.7	3561	2247	5808	92.0
missed	252	156	408	6.5	232	155	387	6.1
total	3881	2435	6316	100.0	3881	2435	6316	100.0

Table (14) shows the Prevalence of Hepatitis B and C in ESRD patients
(0.9 %) of the cases had Hepatitis B , and (1.9 %) had Hepatitis C.

Part Four

Incidence of ESRD Patients

The total number of Jordanian patients who treated in the dialysis units by the end of 2019 were (6316) patients, but the number of new cases for the year 2019 was 750 patients , of them (719) were Jordanians (95.8 %) and(31) were non Jordanians (4.2 %).

This part of the report only include Jordanian patient – incidence 2019, The number of new cases of ESRD Jordanian patients for the year 2019 was 719 patient.

Incidence of ESRD, 2019

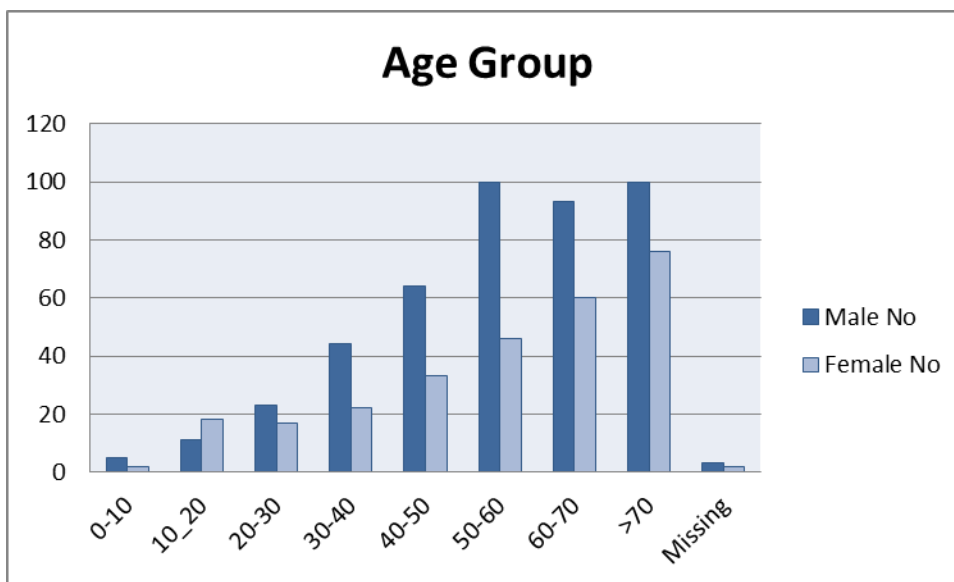
Table (15) and Figure (18) show the distribution of ESRD incident patients in 2019 according to the age group and gender, with a mean age of 55 years, and median age of 56 years. Table (15) also shows the distribution of ESRD patients by Age-Specific Incidence Rate per million (ASIR). The overall Incidence per Million Populations in Jordan was (98/1,000,000).

Table (15) Distribution and ASIR of ESRD cases by gender and age group - Incidence 2019

Agegroup	Male		Female		Total		
	No	PPM	No	PPM	No	PPM	%
0-10	5	1.3	2	0.6	7	1.0	1.0
10_20	11	3.0	18	5.0	29	4.0	4.0
20-30	23	6.2	17	4.7	40	5.5	5.6
30-40	44	11.8	22	6.1	66	9.0	9.2
40-50	64	17.2	33	9.2	97	13.3	13.5
50-60	100	26.9	46	12.8	146	20.0	20.3
60-70	93	25.0	60	16.7	153	20.9	21.3
>70	100	26.9	76	21.2	176	24.1	24.5
Missing	3	0.8	2	0.6	5	0.7	0.7
Total	443	119	276	77	719	98	100.0

***ASIR per Million population**

Figure (18) Incidence of ESRD Jordanian by sex & age group-2019



Distribution of incident ESRD patients by health sector

Figure (19) shows that the new number of patients treated in the Dialysis Units in 2019 were 719 patients; 278 patients (38.7%) treated in MOH dialysis units, 185 patients (25.7%) treated in RMS dialysis units, 23 patients (3.2%) treated in university hospital dialysis unit, and 233 patients (32.4 %) treated in Private Sector dialysis units.

