Psychiatric Morbidity and Quality of life in Renal Transplant Recipients

submitted for partial fulfillment of M.D. degree in Psychiatry

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List of abbreviations

ANOVA: analysis of variance
B.C.: before Christ
BDI: Beck depression inventory
CD: cluster of differentiation
CIAD: chronic illness or acquired disability
CMV: cytomegalovirus
CRF: chronic renal failure
DALYs: related 'disability-adjusted life years
DSA: digital subtraction angiography
DSM: diagnostic statistical mannual
GFR: glomerular filtration rate
GHQ: general health questionnaire
ECT: electroconvulsive therapy
ED: erectile dysfunctions
ESRD: end-stage renal disease
HLA: human leukocytic antigen
HRQoL: Health-related quality of life
IL: interleukins
LRD: living related donor
LRKT: living-related kidney transplant
MICS: malnutrition inflammation complex syndrome
MMF*:* Mycophenolate Mofetil
NICE: national institute of mental health
PPS: Paradoxical psychiatric syndrome
PRTR: post renal transplant recipients
PTSD: Post traumatic stress disorders
QALYs: quality-adjusted life years
QoL: quality of life
RTS: renal transplant surgery
SD: standard deviation
SPS: suicide probability scale
SSRI: selective serotonin reuptake inhibitors
TCAs: tricyclic antidepressants
WHO: world health organization

WHOQoL-100: world health organization quality of life 100 questions questionnaire.

Introduction

Since the first organ transplantation in the 1950s, there have been reports that patients who underwent organ transplantation had a poor prognosis if they were depressed and/or anxious prior to transplantation ***(Illescas-Rico et al, 2002).*** Psychiatric disorders such as depression and anxiety may be seen after a successful renal transplantation. The frequency of psychiatric disorders is quite high in renal transplantation patients ***(Araplasan et al, 2004).***

The occurrence of (paradoxical psychiatric syndrome) PPS was significantly related to recipients' guilt feelings toward living donors, but these were strongly superseded by recipients' desires to escape from approaching death. The postoperative prevalence of psychiatric disorders for adult transplant recipients was highest the first 3 months post-transplant ***(Fukunishi et al, 2002).*** Illness and the patient role can come to dominate the sense of self, resulting in feelings of hopelessness, helplessness, and distress ("engulfment"). Illness-induced lifestyle disruptions ("illness intrusiveness") introduce adaptive demands, challenging preexisting conceptions of self. Illness intrusiveness and engulfment may interact, leading affected individuals to construe themselves ***(Beanlands et al, 2003).***

Delirium, depression and other psychiatric difficulties are commonly encountered by post-transplantation patients, and antipsychotic medicines are frequently used to treat these difficulties. Unproven but of concern is that these effects may influence graft fate. Older antipsychotic medicines such as haloperidol and chlorpromazine have a high likelihood of elevating prolactin. Prolactin is an immunologically active molecule and could further affect rejection of solid-organ transplants. The immunological consequences of psychiatric medicines should be considered when treating transplant patients for delirium, depression and thought disorders; in addition, if elevation of prolactin is thought to be of immunological importance during psychiatric treatment, then it should be

monitored and treated ***(Foley & Kast, 2006)***.

Rationale of the study

WHO (2004) enhances and encourages the trans- and interdisciplinary dialogue on transplantation and ethics by making available selection of important scientific and medical references concerning organ and tissue transplantation and by providing references on ethical, social and cultural issues. According to ***WHO (2004),*** in Egypt, one reference only exists in this text which discusses organ transplantation, but it does not include any statistical data.

Hypothesis

The psychiatric morbidity and poor QoL are highly present among renal transplant recipients, which may be due to lifestyle disruptions, stress of the operation, guilt feelings toward the donor, fear of organ rejection, and post operative immunosuppressants.

Subjects & Methods

(A) Subjects:

1) Study design: cross sectional study.
2) Setting of the study: nephrology clinic of Ain Shams University Specialised Hospital and Naser Institute where patients follow up after undergoing surgery.
3) Study population: renal transplant recipients following up in nephrology clinic of Ain Shams University Specialised Hospital and Naser Institute.
4) Sample design: stratified random sample
5) Sample size: is calculated using Epi- Info program version 6 assuming:

- 95% confidence interval
- 80% power of the test

Accordingly, the following equation was used:

$$n = (z/e) *2 (p) (1-p)$$

where,

- n: the sample size
- p: the expected prevalence
- z: the critical value 1.96
- e: the margin of sample error tolerated 0.05

The expected prevalence according to ***O"zc,u"ru" et al, 2004*** is 18.4% . Therefore, the sample size was calculated to be 230.

(B) Methods:

We collected the cases from the nephrology clinics of Naser Institute at Saturday and Wednesday held at 1p.m. every week, and from the nephrology clinics of Ain shams university specialized hospital held daily at 9 a.m. from Saturday to Wednesday through out the week, after authority permission was taken. There were no inclusion or exclusion criteria

An oral consent was taken from the patients before they

participate in the study, confidentiality was ensured and explanation of nature of the research was done.

In a session of 3 hours all cases was subjected to:

(1) Psychiatric interview for renal transplant recipients was done by candidate.

(2) The semi-structured questionnaire for renal transplant recipients: a semi-structured questionnaire based on the Structured Interview for Renal Transplantation SIRT ***(Mori et al, 2000)*** to determine the medical condition of the PRTRs and the circumstances of surgery (See appendix 1).

(3) The socioeconomic family scale: to determine the social class of the PRTRs ***(Al shakhss, 2006*)*** (See appendix 2).

(4) The Arabic version of General Health Questionnaire-28 (GHQ-28) *(Abdel Hakim, 1988)*: to measure the mental health ***(Goldberg and Williams, 1971)*** (See appendix 3**).** The patient who has bad mental health (score >/ 5) will be subjected to **ICD-10 symptom checklist** (See appendix 4) to diagnose according to ICD-10 diagnostic criteria ***(WHO, 1992).***

(5) The Egyptian version of Beck Depression Inventory (BDI-II*) (Gareeb, 2000):*** to assess the depressive symptoms in PRTRs ***(Beck et al, 1996a & Beck et al, 1996b)*** (See appendix 5).

(6) The Egyptian version of the Suicide Probability Scale (SPS) *(Al Beheiry, 2003*)*:** to estimate of suicide potential that, along with clinical evaluation, helps determine appropriate intervention ***(Cull and Gill, 1982)*** (See appendix 6).

(7) The Arabic version of the World Health Organization Quality of Life Questionnaire (WHOQOL-100): (WHO Quality of Life Group, 1995) a cross-cultural measurement tool to examine overall quality of life and general health perceptions **(Mick & Willem, 1998)** (See appendix 7**).** The Arabic translation was done by faculty of medicine Alexandria university.

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* Arabic reference: ***الشخص،٢٠٠٦***

** Arabic reference**: غريب، ٢٠٠٠**

*** Arabic reference:**البحيري، ٢٠٠٣**

(1) A semi-structured questionnaire for renal transplant recipients: a semi-structured questionnaire based on the Structured Interview for Renal Transplantation SIRT ***(Mori et al, 2000)*** to determine the medical condition of the patient and the circumstances of surgery (See appendix 1) and ICD-10 symptom checklist to diagnosis according to ICD-10 Diagnostic criteria.

(2) The Arabic version General Health Questionnaire-28 (GHQ-28): ***(Abd el Hakim, 1988) (Goldberg and Williams, 1971)*** to measure the mental health the General Health (See appendix 2)**.** The patient who has bad mental health (score >/ 5) will be subjected to ICD-10 symptom checklist to diagnose according to ICD-10 diagnostic criteria ***(WHO, 1992).***

(3) The Egyptian version of Beck Depression Inventory (BDI-II): (***Gareeb, 2000) (Beck, 1961)*** to assess the depressive symptoms in patients (See appendix 3).

(4) The Egyptian version of the Suicide Probability Scale (SPS): ***(Behairy, 2003) (Cull and Gill, 1982)*** to estimate of suicide potential that, along with clinical evaluation, helps determine appropriate intervention (See appendix 4).

(5) The Arabic version of the World Health Organization Quality of Life Questionnaire (WHOQOL-100): (WHO Quality of Life Group, 1995) a cross-cultural measurement tool to examine overall quality of life and general health perceptions (See appendix 5).

Pilot study:

A pilot study will be done on 30% percent of sample size ***(Jacobs, 2002)*** followed by study proper to obtain preliminary data that can be used for planning the definite study. So, the number of patients in the pilot study is 77.

Statistical methods:

The results were analyzed using the statistical package for the social sciences (SPSS) version 12.

- Qualitative data was described using frequency and percentage.
- Quantitative data was described using mean and standard deviation.

The following inferential statistical procedures were used:

- Chi- square (Chi $_2$): compare categoric variables
- Correlation method: compare continuous variables

P value is indicator of level of significance

- P> 0.05= Non-significant
- P< 0.05= Significant
- P< 0.01= Highly significant
- P< 0.001= very highly significant

Ethical Considerations

- Oral consent was taken from post renal transplant recipients PRTR before their participation in any procedure.
- Aim of the study was explained to them.
- There was no moral or financial pressure laid on them to participate.
- Confidentiality was assured to PRTR.
- Results of the study are planned to scientific publication that serves and improves policies and plans affecting the QoL of PRTR.

Time Table

Phase 1:

The aim of the study and the protocol of work were designed during the time interval from 1st of September 2006 until 1st of January 2007.

Phase 2:

The review of literature and the cases were collected during the time interval from 1st of January 2007 until 1st of June 2007.

Phase 3:

Results were statistically analyzed and discussed to come up with the study conclusion and recommendations during the time interval from 1st of June 2007 until 1st of February 2009.

Costs of the study

Tools and printing paper and ink coasted 3 thousand pounds.

Aim of the work

This work aims to:

- Create a theoretical background from previous studies on the psychiatric morbidity and QoL in renal transplant patients
- study prevalence of psychiatric disorders among renal transplant recipients
- identify the quality of life among renal transplant recipients

At the beginning we tried to collect the number of renal transplant recipients in Egypt.

As regards Naser institute, we collected data from its renal transplantation unit and we found that 623 cases of RTS were done from the time of unit construction (1997) until 2006.

By collecting data from the Mansoura University renal center we found that 1917 cases of RTS were done form the time of center construction 1976 until 2006.

As regards Ain Shams Specialised Hospital, we collected data from its renal transplantation unit and we found that 60 cases of RTS were done from the time of unit construction (1987) until 2006.

Pilot study:

We collected 70 PRTR from Naser Institute Nephrology Clinics which is held twice per week (Sunday and Wednesday) at 11 a.m. to 2 p.m. during the time interval from 1st of January until 1st of February 2007.

We didn't find any PRTR from Ain Shams Specialised Hospital out patient daily nephrology clinic. Only one case underwent RTS during January 2007 at Ain Shams Specialised Hospital.

So we decided to collect the entire sample from Naser Institute Nephrology Clinics.

Study proper:

We collected 160 PRTR in addition to the former 70 PRTR to fulfill the calculated sample size of 230 PRTR from Naser Institute Nephrology Clinics held every Sunday and Wednesday at 11 a.m. to 2 p.m. during the time interval from 1st of February until 1st of June 2007.

I.Sample description:

i. Sociodemographic data of PRTR:

(1a) Age:

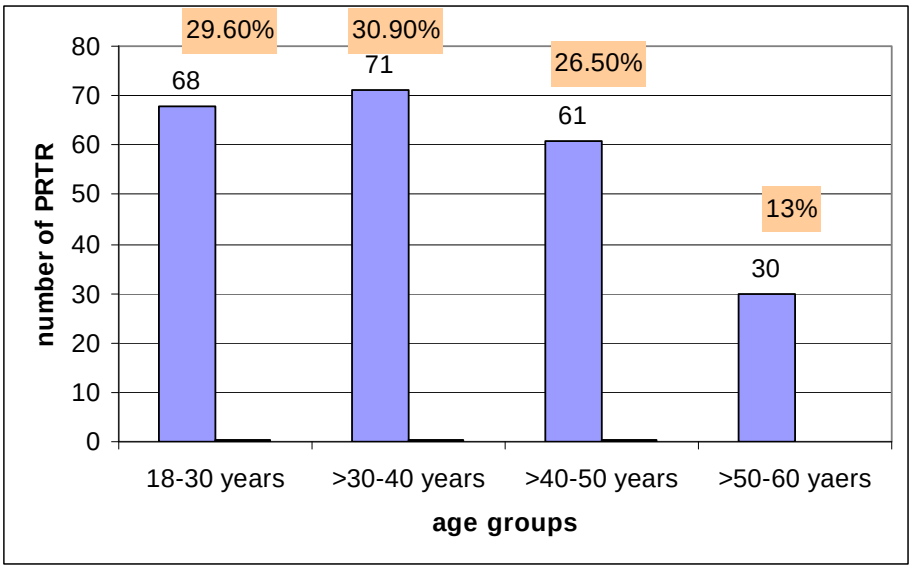

Figure 1a: Age groups of PRTR at time of interview

The age ranges from 18 to 60 years old, with a mean of 37.3 years old and standard deviation of 7.6 years. Figure (1a) shows that the age group (>30-40 years) has the highest number of PRTR (71/230, 30.9%) and the age group (>50-60 years) has the least number of PRTR (30/230, 13%).

(1b) Age at time of renal transplant surgery RTS:

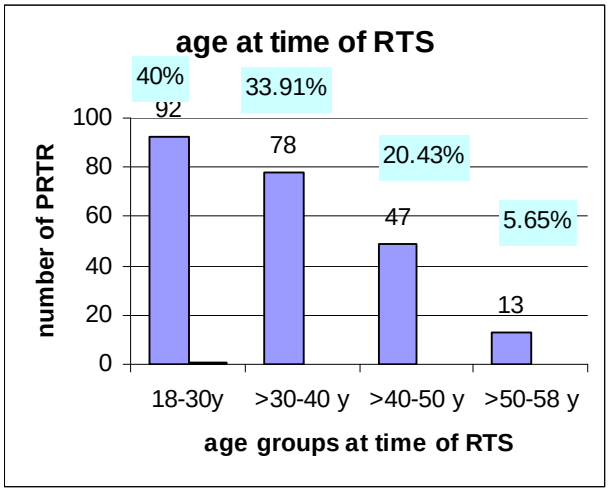

Figure 1b: Age groups at time of RTS

The age ranges from 18 to 58 years old, with a mean of 33.8 years old and standard deviation of years. Figure (1b) shows that the age group (18-30 years) has the highest number of PRTR (92/230, 40%) and the age group (>50-58 years) has the least number of PRTR (13/230, 5.65%).

(2) Sex:

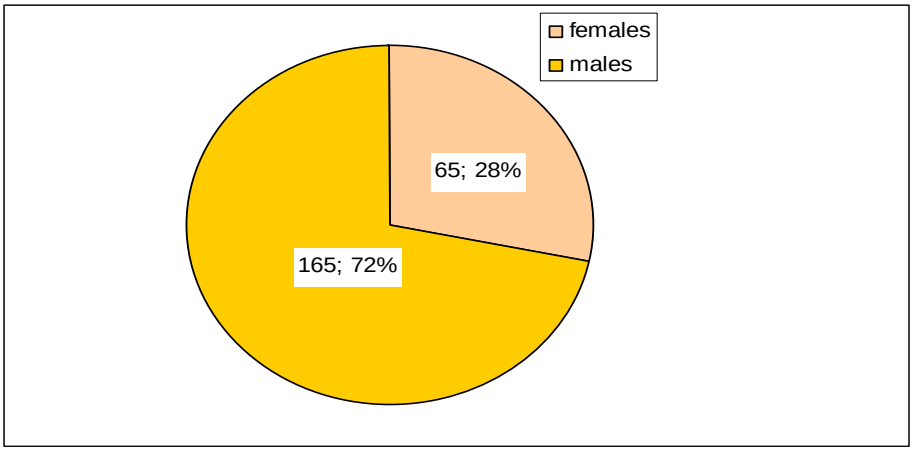

Figure 2: Sex' distribution

Figure (2) shows that most of the PRTR (165/230, 72%) are males and only 28% (65/230) are females.

(3) Religion:

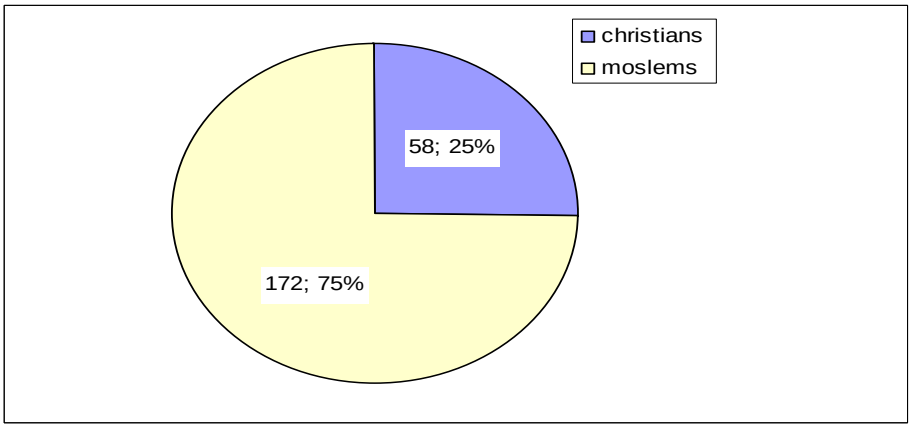

Figure 3: Religion's distribution

Figure (3) shows that most of the PRTR (172/230, 75%) are moslems and only 25% (58/230) are christians.

(4) Residence:

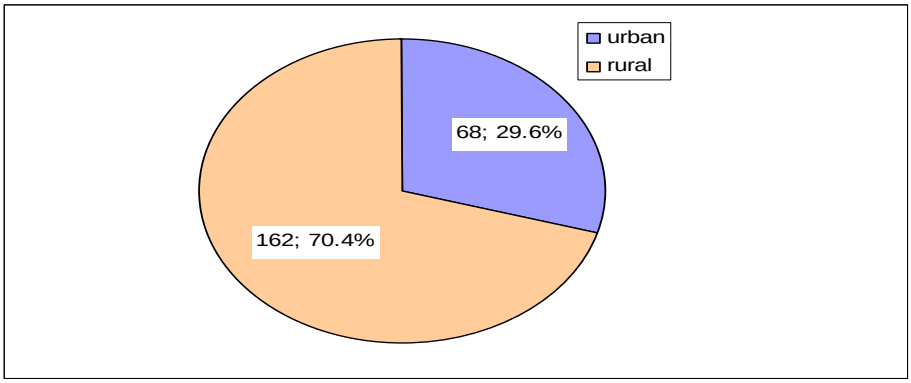

Figure 4: Residence's distribution

Figure (4) shows that most of the PRTR (162/230, 70.4%) are rural and only 29.6% (68/230) are urban.

(5) Educational level :

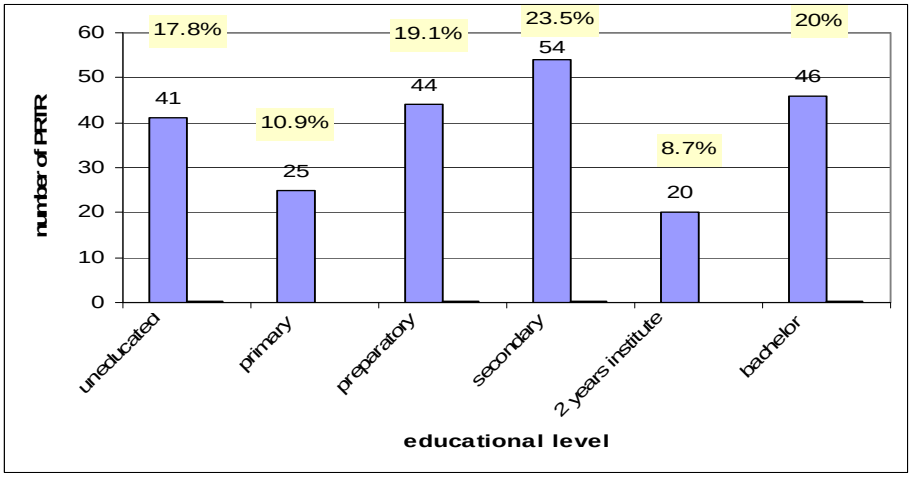

Figure 5: Educational level's distribution

Figure (5) shows that the highest prevalence of PRTR is present among the secondary school graduates 23.5% (54/230) and the least prevalence of PRTR is present among the 2 years institute graduates 8.7% (20/230)

(6) Occupational level:

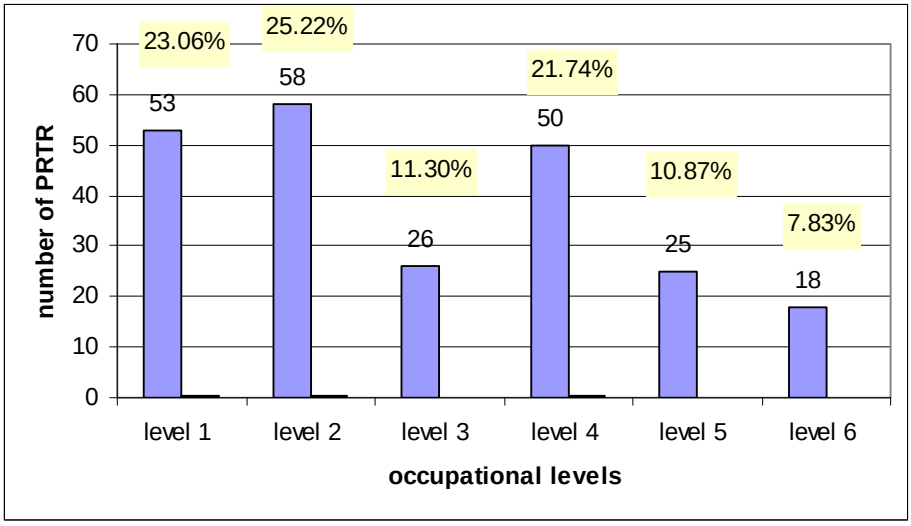

Figure 6: occupational level's distribution

Figure (6) shows that the highest prevelance of PRTR is present among level 2 occupational level 25.22% (58/230) and the least prevelance of PRTR is present among level 6 occupational level 7.83% (see appendix 2 for occupational levels).

By applying the semistructured questionnaire for renal transplant recipients we found that all PRTR returned to work after transplantation.

(7) Marital state:

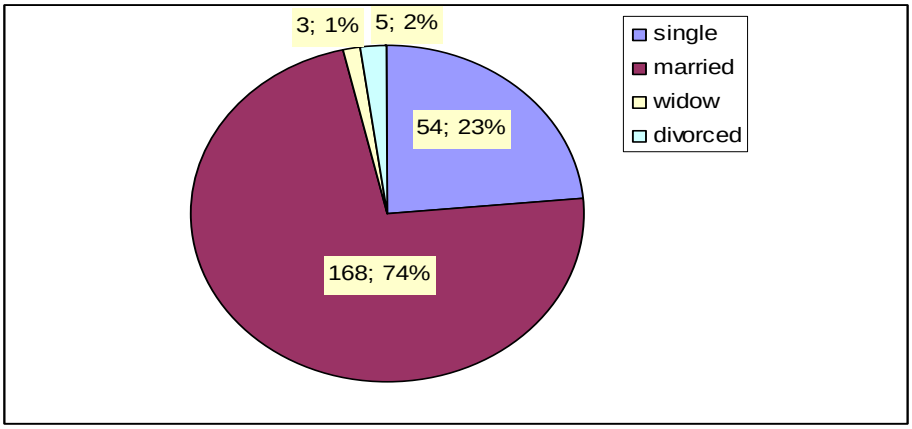

Figure 7: Marital state's distribution

Figure (7) shows that most of the PRTR (168/230, 74%) are married, while only 1% (3/230) are widowed.

(8) Social class:

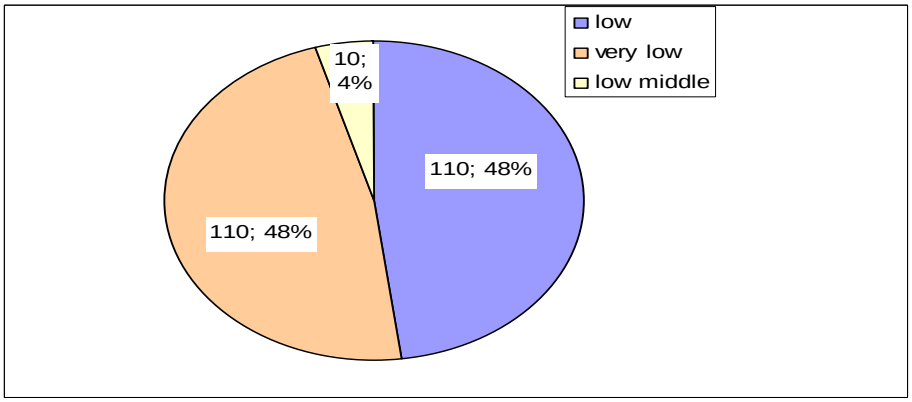

Figure 8: Social class's distribution

Figure (8) shows that 48% of the PRTR (110/230) are very low social class, also 48% (110/230) are low social class and only 4% (10/230) are low middle social class (see appendix 2 for social class).