Figure (19) Distribution of ESRD patients by health sector, 2019

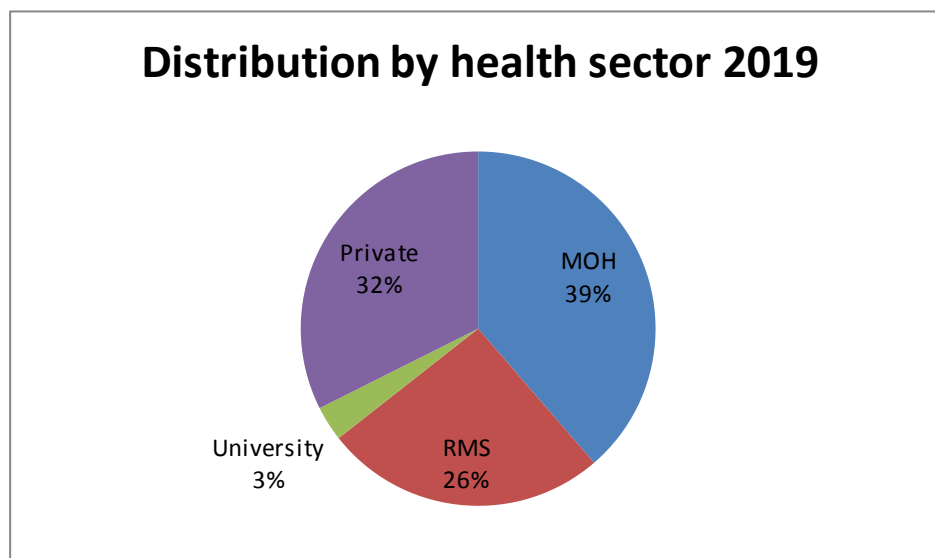
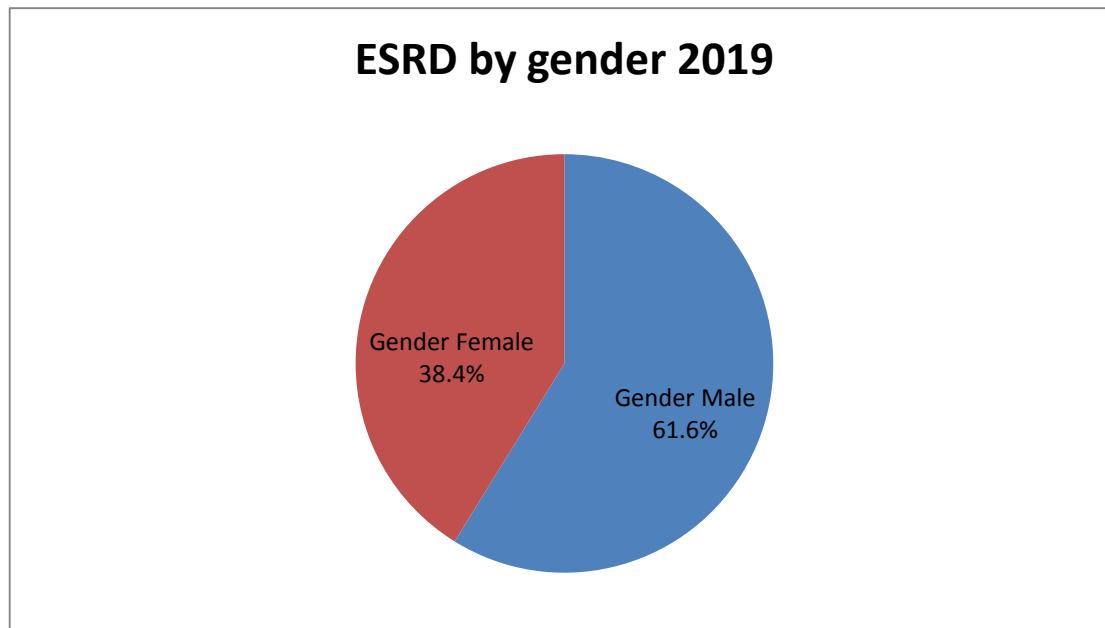


Figure (20) Distribution of ESRD patients by gender, 2019



Distribution of ESRD incident patients by gender

In the years 2019, out of the total (719) new cases of ESRD, 443 patients (61.6%) were males and 276 patients (38.4 %) were females with male to female ratio 1.6:1 Figure (20)

Distribution of ESRD patients by primary cause

Table (16) shows the main primary causes of ESRD Incident patients:

The most common primary cause was Diabetes and Hypertension together (32.3%), followed by DM (24.9%), Hypertension (20.7%) , Glomerulonephritis (6.5%) Polycystic kidney disease (4.7 %) , infection (3.6%) , congenital causes (2.8 %), , Vesico uretric reflux (2.6%), Drugs (1%) , SLE (0.3%) , and others was (0.6 %) of the patients.

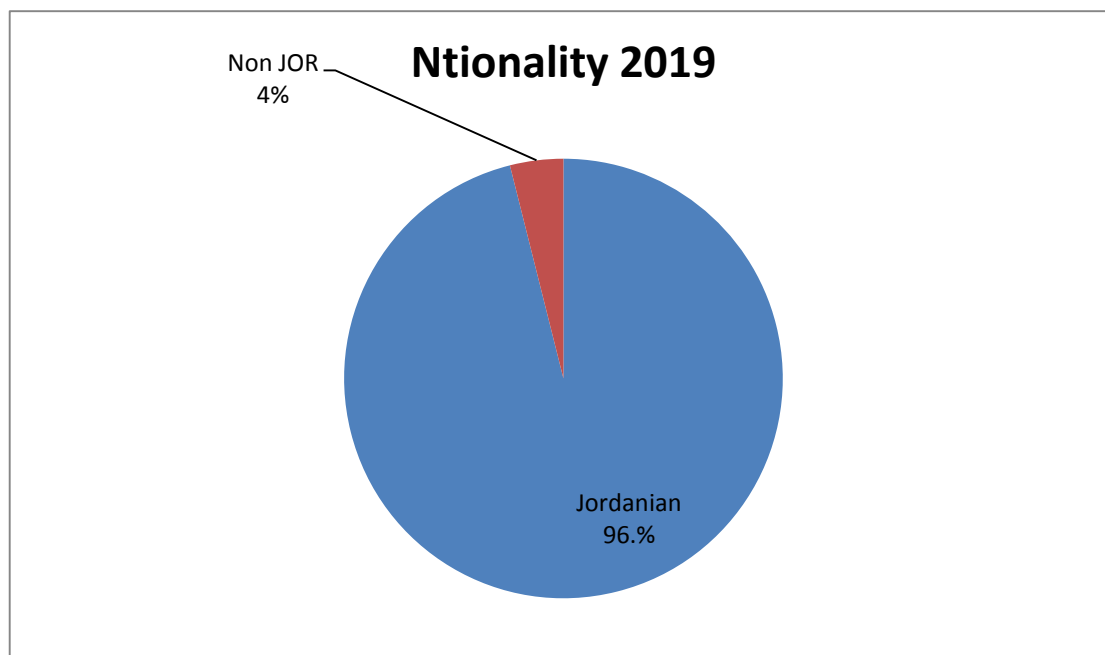
Table (16) Primary causes of ESRD for the year 2019- Incidence