(9) Sponsering RTS:

1. Financial problems:

All PRTR had financial problem regarding the costs of RTS; 74% (170/230) of PRTR underwent RTS by state sponsoring and 26% (60/230) by Health insurance sponsoring as shown in figure 9.

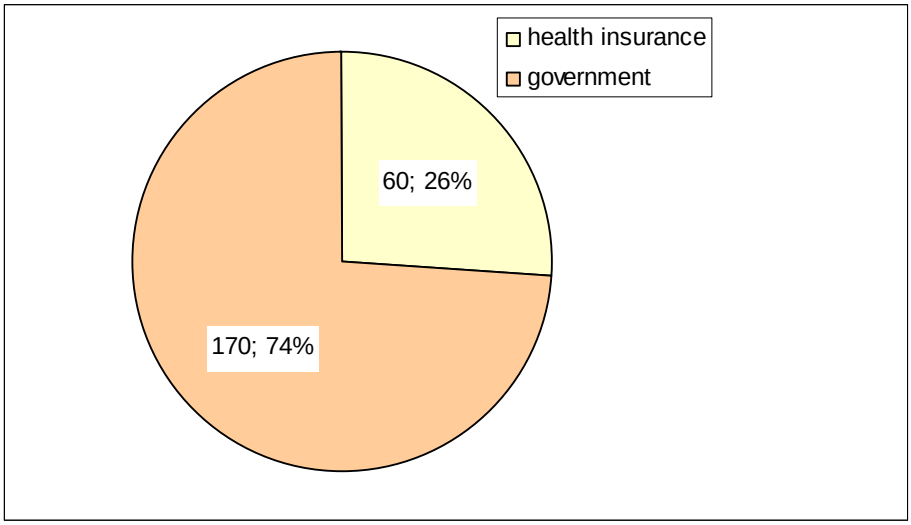

Figure 9: Sponsoring RTS

2. Religious problems:

By applying the semistructured questionnaire for PRTR, no one faced religious problems that hindered RTS.

ii. Medical data of PRTR:

(1) Dialysis before RTS:

a) Hemodialysis: the type of dialysis performed to all cases before RTS (230/230, 100%) was hemodialysis and number of sessions was three times /week and the duration of every session was three hours.

b) Duration of hemodialysis:

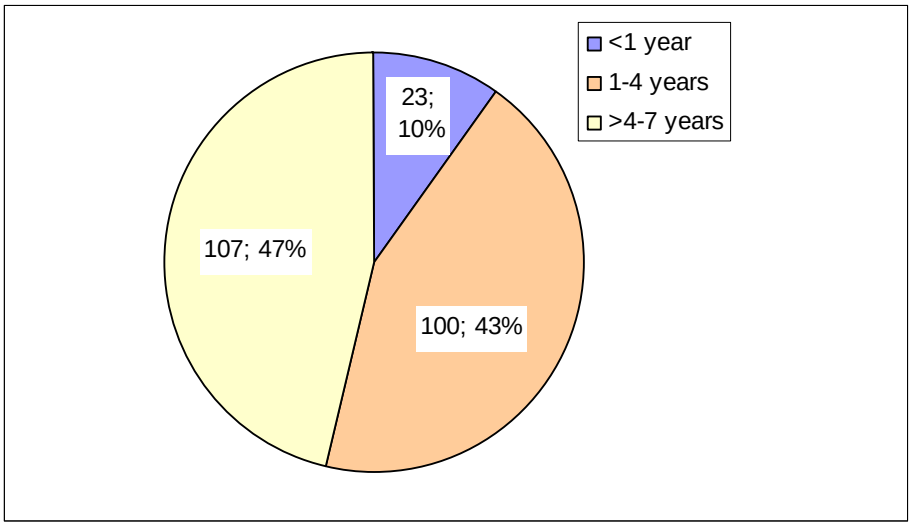

Figure 10: Haemodialysis duration's distribution

Figure (10) shows that 47% of the PRTR (107/230) were on haemodialysis for a duration 1-4 years before RTS, whereas 43% of PRTR (100/230) have done hemodialysis for <1 year before RTS and only 10% of the PRTR (23/230) were on haemodialysis from 4-7 years before undergoing RTS.

(2) Medical diseases other than renal impairment present before RTS:

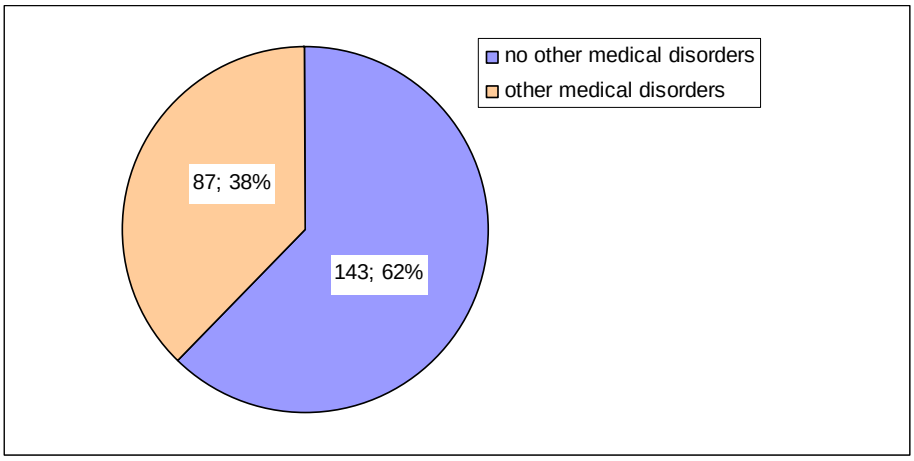

Figure 11: Presence of medical diseases other than renal impairment present before RTS

Figure (11) shows that 62% (143/230) of the PRTR have no medical diseases other than renal impairment before RTS and only 38% (87/230) have medical diseases other than renal impairment present before RTS

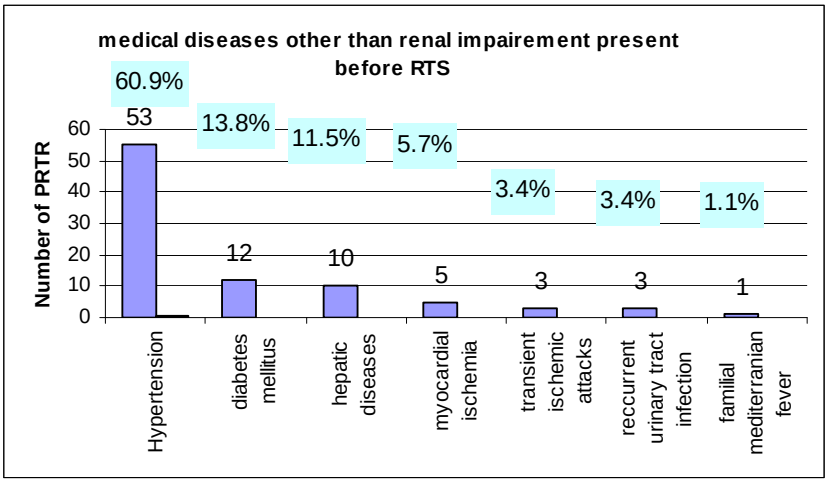

Figure 12: Distribution of medical diseases other than renal impairment present before RTS

Figure 12 shows that many of the PRTR have hypertension (53/87, 60.9%) followed by diabetes mellitus (DM) (12/87, 13.8%) then hepatic diseases (10/87, 11.5%) followed by myocardial ischemia (5/87, 5.7%), lastly other medical diseases in small percents.

(3) Type of donors:

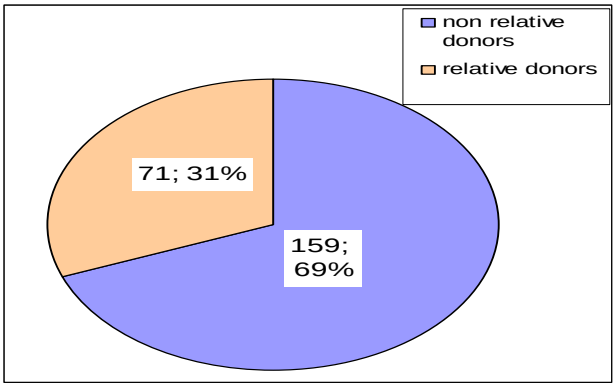

Figure 13: Distribution of the type of donors

Figure (13) shows that most of the PRTR (159/230, 69%) got the renal transplant from none relative donors and 31% (71/230) got the renal transplant from relative donors

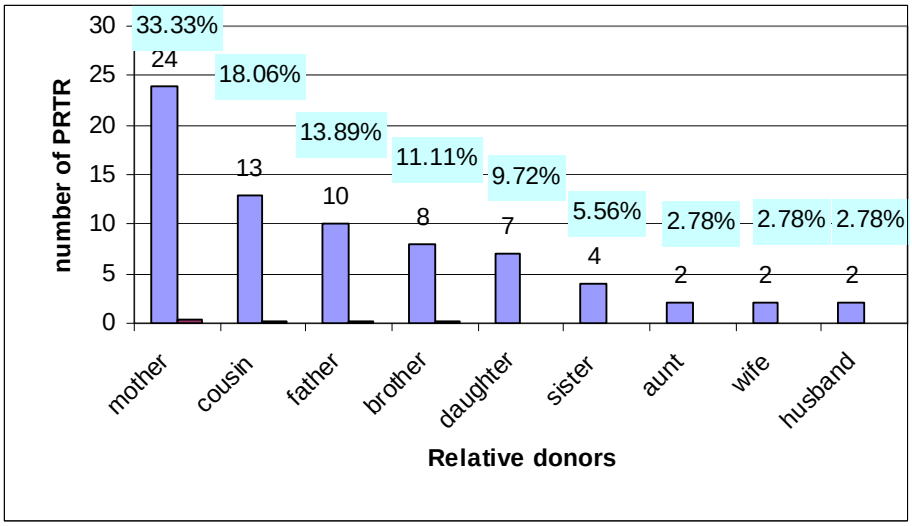

Figure 14: Distribution of the relative donors

Figure (14) shows that the highest prevalence of the PRTR relative donors is among mothers (24/72, 33.33%) and the least

prevalence of the PRTR relative donors is among maternal and paternal aunts, spouses (everyone 2/72, 2.78%) N.B.: No uncles or sons were donors.

(4) Hospitalisation after RTS:

All PRTR (230/230, 100%) spent 2 weeks under observation in hospital after RTS and were discharged as there were no post operative complications during there stay.

(5) Side effects from drugs received after RTS:

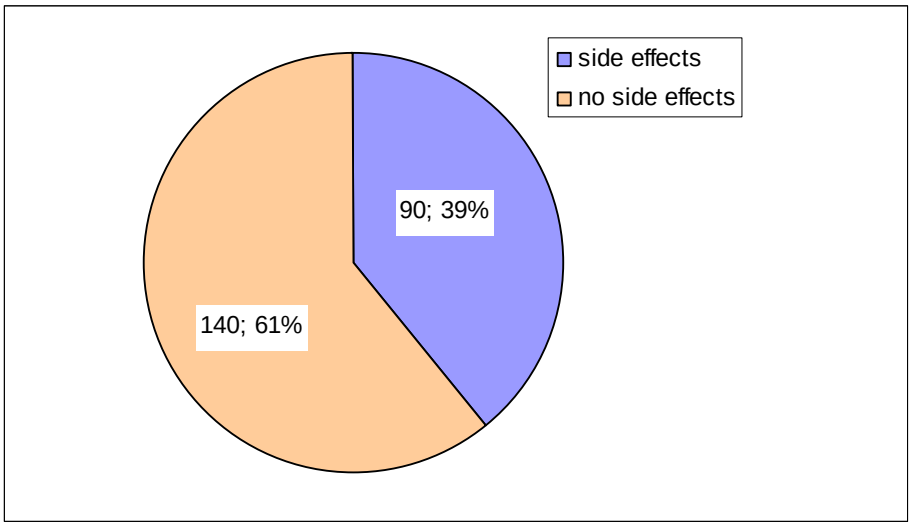

Figure 15: Presence of side effects from drugs received after RTS

N.B.: drugs received after surgery are for life to prevent rejection of the renal transplant, these drugs are *cyclosporine(sandimmune)* , *Mycophenolate* (MMS), and *prednesilone(methylprednisolone).*

Figure (15) shows that (140/230, 61%) have side effects from drugs received after RTS and 39% of the PRTR (90/230) haven't got side effects of drugs received after RTS

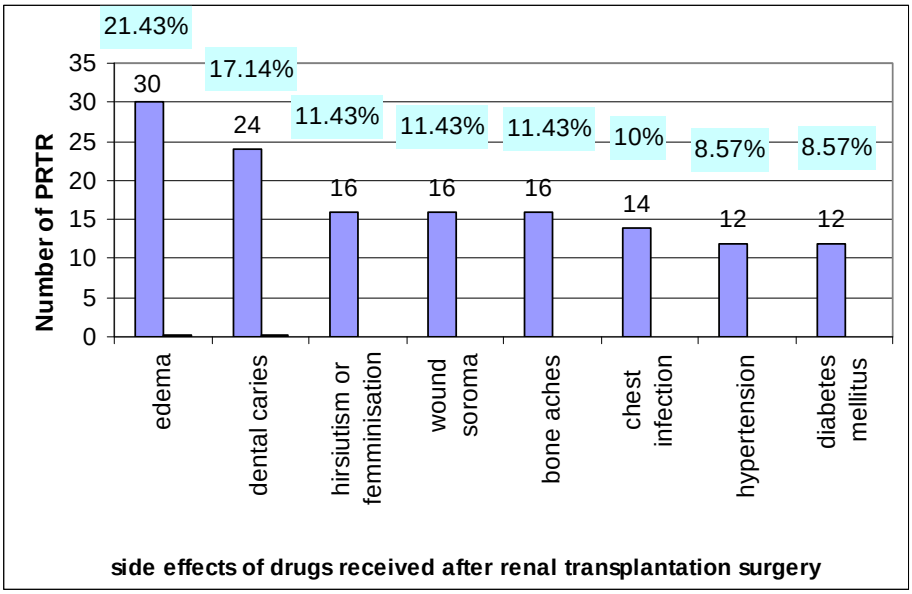

Figure 16: Distribution of side effects from drugs received after RTS

Figure 16 shows that the commonest side effect is edema (30/140, 21.4%) followed by dental caries, (24/140, 17.14%), then hirsutism or femminisation, seroma, boneaches (each one 16/140, 11.4%), then chest infection (14/140, 10%), lastly hypertension and diabetes mellitus (each one 12/140, 12%)

(6) History of rejection controlled by medical treatment:

6.5% (15/230) of PRTR experienced symptoms of acute rejection during follow up in outpatient clinic and it was controlled by increasing the dose of immunosuppressant drugs as shown in figure 17

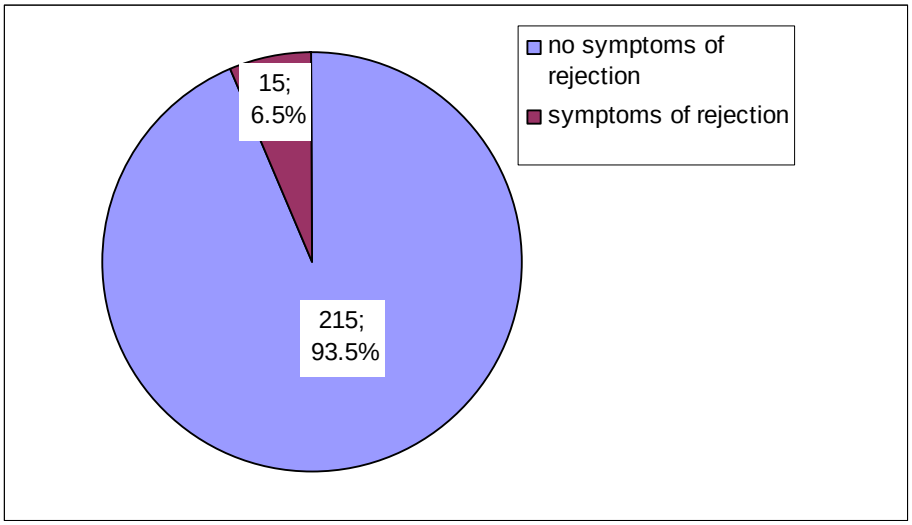

Figure 17: History of symptoms of rejection

Figure (17) shows that most of the PRTR (215/230, 93.5%) had no history of symptoms of rejection and 6.5% (15/230) had history of symptoms of rejection

(7) Number of previous RTS:

Only one PRTR (1/230, 0.4%) had to undergo RTS again as it failed due to rejection that was not controlled by medical treatment.

(8) Time since RTS:

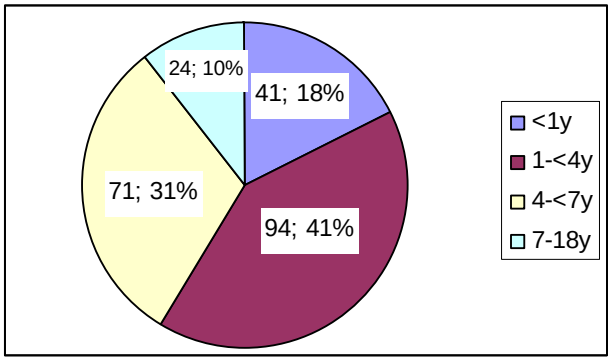

Figure 18: Distribution of duration from the time of RTS until the time of the interview

Figure (18) shows that 41% (94/230) of PRTR were interviewed after 1-4 years from undergoing RTS and 31% (71/230) were interviewed after 4-7 years from undergoing RTS, whereas 18% (41/230) were interviewed after <1 year from undergoing RTS, and only 10% (24/230) were interviewed after 7-18 years from undergoing RTS. The duration from the time of RTS until the time of the interview ranges from 3months to 18 years, with a mean of years and standard deviation of years.

iii. Psychiatric data of PRTR:

(1) Mental health (GHQ-28):

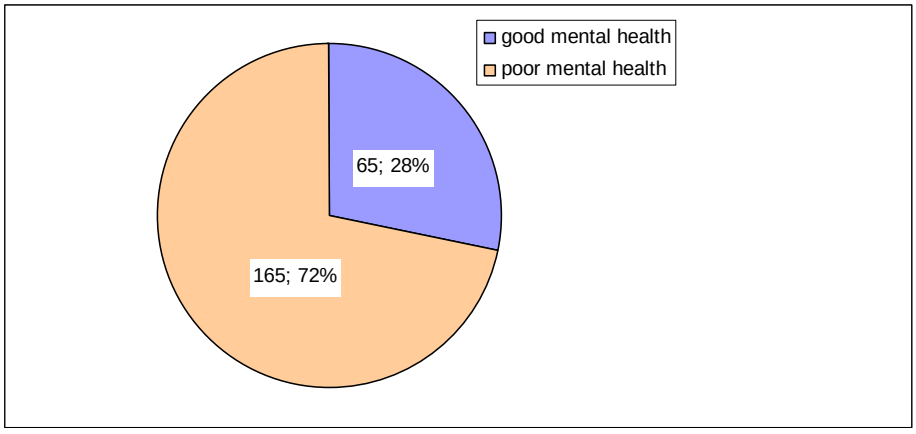

Figure 19: Distribution of mental health of the PRTR

Figure (19) shows that most of the PRTR (165/230, 72%) have poor mental health and only 28% (65/230) have good mental health

(2) Psychiatric diagnoses (ICD-10):

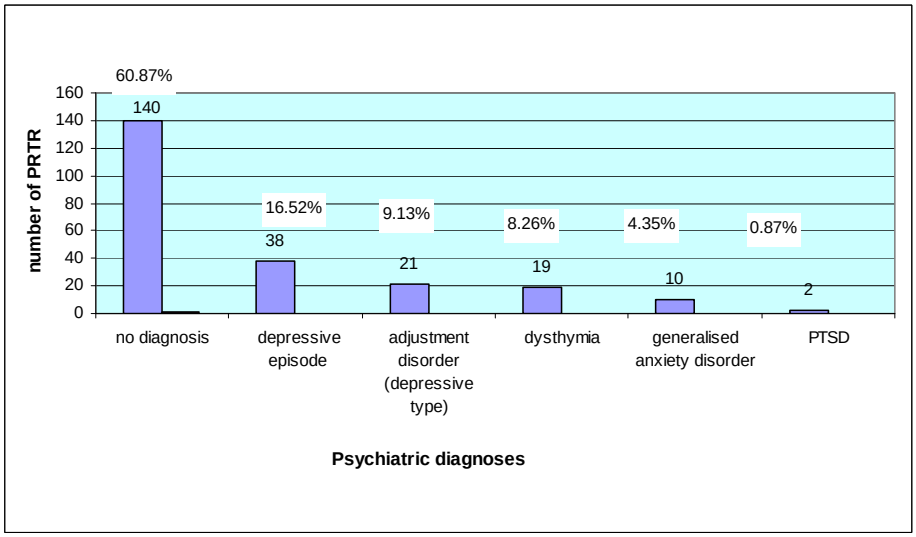

Figure 20: Distribution of psychiatric diagnoses (ICD-10)

Figure 20 shows that 60.87% of PRTR (140/230) haven't psychiatric diagnosis and the commonest diagnosis is depressive

episode (38/230, 16.52%), followed by adjustment disorder depressive type (21, 9.13%) then dysthymia (19/230, 8.26%), then generalized anxiety disorder (10/230, 4.35%), lastly PTSD and (each 2/230, 0.87%)

(3) Severity of depression (BDI):

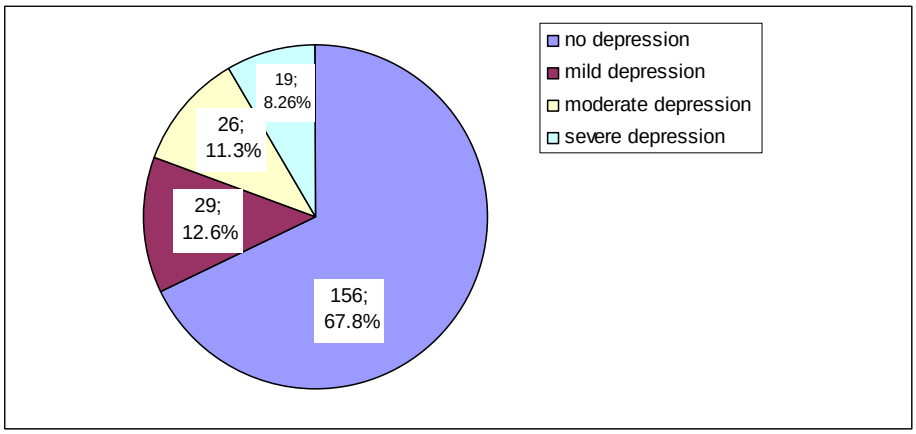

Figure 21: Distribution of severity of depression **(**BDI)

Figure 21 shows that 67.8% of PRTR (156/230) haven't depression, and among those who have depression, mild depression is the commonest (29/230, 12.6%), followed by moderate depression (26/230, 11.3%) then severe depression (19/230, 8.26%)

(4) Risk of suicide (SPS):

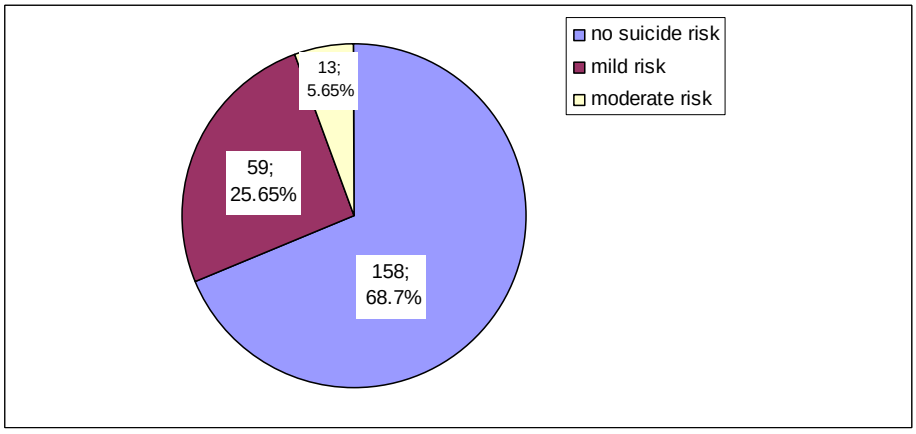

Figure 22: Distribution of the risk of suicide (SPS)

Figure 22 shows that 68.7% of PRTR (158/230) haven't risk of suicide, and among those who have risk of suicide, mild risk is the commonest (59/230, 25.65%), followed by moderate risk (13/230, 5.65%) and there is no severe risk of suicide in PRTR.

(5) Depressive symptoms (SPS-subscales):

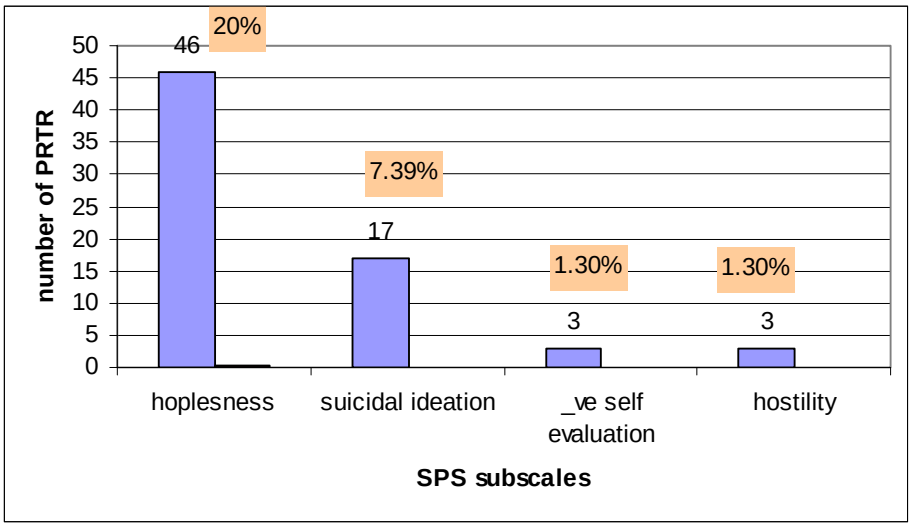

Figure 23: Distribution of depressive symptoms (SPS-subscales)

Figure 23 shows that the commonest depressive symptoms is hopelessness (46/230, 20%), followed by suicidal ideation (17/230, 7.39%) then –ve self evaluation and hostility (each 3/230, 1.3%)

iv. QoL of PRTR (WHO-QoL 100):

Figure 24: QoL distribution

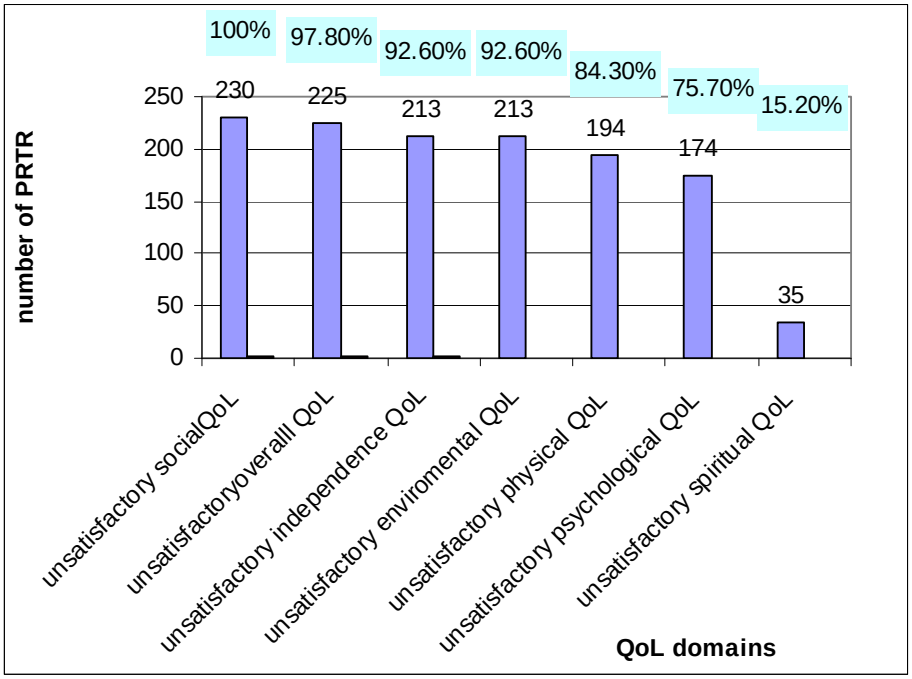

Figure 24 shows that all the PRTR have bad Social QoL followed by the bad overall QoL (225/230, 97.8%), then bad independence and enviromental QoL (each 213/230, 92.6%), then bad physical QoL (194/230, 84.3%), lastly bad pyschological QoL (174/230, 75.7%), and finally the bad spiritual QoL is only 15.2% (35/230).

II. Relating psychiatric data and QoL of post renal transplant recipients (PRTR) to their sociodemographic & medical data:

A. Sociodemographic data:

(I) Age:

(1) Mental health of PRTR (GHQ-28):

Table 1: Mental health of PRTR in relation to different age groups

mental health	PRTP's age groups				X2	P
	18-30y n (%)	>30-40y n (%)	>40-50y n (%)	>50-60y n (%)		
poor mental health (scored >/ 5)	51 (75%)	50 (70.4%)	40 (65.5%)	24 (80%)	**15**	**<0.01 HS**
good mental health (scored <5)	17 (25%)	21 (29.6%)	21 (34.5%)	6 (20%)		
Total	68 (100%)	71 (100%)	61 (100%)	30 (100%)		

Table 1 shows that in all age groups the PRTR have poor mental health and the eldest group (>50-60 years) has the highest percent (80%) of poor mental health compared to other age groups with highly significant difference, but there is no significant correlation between the age of the PRTR and the mental health as shown in table 8.

(2) Poor mental health of PRTR:

Table 2: Poor mental health of PRTR in relation to different age groups

Poor mental health(scored >/ 5)	PRTP's age groups				X2	P
	18-30y n (%)	>30-40y n (%)	>40-50y n (%)	>50-60y n (%)		
With psychiatric disorders (ICD-10)	31 (60.7%0	26 (52%)	24 (60%)	9 (37.5%)	**12**	**<0.01 HS**
Without psychiatric disorders (ICD-10)	20 (39.3%	24 (48%)	16 (40%)	15 (62.5%)		
Total	51(100%)	50 (100%)	40 (100%)	24 (100%)		

Table 2 shows that although the eldest group (>50-60 years) has the highest percent (80%) of poor mental health (table 1), it has the least percent (37.5%) of psychiatric disorders as compared with other age groups with highly significant difference

(3) Psychiatric disorders of PRTR (ICD-10):

Table 3: Psychiatric disorders of PRTR (ICD-10) in relation to different age groups

Psychiatric disorders	PRTP's age groups				X2	P
	18-30y n (%)	>30-40y n (%)	>40-50y n (%)	>50-60y n (%)		
depressive episode	23(74.2%	3(11.5%)	8(32.4%)	4(44.5%)	**22**	**<0.01 HS**
dysthymia	3(9.6%)	10(38.5%	4(16.8%)	2(22.2%)		
Generalised anxiety	5(16.2%)	4(15.5%)	1(4.4%)	0		
post traumatic stress	0	0	2(8.6%)	0		
adjustment disorder (depressive type)	0	9(34.5%	9(37.8%)	3(33.3%)		
Total	31(100%)	26(100%)	24(100%)	9(100%)		

Table 3 shows that depressive episode is the commonest disorder among the youngest (18-30y) (74.2%) and the eldest age groups (>50-60y) (44.5%), while adjustment disorder depressive type is the commonest among the age group (>40-50y) (37.8%) and in age group (>30-40y) the commonest disorder is dysthymia (38.5%).

(4)Severity of depression in PRTR (BDI):

Table 4: Severity of depression among PRTR (BDI) in relation to different age groups

Severity of depression	PRTR's age groups				X2	P
	18-30y n (%)	>30-40y n (%)	>40-50y n (%)	>50-60y n (%)		
severe	6(8.8%)	4(5.6%)	4(6.5%)	5(16.7%)	**18**	**<0.01 HS**
moderate	14(20.6%)	3(4.2%)	5(8.3%)	4(13.3%)		
mild	6(8.8%)	11(15.6%)	8(13%)	4(13.3%)		
no depression	42(61.8%)	53(74.6%)	44(72.2%)	17(56.7%)		
Total	68(100%)	71(100%)	61(100%)	30(100%)		

Table 4 shows that by using BDI in the eldest age group (>50-60) severe depression is highly presented (16.7%) as compared to other age groups with highly significant difference while in the youngest age group (18-30y) moderate depression is highly presented (20.6%) as compared to other age groups with highly significant difference, but there is no significant correlation between the age of the PRTR and the severity of depression as shown in table 8.

(5) Depressive symptoms of PRTP (SPS):

Table 5: Depressive symptoms of PRTP according to (SPS) subscales in relation to different age groups

Depressive symptoms	PRTR's age groups				**X2**	**P**
	18-30y (n=68)	>30-40y (n=71)	>40-50y (n=61)	>50-60y (n=30)		
Hopelessness	0	3(4.2%)	0	0	1.2	>0.05 NS
-ve self evaluation	3(4.4%)	0	0	0	1.2	>0.05NS
hostility	17(25%)	5(7%)	16(26.2%)	6(20%)	2.5	>0.05NS
suicidal ideation	4(5.8%)	0	8(13.1%)	5(16.6%)	1.6	>0.05 NS

Table 5 shows that hopelessness, -ve self evaluation, hostility and suicidal ideation in PRTR have no statistically significant relation to different age groups, but table 8 shows –ve correlation between the age of the PRTR and hopelessness.

(6) Risk of suicide in PRTR (SPS):

Table 6: Risk of suicide in PRTR (SPS) in relation to different age groups

Risk of suicide	PRTR's age groups				X2	P
	18-30y n (%)	>30-40y n (%)	>40-50y n (%)	>50-60y n (%)		
Severe	0	0	0	0	23	**<0.01 HS**
moderate	1(1.5%)	3(4.3%)	9(14.8%)	0		
mild	17(25%)	12(16.9%)	18(29.5%)	12(40%)		
absent	50(73.5%)	56(78.8%)	34(55.7%)	18(60%)		
Total	68	71	61	30		

Table 6 shows that there is no severe risk of suicide among PRTR and that moderate risk of suicide is common among the age group (>40-50) (14.8%) as compared to the other age groups with highly significant difference, but there is no significant correlation between the age of the PRTR and the risk of suicide as shown in table 8.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 7: Quality of life (WHOQoL 100) among PRTR in relation to different age groups

WHOQoL 100	PRTR's age groups					**X2**	**P**
		18-30y n (%)	>30-40y n (%)	>40-50y n (%)	>50-60y n (%)		
Physical	Bad	62(91.2%)	61(85.9%)	47(77%)	25(83.3%)	**15**	**<0.01 HS**
	Good	6(7.8%)	10(14.1%)	14(32.3%)	5(16.7%)		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		
Psychological	Bad	68(100%)	61(85.9%)	49(80%)	26(86.3%)	**20**	**<0.01 HS**
	Good	0	10(14.1%)	12(20%)	4(3.7%)		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		
Social	Bad	68(100%)	71(100%)	61(100%)	30(100%)	1.1	>0.05 NS
	Good	0	0	0	0		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		
Independence	Bad	68(100%)	37(52.1%)	17(27.8%)	17(56.6%)	**17**	**<0.01 HS**
	Good	0	34(47.9%)	44(72.2%)	13(43.4%)		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		
Environmental	Bad	68(100%)	67(94.3%)	53(86.8%)	25(83.3%)	**15**	**<0.01 HS**
	Good	0	4 (5.7%)	8 (13.2%)	5 (16.7%)		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		
Spiritual	Bad	11(16.2%)	7(9.8%)	11(18%)	7(23.3%)	**7.9**	**<0.01 HS**
	Good	56(83.8%)	64(90.2%)	50(82%)	23(76.7%)		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		
overall	Bad	68(100%)	66(92.9%)	58(95%)	30(100%)	1.9	>0.05 NS
	Good	0	5(7.1%)	3(5%)	0		
	Total	68(100%)	71(100%)	61(100%)	30(100%)		

Table 7 shows that physical, psychological, independence and environmental QoL are more affected among the youngest age group (18-30y) by comparing with the other age groups with highly significant difference. All the PRTR (100%) have bad social QoL. As regards the overall QoL, it is more affected among the youngest (18-30 y) (100%) and the oldest (>50-60 y) (100%) age groups by comparing with the other age groups but without significant difference. Also table 8 shows that physical, psychological, independence and overall QoL are positively correlated to age.

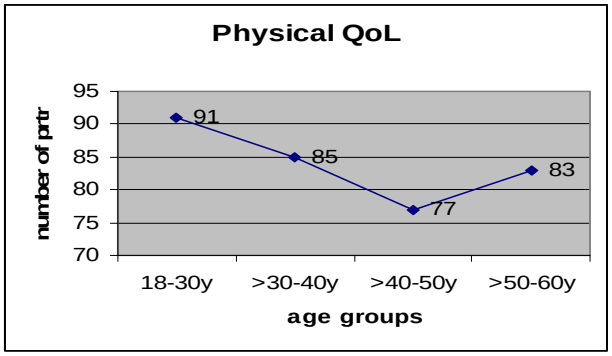

Figure 25a: Distribution of bad physical QoL among PRTR among different age groups

Figure 25a shows that bad physical QoL is commonest among the youngest age group (18-30 y) (62/68, 91.2%) and least among the age group (>40-50 y) (47/61, 77%).

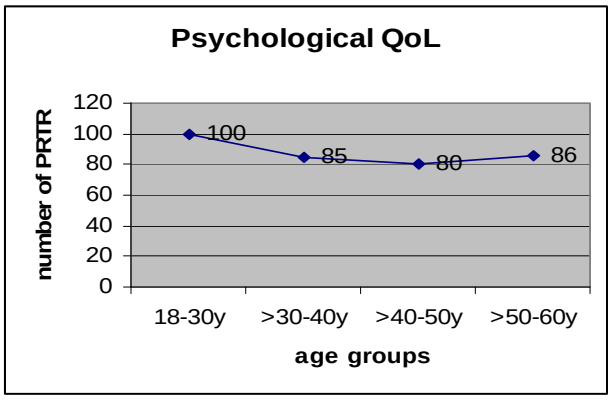

Figure 25b: Distribution of bad psychological QoL among PRTR among different age groups

Figure 25b shows that bad psychological QoL is commonest among the youngest age group (18-30 y) (68/68, 100%) and least among the age group (>40-50 y) (49/61, 80%).

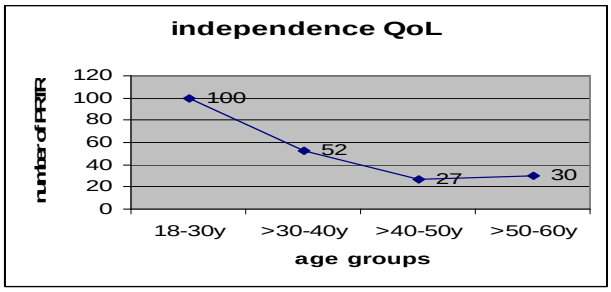

Figure 25c: Distribution of bad independence QoL among PRTR among different age groups

Figure 25c shows that bad independence QoL is commonest among the youngest age group (18-30 y) (68/68, 100%) and least among the age group (>40-50 y) (17/61, 27.8%).

Figure 25d: Distribution of bad enviromental QoL among PRTR among different age groups

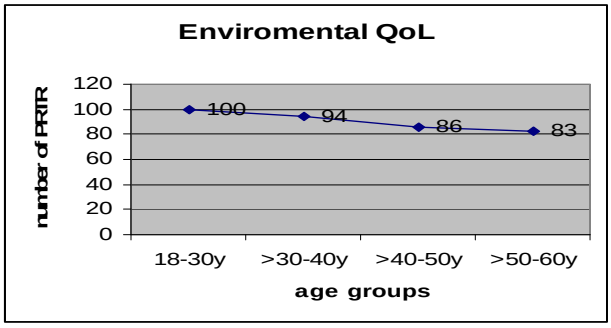

Figure 25d shows that bad enviromental QoL is commonest among the youngest age group (18-30 y) (68/68, 100%) and least among the age group (>50-60 y) (25/30, 83.3%).

Figure 25e: Distribution of bad spirital QoL among PRTR among different age groups

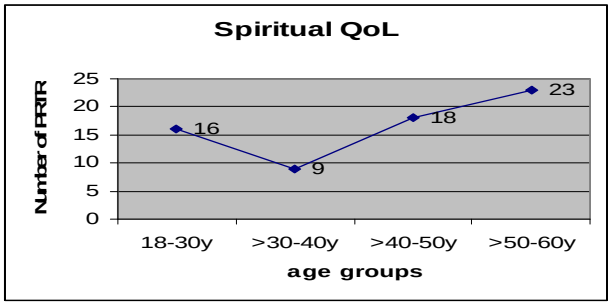

Figure 25e shows that bad spiritual QoL is commoner among the age group (>50-60y) (7/30, 23.3%) than among the age group (>30-40 y) (7/71, 9.8%).

(8) Correlation between different psychiatric data and QoL versus age among PRTR:

Table 8: Correlation between different psychiatric data and QoL versus age among PRTR

Variables	**PRTR's age**	
	r	**P**
GHQ-28	0.12	>0.05 NS
BDI	0.19	>0.05 NS
Hopelessness	**-0.25**	**<0.05 S**
Negative self image	-0.03	>0.05 NS
Hostility	0.12	>0.05 NS
Suicidal ideation	0.19	>0.05 NS
Risk of suicide SPS	-0.08	>0.05 NS
Physical QoL	**0.29**	**<0.05 S**
Psychological QoL	**0.30**	**<0.05 S**
Social QoL	-0.15	>0.05 NS
Independence QoL	**0.29**	**<0.05 S**
Environmental QoL	0.12	>0.05 NS
Spiritual QoL	0.15	>0.05 NS
Overall QoL	**0.34**	**<0.05 S**

Table 8 shows no correlation between the age of PRTR and different psychiatric data except hoplessness, physical, psychological, independence and overall QoL.

(II) Sex:

(1) Mental health of PRTR (GHQ-28):

Table 9: Mental health of PRTR in relation to sex

mental health	PRTP's sex		X2	P
	Males n (%)	Females n (%)		
poor mental health (scored >/ 5)	106 (63.7%)	59 (90.9%)	**18**	**<0.01 HS**
good mental health (scored <5)	59(36.3%)	6 (9.1%)		
Total	165(100%)	65 (100%)		

Table 9 shows that both sexes have poor mental health and females have the highest percent (90.9%) of poor mental health compared to males (63.7%) with highly significant difference.

(2) Poor mental health of PRTR:

Table 10: Poor mental health of PRTR in relation to sex

Poor mental health(scored >/ 5)	PRTP's sex		**X2**	**P**
	Males n (%)	Females n (%)		
With psychiatric disorders (ICD-10)	59(55.6%)	31(52.5%)	2.6	>0.05 NS
Without psychiatric disorders (ICD-10)	47(44.4%)	28(47.5%)		
Total	106(100%)	59 (100%)		

Table 10 shows that both sexes have near percentage of poor mental health with psychiatric disorders as well as poor mental health without psychiatric disorders

(3) Psychiatric disorders of PRTR (ICD-10):

Table 11: Psychiatric disorders of PRTR (ICD-10) in relation to sex

Psychiatric disorders	PRTP's sex		**X2**	**P**
	Males n (%)	Females n (%)		
depressive episode	23(38.9%)	15 (48.3%)	2.9	>0.05 NS
dysthymia	14(23.8%)	5 (16.1%)		
Generalised anxiety	5 (8.5%)	5 (16.1%)		
post traumatic stress	2 (3.3%)	0		
adjustment disorder (depressive type)	15(25.5%)	6 (19.5%)		
Total	59(100%)	31(100%)		

Table 11 shows that depressive episode is the commonest disorder among females (48.3%) and males (38.9%) with

insignificant difference between them

(4)Severity of depression in PRTR (BDI):

Table 12: Severity of depression among PRTR (BDI) in relation to sex

Depression	PRTP's sex		X2	P
	Males n (%)	Females n (%)		
severe	11(10.6%)	8(12.4%)	2.8	>0.05 NS
moderate	20(12.2%)	6(9.2%)		
mild	20(12.2%)	9(13.8%)		
no depression	114(65%)	42(64.6%)		
Total	165(100%)	65 (100%)		

Table 12 shows that in both sexes severity of depression is in near percentages

(5) Depressive symptoms of PRTP (SPS):

Table 13: Depressive symptoms of PRTP according to (SPS) subscales in relation to sex

Depressive symptoms	PRTP's sex		**X2**	**P**
	males (n=165) (%)	females (n=65) (%)		
Hopeless-ness	0	3(4.6%)	0.3	>0.05 NS
-ve self evaluation	0	3(4.6%)	0.9	>0.05 NS
hostility	36 (21.8%)	8(12.3%)	1.9	>0.05 NS
suicidal ideation	17(10.3%)	0	0.5	>0.05 NS

Table 13 shows insignificant difference between male PRTR and female PRTR as regards hoplessness, -ve self evaluation, hostility and suicidal ideation

(6) Risk of suicide in PRTR (SPS):

Table 14: Risk of suicide in PRTR (SPS) in relation to sex

Risk of suicide	PRTP's sex		X2	P
	Males n (%)	Females n (%)		
Severe risk	0	0	1	>0.05 NS
moderate risk	10(6%)	3(4.6%)		
mild risk	42(25%)	17(26.2%)		
Absent risk	113(69%)	45(69.2%)		
Total	165(100%)	65 (100%)		

Table 14 shows insignificant difference between male PRTR and female PRTR as regards the risk of suicide.

(7) Quality of life (WHOQoL) among PRTR:

Table 15: Quality of life (WHOQoL) among PRTR in relation to sex

WHOQoL-100	PRTP's sex			**X2**	**P**
		Males n (%)	Females n (%)		
Physical	Bad	131(79.3%)	63(96.9%)	2.6	>0.05 NS
	Good	34	2		
	Total	165(100%)	65(100%)		
Psychological	Bad	113(68.4%)	61(93.8%)	2.3	>0.05 NS
	Good	48	4		
	Total	165(100%)	65(100%)		
Social	Bad	165(100%)	65(100%)	0	>0.05 NS
	Good	0	0		
	Total	165(100%)	65(100%)		
Independence	Bad	87(52.7%)	43(66.1%)	1.6	>0.05
	Good	72	22		
	Total	165(100%)	65(100%)		
Environmental	Bad	150(90.9%)	63(96.9%)	3.2	>0.05 NS
	Good	15	2		
	Total	165(100%)	65(100%)		
Spiritual	Bad	26(15.7%)	9(13.8%)	2.1	>0.05 NS
	Good	139	54		
	Total	165(100%)	65(100%)		
overall	Bad	159(96.3%)	62(95.3%)	2.9	>0.05 NS
	Good	6	3		
	Total	165(100%)	65(100%)		

Table 15 shows insignificant difference between male PRTR and female PRTR as regards all domains of QoL.

(III) Religion:

(1) Mental health of PRTR (GHQ-28):

Table 16: Mental health of PRTR in relation to religion

mental health	PRTP's religion		X2	P
	Moslems n (%)	Christians n (%)		
poor mental health (scored >/ 5)	118 (68.6%)	47 (81%)	3.2	>0.05 NS
good mental health (scored <5)	55(31.4%)	10 (19%)		
Total	172(100%)	58(100%)		

Table 16 shows insignificant difference between the Moslem PRTR and the Christian PRTR as regards the poor mental health.

(2) Poor mental health of PRTR:

Table 17: Poor mental health of PRTR in relation to religion

Poor mental health(scored >/ 5)	PRTP's religion		**X2**	**P**
	Moslems n (%)	Christians n (%)		
With psychiatric disorders (ICD-10)	64(37.2%)	26(44.8%)	1.9	>0.05 NS
Without psychiatric disorders (ICD-10)	54(62.8%)	21(55.2%)		
Total	118(100%)	47(100%)		

Table 17 shows insignificant difference between the Moslem PRTR and the Christian PRTR as regards the presence of psychiatric disorders.

(3) Psychiatric disorders of PRTR (ICD-10):

Table 18: Psychiatric disorders of PRTR (ICD-10) in relation to religion

Psychiatric disorders	PRTP's religion		**X2**	**P**
	Moslems n (%)	Christians n (%)		
depressive episode	24(37.5%)	14(53.8%)	2.3	>0.05 NS
dysthymia	6(9.4%)	13(46.2%)		
Generalised anxiety	10(15.6%)	0		
post traumatic stress disorder	2(3.1%)	0		
adjustment disorder (depressive type)	21(34.4%)	0		
Total	64(100%)	26(100%)		

Table 18 shows that depressive episode is the commonest disorder among Moslems (37.5%) and Christians (53.8%), dysthymia is more common among Christians (46.2%) compared

to Moslems (9.4%) but without significant difference.