causes	male		female		total	
	no	%	No	%	No	%
Vesicoureteral	8	1.8	11	4.0	19	2.6
HTN	91	20.5	58	21.01	149	20.7
DM	131	29.6	48	17.39	179	24.9
SLE	0	0.0	2	0.72	2	0.3
infection	17	3.8	9	3.26	26	3.6
Both DM & HTN	131	29.6	101	36.59	232	32.3
Glomerulonephritis	31	7.0	16	5.80	47	6.5
congenital	9	2.0	11	3.99	20	2.8
polycystic	21	4.7	13	4.71	34	4.7
Drugs	3	0.7	4	1.45	7	1.0
other	1	0.2	3	1.09	4	0.6
Total	443	100.0	276	100.00	719	100.0

Distribution of ESRD patients by Nationality

Figure (21) shows the distribution of ESRD patients according to Nationality, in 2019 there were (31) non-Jordanian patients accounted (4%) and 719 Jordanian patients accounted (96%).

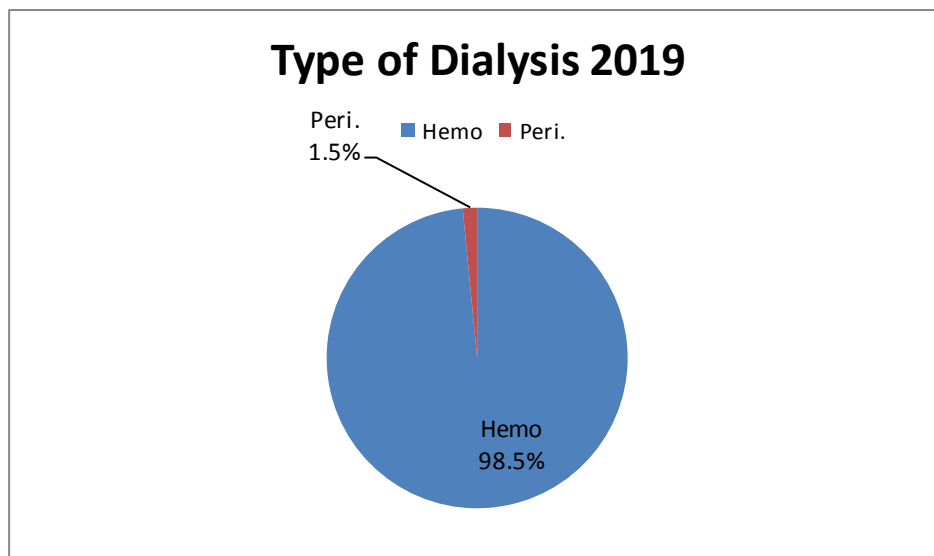
Figures (21) Distribution of ESRD patients by Nationality 2019



Distribution of ESRD patients according to type of Dialysis

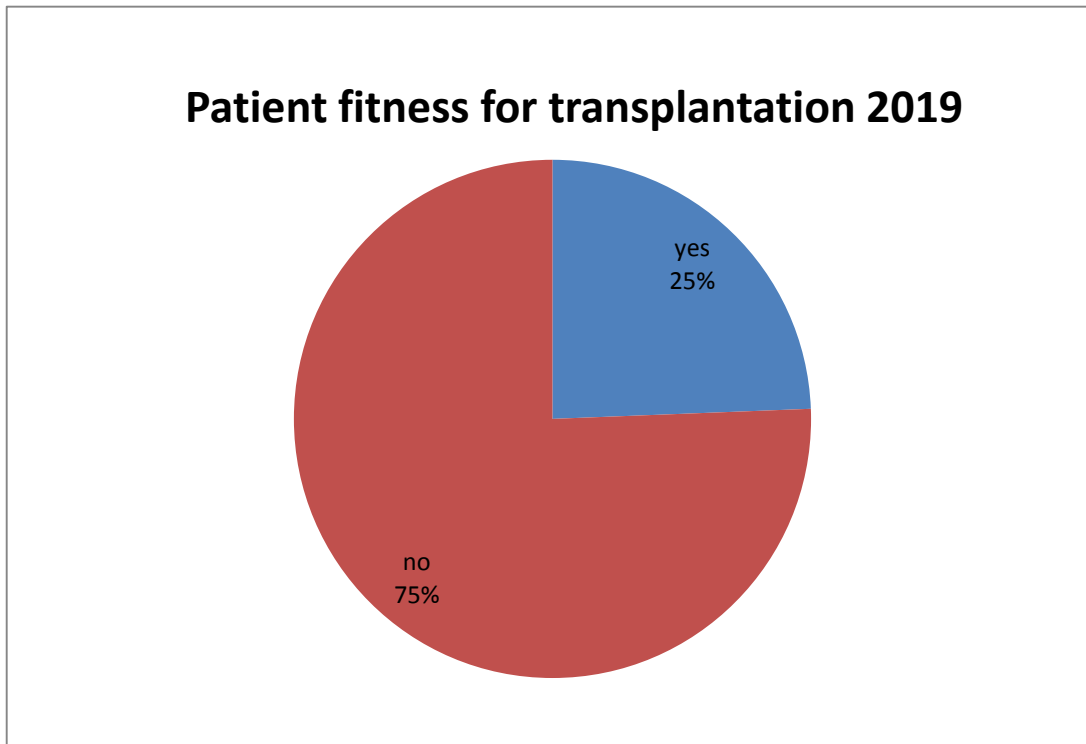
Figure (22) shows that in 2019 , only 11 patients (1.5 %) were treated by peritoneal dialysis, while 708 patients (98.5%) were treated by hemodialysis.