(4)Severity of depression in PRTR (BDI):

Table 19: Severity of depression among PRTR (BDI) in relation to religion

Depression	PRTP's religion		X2	P
	Moslems n (%)	Christians n (%)		
severe	13(7.6%)	6(10.2%)	2.32	>0.05 NS
moderate	17(9.9%)	9(15.6%)		
mild	20(11.6%)	9(15.6%)		
no depression	122(70.9%)	34(58.6%)		
Total	172(100%)	58 (100%)		

Table 19 shows insignificant difference between the Moslem PRTR and the Christian PRTR as regards the severity of depression.

(5) Depressive symptoms of PRTP (SPS):

Table 20: Depressive symptoms of PRTP according to (SPS) subscales in relation to religion

Depressive symptoms	PRTP's religion		X2	**P**
	Moslems (n=172) (%)	Christans (n=58) (%)		
Hopelessness	0	3(5.1%)	1.9	>0.05 NS
-ve self evaluation	0	3(5.1%)	1	>0.05 NS
hostility	27(15.6%)	17(29.3%)	0.9	>0.05 NS
suicidal ideation	12(6.9%)	5(8.5%)	1.9	>0.05 NS

Table 20 shows insignificant difference between the Moslem PRTR and the Christian PRTR as regards hopelessness, -ve self evaluation, hostility and suicidal ideation.

(6) Risk of suicide in PRTR (SPS):

Table 21: Risk of suicide in PRTR (SPS) in relation to religion

Risk of suicide	PRTP's religion		X2	P
	Moslems n (%)	Christians n (%)		
Severe risk	0	0	3.2	>0.05 NS
moderate risk	6(3.4%)	7(12.1%)		
mild risk	42(24.4%)	17(29.3%)		
absent	124(72.2%)	34(58.6%)		
Total	172(100%)	58 (100%)		

Table 21 shows insignificant difference between the Moslem PRTR and the Christian PRTR as regards risk of suicide.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 22: Quality of life (WHOQoL) among PRTR in relation to religion

WHOQoL 100	PRTP's religion			**X2**	**P**
		Moslems n (%)	Christians n (%)		
Physical	Bad	152(88.3%)	42(72.4%)	1.6	>0.05 NS
	Good	20(11.7%)	16(27.6%)		
	Total	172(100%)	58(100%)		
Psychological	Bad	133(77.3%)	41(70.6%)	2.3	>0.05 NS
	Good	39(22.7%)	17(29.4%)		
	Total	172(100%)	58(100%)		
Social	Bad	172(100%)	57(98.2%)	0.9	>0.05 NS
	Good	0	1(1.8%)		
	Total	172(100%)	58(100%)		
Independence	Bad	106(61.6%)	25(43.1%)	2	>0.05 NS
	Good	66(38.4%)	33(56.9%)		
	Total	172(100%)	58(100%)		
Environmental	Bad	162(94.2%)	51(87.9%)	1.9	>0.05 NS
	Good	10(5.8%)	7(12.1%)		
	Total	172(100%)	58(100%)		
Spiritual	Bad	32(18.7%)	3(5.2%)	2.8	>0.05 NS
	Good	140(81.3%)	55(94.8%)		
	Total	172(100%)	58(100%)		
overall	Bad	168(97.6%)	55(94.8%)	1.4	>0.05 NS
	Good	4(2.4%)	3(5.2%)		
	Total	172(100%)	58(100%)		

Table 22 shows insignificant difference between the Moslem PRTR and the Christian PRTR as regards all domains of QoL.

(IV) Residence:

(1) Mental health of PRTR (GHQ-28):

Table 23: Mental health of PRTR in relation to different residence

mental health	PRTP's residence		X2	P
	Urban n (%)	Rural n (%)		
poor mental health (scored >/ 5)	59(86.7%)	106(65.4%)	2.3	>0.05 NS
good mental health (scored <5)	9(13.3%)	56(34.6%)		
Total	68(100%)	162(100%)		

Table 23 shows that although the incidence of poor mental health is higher among the PRTR living in urban areas (86.7%) than among the PRTR living in rural areas (65.4%) there is no significant difference between them.

(2) Poor mental health of PRTR:

Table 24: Poor mental health of PRTR in relation to residence

Poor mental health(scored >/ 5)	PRTP's residence		X2	**P**
	Urban n (%)	Rural n (%)		
With psychiatric disorders (ICD-10)	23(38.9%)	67(63.2%)	1.9	>0.05 NS
Without psychiatric disorders (ICD-10)	36(61.1%)	39(36.8%)		
Total	59(100%)	106(100%)		

Table 24 shows insignificant difference between the PRTR living in urban areas and the PRTR living in rural areas as regards the poor mental health with psychiatric disorders and the poor mental health without psychiatric disorders (subclinical psychiatric disorders).

(3) Psychiatric disorders of PRTR (ICD-10):

Table 25: Psychiatric disorders of PRTR (ICD-10) in relation to residence

Psychiatric disorders	PRTP's residence		X2	**P**
	Urban n (%)	Rural n (%)		
depressive episode	17(73.9%)	21(31.4%)	1	>0.05 NS
dysthymia	4 (17.3%)	15(22.4%)		
Generalised anxiety	0	10(14.9%)		
post traumatic stress disorder	0	2(2.9%)		
adjustment disorder (depressive type)	2(8.8%)	19(28.4%)		
Total	23(100%)	67(100%)		

Table 25 shows that although the depressive episode is highly presented in the PRTR living in urban areas, there is insignificant difference between the PRTR living in urban areas and the PRTR living in rural areas as regards the diagnosis of psychiatric disorders, there is insignificant difference between them.

(4)Severity of depression in PRTR (BDI):

Table 26: Severity of depression in PRTR (BDI) in relation to residence

Severity of depression	PRTP's residence		X2	P
	Urban n (%)	Rural n (%)		
severe	6(8.8%)	13(8.1%)	2.9	>0.05 NS
moderate	8(11.7%)	18(11.1%)		
mild	5(7.3%)	24(14.8%)		
no depression	49(72.2%)	107(66%)		
Total	68(100%)	162(100%)		

Table 26 shows insignificant difference between urban and rural areas as regards the severity of depression in the PRTR.

(5) Depressive symptoms of PRTP (SPS):

Table 27: Depressive symptoms of PRTP according to (SPS) subscales in relation to residence

Depressive symptoms	PRTP's residence		X2	**P**
	Urban(n=68) (%)	Rural(n=162) (%)		
Hopelessness	0	3(1.8%)	1.3	>0.05 NS
-ve self evaluation	3(4.4%)	3(1.8%)	0.3	>0.05 NS
hostility	17(25%)	28(17.2%)	0.08	>0.05 NS
suicidal ideation	6(8.8%)	11(6.7%)	0.7	>0.05 NS

Table 27 shows that hopelessness, -ve self evaluation, hostility and suicidal ideation in PRTR haven't significant relation to the residence of PRTR.

(6) Risk of suicide in PRTR (SPS):

Table 28: Risk of suicide in PRTR (SPS) in relation to residence

Risk of suicide	PRTP's residence		X2	P
	Urban n (%)	Rural n (%)		
Severe risk	0	0	2.9	>0.05 NS
moderate risk	1(1.5%)	12(7.5%)		
mild risk	14(20.6%)	45(27.7%)		
absent risk	53(77.9%)	105(64.8%)		
Total	68(100%)	162(100%)		

Table 28 shows that the residence of PRTR haven't significant relation to the risk of suicide

(7) Quality of life (WHOQoL 100) among PRTR:

Table 29: Quality of life (WHOQoL 100) among PRTR in relation to residence

WHOQoL 100		PRTP's residence		X2	P
		Urban n (%)	Rural n (%)		
Physical	Bad	65(95.5%)	129(79.6%)	1.1	>0.05 NS
	Good	3(4.5%)	33(20.4%)		
	Total	68(100%)	162(100%)		
Psychological	Bad	67(98.5%)	137(84.5%)	1.8	>0.05 NS
	Good	1(1.5%)	25(15.5%)		
	Total	68(100%)	162(100%)		
Social	Bad	68(100%)	161(99.3%)	0.8	>0.05 NS
	Good	0	1(0.7%)		
	Total	68(100%)	162(100%)		
Independence	Bad	40(58.8%)	91(56.1%)	0.7	>0.05 NS
	Good	28(41.2%)	71(43.9%)		
	Total	68(100%)	162(100%)		
Environmental	Bad	68(100%)	143(88.2%)	0.6	>0.05 NS
	Good	0	19(11.8%)		
	Total	68(100%)	162(100%)		
Spiritual	Bad	10(14.7%)	25(15.5%)	1.8	>0.05 NS
	Good	58(85.3%)	137(84.5%)		
	Total	68(100%)	162(100%)		
overall	Bad	67(98.5%)	156(96.2%)	1.2	>0.05 NS
	Good	1(1.5%)	6(13.8%)		
	Total	68(100%)	162(100%)		

Table 29 shows insignificant difference between the PRTR living in urban areas and the PRTR living in rural areas as regards all domains of QoL.

(V) Educational level:

(1) Mental health of PRTR (GHQ-28):

Table 30: Mental health of PRTR in relation to educational level

mental health	PRTR's education						X2	P
	Uneduated n (%)	Primary n (%)	Preparatory n (%)	Secondary n (%)	2years institute	bachelor n (%)		
poor mental health (scored >/ 5)	32 (78%)	23 (92%)	28 (63.6%)	38 (70.3%)	13 (65%)	31 (67.3%)	2.5	>0.05 NS
good mental health (scored <5)	9 (12%)	2 (8%)	16 (46.4%)	16 (29.7%)	7 (35%)	15 (32.7%)		
Total	41 (100%	25 (100%	44 (100%	54 (100%	20 (100%)	46 (100%		

Table 30 shows no significant difference between the PRTR with different educational levels as regards the mental health.

(2) Poor mental health of PRTR:

Table 31: Poor mental health of PRTR in relation to educational level

Poor mental health(scored >/ 5)	PRTR's education						X2	P
	Unedua ted n (%)	Primary n (%)	Preparatory n (%)	Secondary n (%)	2years institute	bachelor n (%)		
With psychiatric disorders (ICD-10)	10 (31.2%)	5 (21.8%)	23 (82.1%)	28 (73.6%)	9 (69.2%)	15 (48.3%)	3.2	>0.05 NS
Without psychiatric disorders (ICD-10)	22 (68.7%)	18 (78.2%)	5 (17.9%)	10 (26.4%)	4 (30.8%)	16 (51.7%)		
Total	32 (100%)	23 (100%)	28 (100%)	38 (100%)	13 (100%)	31 (100%)		

Table 31 shows no significant difference between the PRTR with different educational levels as regards the poor mental health with psychiatric disorders and the poor mental health without psychiatric disorders (subclinical psychiatric disorders).

(3) Psychiatric disorders of PRTR (ICD-10):

Table 32: Psychiatric disorders of PRTR (ICD-10) in relation to educational level

ICD-10 disorders	PRTR's education						X2	P
	Uneduated n (%)	Primary n (%)	Preparatory n (%)	Secondary n (%)	2years institute	bachelor n (%)		
depressive episode	2 (20%)	3 (60%)	13 (56.7%)	5 (17.8%)	9 (100%)	6 (40%)	3.2	>0.05 NS
dysthymia	0	2 (40%)	6 (26.1%)	8 (28.6%)	0	3 (20%)		
Generalised anxiety disorder	4 (40%)	0	2 (8.6%)	4 (14.3%)	0	0		
post traumatic stress disorder	0	0	0	0	0	2 (15%)		
adjustment disorder depressive type	4 (40%)	0	2 (8.6%)	11 (39.2%)	0	4 (25%)		
Total	10 (100%)	5 (100%)	23 (100%)	28 (100%)	9 (100%)	15 (100%)		

Table 32 shows no significant difference between the PRTR with different educational levels as regards the diagnosis of psychiatric disorders.

(4)Severity of depression in PRTR (BDI):

Table 33: Severity of depression in PRTR (BDI) in relation to educational level

Severity of depression	PRTR's education						X2	P
	Uneduated n (%)	Primary n (%)	Preparatory n (%)	Secondary n (%)	2years institute	bachelor n (%)		
severe	2 (4.9%)	5 (20%)	0	8 (14.8%)	4 (20%)	0	**6.3**	**<0.05**
moderate	0	4 (16%)	6 (12.7%)	5 (9.7%)	4 (20%)	7 (15.4%)		
mild	2 (4.9%)	0	5 (11.3%)	11 (20.3%)	3 (15%)	8 (17.3%)		
no depression	37 (90.2%)	16 (64%)	33 (75%)	30 (55.5%)	9 (45%)	31 (67.3%)		
Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		

Table 33 shows significant difference between the PRTR with different educational levels as regards the severity of depression.

(5) Depressive symptoms of PRTP (SPS):

Table 34: Depressive symptoms of PRTP according to (SPS) subscales in relation to educational level

Depressive symptoms	PRTR's education						X2	P
	Uneduated n =41 (%)	Primary n=25 (%)	Preparatory n =44 (%)	Secondary n=54 (%)	2years institute n =20 (%)	bachelor n =46 (%)		
Hopelessness	0	0	0	3(5.5%)	0	0	0.9	>0.05 NS
-ve self evaluation	2 (4.8%)	7 (28%)%	7 (15.9%)	13 (24%)	8 (40%)	7 (15.2%)	**6.6**	**<0.05 S**
hostility	0	3 (10.7%)	4 (9%)	2 (3.7%)	3 (15%)	5 (11.9%)	1.5	>0.05 NS
suicide ideas	0	0	0	3(5.5%)	0	0	0.2	>0.05 NS

Table 34 shows that -ve self evaluation is more presented among the PRTR with 2 years institute education than the other educational levels with significant difference between them, while hopelessness, , hostility and suicidal ideation in PRTR have no significant relation to the educational level of PRTR. Also table 37 shows that hopelessness is positively correlated to educational level.

(6) Risk of suicide in PRTR (SPS):

Table 35: Risk of suicide in PRTR (SPS) in relation to educational level

Risk of suicide	PRTR's education						X2	P
	Uneduated n (%)	Primary n (%)	Preparatory n (%)	Secondary n (%)	2years institute	bachelor n (%)		
severe	0	0	0	0	0	0	**5.9**	**<0.01 HS**
moderate	0	0	0	13 (24%)	0	1		
mild risk	6 (13.7%)	8 (32%)	9 (20.5%	69 (11%)	4 (20%)	16 (34.8%)		
absent risk	35 (85.3%)	17 (68%)	35 (79.5%)	35 (65%)	16 (80%)	30 (65.2%)		
Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		

Table 35 shows that there is no severe risk of suicide among PRTR and that moderate risk of suicide is present only among secondary education PRTR in highly significant difference as regards the risk of suicide.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 36: Quality of life (WHOQoL 100) among PRTR in relation to educational level

WHO QoL 100		PRTR's education						X2	P
		Uneduated n (%)	**Primary n (%)**	**Preparatory n (%)**	**Secondary n (%)**	**2years institute**	**bachelor n (%)**		
Physical	**Bad**	40 (97.6%)	22 (88%)	37 (84%)	47 (87%)	17 (95%)	31 (67.3%)	3	>0.05 NS
	Good	1 (2.4%)	3(12%)	7(16%)	3(13%)	3(5%)	15(33.7%)		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%0	46 (100%)		
Psychological	**Bad**	40 (97.6%)	19 (76%)	41 (93.1%)	31 (57.4%)	14 (70%)	29 (63%)	4	**<0.05 S**
	Good	1 (2.4%)	6 (24%)	3 (6.9%)	19 (42.5%)	6 (30%)	17 (37%)		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%0		
Social	**Bad**	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)	2.6	>0.05 NS
	Good	0	0	0	0	0	0		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		
Independence	**Bad**	23 (56%)	16 (64%)	25 (56.8%)	30 (55.5%)	11 (55%)	26 (56.5%)	5	**<0.05 S**
	Good	18 (44%)	9 (36%)	19 (43.2%)	24 (44.5%)	9 (45%)	20 (43.5%)		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		
Environmental	**Bad**	39 (95%)	23 (92%)	37 (84%)	51 (94.4%)	20 (100%)	43 (93.4%)	2.8	>0.05 NS
	Good	2 (5%)	2 (8%)	7 (16%)	3 (5.6%)	0	3 (6.6%)		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		
Spiritual	**Bad**	10 (24.3%)	4 (16%)	5 (11.3%)	8 (14.8%)	3 (15%)	5 (10.8%)	2.8	>0.05 NS
	Good	31 (75.6%)	21 (84%)	29 (88.7%)	44 (85.2%)	17 (85%)	41 (89.2%)		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		
overall	**Bad**	31 (75.6%)	24 (96%)	43 (97.7%)	52 (96.2%)	19 (96%)	45 (97.8%)	2.9	>0.05 NS
	Good	10 (24.3%)	1 (4%)	1 (2.3%)	2 (3.8%)	1 (4%)	1 (2.2%)		
	Total	41 (100%)	25 (100%)	44 (100%)	54 (100%)	20 (100%)	46 (100%)		

Table 36 shows that Bachelor, 2years institute and secondary educational levels have better psychological and independence QoL than the other educational levels with a significant difference between them; while physical, social, environmental, spiritual and overall QoL in PRTR have no significant relation to the educational level of PRTR. Table 37 shows that psychological and independence QoL are positively correlated to educational level.

Figure 26a: Distribution of bad psychological QoL among PRTR among different educational levels

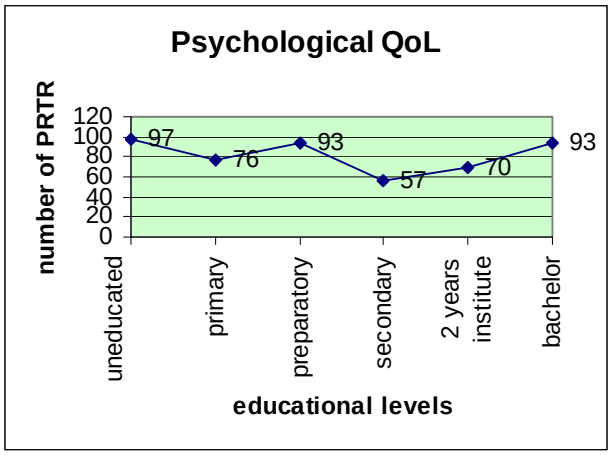

Figure 26a shows that bad psychological QoL is commonest among uneducated group (40/41, 97.6%) least among secondary group (31/54, 57%).

Figure 26b: Distribution of bad independence QoL among PRTR among different educational levels

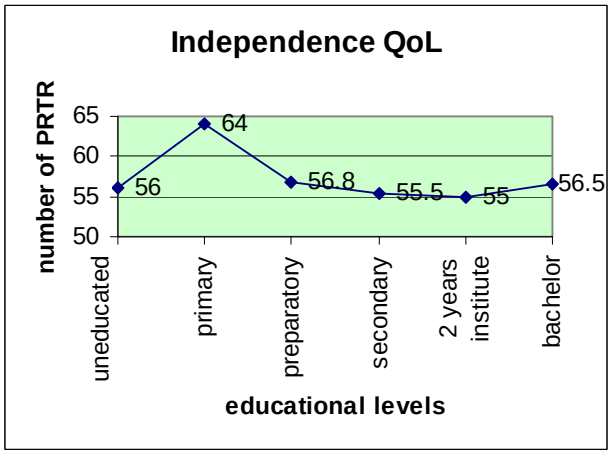

Figure 26b shows that bad independence QoL is commonest among primary group (19/25, 64%) least among 2 years institute group (11/68, 55%).

(8) Correlation between different psychiatric data and QoL versus educational level among PRTR:

Table 37: Correlation between different psychiatric data and QoL versus educational level among PRTR

Variables	PRTR's educational levels	
	r	P
GHQ-28	0.17	>0.05 NS
BDI	0.07	>0.05 NS
Hopelessness	**0.82**	**<0.01 HS**
Negative self evaluation	0.19	>0.05 NS
Hostility	0.07	>0.05 NS
Suicidal ideation	0.03	>0.05 NS
Risk of suicide SPS	0.23	>0.05 NS
Physical QoL	0.16	>0.05 NS
Psychological QoL	-0.5	**<0.01 HS**
Social QoL	0.17	>0.05 NS
Independence QoL	0.26	**<0.05 S**
Environmental QoL	0.10	>0.05 NS
Spiritual QoL	-0.19	>0.05 NS
Overall QoL	-0.14	>0.05 NS

Table 37 shows no correlation between the educational levels of PRTR and different psychiatric data except hopelessness, also no correlation to various domains of QoL except psychological and independence QoL.

(VI) Occupational level (see appendix 6):

(1) Mental health of PRTR (GHQ-28):

Table 38: Mental health of PRTR in relation to occupational level

mental health	PRTR's occupational levels						X2	P
	Level1 n (%)	Level2 n (%)	Level3 n (%)	Level4 n (%)	Level5 n (%)	Level6 n (%)		
poor mental health (scored >/ 5)	43 (81%)	33 (56.8%	18 (69.2%	43 (86%)	17 (68%)	11 (61%)	2.5	>0.05 NS
good mental health (scored <5)	10 (19%)	25 (43.2%	8 (30.8%	7 (14%)	8 (32%)	7 (39%)		
Total	53(100 %	58(100 %	26(100 %	50(100 %	25(100 %	18(100 %		

(Occupational Level 1-6 see appendix 6)

Table 38 shows no significant difference between the PRTR with different occupational levels as regards the mental health.

(2) Poor mental health of PRTR:

Table 39: Poor mental health of PRTR in relation to occupational level

Poor mental health(scored >/ 5)	PRTR's occupational levels						X2	P
	Level1 n (%)	Level2 n (%)	Level3 n (%)	Level4 n (%)	Level5 n (%)	Level6 n (%)		
With psychiatric disorders (ICD-10)	24 (55.8 %)	21 (63.6 %)	16 (88.8 %)	14 (32.5 %)	11 (64.7 %)	4 (36.3 %)	2	>0.05 NS
Without psychiatric disorders (ICD-10)	19 (44.2 %)	12 (36.4 %)	2 (11.2 %)	29 (67.5 %)	6 (35.3 %)	7 (63.7 %)		
Total	43 (100%)	33 (100%)	18 (100%)	43 (100%)	17 (100%)	11 (100%)		

(Occupational Level 1-6 see appendix 6)

Table 39 shows no significant difference between the PRTR with different occupational levels as regards the poor mental health with psychiatric disorders and the poor mental health without psychiatric disorders (subclinical psychiatric disorders).

(3) Psychiatric disorders of PRTR (ICD-10):

Table 40: Psychiatric disorders of PRTR (ICD-10) in relation to occupational level

ICD-10 disorders	PRTR's occupational levels						X2	P
	Level1 n (%)	Level2 n (%)	Level3 n (%)	Level4 n (%)	Level5 n (%)	Level6 n (%)		
depressive episode	17 (72%)	13 (62%)	1 (6.4%)	2 (14.1%)	4 (36.4%)	1 (25%)	**22**	**<0.01 HS**
dysthymia	2 (8%)	4 (19%)	5 (31.2%)	4 (28.2%)	2 (18.2%)	2 (50%)		
Generalised anxiety	1 (4%)	2 (9.5%)	6 (37.4%)	0	1 (9%)	0		
post traumatic stress	0	0	0	0	2 (18.2%)	0		
adjustment disorder depressive type	4 (16%)	2 (9.5%)	4 (25%)	8 (56.7%)	2 (18.2%)	1 (25%)		
Total	24 (100%)	21 (100%)	16 (100%)	14 (100%)	11 (100%)	4 (100%)		

(Occupational Level 1-6 see appendix 6)

Table 40 shows that depressive episode is the commonest disorder among level 1, 2, and 5, while adjustment disorder depressive type is the commonest among level 4. Dysthymia is the commonest among level 6, while generalized anxiety disorder is the commonest among level 3. These differences are highly significant differences.

(4)Severity of depression in PRTR (BDI):

Table 41: Severity of depression in PRTR (BDI) in relation to occupational level

Severity of depression	PRTR's occupational levels						X2	P
	Level1 n (%)	Level2 n (%)	Level3 n (%)	Level4 n (%)	Level5 n (%)	Level6 n (%)		
severe	0	10(17%)	0	9(18)	0	0	**6.5**	**<0.05 S**
moderate	18(34%)	2(3.5%)	2(8%)	2(4%)	0	2(9.8%)		
mild	6(12%)	2(3.5%)	7(27%)	7(14%)	7(28%)	0		
no depression	29 (54 %)	44 (76%)	17 (65%)	32 (64%)	18 (72%)	16 (88.2%)		
Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		

(Occupational Level 1-6 see appendix 6)

Table 41 shows that in level 2 and 4, severe depression is highly presented, while in level 1 moderate depression is highly presented. In the level 3 mild depression is highly presented with a significant difference.

(5) Depressive symptoms of PRTR (SPS):

Table 42: Depressive symptoms of PRTR according to (SPS) subscales in relation to occupational level

Depressive symptoms	PRTR's occupational levels						X2	P
	Level1 N=53 (%)	Level2 N=58 (%)	Level3 N=26 (%)	Level4 N=50 (%)	Level5 n (%)	Level6 N=18 (%)		
Hopeless	0	0	0	3(6%)	0	0	1.9	>0.05 NS
-ve self evaluation	0	0	0	3(6%)	0	0	**7**	**<0.05 S**
hostility	13 (24.5%)	11 (18.9%)	4 (15.3%)	13 (26%)	2 (8%)	1 (5.5%)	1.4	>0.05 NS
suicide ideas	4 (7.5%)	0	5 (19.2%)	5 (10%)	3 (12%)	0	2	>0.05 NS

(Occupational Level 1-6 see appendix 6)

Table 42 shows that -ve self evaluation is more presented among the PRTR in level 4 and it is absent in the other occupational levels with significant difference between them, while hopelessness, hostility and suicidal ideation in PRTR have insignificant relation to the educational level of PRTR. Also, table 45 shows +ve correlation between the occupational level of the PRTR and the –ve self image.

(6) Risk of suicide in PRTR (SPS):

Table 43: Risk of suicide in PRTR (SPS) in relation to occupational level

Risk of suicide	PRTR's occupational levels						X2	P
	Level1 n (%)	Level2 n (%)	Level3 n (%)	Level4 n (%)	Level5 n (%)	Level6 n (%)		
severe	0	0	0	0	0	0	**7.8**	**<0.05 S**
moderate	0	0	0	10(20%	3(12%	0		
mild	11 (20.8%)	18 (31.1%)	14 (53.9%)	9 (18%)	4 (16%)	3 (16.5%)		
no risk of suicide	42 (79.2%)	40 (68.9%)	12 (46.1%)	31 (62%)	18 (72%)	15 (83.5%)		
Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		

(Occupational Level 1-6 see appendix 6)

Table 43 shows that there is no severe risk of suicide among PRTR and moderate risk of suicide is presented only among level 4and 5 with a significant difference between them.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 44: Quality of life (WHOQoL 100) among PRTR in relation to occupational level

WHO QoL 100		PRTR's occupational levels						X2	P
		Level1 n (%)	Level2 n (%)	Level3 n (%)	Level4 n (%)	Level5 n (%)	Level6 n (%)		
Physical	Bad	51 (96.2%)	49 (84.4%)	23 (88.4%)	43 (86%)	17 (68%)	11 (61%)	15	**<0.01 HS**
	Good	2 (3.8%)	9 (15.6%)	3 (11.6%)	7 (14%0	8 (32%)	7 (39%)		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		
Psychological	Bad	41 (77.3%)	49 (84.4%)	19 (73%)	41 (82%)	13 (52%)	11 (61%)	20	**<0.01 HS**
	Good	12 (32.3%)	9 (15.6%)	7 (27%)	9 (18%)	12 (48%)	7 (39%)		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		
Social	Bad	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)	1.1	>0.05 NS
	Good	0	0	0	0	0	0		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		
Independence	Bad	45(85%)	31(53.4%)	8(30.7%)	31(62%)	12(48%)	4(22.2%)	17	**<0.01 HS**
	Good	8 (15%)	27 (46.6%)	18 (69.3%)	19 (38%)	13 (52%)	14 (77.8%)		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		
Environmental	Bad	49 (92.4%)	55 (94.8%)	25 (96.1%)	44 (88%)	23 (92%)	17 (94.4%)	15	**<0.01 HS**
	Good	4(7.6%)	3(5.2%)	1(3.9%)	6(12%)	2(8%)	1(5.6%)		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		
Spiritual	Bad	10 (18.8%)	4 (6.8%)	7 (27%)	10 (20%)	2 (8%)	2 (11.1%)	7.9	**<0.01 HS**
	Good	43 (81.2%)	54 (93.2%)	19 (73%)	40 (80%)	23 (92%)	16 (88.9%)		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		
overall	Bad	51 (96.2%)	57 (98.2%)	25 (96.1%)	49 (98%)	24 (96%)	17 (94.4%)	1.9	>0.05 NS
	Good	2(3.8%)	1(1.8%)	1(3.9%)	1(2%)	1(4%)	6(5.6%)		
	Total	53 (100%)	58 (100%)	26 (100%)	50 (100%)	25 (100%)	18 (100%)		

(Occupational Level 1-6 see appendix 6)

Table 44 shows that level 4 and 6 occupational levels have better independence QoL than the other occupational levels, level 4 occupational levels has better enviromental QoL than the other occupational levels, level 2, 5 and 6 occupational levels have better spiritual QoL than the other occupational levels with a significant difference. Also, table 45 shows +ve correlation between the occupational level of the PRTR and independence and environmental QoL.

Figure 27a: Distribution of bad physical QoL among PRTR among different occupational levels

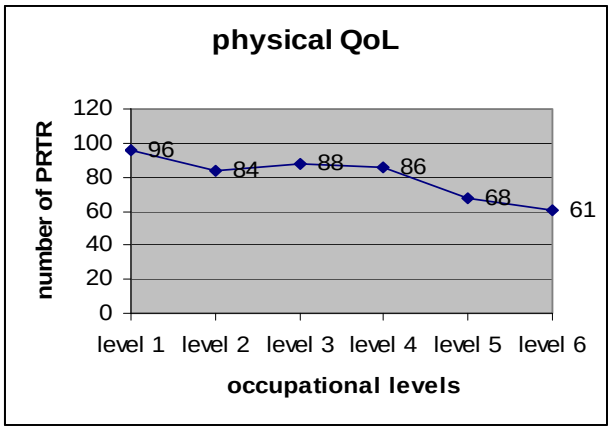

Figure 27a shows that bad physical QoL is commonest among level 1 occupational group (51/68, 96.2%) and least among level 6 occupational group (11/18, 61%).

Figure 27b: Distribution of bad psychological QoL among PRTR among different occupational levels

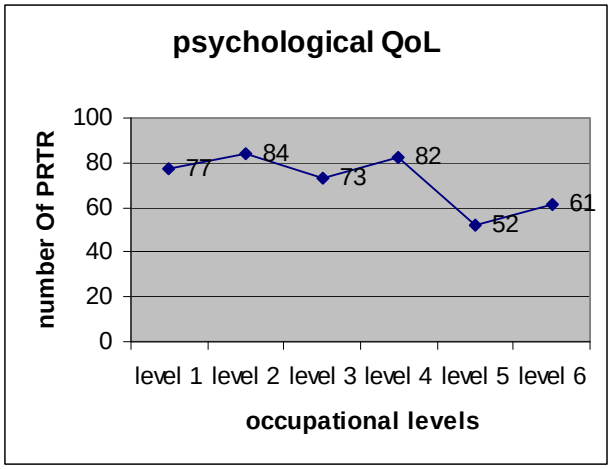

Figure 27b shows that bad psychological QoL is commonest among level 2 occupational group (49/68, 84.4%) and least among level 5 occupational group (13/25, 52%).

Figure 27c: Distribution of bad independence QoL among PRTR among different occupational levels

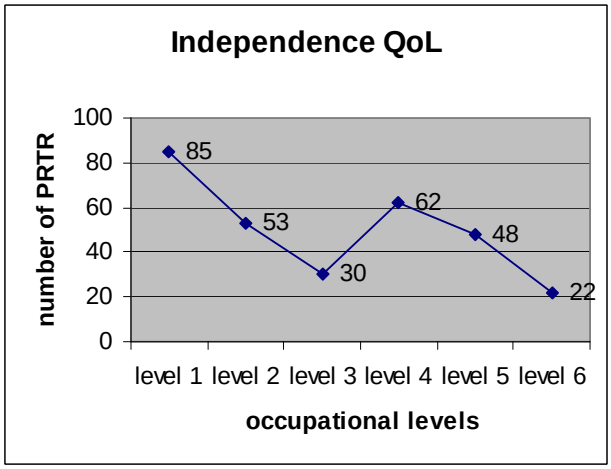

Figure 27c shows that bad independence QoL is commonest among level 1 occupational group (45/68, 85%) and least among level 6 occupational group (4/18, 22.2%).

Figure 27d: Distribution of bad enviromental QoL among PRTR among different occupational levels

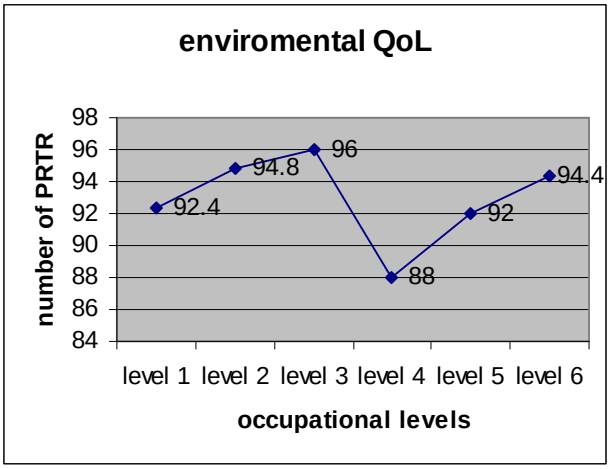

Figure 27d shows that bad enviromental QoL is commonest among level 2 occupational group (55/68, 94.8%) and least among level 6 occupational group (17/18, 94.4%).

Figure 27e: Distribution of bad spiritual QoL among PRTR among different occupational levels

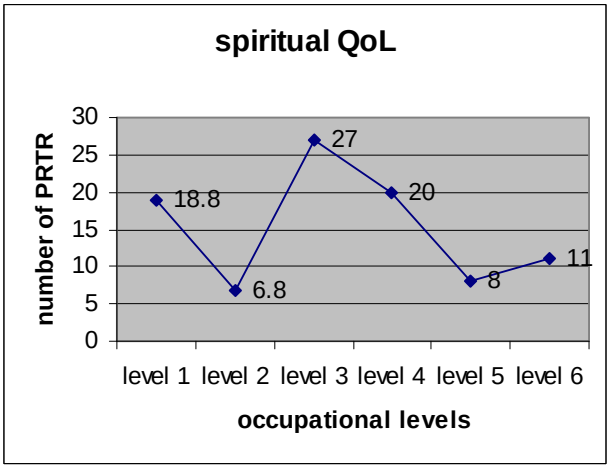

Figure 27e shows that bad spiritual QoL is commonest among level 3 occupational group (7/26, 27%) and least among level 2 occupational group (4/58, 6.8%).

(8) Correlation between different psychiatric data and QoL versus occupational level among PRTR:

Table 45: Correlation between different psychiatric data and QoL versus occupational level among PRTR

Variables	**PRTR's occupational levels**	
	r	**P**
GHQ-28	0.16	>0.05 NS
BDI	1.8	>0.05 NS
Hopelessness	0.7	>0.05 NS
Negative self evaluation	**13**	**<0.01 HS**
Hostility	1.3	>0.05 NS
Suicidal ideation	0.9	>0.05 NS
Risk of suicide SPS	1	>0.05 NS
Physical QoL	1.1	>0.05 NS
Psychological QoL	1.4	>0.05 NS
Social QoL	1.3	>0.05 NS
Independence QoL	**3.6**	**<0.05 S**
Environmental QoL	**2.9**	**<0.05 S**
Spiritual QoL	1.6	>0.05 NS
Overall QoL	1.9	>0.05 NS

Table 45 shows no correlation between the occupational levels of the PRTR and the different psychiatric data except the negative self image, also there is no correlation with various domains of QoL except independence and spiritual QoL.

(VII) Marital state:

(1) Mental health of PRTR (GHQ-28):

Table 46: Mental health of PRTR in relation to marital state

mental health	PRTP's marital state				X2	P
	Single n (%)	Married n (%)	Divorced n (%)	Widow n (%)		
poor mental health (scored >/ 5)	41(75.9%)	119(70.8	5(100%)	0	2.6	>0.05 NS
good mental health (scored <5)	13(24.1%)	49(21.2%) .	0	3(100%)		
Total	54(100%)	168(100%	5(100%)	3(100%)		

Table 46 shows that all the divorced PRTR (5/5, 100%) have poor mental health but without significant difference when compared to the other groups.

(2) Poor mental health of PRTR:

Table 47: Poor mental health of PRTR in relation to marital state

Poor mental health(scored >/ 5)	PRTP's marital state				**X2**	**P**
	Single n (%)	Married n (%)	Divorced n (%)	Widow n (%)		
With psychiatric disorders (ICD-10)	15(36.5%)	70(58.8%)	5(100%)	0	**6.9**	**<0.05 S**
Without psychiatric disorders (ICD-10)	26(63.5%)	49(41.2%)	0	0		
Total	41(100%)	119(100%	5(100%)	0		

Table 47 shows that all the divorced PRTR (5/5, 100%) have psychiatric disorders. 58.8% (70/119) of the married PRTR and 36.5% (15/41) of the single PRTR have psychiatric disorders with significant difference between them.

(3) Psychiatric disorders of PRTR (ICD-10):

Table 48: Psychiatric disorders of PRTR (ICD-10) in relation to marital state

Psychiatric disorders	PRTP's marital state				**X2**	**P**
	Single n (%)	Married n (%)	Divorced n (%)	Widow n (%)		
depressive episode	13(86.6%	20(28.6%)	5(100%)	0	**6.5**	**<0.05 S**
dysthymia	0	19(27.12%)	0	0		
Generalised anxiety	0	10(14.3%)	0	0		
post traumatic stress	0	2(2.86%)	0	0		
adjustment disorder (depressive type)	2(13.4%	19(27.12%)	0	0		
Total	15(100%)	70(100%)	5(100%)	0(100%)		

Table 48 shows that there is significant difference between PRTR marital state groups as regards psychiatric disorders. Depressive episode is the commonest disorder among the single, married and divorced PRTR, followed by adjustment disorder depressive type among the single and the married groups PRTR. Also, dythymia is present among the married PRTR with the same percent as the adjustment disorder depressive type.

(4)Severity of depression in PRTR (BDI):

Table 49: Severity of depression in PRTR (BDI) in relation to marital state

Severity of depression	PRTP's marital state				X2	P
	Single n (%)	Married n (%)	Divorced n (%)	Widow n (%)		
severe	0	19(11.3%)	0	0	3	>0.05 NS
moderate	4(7.5%)	18(10.8%)	4(80%)	0		
mild	9(16.6%)	19(11.3%)	1(20%)	0		
no depression	41(75.9%)	112(66.6%)	0	3(100%)		
Total	54(100%)	168(100%	5(100%)	3(100%)		

Table 49 shows insignificant difference between the PRTR with different marital states as regards the severity of depression.

(5) Depressive symptoms of PRTP (SPS):

Table 50: Depressive symptoms of PRTP according to (SPS) subscales in relation to marital state

Depressive symptoms	PRTP's marital state				**X2**	**P**
	Single n=54 (%)	Married n=168(%)	Divorced n=5(%)	Widow n=3(%)		
Hopeless-ness	0	0	0	0	2	>0.05 NS
-ve self evaluation	0	3(1.78%)	0	0	2.4	>0.05 NS
hostility	14(25.9%)	30(17.8%)	0	0	2.5	>0.05 NS
suicidal ideation	1(1.8%)	16(9.5%)	0	0	3	>0.05 NS

Table 50 shows insignificant difference between the PRTR with different marital states as regards hopelessness, -ve self evaluation, hostility and suicidal ideation.

(6) Risk of suicide in PRTR (SPS):

Table 51: Risk of suicide in PRTR (SPS) in relation to marital state

Risk of suicide	PRTP's marital state				X2	P
	Single n (%)	Married n (%)	Divorced n (%)	Widow n (%)		
Severe	0	0	0	0	1	>0.05 NS
Moderate	2(3.8%)	11(6.7%)	0	0		
mild	11(20.3%	48(28.5%	0	0		
Absent	41(75.9%	109(64.8%	5(100%)	3(100%)		
Total	54(100%)	168(100%	5(100%)	3(100%)		

Table 51 shows insignificant difference between the PRTR with different marital states as regards the risk of suicide.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 52: Quality of life (WHOQoL 100) among PRTR in relation to marital state

WHOQoL 100	PRTP's marital state					**X2**	**P**
		Single n (%)	Married n (%)	Divorced n (%)	Widow n (%)		
Physical	Bad	49(90.7%)	142(84.5%)	2(40%)	1(33.3%)	2	>0.05 NS
	Good	5(9.3%)	26(15.5%)	3(60%)	2(66.7%)		
	Total	54(100%)	168(100%	5(100%)	3(100%)		
Psychological	Bad	36(66.7%)	136(80.9%)	2(40%)	0	3	>0.05 NS
	Good	18(33.3%)	32(19.1%)	3(60%)	3(100%)		
	Total	54(100%)	168(100%	5(100%)	3(100%)		
Social	Bad	54(100%)	168(100%	5(100%)	3(100%)	2.4	>0.05 NS
	Good	0	0	0	0		
	Total	54(100%)	168(100%	5(100%)	3(100%)		
Independence	Bad	38(70.3%)	91(54.2%)	2(40%)	0	2.5	>0.05 NS
	Good	16(29.7%)	9(5.8%)	3(60%)	3(100%)		
	Total	54(100%)	168(100%	5(100%)	3(100%)		
Environmental	Bad	50(92.5%)	158(94%)	4(80%)	1(33.3%)	3	>0.05 NS
	Good	4(7.5%)	10(6%)	1(20%)	2(66.7%)		
	Total	54(100%)	168(100%	5(100%)	3(100%)		
Spiritual	Bad	10(18.5%)	25(14.8%)	0	0	3.5	>0.05 NS
	Good	44(82.5%)	143(85.2%)	5(100%)	3(100%)		
	Total	54(100%)	168(100%	5(100%)	3(100%)		
overall	Bad	51(94.4%)	166(98.8%)	4(80%)	2(66.7%)	3.5	>0.05 NS
	Good	3(5.6%)	2(1.2%)	1(20%)	1(33.3%)		
	Total	54(100%)	168(100%	5(100%)	3(100%)		

Table 52 shows insignificant difference between the PRTR with different marital states as regards all domains of QoL.

(VIII) Social class (see appendix 6):

(1) Mental health of PRTR (GHQ-28):

Table 53: Mental health of PRTR in relation to social class

mental health	PRTP's social class			X2	P
	Very low n (%)	Low n (%)	Low middle n (%)	4.3	>0.05 NS
poor mental health (scored >/ 5)	10(100%)	70(63.6%)	85(77.2%)		
good mental health (scored <5)	0	40(36.4%)	25(22.8%)		
Total	10(100%)	110(100%)	110(100%)		

Table 53 shows that all the very low social class PRTR have poor mental health but without significant difference when compared to other groups.

(2) Poor mental health of PRTR:

Table 54: Poor mental health of PRTR in relation to social class

Poor mental health(scored >/ 5)	PRTP's social class			**X2**	**P**
	Very low n (%)	Low n (%)	Low middle n (%)	3.3	>0.05 NS
With psychiatric disorders (ICD-10)	7(70%)	40(57.1%)	43(50.5%)		
Without psychiatric disorders (ICD-10)	3(30%)	30(42.9%)	42(49.5%)		
Total	10(100%)	70(100%)	85(100%)		

Table 54 shows insignificant difference between PRTR with different social classes as regards the poor mental health with psychiatric disorders and without psychiatric disorders.

(3) Psychiatric disorders of PRTR (ICD-10):

Table 55: Psychiatric disorders of PRTR (ICD-10) in relation to social class

Psychiatric disorders	PRTP's social class			**X2**	**P**
	Very low n (%)	Low n (%)	Low middle n (%)	3.2	>0.05 NS
depressive episode	7(100%)	20(50%)	11(25.6%)		
dysthymia	0	5(12.5%)	14(32.6%)		
Generalised anxiety	0	0	10(23.2%)		
post traumatic stress	0	2(5%)	0		
adjustment disorder (depressive type)	0	13(32.5%)	8(18.6%)		
Total	7(100%)	40(100%)	43(100%)		

Table 55 shows no significant difference between the PRTR with different social classes as regards the diagnosis of psychiatric disorders.

(4)Severity of depression in PRTR (BDI):

Table 56: Severity of depression in PRTR (BDI) in relation to social class

Severity of depression	PRTP's social class			X 2	P
	Very low n (%)	Low n (%)	Low middle n (%)	**1 0**	**<0.0 1 HS**
severe	0	3(2.7%)	16(14.6%)		
moderate	2(20%)	14(12.7%)	10(9%)		
mild	4(40%)	4(3.7%)	21(19.1%)		
no depression	4(40%)	89(80.9%)	63(57.3%)		
Total	10(100%)	110(100%)	110(100%)		

Table 56 shows highly significant difference between the PRTR with different social classes as regards the severity of depression.

(5) Depressive symptoms of PRTP (SPS):

Table 57: Depressive symptoms of PRTP according to (SPS) subscales in relation to social class

Depressive symptoms	PRTP's social class			**X2**	**P**
	Very low (n=10) n (%)	Low (n=110) n (%)	Low middle (n=110) n (%)		
Hopeless-ness	0	0	3(2.7%)	1.2	>0.05 NS
-ve self evaluation	0	1(0.9%)	2(1.8%)	0.7	>0.05 Ns
hostility	1(10%)	26(23.6%)	17(15.3%)	**10**	**<0.01 HS**
suicidal ideation	0	10(9%)	7(6.3%)	**3.9**	**<0.05 S**

Table 57 shows that hostility is more presented among the PRTR with low social class than the other social classes with highly significant difference between them. Suicidal ideation is more presented among the PRTR with low social class (10/110, 9%) followed by the low middle social class (7/110, 6.3%), but the PRTR with very low social class haven't suicidal ideation with significant difference between them. Hopelessness and –ve self evaluation in PRTR have insignificant relation to the social class. Also, table 60 shows +ve correlation between the social class of the PRTR and hostility.

(6) Risk of suicide in PRTR (SPS):

Table 58: Risk of suicide in PRTR (SPS) in relation to social class

Risk of suicide	PRTP's social class			X2	P
	Very low n (%)	Low n (%)	Low middle n (%)		
Severe	0	0	0	11	**<0.01 HS**
moderate	2(20%)	7(6.4%)	4(3.6%)		
mild	4(40%)	23(20.9%)	32(29.2%)		
absent	4(40%)	80(72.7%)	74(67.2%)		
Total	10(100%)	110(100%)	110(100%)		

Table 58 shows that the severe risk of suicide is not presented in the PRTR and the moderate degree is more presented in the very low social class which decreases by increasing the social class with significant difference between various social classes.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 59: Quality of life (WHOQoL 100) among PRTR in relation to social class

WHOQoL 100	PRTP's social class				X2	P
		Very low n (%)	Low n (%)	Low middle n (%)		
Physical	Bad	7 (70%)	90(81.8%)	97(88.2%)	3	<0.05 NS
	Good	3(30%)	20(18.2%)	13(11.8%)		
	Total	10 (100%)	110(100%)	110(100%)		
Psychological	Bad	3(30%)	83(75.55%)	88(80%)	2	<0.05 NS
	Good	7(70%)	27(24.5%)	22(20%)		
	Total	10 (100%)	110(100%)	110(100%)		
Social	Bad	10 (100%)	110 (100%)	110 (100%)	1	<0.05 NS
	Good	0	0	0		
	Total	10 (100%)	110(100%)	110(100%)		
Independence	Bad	5(50%)	56(50.9%)	70(63.6%)	2	<0.05 NS
	Good	5(50%)	54(49.1%)	40(36.4%)		
	Total	10 (100%)	110(100%)	110(100%)		
Environmental	Bad	8(80%)	101(91.8%)	104(94.5%)	1.1	<0.05 NS
	Good	2(20%)	9(8.2%)	6(5.5%)		
	Total	10 (100%)	110(100%)	110(100%)		
Spiritual	Bad	0	10(9.1%)	25(22.8%)	1.7	<0.05 NS
	Good	10(100%)	100(90.9%)	85(77.2%)		
	Total	10 (100%)	110(100%)	110(100%)		
overall	Bad	9(90%)	106(96.3%)	108(98.2%)	2	<0.05 NS
	Good	1(10%)	4(3.7%)	2(1.8%)		
	Total	10 (100%)	110(100%)	110(100%)		

Table 59 shows insignificant difference between the PRTR with different social classes as regards all domains of QoL.

(8) Correlation between different psychiatric data and QoL versus social class among PRTR:

Table 60: Correlation between different psychiatric data and QoL versus social class among PRTR

Variables	PRTR's social class	
	r	P
GHQ-28	0.16	>0.05 NS
BDI	-0.11	>0.05 NS
Hopelessness	0.13	>0.05 NS
Negative self evaluation	-0.11	>0.05 NS
Hostility	**0.29**	**<0.05 S**
Suicidal ideation	-0.12	>0.05 NS
Risk of suicide SPS	-0.08	>0.05 NS
Physical QoL	0.04	>0.05 NS
Psychological QoL	0.11	>0.05 NS
Social QoL	-0.06	>0.05 NS
Independence QoL	0.10	>0.05 NS
Environmental QoL	0.10	>0.05 NS
Spiritual QoL	0.13	>0.05 NS
Overall QoL	0.13	>0.05 NS

Table 60 shows no correlation between the social class of the PRTR versus various domains of QoL and different psychiatric data except hostility.