Figure (22) Distribution of ESRD patients by type of Dialysis, 2019



Distribution of ESRD cases according to fitness for transplantation, 2019.

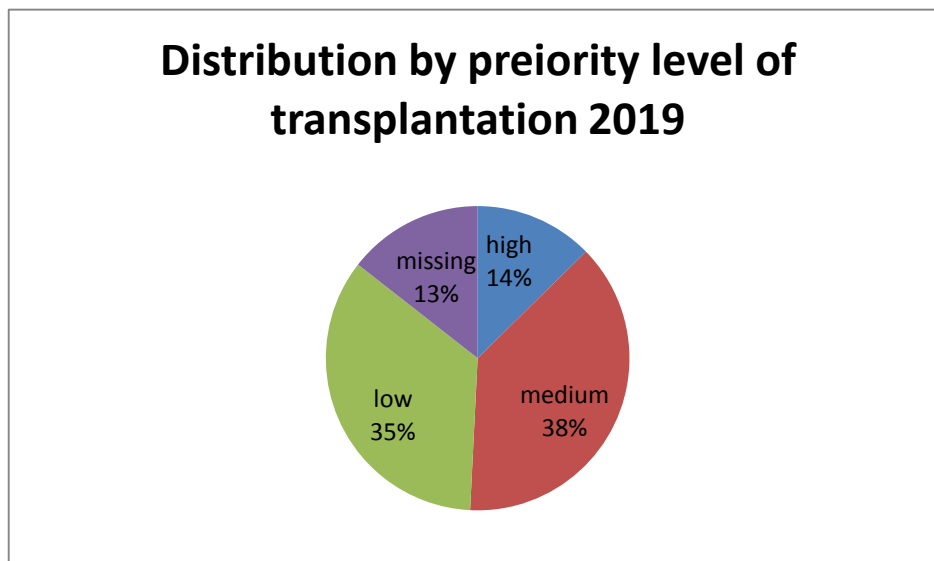
Figure (23) shows that there were 180 (25 %) candidates for transplantation, and 539 (75%) are not candidates for transplantation.



Distribution of fitness of ESRD patients by Priority level for transplantation

Figure (24) shows the priority level for transplantation: in 2019 it was found that 102 patients (14 %) were of high priority level for transplant, 268 patients (38 %) of medium and 250 patients (35 %) of low propriety level , and 99 patients (13%) had missing data

Figure (24) Distribution of fitness of ESRD patients by Priority level for Transplantation 2019



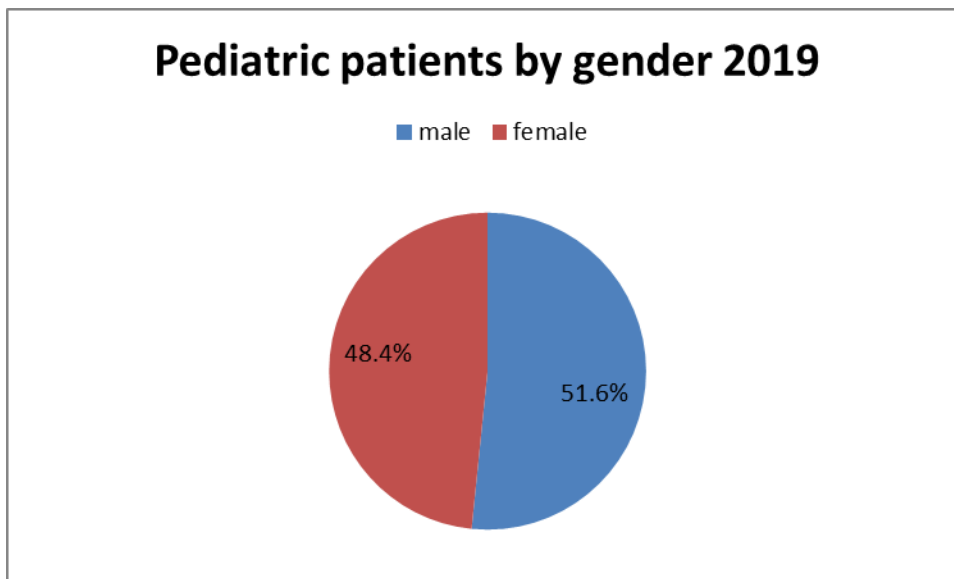
Part Five:

Pediatric ESRD

The total number of pediatric patients from 0-14 years was 186 patients in 2019.