B. Medical data:

(I) Duration of haemodialysis done before renal transplantation surgery (RTS):

(1) Mental health of PRTR (GHQ-28):

Table 61: Mental health of PRTR in relation to duration of haemodialysis done before RTS

mental health	duration of haemodialysis done before RTS			X2	P
	<1 y n (%)	1-4y n (%)	4-7y n (%)	**6.5**	**<0.01 S**
poor mental health (scored >/ 5)	85(85%)	67(62.6%)	13(56.5%)		
good mental health (scored <5)	15(15%)	40(37.4%)	10(43.5%)		
Total	100(100%)	107(100%	23(100%)		

Table 61 shows in all groups the PRTR have poor mental health and the group (<1 year) has the highest percent (85%) of poor mental health compared to other groups with significant difference, but there is no significant correlation between the duration of haemodialysis done before RTS and the mental health as shown in table 68.

(2) Poor mental health of PRTR:

Table 62: Poor mental health of PRTR in relation to duration of haemodialysis done before RTS

Poor mental health(scored >/ 5)	duration of haemodialysis done before RTS			**X2**	**P**
	<1 y n (%)	1-4y n (%)	4-7y n (%)	2.1	>0.05 NS
With psychiatric disorders (ICD-10)	45(52.9%)	40(59.7%)	5(38.5%)		
Without psychiatric disorders (ICD-10	40(47.1%)	27(40.1%)	8(61.5%)		
Total	85(100%)	67(100%)	13(100%)		

Table 62 shows insignificant difference between the PRTR with different durations of haemodialysis done before RTS as regards the presence of psychiatric disorders

(3) Psychiatric disorders of PRTR (ICD-10):

Table 63: Psychiatric disorders of PRTR (ICD-10) in relation to duration of haemodialysis done before RTS

Psychiatric disorders	duration of haemodialysis done before RTS			**X2**	**P**
	<1 y n (%)	1-4y n (%)	4-7y n (%)	3.3	>0.05 NS
depressive episode	13(28.8%)	25(62.5%)	0		
dysthymia	11(24.4%)	7(17.5%)	1(20%)		
Generalised anxiety	8(18%)	0	2(40%)		
post traumatic stress	0	0	2(40%)		
adjustment disorder(depressive type)	13(28.8%)	8(20%)	0		
Total	45(100%)	40(100%)	5(100%)		

Table 63 shows insignificant difference between the PRTR with different durations of haemodialysis done before RTS as regards the diagnosis of psychiatric disorders.

(4)Severity of depression in PRTR (BDI):

Table 64: Severity of depression in PRTR (BDI) in relation to duration of haemodialysis done before RTS

Severity of depression	duration of haemodialysis done before RTS			X2	P
	<1 y n (%)	1-4y n (%)	4-7y n (%)	1.9	>0.05 NS
severe	0	19(17.8%)	0		
moderate	11(11%)	15(14%)	0		
mild	23(23%)	2(1.8%)	4(17.4%)		
no depression	66(66%)	71(66.4%)	19(82.6%)		
Total	100(100%)	107(100%)	23(100%)		

Table 64 shows insignificant difference between the PRTR with different durations of haemodialysis done before RTS as regards the severity of depression

(5) Depressive symptoms of PRTP (SPS):

Table 65: Depressive symptoms of PRTP according to (SPS) subscales in relation to duration of haemodialysis done before RTS

Depressive symptoms	duration of haemodialysis done before RTS			**X2**	**P**
	<1 y n=100(%)	1-<4 y n=107(%)	4-7 y n=23(%)		
Hopeless-ness	2(20%)	1(0.9%)	0	0.9	>0.05 NS
-ve self evaluation	1(10%)	2(1.8%)	0	0.7	>0.05 NS
hostility	19(19%)	25(23.3%)	0	2	>0.05 NS
suicidal ideation	8(8%)	7(6.5%)	2(8.7%)	1.5	>0.05 NS

Table 65 shows insignificant difference between the PRTR with different durations of haemodialysis done before RTS as regards hopelessness, -ve self evaluation, hostility and suicidal ideation.

(6) Risk of suicide in PRTR (SPS):

Table 66: Risk of suicide in PRTR (SPS) in relation to duration of haemodialysis done before RTS

Risk of suicide	duration of haemodialysis done before RTS			X2	P
	<1 y n (%)	1-4y n (%)	4-7y n (%)	3.5	>0.05 NS
Severe	0	0	0		
moderate	6(6%)	7(6.5%)	0		
mild	26(26%)	29(18.1%)	4(17.4%)		
absent	68(68%)	71(66.4%)	19(82.6%		
Total	100(100%)	107(100%)	23(100%)		

Table 66 shows insignificant difference between the PRTR with different durations of haemodialysis done before RTS as regards the risk of suicide.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 67: Quality of life (WHOQoL 100) among PRTR in relation to duration of haemodialysis done before RTS

WHOQoL 100	duration of haemodialysis done before RTS				**X2**	**P**
		<1 y n (%)	1-4y n (%)	4-7y n (%)		
Physical	Bad	89(89%)	90(84.1%)	15(62.2%)	2.5	>0.05 NS
	Good	11(11%)	17(15.9%)	8(37.8%)		
	Total	100(100%)	107(100%)	23(100%)		
Psychological	Bad	80 (80%)	87(81.3%)	7(30.5%)	3	>0.05 NS
	Good	20(20%)	20(18.7%)	16(69.5%)		
	Total	100(100%)	107(100%)	23(100%)		
Social	Bad	100 (100%)	107 (100%)	23 (23%)	1	>0.05 NS
	Good	0	0	0		
	Total	100(100%)	107(100%)	23(100%)		
Independence	Bad	56(56%)	67(62.6%)	8(37.8%)	1.9	>0.05 NS
	Good	44(44%)	40(37.4%)	15(62.2%)		
	Total	100(100%)	107(100%)	23(100%)		
Environmental	Bad	92(92%)	104(97.1%)	17(73.9%)	1.2	>0.05 NS
	Good	8(8%)	3(2.9%)	6(16.1%)		
	Total	100(100%)	107(100%)	23(100%)		
Spiritual	Bad	12(12%)	23(21.4%)	0	1.5	>0.05 NS
	Good	88(88%)	84(78.6%)	23(100%)		
	Total	100(100%)	107(100%)	23(100%)		
overall	Bad	99(99%)	104(97.1%)	20(86.9%)	2	>0.05 NS
	Good	1(1%)	3(2.9%)	3(13.1%)		
	Total	100(100%)	107(100%)	23(100%)		

Table 67 shows insignificant difference between the PRTR with different durations of haemodialysis done before RTS as regards the various domains of QoL

(8) Correlation between different psychiatric data and QoL versus hemodialysis duration among PRTR:

Table 68: Correlation between different psychiatric data and QoL versus dialysis duration among PRTR

Variables	duration of haemodialysis done before RTS	
	r	P
GHQ-28	>0.05	0.19 NS
BDI	>0.05	-0.18 NS
Hopelessness	>0.05	-0.03 NS
Negative self evaluation	>0.05	-0.10 NS
Hostility	>0.05	0.16 NS
Suicidal ideation	>0.05	-0.04 NS
Risk of suicide SPS	>0.05	-0.18 NS
Physical QoL	>0.05	-0.14 NS
Psychological QoL	>0.05	-0.02 NS
Social QoL	>0.05	0.06 NS
Independence QoL	>0.05	0.21 NS
Environmental QoL	>0.05	0.10 NS
Spiritual QoL	>0.05	0.12 NS
Overall QoL	>0.05	0.22 NS

Table 68 shows that there is no correlation between different psychiatric data and QoL versus duration of haemodialysis done before RTS among PRTR.

(II) Medical diseases other than renal impairment present before the RTS:

(1) Mental health of PRTR (GHQ-28):

Table 69: Mental health of PRTR in relation to medical diseases other than renal impairment present before RTS

mental health	PRTP's medical diseases other than renal impairment present before RTS		X2	P
	present n (%)	absent n (%)		
poor mental health (scored >/ 5)	61(70.1%)	104(72.7%)	3.3	>0.05 NS
good mental health (scored <5)	26(29.1%)	39(17.3%)		
Total	87(100%)	143(100%)		

Table 69 shows no relation between the mental health of PRTR and the the medical diseases other than renal impairment present before RTS

(2) Poor mental health of PRTR:

Table 70: Poor mental health of PRTR in relation to medical diseases other than renal impairment present before RTS

Poor mental health(scored >/ 5)	PRTP's medical diseases other than renal impairment present before RTS		X2	**P**
	present n (%)	absent n (%)		
With psychiatric disorders (ICD-10)	36(59%)	54(51.9%)	3	>0.05 NS
Without psychiatric disorders (ICD-10)	25(41%)	50(48.1%)		
Total	61(100%)	104(100%)		

Table 70 shows no relation between the presence of psychiatric disorders among PRTR and the medical diseases other than renal impairment present before RTS

(3) Psychiatric disorders of PRTR (ICD-10):

Table 71: Psychiatric disorders of PRTR (ICD-10) in relation to medical diseases other than renal impairment present before the renal transplantation surgery

Psychiatric disorders	PRTP's medical diseases other than renal impairment present before RTS		X2	**P**
	present n (%)	absent n (%)		
depressive episode	13(36.1%)	25(46.3%)	1.8	>0.05 NS
dysthymia	9(25%)	10(18.5%)		
Generalised anxiety	8(22.3%)	2(3.7%)		
post traumatic stress disorder	2(5.5%)	0		
adjustment disorder (depressive type)	4(11.1%)	17(31.5%)		
Total	36(100%)	54(100%)		

Table 71 shows no relation between the diagnosis of psychiatric disorders among PRTR and the medical diseases other than renal impairment present before RTS

(4)Severity of depression in PRTR (BDI):

Table 72: Severity of depression in PRTR (BDI) in relation to medical diseases other than renal impairment present before RTS

Severity of depression	PRTP's medical diseases other than renal impairment present before RTS		X2	P
	present n (%)	absent n (%)		
severe	5(5.8%)	14(9.6%)	4.4	>0.05 NS
moderate	5(5.8%)	21(14.6%)		
mild	16(18.3%)	13(9%)		
no depression	61(70.1%)	95(66.4%)		
Total	87(100%)	143(100%)		

Table 72 shows no relation between the severity of depression among PRTR and the medical diseases other than renal impairment present before RTS

(5) Depressive symptoms of PRTP (SPS):

Table 73: Depressive symptoms of PRTP according to (SPS) subscales in relation to medical diseases other than renal impairment present before RTS

Depressive symptoms	PRTP's medical diseases other than renal impairment present before RTS		X2	**P**
	present n=87(%)	absent n=143(%)		
Hopeless-ness	2(2.2%)	1(0.6%)	1.3	>0.05 NS
-ve self evaluation	1(1.1%)	2(1.2%)	2.1	>0.05 NS
hostility	14(15.9%)	30(20.9%)	1.3	>0.05 NS
suicidal ideation	9(10.1%)	8(5.6%)	1.1	>0.05 NS

Table 73 shows no relation between the depressive symptoms among PRTR and the medical diseases other than renal impairment present before RTS evaluation, hostility and suicidal ideation.

(6) Risk of suicide in PRTR (SPS):

Table 74: Risk of suicide in PRTR (SPS) in relation to medical diseases other than renal impairment present before RTS

Risk of suicide	PRTP's medical diseases other than renal impairment present before RTS		X2	P
	present n (%)	absent n (%)		
Severe risk	0	0	3.2	>0.05 NS
moderate risk	9(10.1%)	4(2.4%)		
mild risk	17(19.4%)	42(29.3%)		
no suicide risk	61(70.1%)	97 (68.3%)		
Total	87(100%)	143(100%)		

Table 74 shows no relation between the risk of suicide among PRTR and the medical diseases other than renal impairment present before RTS.

(7) Quality of life (WHOQoL 100) among PRTR:

Table 75: Quality of life (WHOQoL 100) among PRTR in relation to medical diseases other than renal impairment present before RTS

WHOQoL 100	PRTP's medical diseases other than renal impairment present before RTS			**X2**	**P**
		present n (%)	absent n (%)		
Physical	Bad	78(89.9%)	116(80.9%)	2	>0.05 NS
	Good	9(10.1%)	27(19.1%)		
	Total	87(100%)	143(100%)		
Psychological	Bad	62(74%)	112(78.5%)	1.9	>0.05 NS
	Good	25(26%)	31(21.5%)		
	Total	87(100%)	143(100%)		
Social	Bad	87(100%)	143(100%)	2	>0.05 NS
	Good	0	0		
	Total	87(100%)	143(100%)		
Independence	Bad	43(49.5%)	88(61.5%)	2.3	>0.05 NS
	Good	44(50.5%)	55(38.5%)		
	Total	87(100%)	143(100%)		
Environmental	Bad	80(92%)	133(93.1%)	2.5	>0.05 NS
	Good	7(8%)	10(6.9%)		
	Total	87(100%)	143(100%)		
Spiritual	Bad	13(14.8%)	22(15%)	1.2	>0.05 NS
	Good	74(85.2%)	121(85%)		
	Total	87(100%)	143(100%)		
overall	Bad	80(92%)	143(100%)	3	>0.05 NS
	Good	7(8%)	0		
	Total	87(100%)	143(100%)		

Table 75 shows no relation between all the domains of QoL among PRTR and the medical diseases other than renal impairment present before RTS

(III) Type of donor:

(1) Mental health of PRTR (GHQ-28):

Table 76: Mental health of PRTR in relation to type of donor

mental health	type of donor		X2	P
	Relative n (%)	Non relative n (%)		
poor mental health (scored >/ 5)	52(73.2%)	113(71%)	2.3	>0.05 NS
good mental health (scored <5)	19(26.8%)	46(29%)		
Total	71(100%)	159(100%)		

Table 76 shows no relation between mental health of PRTR and the type of donor

(2) Poor mental health of PRTR:

Table 77: Poor mental health of PRTR in relation to type of donor

Poor mental health(scored >/ 5)	type of donor		X2	**P**
	Relative n (%)	Non relative n (%)		
With psychiatric disorders (ICD-10)	25(48%)	65(57.5%)	1.9	>0.05 NS
Without psychiatric disorders (ICD-10)	27(52%)	48(42.5%)		
Total	52(100%)	113 (100%)		

Table 77 shows no relation between psychiatric disorders of PRTR and the type of donor

(3) Psychiatric disorders of PRTR (ICD-10):

Table 78: Psychiatric disorders of PRTR (ICD-10) in relation to type of donor

Psychiatric disorders	type of donor		X2	**P**
	Relative n (%)	Non relative n (%)		
depressive episode	14(56%)	24(36.9%)	1	>0.05 NS
dysthymia	3(12%)	16(24.6%)		
Generalised anxiety	4(16%)	6(9.2%)		
post traumatic stress disorder	0	2(3%)		
adjustment disorder (depressive type)	4(16%)	17(26.3%)		
Total	25(100%)	65(100%)		

Table 78 shows no relation between the presence of psychiatric disorders among PRTR and the type of donor

(4)Severity of depression in PRTR (BDI):

Table 79: Severity of depression in PRTR (BDI) in relation to type of donor

Severity of depression	type of donor		X2	P
	Relative n (%)	Non relative n (%)		
severe	12(16.9%)	7(4.5%)	3.8	>0.05 NS
moderate	4(5.7%)	22(13.8%)		
mild	10(14%)	19(11.9%)		
no depression	45(63.4%)	111(69.8%)		
Total	71(100%)	159(100%)		

Table 79 shows no relation between severity of depression among PRTR and the type of donor

(5) Depressive symptoms of PRTP (SPS):

Table 80: Depressive symptoms of PRTP according to (SPS) subscales in relation to type of donor

Depressive symptoms	type of donor		X2	**P**
	Relative n=71(%)	Non relative n=159(%)		
Hopelessness	0	3(1.8%)	1.2	>0.05 NS
-ve self evaluation	7(9.8%)	10(6.2%)	0.8	>0.05 NS
hostility	0	3(1.8%)	1.2	>0.05 NS
suicidal ideation	13(18.3%)	31(19.4%)	1.4	>0.05 NS

Table 80 shows no relation between depressive symptoms among PRTR and the type of donor

(6) Risk of suicide in PRTR (SPS):

Table 81: Risk of suicide in PRTR (SPS) in relation to type of donor

Risk of suicide	type of donor		X2	P
	Relative n (%)	Non relative n (%)		
Severe	0	0	3.3	>0.05 NS
moderate	7(10%)	6(4%)		
mild	11(15.4%)	48(30%)		
no suicide	53(74.6%)	105(66%)		
Total	71(100%)	159(100%)		

Table 81 shows no relation between risk of suicide among PRTR and the type of donor

(7) Quality of life (WHOQoL 100) among PRTR:

Table 82: Quality of life (WHOQoL 100) among PRTR in relation to type of donor

WHOQoL 100	type of donor			**X2**	**P**
		Relative n (%)	Non relative n (%)		
Physical	Bad	60(84.5%)	134(84.2%)	2.2	>0.05 NS
	Good	11(15.5%)	25(15.8%)		
	Total	71(100%)	159(100%)		
Psychological	Bad	61(85.9%)	113(71%)	1.2	>0.05 NS
	Good	10(14.1%)	46(29%)		
	Total	71(100%)	159(100%)		
Social	Bad	71(100%)	159(100%)	2.9	>0.05 NS
	Good	0	0		
	Total	71(100%)	159(100%)		
Independence	Bad	48(67.6%)	73(45.9%)	1.4	>0.05 NS
	Good	23(32.4%)	86(54.1%)		
	Total	71(100%)	159(100%)		
Environmental	Bad	67(94.3%)	146(91.8%)	3	>0.05 NS
	Good	4(5.7%)	13(8.2%)		
	Total	71(100%)	159(100%)		
Spiritual	Bad	10(14.1%)	25(22.1%)	1.1	>0.05 NS
	Good	61(85.9%)	124(77.9%)		
	Total	71(100%)	159(100%)		
overall	Bad	69(97.1%)	154(96.8%)	3.6	>0.05 NS
	Good	2(2.9%)	5(3.2%)		
	Total	71(100%)	159(100%)		

Table 82 shows no relation between various domains of QoL of PRTR and the type of donor

(IV) Side effects of drugs received after renal transplantation surgery:

(1) Mental health of PRTR (GHQ-28):

Table 83: Mental health of PRTR in relation to side effects of drugs received after RTS

mental health	side effects of drugs received after RTS		X2	P
	Side effects n (%)	No side effects n (%)		
poor mental health (scored >/ 5)	109(77.8%)	56(62.2%)	2.2	>0.05 NS
good mental health (scored <5)	31(22.2%)	34(37.8%)		
Total	140(100%)	90(100%)		

Table 83 shows no relation between mental health of PRTR and the side effects of drugs received after RTS

(2) Poor mental health of PRTR:

Table 84: Poor mental health of PRTR in relation to side effects of drugs received after RTS

Poor mental health(scored >/ 5)	side effects of drugs received after RTS		X2	**P**
	Side effects n (%)	No side effects n (%)		
With psychiatric disorders (ICD-10)	68(60.5%)	22(39.2%)	2.8	>0.05 NS
Without psychiatric disorders (ICD-10)	41(39.5%)	34(60.8%)		
Total	109(100%)	56(100%)		

Table 84 shows no relation between the presence of psychiatric disorders among PRTR and the side effects of drugs received after RTS

(3) Psychiatric disorders of PRTR (ICD-10):

Table 85: Psychiatric disorders of PRTR (ICD-10) in relation to side effects of drugs received after RTS

Psychiatric disorders	side effects of drugs received after RTS		X2	**P**
	Side effects n (%)	No side effects n (%)		
depressive episode	28(41.3%)	10(45.4%)	1.7	>0.05 NS
dysthymia	19(26.5%)	0		
Generalised anxiety	8(11.8%)	2(9.2%)		
post traumatic stress disorder	2(2.7%)	0		
adjustment disorder (depressive type)	11(17.7%)	10(45.4%)		
Total	68(100%)	22((100%)		

Table 85 shows no relation between the diagnosis of psychiatric disorders of PRTR and the side effects of drugs received after RTS

(4)Severity of depression in PRTR (BDI):

Table 86: Severity of depression in PRTR (BDI) in relation to side effects of drugs received after RTS

Severity of depression	side effects of drugs received after RTS		X2	P
	Side effects n (%)	No side effects n (%)		
severe	19(13.6%)	0	**8.8**	**<0.01 HS**
moderate	12(8.6%)	14(15.5%)		
mild	21(15%)	8(9%)		
no depression	88(62.8%)	68(75.5%)		
Total	140(100%)	90(100%)		

Table 86 shows that PRTR with side effects of drugs received after RTS only have severe depression while PRTR without side effects of drugs received after RTS have moderate depression more presented (14/90, 15.5%) compared to the other group (12/140, 8.6%) with highly significant difference

(5) Depressive symptoms of PRTP (SPS):

Table 87: Depressive symptoms of PRTP according to (SPS) subscales in relation to side effects of drugs received after RTS

Depressive symptoms	PRTP's side effects of drugs received after RTS		X2	**P**
	Side effects n=140 (%)	No side effects n=90 (%)		
Hopelessness	3(2.1%)	0	**4.5**	**<0.05 S**
-ve self evaluation	2(1.4%)	1(1.1%)	2.2	>0.05 NS
hostility	29(20.7%)	15(16.5%)	2.8	>0.05 NS
suicidal ideation	14(10%)	3(3.3%)	1.2	>0.05 NS

Table 87 shows no relation between the depressive symptoms of PRTR and the side effects of drugs received after RTS except hopelessness which is only presented among the PRTR with side effects of drugs received after RTS with significant difference

(6) Risk of suicide in PRTR (SPS):

Table 88: Risk of suicide in PRTR (SPS) in relation to side effects of drugs received after RTS

Risk of suicide	side effects of drugs received after RTS		X2	P
	Side effects n (%)	No side effects n (%)		
Severe	0	0	2.9	>0.05 NS
moderate	13(9.2%)	0		
mild	41(29.2%)	18(20%)		
no suicide	86(61.6%)	72(80%)		
Total	140(100%)	90(100%)		

Table 88 shows no relation between the severity of suicide of PRTR and the side effects of drugs received after RTS

(7) Quality of life (WHOQoL 100) among PRTR:

Table 89: Quality of life (WHOQoL 100) among PRTR in relation to side effects of drugs received after RTS

WHOQoL 100	side effects of drugs received after RTS			**X2**	**P**
		Side effects n (%)	No side effects n (%)		
Physical	Bad	118(84.2%)	76(84.4%)	2.8	>0.05 NS
	Good	22(15.8%)	14(15.6%)		
	Total	140(100%)	90(100%)		
Psychological	Bad	91(65%)	83(92.2%)	2.8	>0.05 NS
	Good	49(35%)	7(7.8%)		
	Total	140(100%)	90(100%)		
Social	Bad	140(100%)	90(100%)	4	>0.05 NS
	Good	0	0		
	Total	140(100%)	90(100%)		
Independence	Bad	74(52.6%)	57(63.3%)	1.7	>0.05 NS
	Good	66(47.4%)	33(36.7%)		
	Total	140(100%)	90(100%)		
Environmental	Bad	139(99.3%)	84(93.4%)	4.1	>0.05 NS
	Good	1(0.7%)	6(6.6%)		
	Total	140(100%)	90(100%)		
Spiritual	Bad	15(12.2%)	20(22.3%)	1.1	>0.05 NS
	Good	123(87.8%)	70(77.7%)		
	Total	140(100%)	90(100%)		
overall	Bad	138(97.6%)	85(94.4%)	2.4	>0.05 NS
	Good	2(1.4%)	5(5.6%)		
	Total	140(100%)	90(100%)		

Table 89 shows no relation between the various domains of QoL of PRTR and the side effects of drugs received after RTS

(V) Duration from the time of RTS until the time of the interview:

(1) Mental health of PRTR (GHQ-28):

Table 90: Mental health of PRTR in relation to duration from the time of RTS until the time of the interview

mental health	duration from the time of the renal transplantation surgery until the time of the interview				X2	P
	<1 y n (%)	1-4y n (%)	4-8y n (%)	8-17y n (%)		
poor mental health (scored >/ 5)	34(82.9%	74(78.7%	41(57.7%	16(66.7%	**6.9**	**<0.01 HS**
good mental health (scored <5)	7(17.1%	20(21.3%	30(42.3%	8(33.3%		
Total	41(100%)	94(100%)	71(100%)	24(100%)		

Table 90 shows that in all groups the PRTR have poor mental health and the group (<1 year) has the highest percent (82.9%) of poor mental health compared to other groups with highly significant difference, but there is no significant correlation between the age of the PRTR and the mental health as shown in table 76.

(2) Poor mental health of PRTR:

Table 91: Poor mental health of PRTR in relation to duration from the time of RTS until the time of the interview

Poor mental health(scored >/ 5)	duration from the time of the renal transplantation surgery until the time of the interview				**X2**	**P**
	<1 y n (%)	1-4y n (%)	4-8y n (%)	8-17y n (%)		
With psychiatric disorders (ICD-10)	20(58.8%	31(41.9%	30(73.1%	9(56.2%	3.5	>0.05 NS
Without psychiatric disorders (ICD-10)	14(41.2%	43(58.1%	11(26.9%	7(43.8%		
Total	34(100%)	74(100%)	41(100%)	16(100%)		

Table 91 shows no relation between the presence of psychiatric disorders and the time of the renal transplantation surgery until the time of the interview.

(3) Psychiatric disorders of PRTR (ICD-10):

Table 92: Psychiatric disorders of PRTR (ICD-10) in relation to duration from the time of RTS until the time of the interview

Psychiatric disorders	duration from the time of the renal transplantation surgery until the time of the interview				**X2**	**P**
	<1 y n (%)	1-4y n (%)	4-8y n (%)	8-17y n (%)		
depressive episode	8(40%	19(61.2%	7(23.3%	4(44.5%	3.2	>0.05 NS
dysthymia	0	0	14(46.7%	5(55.5%		
Generalised anxiety	4(20%	2(6.6%	4(13.3%	0		
post traumatic stress	0	0	2(6.7%	0		
adjustment disorder (depressive type)	8(40%	10(32.2%	3(10%	0		
Total	20(100%)	31(100%)	30(100%)	9(100%)		

Table 92 shows no relation between the diagnosis of psychiatric disorders and the time of the renal transplantation surgery until the time of the interview

(4)Severity of depression in PRTR (BDI):

Table 93: Severity of depression in PRTR (BDI) in relation to duration from the time of RTS until the time of the interview

Severity of depression	duration from the time of the renal transplantation surgery until the time of the interview				X2	P
	<1 y n (%)	1-4y n (%)	4-8y n (%)	8-17y n (%)		
severe	8(19.5%	2(2.1%	5(7%	4(16.6%	2.8	>0.05 NS
moderate	2(4.8%	13(13.8%	4(5.6%	7(29.2%		
mild	10(24.4%	2(2.1%	14(19.8%	3(13.5%		
no depression	21(51.3%	77(81.8%	48(67.6%	10(42.7%		
Total	41(100%)	94(100%)	71(100%)	24(100%)		

Table 93 shows no relation between the severity of depression and the time of the renal transplantation surgery until the time of the interview

(5) Depressive symptoms of PRTP (SPS):

Table 94: Depressive symptoms of PRTP according to (SPS) subscales in relation to duration from the time of RTS until the time of the interview

Depressive symptoms	duration from the time of the renal transplantation surgery until the time of the interview				**X2**	**P**
	<1 y n=41(%)	1-<4 y n=94(%)	4-<8 y n=71(%)	8-17y n=24(%)		
Hopelessness	0	1(0.95%	2(2.8%	0	0.13	>0.05 NS
-ve self evaluation	2(4.8%	0	1(1.4%	0	0.11	>0.05 NS
hostility	4(9.6%	20(21%	10(14%	10(42.7%	0.10	>0.05 NS
suicidal ideation	4(9.6%	2(2.1%	3(4.2%	8(33.3%	0.14	>0.05 NS

Table 94 shows no relation between the presence of depressive symptoms and the time of the renal transplantation surgery until the time of the interview

(6) Risk of suicide in PRTR (SPS):

Table 95: Risk of suicide in PRTR (SPS) in relation to duration from the time of RTS until the time of the interview

Risk of suicide	duration from the time of the renal transplantation surgery until the time of the interview				X2	P
	<1 y n (%)	1-4y n (%)	4-8y n (%)	8-17y n (%)		
Severe risk	0	0	0	0	2.5	>0.05 NS
moderate risk	0	5(5.8%	2(2.8%	6(25%		
mild risk	11(26.8	21(21.9%	21(29.6%	6(25%		
absent risk	30(73.2%	68(72.3%	48(67.6%	12(50%		
Total	41(100%)	94(100%)	71(100%)	24(100%)		

Table 95 shows no relation between the risk of suicide and the time of the renal transplantation surgery until the time of the interview

(7) Quality of life by (WHOQoL 100) among PRTR:

Table 96: Quality of life by (WHOQoL 100) among PRTR in relation to duration from the time of RTS until the time of the interview

WHOQoL 100		duration from the time of the renal transplantation surgery until the time of the interview				**X2**	**P**
		<1 y n (%)	1-4y n (%)	4-8y n (%)	8-17y n (%)		
Physical	Bad	34(82.9%	77(81.8%	60(87.4%	23(92%	3	>0.05 NS
	Good	7(8.1%	27(18.2%	11(12.6%	1(8%		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		
Psychological	Bad	25(56%	87(92.3%	42(70.2%	20(85.4%	3.6	>0.05 NS
	Good	16(44%	7(7.7%	29(29.8%	4(4.6%		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		
Social	Bad	41(100%	94(100%	71(100%	24(100%	2.5	>0.05 NS
	Good	0	0	0	0		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		
Independence	Bad	22(53.6%	59(62.1%	47(77.2%	3(12.4%	1.5	>0.05 NS
	Good	19(46.4%	35(37.9%	24(22.8%	21(87.6%		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		
Environmental	Bad	40(98.2%	91(96.5%	62(90.2%	20(85.4%	2	>0.05 NS
	Good	1(1.8%	3(3.5%	9(9.8%	4(4.6%		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		
Spiritual	Bad	2(4.9%	20(11.2%	11(12.6%	2(10.1%	2.3	>0.05 NS
	Good	39(95.1%	74(78.8%	60(87.4%	22(89.8%		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		
overall	Bad	40(98.2%	91(96.5%	70(98.6%	22(89.8%	1.5	>0.05 NS
	Good	1(1.8%	3(3.5%	1(1.4%	2(10.1%		
	Total	41(100%)	94(100%)	71(100%)	24(100%)		

Table 96 shows no relation between the domains of QoL and the time of the renal transplantation surgery until the time of the interview

(8) Correlation between different psychiatric data and QoL versus duration from the time of the renal transplantation surgery until the time of the interview among PRTR:

Table 97: Correlation between different psychiatric data and QoL versus duration from the time of RTS until the time of the interview

Variables	duration from the time of the renal transplantation surgery until the time of the interview	
	r	P
GHQ-28	>0.05	0.09 NS
BDI	>0.05	-0.13 NS
Hoplessness	>0.05	0.13 NS
Negative self image	>0.05	-0.11 NS
Hostility	>0.05	0.10 NS
Suicidal ideation	>0.05	-0.14 NS
Risk of suicide SPS	>0.05	-0.12 NS
Physical QoL	>0.05	0.04 NS
Psychological QoL	>0.05	-0.12 NS
Social QoL	>0.05	0.16 NS
Independence QoL	>0.05	0.11 NS
Environmental QoL	>0.05	0.11 NS
Spiritual QoL	>0.05	0.17 NS
Overall QoL	>0.05	0.21 NS

Table 97 shows no correlation between different psychiatric data and QoL versus duration from the time of the renal transplantation surgery until the time of the interview

The number of RTS done in Egypt is relatively low where 1917 surgeries done in Mansoura University renal center during 37 years, 623 surgeries done in Naser Institute in Cairo during 10 years and only 60 cases of RTS done in Ain Shams Specialised Hospital in Cairo during 19 years. We consider that the number of RTS done in Egypt is very low as compared to the prevalence of renal failure as reported by ***the International Federation of Renal Registries (2003)*** where they reported that in year 2000, prevalence of renal failure in Egypt ranged from 9 to 14.5% of general population, while the United States exhibited renal failure rates per million population (150 cases per million population). Also, ***Shah et al (2006)*** in his preliminary study found that 64% (23/50) of PRTR are African Americans.

Also, the rate of renal transplantation in Egypt is low compared to other countries as the ***International Federation of Renal Registries (2003)*** in year 2000 reported that the United States, Spain, Austria, and Norway exhibited the highest kidney transplantation rates per million population (46-52 new transplants per million population). So we can conclude that although the rate of renal failure in Egypt is higher than the United States, yet renal transplantation in Egypt is lower than USA and many Europian countries. The low rate of renal transplantation in Egypt compared to other countries may be due to the religious institutes which restrict the donation of organs from one human being to another to guard against illegal unhuman organ commerce, although there are highly qualified surgeons in Egypt.

A. Sociodecoomic data of PRTR:

1) Age:

In ***the present study***, we found that age range of RTR at time of RTS is 18-58 years old which is a wide range indicating that various age groups need renal transplantation (figure 1b). ***Harrison (2005)*** states that glomerulonephritis is the leading cause of renal impairment in young age, diabetic nephropathy in middle age, hypertensive nephropathy in old age. ***In the present study***, the age range of PRTR at the time of interview is 18-60 years old (figurre 1a). ***O¨zc¸u¨ru¨mez et al (***2005) reported that the age range of PRTR at time of their study is 18-64 years old, and ***Zarifian (2006)*** found that the age range of PRTR at time of his study is 21-69 years old.

In our sample 13/230 (5.6 %) only are above 50 years old at time of RTS. So, renal transplantation is more common in young patients than elderly patients. This agrees with ***Jassal et al (2003)*** who found that renal transplantation is not the preferable renal replacement therapy in elderly patients, with end stage renal disease and he reported that patients gained less improvement after transplantation than younger subjects.

In ***the present study***, the mean age of PRTR at time of RTS is 33.8 +_ 6.8 years and the mean age of PRTR at time of interview is 37.3 +_ 7.6 years. This agrees with ***Kalman et al (1983)*** who found that PRTR are significantly younger than patients undergoing dialysis (mean age 37.4 years versus 49.5 years). ***Abbott et al (2003)*** reported that renal transplantation is much less common among elderly dialysis patients.

2) Sex:

In the present study, seventy two percent are males (165/230) and twenty eight percent are females (65/230) (figure 2). Although, prevalence of leading indications to RTS is equal in both sexes ***(Harrison, 2005)*** yet females face barriers in being activated for RTS. ***Garg et al (2000)*** reported that several studies suggest that women may be less likely than men to receive a renal transplant worldwide. Our results are nearly like that in the ***O¨zc¸u¨ru¨mez et al (2005)*** study (75.5 males and 24.5% females) and also that in the ***Zarifian (2006)*** study (68% males and 32% females). Even in the United States, ***Shah et al (2006)*** found in his preliminary study that 48% (23/50) of PRTR are females.

3) Religion:

We found that seventy five percent are Moslems and twenty five percent are Christian (figure 3). Official estimates put Christian population at 9% of general population. The high incidence of Christian PRTR may be because the Christian priests' attitude is in favor of transplantation rather than Moslem sheikhs who have a rather controversial attitude.

4) Residence:

In the present study, seventy percent of PRTR (162/230) are from rural areas and 30 percent (68/230) are from urban areas (figure 4). Official estimates put urban population at 43% of general population ***(Egyptian Central Auditing Organisation, 2006)***. The high incidence of PRTR coming from rural areas may be because Naser institute receives rural PRTR more than urban

PRTR who prefer to follow up in private clinics.

5) Educational level:

In the present study, twenty three percent have secondary education, 20% have preparatory education, 20% are bachelors**,** 18% are illiterate, 10% reads and writes, 9% have 2 years institute education (figure 5). According to the ***Egyptian Central Auditing Organisation (2006***) 10 % of Egyptian population is university graduates 40 % are illiterate. So, we can conclude that renal transplantation is more common in higher educated than lower educated patients. This agrees with ***Zarifian (2006)*** who found that 1% of PRTR are illiterate, 5% reads and writes, 26% moderate education -preparatory and secondary-, 42% high-university. So, education may be in favour of renal transplantation.

6) Occupational level:

In the present study, the highest prevalence of PRTR is present among level 2 occupational level (24.7%), followed by level 1 (23.4%), then level 4(22%), then level 3 (11.7%), then level 5 (10.4%) and the least prevalence of PRTR is present among level 6 occupational level 7.8% (figure 6). These findings may be because PRTR with lower occupational levels follow up after RTS at Naser institute while PRTR with higher occupational levels prefer to follow up in private clinics.

In the present study, all PRTR (230/230, 100%) returned to work after renal transplantation surgery. Although ***Evans (1990)*** reported that 74.1 % of renal transplant recipients are able to work and ***O¨zc¸u¨ru¨mez et al (2005*)** reported that only 24.5% of PRTR are still able to work after the RTS. This can be explained by PRTR returned to work but not with impaired functioning in

the form of frequent absence or decreased productivity. ***Rundell and Hall (1997)*** reported that the mean score on the glogal assessment of functioning scale is less impaired in 66 PRTR than 134 consultation liaison inpatients. Also, ***Arapaslan et al (2004)*** found that the set of occupation was insignificantly different between PRTR with or without psychiatric diagnoses. As regards returning to work after liver transplantation ***Thomas et al (1996)*** reported that 39% of post transplant patients are working full tme three years after transplantation.

7) Marital state:

We found that seventy percent are married, 26% are single 3% are single and 1% widowed (figure 7). This can be explained by ESRD occurs in an age where patients are already married. This agrees with ***O¨zc¸u¨ru¨mez et al, (2005)*** who found that 28.5% of PRTR are single and 71.5% are married, and ***Zarifian (2006)*** who found that 25% of PRTR are single and 75% are married.

8) Social class:

Forty nine percent of sample is of low social class, 47% very low, 4% low middle (figure 8). This is explained by the fact that Naser Institute where sampling occurred is supported by state and offers medical services in cooperation with health insurance to those who can not afford follow up in private clinics where higher classes avoid crowding and longer waiting times.

9) Problems hindering RTS:

1. Financial problems:

We found that all PRTR have financial problem as regards

the costs of RTS, the post operative immunosuppressants and the follow up investigations; 74% (170/230) of PRTR underwent RTS by state sponsoring and 26% (60/230) by Health insurance sponsoring (figure 9). But we must mention that Naser Institute (site of our study) is the medical institute where renal transplantation surgery is sponsored by Health insurance or state and there are no private cases there.

2. Religious problems:

All PRTR (230/230, 100%) in our study didn't face any religious problems which can hinder RTS. This shows that PRTR who underwent RTS where convinced that there are no religious prohibitions as regards RTS.

B. Medical data of PRTR:

1) Hemodialysis before RTS:

In the present study, patients underwent hemodialysis sessions of 3 hours duration, 3times per week, in a time interval that ranged from 2 weeks to 7 years (figure 10) nearly like that in the ***O¨zc¸u¨ru¨mez et al (2005)*** study where the duration of hemodialysis before RTS is from 1 month to 10 years.

47% of the PRTR (107/230) were on haemodialysis for a duration 1-4 years before RTS, whereas 43% of PRTR (100/230) have done hemodialysis for <1 year before RTS and only 10% of the PRTR (23/230) were on haemodialysis from 4-7 years before undergoing RTS. The fact that nearly half of our sample were on haemodialysis for a duration 1-4 years before RTS can be explained by economic hinders and searching for a donor that kept them all this time before undergoing RTS.

2) Medical diseases other than renal impairment present before RTS:

In the present study, 38 percent had medical diseases other than end stage renal disease before RTS (figure 11). In the ***O¨zc¸u¨ru¨mez et al (2005)*** study 16.3% of PRTR have comorbid physical disease. Nearly one third of our sample has medical diseases other than end stage renal disease before RTS**.** This shows the patients need to alleviate the burden of hemodialysis therapy that aggravates the impact of other diseases on our patients.

3) Type of donors:

In the present study, all our patients (230/230, 100%) receive the kidney transplant from living donors and 0% from cadaveric donors. 69 percent received transplants from non relatives and 31% from relatives (figure 13). This is unlike ***O¨zc¸u¨ru¨mez et al (2005*****)** who reorted that 49% received transplants from cadavers, 25.5% received transplants from relatives, and 25.5% received transplants from non relatives. Also, it is unlike ***Zarifian (2006)*** who reported that 76% received transplants from cadavers, living relatives 21% and living non relatives 4%. This can be explained by absence of cadaveric donors in Egypt due to controversy about determination of clinical death of patients and fear of its abuse. Also, high percent of relative donors may be due to the Egyptian law mandating relative donors or volunteering non relative donor. The highest prevalence of the PRTR relative donors is among mothers (24/72, 33.4%) and the least prevalence of the PRTR relative donors is among maternal and paternal aunts, spouses (everyone 2/72, 2.9%).

4) Hospitalisation afterRTS:

All PRTR (230/230, 100%) spent 2 weeks under observation in hospital after RTS and were discharged as no post operative complications occurred during their stay. This indicates proper post operative care and good quality of medical service offered.

5) Side effects from drugs received after RTS:

In the present study, 61% of PRTR have side effects of immunosuppressive drugs received after RTS (figure 15). This agrees with ***Zarifian (2006)*** who found that 70% of PRTR are experiencing side effects of medications. The commonest side effect is edema (30/140, 21.4%) followed by dental caries, (20/140, 14.2%), then hirsutism or femminisation, wound seroma, boneaches (everyone 16/140, 11.4%), then chest infection (14/140, 10%), lastly hypertension and diabetes mellitus (everyone 12/140, 12%) (figure 16).

6) History of rejection and number of previous RTS:

In the present study, 7% (15/230) of PRTR have history of symptoms of acute rejection during follow up in outpatient clinic and it is controlled by increasing the dose of immunosuppressant drugs**.** Only one PRTR (1/230, 0.4%) gave history of previous RTS as it failed due to rejection that was not controlled by medical treatment (figure 17**).** This indicates proper post operative care and good quality of medical service offered. Some patients when rejection occurred couldn't repeat RTS and as they resumed dialysis they follow up in the general nephrology clinic. ***Viederman (1975)*** reported that there is positive influence of psychic factors on kidney transplant rejection in a patient who

suffered emotional trauma. ***Stienberg and Levy (1979)*** reported that behavioral scientists have been attempting to identify the psychological factors that may affect the body's acceptance or rejection of a new organ. Also, the psychiatric literature suggests that self-esteem is enhanced by donating a kidney. ***Stienberg and Levy (1979)*** found that emotions especially hopelessness and helplessness play a role in rejection phenomena. ***Baines et al (2002)*** reported that when PRTR experience physical and psychological side effects of immunosuppressive drugs beside the psychological experience of chronic illness, they become non compliant on medication which leads to late acute rejection.

7) Time since RTS:

In the present study, duration from the time of the RTS until the time of the interview ranges from 3 months to 18 years (figure 18), so our sample includes early and late term PRTR nearly like that in the ***O¨zc¸u¨ru¨mez et al (2005)*** study (range, 2 months to 11 years) and also that in the ***Zarifian (2006)*** study (11 months to 24.8 years).

C. Psychiatric data of PRTR :

(1) Guilt feelings toward the donors:

In the present study, we found that all PRTR haven't got guilt feelings toward donors. Although ***Steinburg and Levy (1979)*** reported that there is very intimate and delicate bond between donors and recipients. There is a feeling of indebtness felt by recipient toward donors, making it difficult for recipients to refuse demands made on them by their donors. Recipients often feel guilty about asking for a donation, a procedure entailing

risk. This feeling doesn't appear when a donor volunteer immediately and insists on donating his kidney. Also, they reported that in rejecting her mother's kidney a young patient said "I felt as though I killed a part of my mother". ***Abbott et al (2003)*** reported that guilt-based psychiatric disorders of various types occurred despite successful operative outcome for both donor and recipient.

(2) Mental health (GHQ-28):

In the present study, 72% of PRTR have poor mental health (GHQ-28 score >/ 5) (figure 19). ***Kalman et al (1983)*** found that 19/57 (33%) of long term PRTR (5 years or longer) have psychiatric morbidity as detected by (GHQ-28 score >/5). Poor mental health before RTS, little health education before RTS and high expectations after RTS lead to frustration of RTR and high percent of poor mental health. Also, ***Kalman et al (1983)*** reported that 26/57 (46%) of PRTR had some emotional disorders which are detected by either high score on GHQ or history of psychiatric treatment without high score on GHQ (score<5).

(3) Psychiatric diagnoses (ICD-10):

In the present study, we found 39% (90/230) of PRTR have psychiatric disorders according to ICD-10 diagnostic criteria (figure 20). ***Fukunishi et al (2001***) reported that the incidence of psychiatric disorders according to DSM-IV diagnostic criteria in the adult recipients with living-related kidney transplant (LRKT) is (28%, 65 of 234)**.** In the preliminary study of ***O¨zc¸u¨ru¨mez et al (2005)*** only 9/49 (18.4%) have psychiatric diagnosis**.**

In the present study, the commonest diagnosis is major depressive episode (38/230, 17%), followed by adjustment

disorder (21/230, 9%), then dysthymia (19/230, 8%), then generalized anxiety disorder (10/230, 4%), lastly PTSD (2/230, 1%). ***Dobbles et al (2008)*** reported that depression was identified in 3360 PRTR in 3 years post transplantation with cumulative incidences 5.05%, 7.29% and 9.15 at 1, 2 and 3 years respectively. Depression was associated with 2 fold greater risk of graft failure, return to dialysis and death with a functioning graft. ***Gelder et al (1989)*** reported that problems of transplant rejection or threatened rejection are common, and frequently associated with considerable depression and anger. ***Steinburg and Levy (1979)*** reported that depression can easily be understood as a postoperative complication when one thinks about unfulfilled wishes and about the medical complications that may arise in these patients. ***Kalman et al (1983) and Petrie (1989)*** reported that the risk of graft rejection is an important source of anxiety in renal transplant patients. ***Steinburg and Levy (1979)*** reported that sexual dysfunction among PRTR is the result of both physical and psychological factors. Physical factors include immunosuppressant and recurrent infection. Psychological factors include anxiety and depression they experience due to the possibility of rejection. In the preliminary study of ***Abbott et al (2003)***, they reported that hospitalized psychoses occurring after renal transplantation (7.5/1000 persons-years) are not commoner than among chronic dialysis patients (702/1000 persons-years). However, hospitalized psychoses are associated with substantially increased risk of death and graft loss after renal transplantation, which may be at least partially mediated by undertreatment by medical providers or by patient non- adherence.

(4) Severity of depression (BDI-II):

In the present study, sixty eight percent of PRTR (156/230) haven't depression, and among those who have depression, mild

depression is the commonest (29/230, 13%), followed by moderate depression (26/230, 11%) then severe depression (19/230, 8%) (figure 21). ***Dobbles et al (2008)*** reported that depression is identified in 3360 PRTR in 3 years post transplantation with cumulative incidences 5.05%, 7.29% and 9.15 at 1, 2 and 3 years respectively. Depression is associated with 2 fold greater risk of graft failure, return to dialysis and death with a functioning graft.

(5) Risk of suicide (SPS):

In the present study, 32 % of PRTR (56/230) have risk of suicide, (moderate risk in 6% -13/230 and mild risk in 26% - 59/230) (figure 22). ***Crone (2003)*** said that limited information has been published about suicide following transplantation. ***Reither & Mahler (1994)*** provided case reports of suicide in liver transplant recipients. ***Ojo et al (2000)*** published information on RTR in USA between 1988- 1997, reporting suicide rate of 15.7 per 100,000patient-year compared to general population of 9 per 100,000 person-year, and this represent a significantly higher rate. ***Crone (2003)*** reported that PRTR must cope with being on multiple medications side effects, undergo frequent testing and medical follow up and be at risk for serious complications such as organ rejection. For some patients, this may prove to be disillusioning. On the other hand, psychiatric symptoms can develop secondary to immunosuppressive therapy with corticosteroids, cyclosporines or tacrolimus.

(6) Depressive symptoms (SPS-subscales):

In the present study, the commonest depressive symptoms among PRTR is hostility (46/230, 19.5%), followed by suicidal ideation (17/230, 7.8%) then –ve self evaluation and

hopelessness (each 3/230, 1.2%) (figure 23). ***Eryilmaz et al (2005)*** found that sleep problems (using Pittsburgh Sleep Quality Index) are not as common among PRTR as among dialysis patients, but still higher than general population. Poor sleep seems to be part of depressive symptomatology (using BDI). ***Cianciarous et al (2008)*** reported that although many sleep disorders improve or even disappear after a successful transplantation, sleep quality remains low, and the prevalence of sleep complaints, although lower than in dialysis patients, is much higher than in general population. In the diagnosis of sleep disorders the nephrologist must learn to distinguish medical risk factors (pain, pruritis, tremors, drugs) and psychological aspects (depression, anxiety, fear), since they are potentially modifiable with appropriate treatment. .