Figure (25) shows the distribution of Pediatric ESRD who treated in renal dialysis units in all hospitals during the year 2019 according to sex. There were 186 patients , out of them 96 were males (51.6%) and 90 were female patients accounted (48.4%).

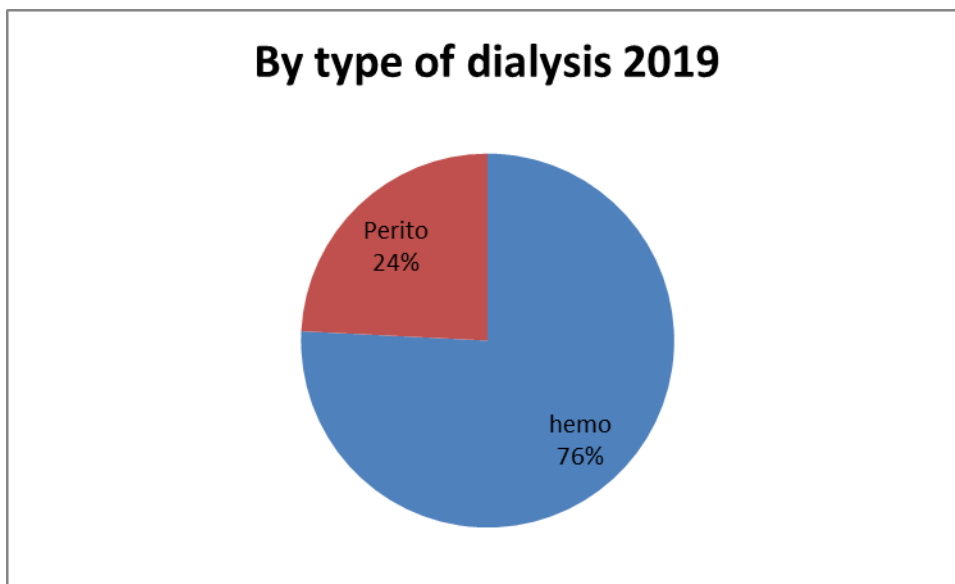
Figure (25) Distribution of ESRD pediatric patients by Gender



Distribution of Pediatric patients according to type of Dialysis

The total number of pediatric patients from 0-14 years was 186 patients. Out of them 141 patients were treated by hemodialysis and 45 on peritoneal dialysis. Figure (26) shows distribution of pediatric patients according to type of dialysis.

Figure (26) Distribution of Pediatric patients according to type of Dialysis



Causes of ESRD in Pediatric patients

Table (17) shows that the primary cause of ESRD in pediatric patients (those below 14 years): the commonest causes of ESRD Vesicoureteric reflux (14%) Congenital renal anomalies(11%) followed by polycystic kidney (9%) Hypertension (8 %) Glomerulonephritis (7%), Hypertension (10.3%), Nephrotic syndrome (5%) , DM (4%) Drug induced (2%) , SLE (1%), while other causes were not determined in (40%) of the pediatric patients.

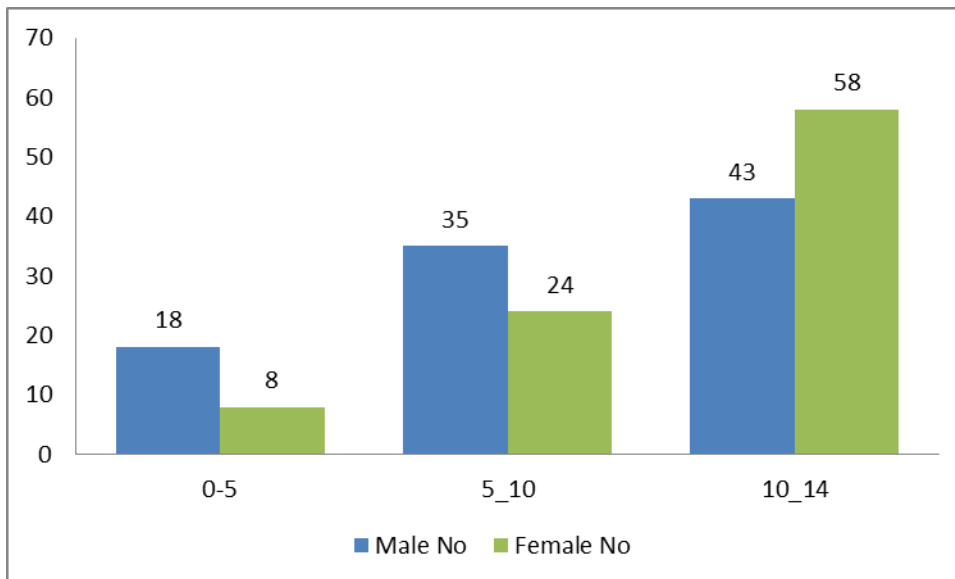
Table (17) Causes of ESRD in Pediatric patients 2019

causes	male		female		total	
	no	%	No	%	No	%
vesico	15	16	11	12	26	14
HTN	7	7	7	8	14	8
DM	4	4	3	3	7	4
SLE	0	0	1	1	1	1
infection	1	1	0	0	1	1
Nephrotic Syndrome	6	6	3	3	9	5
Glomerulonephritis	3	3	10	11	13	7
congenital	10	10	11	12	21	11
polycystic	8	8	8	9	16	9
Drugs	1	1	2	2	3	2
other	41	43	34	38	75	40
Total	96	100	90	100	186	100

Pediatric ESRD patients according to age groups and gender, 2019

Figure (27) shows the distribution of pediatric patients according to the age groups and gender in 2019, which indicates that the highest occurrence of the cases was among the age group (10-14) years 69 (54.3 %) for both genders, with a mean age of 9.2 years and median 10.00.