D. QoL of PRTR:

In the present study, all the PRTR have bad Social QoL followed by bad overall QoL (225/230, 96.1%), then bad independence and enviromental QoL (each 213/230, 92.2%), then bad physical QoL (174/230, 84.4%), lastly bad pyschological QoL (174/230, 75.3%), finally the bad spiritual QoL is only 15.6% (35/230) (figure 24). This agrees with ***Parfrey et al (1987)*** who reported that there is unrealistic expectation lowered the perception of the transplant recipients of their quality of life and made them less satisfied with the outcome. Also, ***Beard (1971)*** reported that QoL is seriously affected by transplant operation. Transplant recipients have to cope with fear of death, discouragement, apathy and reduced interest and drive. They suffer from damage to their self esteem in that their relationships with significant people are reduced to hostile, dependent attachments. ***Johnson et al (1998)*** reported

that African American PRTR achieve less improvement in QoL than Caucasian Americans. After an English literature search is performed using Medline and Psch INFO based on meta-analysis, ***Liem et al (2004)*** conclude that hemodialysis and peritoneal dialysis patients tend to have a lower QoL than PRTR. QoL seems equal or slightly worse for hemodialysis compared to peritoneal dialysis. ***Cianciaruso et al (2008)*** reported that renal transplantation is associated with better survival and improved quality of life compared to maintenance dialysis***. Lazzaretti et al (2004)*** reported that by using a multidimensional QoL scale (WHOQLBrief) QoL is improved in all PRTR.

E. Factors affecting psychiatric condition of PRTR:

(1) Age:

In the present study, the eldest age group (>50-60 years) have the highest percent (80%) of poor mental health and the least percent (37.5%) of psychiatric disorders i.e.: high subclinical poor mental health (table 1) and severe depression is highly presented (16.7%) as compared to other age groups (table 4).

Sadock and Sadock (2005) describe the characters of the eldest age group by fading of occupational and familial activity, stress of stephood and coping with physical decline in the form of run out of the physiologic reserve of at least one body system. These characters may be the causes of poor mental health and severe depression in elderly.

Also, moderate risk of suicide is common among the age group (>40-50) (14.8%) as compared to the other age groups 9table 6). This can be explained by the report of ***Sadock and Sadock (2005***) who describe the characters of this age group by

the presence of the middle life crisis where sense of identity and integration of self image are most vulnerable.

In ***the present study*** we don't find correlation between age of PRTR and psychiatric data (table 8). Also, ***Dew (1998)*** and ***Arapaslan et al (2004)*** found that the overall symptom occurrence score by age group statistically insignificant. But ***Zarifian (2006***) found that symptoms occurrence varied with age groups (overeating in 86% of the 21-34 years old subjects, and fatigue in 94% of the 51-69 years old subjects).

(2) Sex:

In the present study, females have significant high percent (90.9%) of poor mental health compared to males (63.7%) (table 9). Also, severe depression is more significantly presented in females than males (table 12). This agrees with ***Dobbels et al (2008)*** who reported that female sex is associated with more depression.

Garg (2000) reported that this gender gap is more likely due to attitudinal and interpersonal factors, such as patient preferences, biologic or clinical differences between male and female patients. As a result, the equity of the kidney allocation process and the health of women with ESRD may be improved if greater emphasis is placed on evaluating and improving patient-physician communication about renal transplantation.

Zarifian (2006) found that the effects of symptoms occurrence varied with sex (changes in facial appearance 84%, increased hair 79%, bruising 60% are more annoying to females while swollen ankles 66%, headache 63%, decreased concentration 62% are more annoying to males).

On the other hand, ***Arapaslan et al (2004)*** reported that there is insignificant difference between males and females as regards different psychiatric disorders.

(3) Religion:

In the present study, there is insignificant difference between both religions as regards the psychiatric condition of PRTR (tables 16 to 22). This can be explained by the fact that both religions share the same moral values and ensure support of the "other" for survival.

Violating the human body, whether living or dead, is normally forbidden in Islam. However, the Shariah waives this prohibition in cases of necessity (necessities overrule prohibition) and saving another person's life as in **Qur'an, chapter 5 vs. 32** "Whosoever saves the life of one person it would be as if he saved the life of all mankind." ***(BBC Health website, 2007).*** Sacrifice and helping others are key themes across all forms of *Christianity*, and therefore a decision to donate organs is seen as a positive thing.

(4) Residence:

In the present study, we found insignificant difference between urban and rural areas as regards the psychiatric condition of PRTR (tables 23 to 29). So, residence doesn't affect psychiatric condition of PRTR.

Lock (2002) reported that the difference in attitudes in different countries leads to the difference in practice. For example, although Japan is likewise a pioneer in transplantation surgery, it performs less organ transplants than the United States. Japan did not legally acknowledge brain death as death until 1997. But the United States which acknowledges brain death as death performs more organ transplants than any other country**.**

(5) Educational level:

In the present study, there is insignificant difference between the PRTR with different educational levels as regards mental health (table 30) and different psychiatric disorders (tables 31 and 32). This agrees with ***Arapaslan et al (2004)*** who found that set of education is not significantly different between PRTR with or without psychiatric diagnoses in the study.

In the present study, there is significant difference between the PRTR with different educational levels as regards the severity of depression (table 33) and -ve self evaluation (table 34) and risk of suicide (table 35). ***Tennen & Affleck (2006)*** reported that low education and the perception of medical care as being a substantial economic burden predict greater depressive symptoms and poorer functional status among the chronically ill. ***Sagduyu et al (2006)*** show that low educational level is predictive of depression.

(6) Occupational level:

In the present study, there is significant difference between the PRTR with different occupational levels as regards psychiatric diagnoses knowing that depressive episode is the commonest disorder among low level occupations, while adjustment disorder depressive type and GAD is the commonest among middle levels occupations. Dysthymia is the commonest among the high level occupations (table 40). Moderate risk of suicide is common among high level occupations (level 4and 5) with a significant difference from other occupational levels (table 43). This can be explained by the sense of submission and helplessness among low level occupations predisposing to depression while middle level occupations have milder impact reflected as adjustment disorder or anxiety and finally chronic

stress of high level occupation predispose to dysthymia.

(7) Marital state:

In the present study, all the divorced PRTR (5cases) have psychiatric disorders, also psychiatric disorders are more presented among the married PRTR than the single PRTR with significant difference (table 48).

This can be explained by ***Kimmel (2000)*** who found that divorce is an additional stress predisposing to psychiatric disorders, although marital responsibilities increase stress predisposing to psychiatric disorders. Therefore, higher social and psychologic support must be given to divorced patients**.** And ***Daneker et al (2001)*** reported that married patients have a lower percentage of depression due to the psychosocial support of the spouses. Lower marital satisfaction has been reported to be related to depression in the renal transplant recipient. A lower percentage of depression is observed among married patients, suggesting that spouses adapt to this situation quickly and provide support to their partners. But ***Arapaslan et al (2004)*** reported that the set of marital status is not significantly different between PRTR with or without psychiatric diagnoses.

(8) Social class:

In the present study, there is highly significant difference between the PRTR with different social classes as regards the severity of depression (table 56). Also, hostility, suicidal ideation and risk of suicide are more presented among the PRTR with low social class (table 57-58). This can be explained by the sense of submission and helplessness among the low class predisposing to depression, hostility and suicidality.

Epstien et al (2005) shows that almost all patients in the United States have insurance coverage and are in close contact with the medical care system — that would be expected to reduce disparities in care**.**

(9) Duration of hemodialysis:

In the present study, we found that patients with less than one year on hemodialysis before RTS have the highest incidence of poor mental health (table 61).

Although ***Dobbels et al (2008)*** reported that more than 3 years on dialysis therapy before transplantation is associated with more depression among PRTR and ***Bittencourt et al (2004)*** reported that as renal failure advances, patients start to have more symptoms that interfere with their daily activities, more advanced stages of renal disease could directly impact in the individual's perception of health**.** ***Arapaslan et al (2004)*** found that the set of duration of illness is not significantly different between patients with or without psychiatric diagnoses.

(10) Medical diseases other than renal impairment present before RTS:

In our study, there is insignificant difference in psychiatric morbidity between PRTR with or without medical diseases other than renal impairment (tables 69-74). ***Dobbels et al (2008)*** found that diabetes as 1ry cause of kidney disease and marked obesity (body mass index >/35kg/m2) is associated with more depression**.** ***Dew (1998)*** shows that subjects with diabetes have more reports of depression 60% as opposed to subjects without diabetes 49%**.** ***Simmons and Kamstra (1990)*** show that those without diabetes are more favorably adjusted than those with diabetes on measures of depression. ***Jassal et al (2003)*** show that

multimorbid patients gain less improvement after RTS than other subjects**.**

(11) Type of donors:

In the present study, there is insignificant difference between the types of donors as regards the psychiatric condition of the PRTR (tables 76 to 82). So, the type of donor either relative or non relative living donor have no effect on the psychiatric condition of PRTR

The clinical outcomes of renal transplantation have been found to be substantial when organs are from either relative or non relative living donors ***(European Best Practice Guidelines EBPG Expert Group on Renal Transplantation, 2000).***

On the other hand, ***Teran-Escandon et al (2001)*** study shows that patients awaiting a cadaveric donor have been reported to have a greater risk for anxiety than patients with an available living-related donor**.** ***Asderakis (1998)*** study shows that feelings of guilt appear to be prominent in living-related transplantation**.** ***Fukunishi et al (2003)*** study shows that in adult living-related renal transplant recipients *paradoxical psychiatric syndrome* (guilt-based psychiatric symtoms despite successful operative outcome for both donor and recipient) is seen in 5%**.**

Dobbels et al (2008) reported that PRTR whose donors are above age of 65 is associated with more depression.

(12) Side effects from drugs received after RTS:

In the present study, PRTR with side effects of drug regimen after the transplantation surgery have significant higher incidence of severe depression (13.6% -19/140) than without side effects (0%) (table 86). Also, hopelessness is only presented among the PRTR with side effects of drug regimen after the

transplantation surgery (table 87). ***Gelder et al (1989)*** reported that psychological problems may occur in association with immunosuppressive drugs, steroids in high dosage, and antihypertensive drugs. ***Ojo et al (2000)*** reported that psychiatric symptoms can develop secondary to immunosuppressive therapy corticosteroids, cyclosporines or tacrolimus especially early post transplantation when dosing is high.

This can be explained by the fact that RTR expectations of a better life gets frustrated with the emergence of side effects from drugs received after RTS and consequently hopelessness and depression are expected.

Dew (1998) shows that there are moderately negative significant relationships between symptom occurrence and psychological state. Three commonly used immunosuppressants are prednisone, tacrolimus and cyclosporine. These anti-rejection medications may have psychiatric/mood disturbance side effects**.** ***Baines et al (2002)*** show that negative physical and psychological states are related to low self efficacy with taking immunosuppressive medications, compliance and subsequent late acute rejection in PRTR**.** ***Dobbels et al (2008)*** reported that raramycin use, antilymphocytic globulin or antilymphocytic globulin for antibody induction therapy are associated with more depression among PRTR.

(13) Time since RTS:

In the present study, the recent renal transplantation (less than one year) has the highest percent (82.9%) of poor mental health (table 90). ***Dobbels et al (2008)*** reported that recent transplantation is associated with depression**.**

Ojo et al (2000) reported that the risk of suicide is highest between the 13 and 60 months post transplantation and the median time form organ transplantation to suicide is 16 months. But ***Arapaslan et al (2004)*** reported that there is no significant

difference between patients with or without psychiatric diagnoses as regards the time since RTS.

F. Factors affecting QoL of PRTR:

(1) Age:

In the present study, physical, psychological, independence and environmental QoL are more affected among the youngest age group (18-30y) by comparing with the other age groups with highly significant difference. All the PRTR (100%) have bad social QoL. As regards the overall QoL, it is more affected among the youngest (18-30 y) (100%) and the oldest (>50-60 y) (100%) age groups by comparing with the other age groups but without significant difference (table 7). Also physical, psychological, independence and overall QoL are positively correlated to age (table 8).

This can be explained by decreased coping strategies at extremities of age.

Although the overall symptom occurrence score by age group is not statistically significant in ***Dew,1998 study,*** older patients gained less improvement after transplantation than younger subjects in ***Jassal et al, 2003 study.***

This can be explained by difference between tools used in different studies and difference between cultures of samples

Our results disagree with the preliminary study of ***Shah et al (2006)*** who studied 50 PRTR and they reported that perception of QoL did not correlate with age.

(2) Sex:

In the present study, there is insignificant difference between male PRTR and female PRTR as regards QoL (table 15). ***Garth (2008)*** reported that there are negligible clinical differences for these QoL outcomes by gender subgroups**.** ***Jhonson et al (1998)*** reported that although renal transplantation dramatically improved QoL, women do not benefit to same extent as men. ***Fiebiger et al (2004)*** reported that in general QoL improved after successful renal transplantation compared to dialysis and this effect was more pronounced in males than in females**.** ***Hathaway et al (1987)*** reported that there is insignificant difference between males and females except in the psychological domain where women reported more stress.

(3) Religion:

In the present study, there is insignificant difference between the Moslem PRTR and the Christian PRTR as QoL (table 22).

This can be explained by the fact that both religions share the same moral values and ensure support of the "other" for survival.

(4) Residence:

In the present study, there is insignificant difference between the PRTR living in urban areas and the PRTR living in rural areas as regards QoL (table 29). So, residence doesn't affect the QoL of PRTR.

(5) Educational level:

In the present study, Bachelor, 2years institute and secondary educational levels have better psychological and independence QoL than the other educational levels with a significant difference between them; while physical, social, environmental, spiritual and overall QoL in PRTR have insignificant relation to the educational level of PRTR(table 36). Also psychological and independence QoL are positively correlated to educational level (table 36).

This can be explained by the findings of ***Tennen & Affleck (2006)*** that low education and the perception of medical care as being a substantial economic burden predict poor coping and independence and poorer functional status. ***Eryilmaz et al (2005)*** found that lower education and severity of depression are more negatively effective factors on the QOL of PRTR (measured by WHOQoL- BREF)

(6) Occupational level:

In the present study, level 6 occupational levels have significantly better independence QoL than the other occupational levels, this can be explained by the sense of domination among high level occupations leading to independence and spiritual satisfaction. Level 4 occupational level has significantly better enviromental QoL than the other occupational levels, this can be explained by middle level occupations having supported transportation to their work places leading to satisfaction with their environmental QoL. Level 5 and 6 occupational levels have significantly better spiritual QoL than the other occupational levels, this can be explained by higher level occupations have better self esteem leading to satisfaction with their spiritual QoL (table 44). Also, there is +ve correlation between the occupational level of the PRTR and independence and environmental QoL, this can be explained by higher level occupations have better sense of control over one's life leading to satisfaction with their independence and environmental QoL (table 45).

(7) Marital state:

In the present study, there is insignificant difference between the PRTR with different marital states as regards the QoL (table 52).

Jofre et al (1998) found that renal transplant patients perceived their social and spousal support and quality of life at moderate to high levels, and there is a significant positive relationship between social and spousal support and quality of life**.** So, we conclude the spousal support can improve the QoL of PRTR and not the marriage per se.

(8) Social class:

In the present study, there is insignificant difference between the PRTR with different social classes as regards QoL (table 59). So, social class doesn't affect QoL of PRTR.

(9) Duration of hemodialysis:

In the present study, there is insignificant difference between PRTR with different hemodialysis durations as regards the QoL (table 67). So, hemodialysis durations doesn't affect QoL of PRTR.

On the other hand, ***Bittencourt et al (2004)*** reported that more advanced stages of renal disease could directly impact in the individual's perception of their quality of life, becausewhen renal failure advances, patients start to have more symptoms that interfere with their daily activities**.**

(10) Medical diseases other than renal impairment present before RTS:

In the present study, there is insignificant difference between the PRTR with medical diseases other than renal impairment before the renal transplantation surgery and the PRTR without medical diseases other than renal impairment before the renal transplantation surgery as regards the QoL (table 75). So, medical diseases other than renal impairment before the renal transplantation surgery don't affect QoL of PRTR.

There are no statistically significant differences in QoL scores when subjects with diabetes are compared with subjects without diabetes, ***(Dew, 1998).*** Both those with diabetes and those without diabetes revealed improvement in emotional well-

being after renal transplantation ***(Simmons and Kamstra, 1990)***. Although QOL generally improves following transplantation, the more medically complex require more intense interventions to achieve the same level of QOL found in nondiabetic renal transplant recipients ***(Park, 2002).*** But ***Shah et al (2006)*** found in his preliminary study that perception of a better QoL correlates with less perception of illness effects and there is correlation between the perception of QoL in PRTR and the creatinine, hemoglobin or albumin levels.

(11) Type of donors:

In the present study, there is insignificant difference between the PRTR with relative donors and the PRTR with non relative donors as regards the QoL (table 82). So, either relative or non relative donors haven't effect on QoL of PRTR.

(12) Side effects from drugs received after RTS:

In the present study, there is insignificant difference between the PRTR with side effects of drugs after the renal transplantation surgery and the PRTR without side effects of drugs after the renal transplantation surgery as regards the QoL (table 89). So, side effects of drugs after the renal transplantation surgery haven't effect on the QoL of PRTR.

Although ***Bittencourt et al (2004)*** reported that renal transplant, advocated as a treatment that would assure the individual to be back to their daily activities can also be associated with not very satisfactory scores of QoL, particularly in those individuals experiencing adverse events resulting from immunosuppressive therapy. ***Hiricik et al (2001)*** reported that sexual dysfunction and headache have more impact on QoL than change in body and facial shape, hirsuitism and tremors.

On the other hand, ***Shield et al (1997)*** reported that prior to RTS patients had poor health related QoL, which improved after RTS and occurrence of rejection is associated with less improvement of QoL.

(13) Time since RTS:

In the present study, we found no relation between QoL and time since RTS (table 96).. This agrees with ***Shah et al (2006)*** who reported that perception of QoL doesn't correlate with time since transplantation surgery. But ***Beard (1971)*** reported that the first 3 months are full of anxiety about possibility of rejection, 6 months later there are ambivalent conflicts between fear and hope, dependence and independence. After 9 months there are reliable indications of return of hope but these depend on support from concerned and stable family members.

Finally, we must mention that according to the preliminary study of ***Shah et al (2006)*** perception of a better QoL correlates with less perception of depression and perception of greater social support and satisfaction with life. Also, ***Eryilmaz et al (2005)*** found that the severity of depression is a more negatively effective factor on QoL of PRTR.

By studying a sample of 230 early and late term PRTR (time since RTS ranges from 3 months to 18 years) collected from a governmental hospital (Naser Institute) where RTS is done sponsored by government or Health insurance, we found the following:

Sample description:

Only 6% (13/230) of PRTR are above 50 years old at time of RTS. Most of PRTR are males (165/230, 72%), married (169/230, 74%) moslems (172/230, 75%), rural (162/230, 70.4%) and educated (189/230, 82%) and have low occupational levels (111/230, 48% in levels 1 and 2). All PRTR are of low social class except 4% are of low middle social class. All PRTR have financial problems as regards the costs of RTS, post operative immunosuppressants and follow up investigations; but no one faced religious problems.

All PRTR did hemodialysis therapy before RTS (230/230, 100%) three times /week, three hours/ session, but the duration of hemodialysis varied from 1 months to 7 years, with a mean of 1.4 +_0.6 years More than 1/3 of the PRTR (87/230) have medical diseases other than renal impairment before RTS and more than 1/2 of the PRTR (140/230) have side effects from the immunosuppressive drugs received after RTS and the most common side effect is edema (30/230).

All PRTR (230/230, 100%) receive the transplant kidneys from living donors; there are no cadaveric donors. About 3/4 of PRTR receive the transplant kidneys from non relative donors. Only one PRTR (1/230, 0.4%) has previous history of RTS and 6.5% (15/230) have history of symptoms of rejection which is controlled by drug therapy. 1/3 of PRTR who receive the transplant kidneys from relative donors, receive it from their mothers.

No one of PRTR (230/230) has guilt feelings towards the donors. 72%of the PRTR (165/230) have poor mental health.

39% of PRTR (90/230) have a psychiatric disorder (ICD-10) and the commonest diagnosis is depression (major depressive episode, adjustment disorder depressive type, dysthymia), follwed by anxiety (generalized anxiety disorder and PTSD). 8.2% (19/230) of PRTR have severe depression (BDI-II) and 11.3% (26/230) of PRTR have moderate depression (BDI-II). 5.65% (13/230) of PRTR have moderate risk of suicide (SPS) and no one has high risk of suicide. 7.39% (17/230) of PRTR have suicidal ideation. Hopelessness is present among 20% (46/230) of PRTR.

Although all the PRTR are satisfied about RTS itself because they stopped going to the hemodialysis unit, all of them have unsatisfactory Social QoL and more than 3/4 of PRTR have unsatisfactory QoL in all the other domains of QoL except the spiritual QoL where only 15.6% (35/230) have unsatisfactory spiritual QoL.

Factors affecting psychiatric condition of PRTR:

Old PRTR (>50-60 years), female PRTR, those with less than one year hemodialysis therapy before RTS and those with recent RTS (less than one year) have the highest percent of poor mental health.

All divorced PRTR have psychiatric disorders whereas married PRTR have high percent of psychiatric disorders than single PRTR. The major depressive disorder is highly presented among PRTR with low occupational level where dysthymia and risk of suicide is highly present among PRTR with high occupational level.

As regards the severity of depression is highly present among old PRTR (>50-60 years) and among those having side effects from the drugs received after RTS. Also, depression among highly educated PRTR is more severe than the less educated.

Also, depression is more severe among PRTR with low and low middle social classes.

The risk of suicide is more presented among PRTR with secondary school education and those coming form low social class, also hostility and suicidal ideation are more presented among those coming from low social class. Also we found +ve correlation between hostility and social class. Negative self evaluation is more present among those with high educational level with positive correlation between the occupational level and –ve self evaluation. As regards hopelessness, there is –ve correlation with age and +ve correlation with educational level.

Other factors as religion, residence, and medical diseases other than renal impairment and type of donors haven't got effect on the psychiatric condition of PRTR.

All domains of QoL except social and overall domains are affected by the age and occupational level of PRTR,where they are more affected at the extremities of age especially young age groups.

The psychological and independence domains of QoL are affected by the educational level of PRTR where they are less affected among PRTR with 2 years institute or with secondary educational levels.

As regards the independence domain of QoL, there is a +ve correlation with age, educational and occupational level. As regards the psychological domain of QoL, there is a +ve correlation with age and -ve correlation with educational level. Also, there is +ve correlation between the physical domain of QoL and age and between the overall domain of QoL. Lastly, there is +ve correlation between the environmental domain of QoL and occupational level.

Psychiatric disorders such as depression and anxiety may be seen after a successful renal transplantation. The frequency of psychiatric disorders is quite high in renal transplantation patients ***(Araplasan et al, 2004).***

This work aims to review previous studies on the psychiatric morbidity and QoL in renal transplant patients, to study prevalence of psychiatric disorders among renal transplant recipients, and toidentify the quality of life among renal transplant recipients.

In the present cross sectional stratified random study, a stratified random sample (230 PRTR) were collected from Naser Institute Nephrology Clinics. during the time interval from 1st of January until 1st of June 2007. All cases were subjected to:
A semi-structured questionnaire for renal transplant recipients,
the Arabic version General Health Questionnaire-28 (GHQ-28),
the Egyptian version of Beck Depression Inventory (BDI-II),
the Egyptian version of the Suicide Probability Scale (SPS), and
the Arabic version of the World Health Organization Quality of Life Questionnaire (WHOQOL-100). ICD-10 checklist was applied to PRTR who have bad mental health (score of GHQ-28>/5).

The results were analyzed using the statistical package for the social sciences (SPSS) version 12. Qualitative data was described using frequency and percentage. Quantitative data was described using mean and standard deviation. The following inferential statistical procedures were used Chi- square (Chi $_2$) to compare categoric variables and Correlation method to compare continuous variables.

The sample composed of early and late PRTR (time since RTS ranges from 3 months to 18 years). RTS is done sponsored by government or Health insurance and we find the following:

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المراجع العربية:

- البحيرى عبد الرقيب أحمد (٢٠٠٣): مقياس احتمالية الانتحار، القاهرة، مكتبة الأنجلو المصرية.
- الشخص عبد العزيزالسيد (٢٠٠٦): مقياس المستوى الاجتماعى الاقتصادى للأسرةة، الطبعة الثالثة المعدلة، مكتبة الأنجلو المصرية.
- عبد الحكيم رجب (١٩٨٨): رسالة دكتوراة الطب النفسى- كلية لاطب جامعة عين شمس تحت اشراف ا.د. أحمد عكاشة و ا.د. مصطفى كامل و ا.د. رفقى فارس هنا الله.
- الشخص عبد العزيزالسيد (٢٠