Figure (27) Distribution of pediatric patients according to age groups



Part six

ESRD Mortality

Distribution of mortality among ESRD patients

Figures (28-30) and table (18) show the distribution of deaths for ESRD patients 384 patients out of 6316 died during the year 2019. 263 (69 %) of them were males, and 121 (31 %) were females. Median age at death was 67 years, (65 years for males and 68 years for females).

Figure (28) Distribution of mortality in ESRD patients

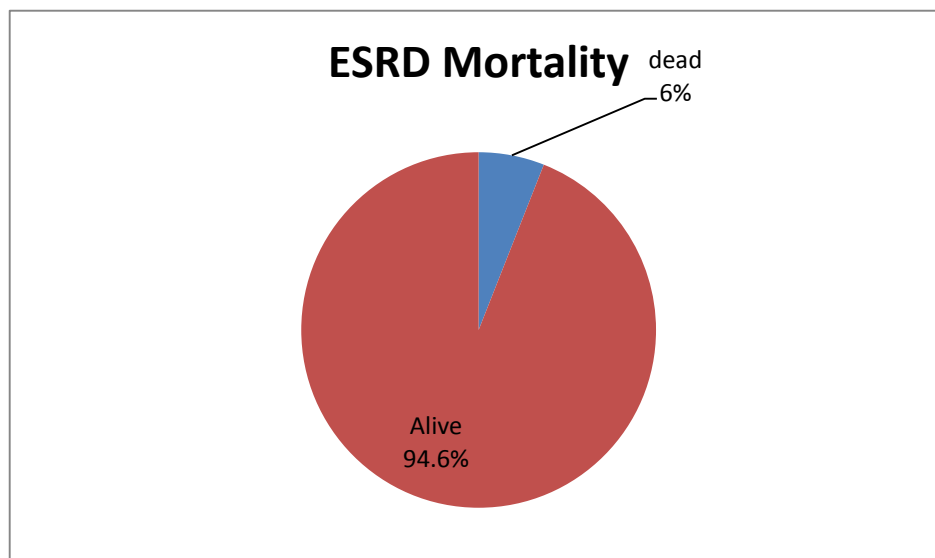


Figure (29) Distribution of mortality in ESRD patients according to gender

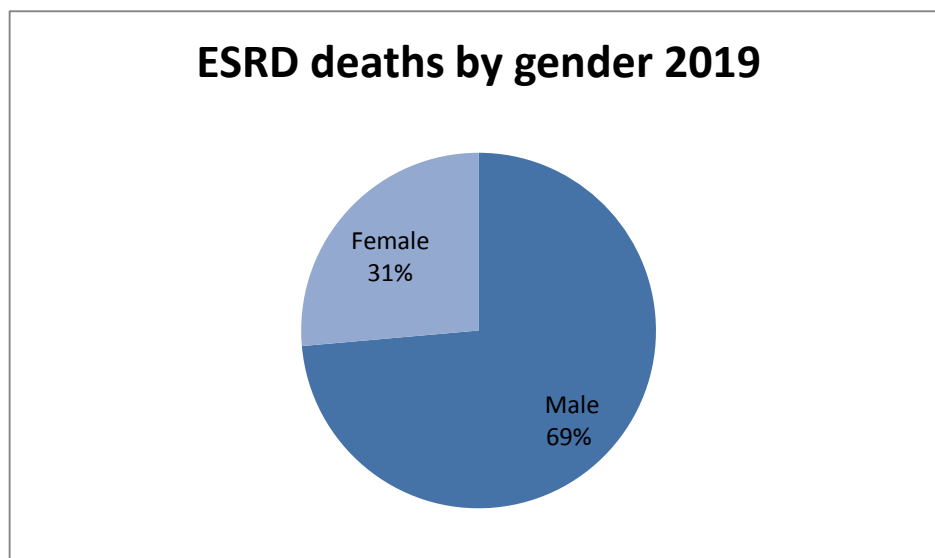


Figure (30) Distribution of mortality in ESRD patients by age group and gender

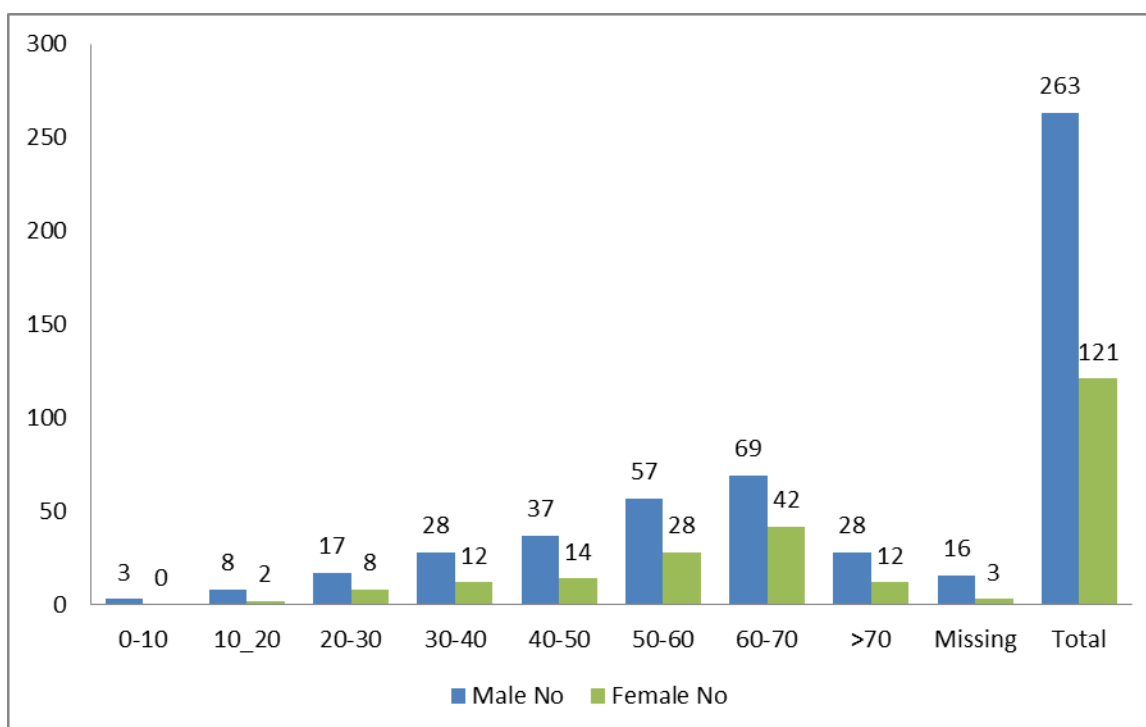


Table (18) Distribution of mortality in ESRD patients by age group and gender

Agegroup	Male		Female		Total	
	No	%	No	%	No	%
0-10	3	1.1	0	0.0	3	0.8
10_20	8	3.0	2	1.7	10	2.6
20-30	17	6.5	8	6.6	25	6.5
30-40	28	10.6	12	9.9	40	10.4
40-50	37	14.1	14	11.6	51	13.3
50-60	57	21.7	28	23.1	85	22.1
60-70	69	26.2	42	34.7	111	28.9
>70	28	10.6	12	9.9	40	10.4
Missing	16	6.1	3	2.5	19	4.9
Total	263	100.0	121	100.0	384	100.0

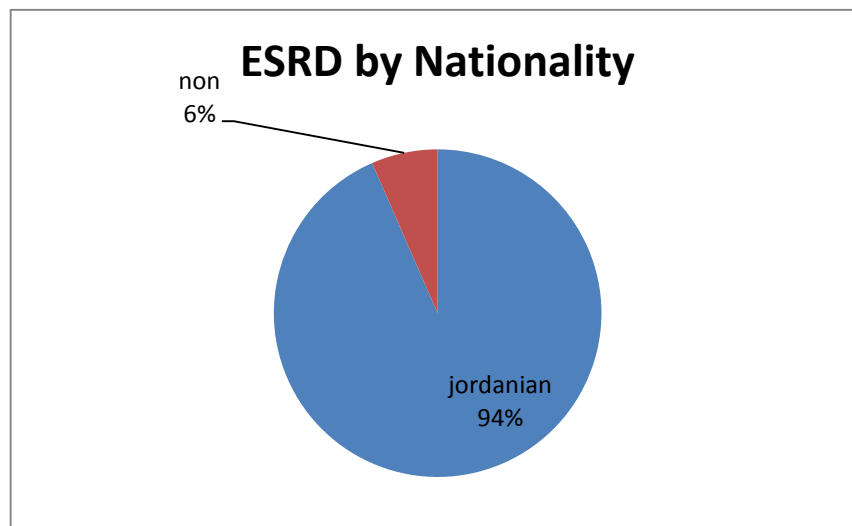
Part seven :

ESRD patients among Non-Jordanians, 2019

Distribution of ESRD patients by Nationality

Figure (31) shows the distribution of ESRD patients according to Nationality, The total number of patients among Non-Jordanians was (390) .

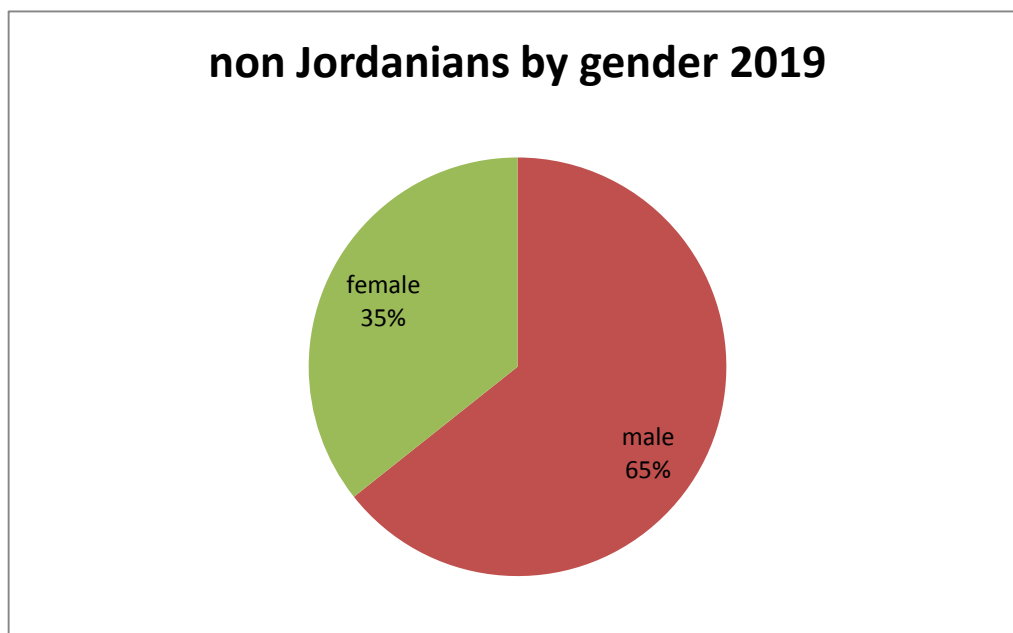
Figure (31) Distribution of ESRD patients by Nationality



Distribution of ESRD patients among Non-Jordanians by Gender

Figure (32) shows the distribution of Non-Jordanians ESRD patients who treated in renal dialysis units in all Jordanian hospitals during the year 2019 according to gender, the number of patients treated in the Dialysis Units were 390 patients, 253 (65 %) male , and 137 (35 %) female

Figure (32) Distribution of ESRD patients among Non-Jordanians by gender



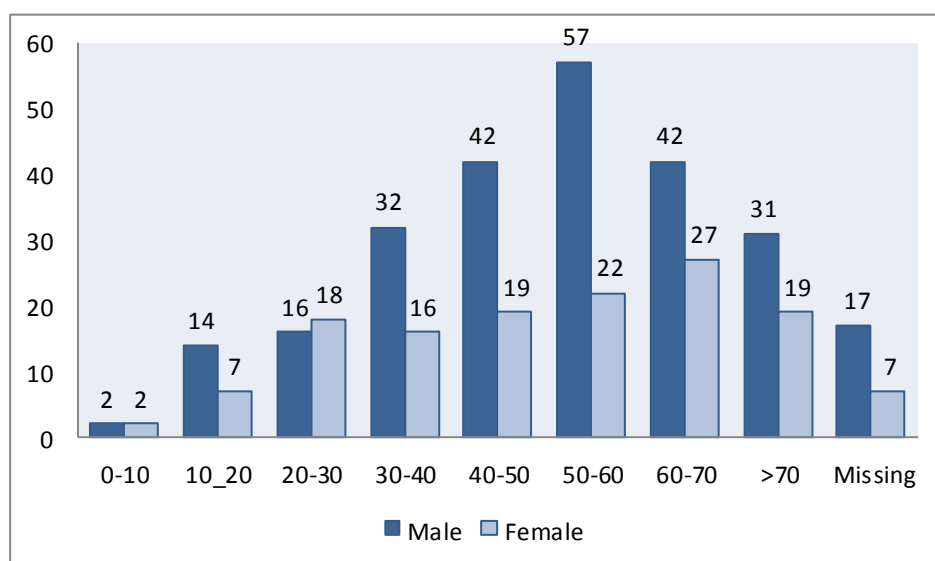
ESRD patients among Non-Jordanians according to age groups

Table (19) Figure (33) shows the distribution of Non-Jordanians patients according to the age groups and gender, which indicates that the highest occurrence of the cases was among the age group (50-60) years for both genders, followed by age-group (60-70) years for both genders

Table (19) Distribution of ESRD patients among Non-Jordanians according to age groups and gender, 2019

Agegroup	Male		Female		Total	
	No	%	No	%	No	%
0-10	2	0.8	2	1.5	4	1.0
10_20	14	5.5	7	5.1	21	5.4
20-30	16	6.3	18	13.1	34	8.7
30-40	32	12.6	16	11.7	48	12.3
40-50	42	16.6	19	13.9	61	15.6
50-60	57	22.5	22	16.1	79	20.3
60-70	42	16.6	27	19.7	69	17.7
>70	31	12.3	19	13.9	50	12.8
Missing	17	6.7	7	5.1	24	6.2
Total	253	100.0	137	100.0	390	100.0

Figure (33) Distribution of ESRD patients among Non-Jordanians according to age groups and gender, 2019



References

- 1- Annual Report, Jordan, 2016. Department of Statistics (DOS)
- 2- BRFSS Survey, 2007 Ministry of Health (MOH) Jordan.
- 3- Cancer incidence in Jordan, MOH, 2014.
- 4- Global Youth Tobacco Survey, Anti-Smoking Society Association, Jordan,
- 5- Mortality Data in Jordan, 2014, information and mortality section annual report 2014-Ministry of Health, Jordan.

(Annex 1)

المملكة الأردنية الهاشمية
وزارة الصحة
مديرية الأمراض غير السارية
السجل الوطني لمرضى الفشل الكلوي
استمارة معلومات حول وحدات الديليزة الكلوية

1- التاريخ				
2- اسم المستشفى				
3-العنوان				
4- رقم الهاتف				
5- الفرعي				
6- ضابط الارتباط				
7- رقم الهاتف				
8- الطبيب المعالج واختصاصه				
9- رقم الهاتف				
10- عدد الأجهزة موزعة كالتالي				
11-عادي				
12-عزل				
13-احتياط				
14-معطل				
15-المجموع				
16-عدد الورديات العاملة				
17-عدد المرضى الأردنيين موزعين كالتالي				
18-تامين صحي مدني				
19- بطاقة غير قادر				
20- صندوق مرضى الكلية				
21-عسكريين				
22- غير ذلك				
23-المجموع				
24-عدد المرضى غير الأردنيين				
25- الجنسية				
26- العدد				
27- المجموع				

28-المجموع الكلي للمرضى في الوحدة				
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29- ملاحظات :

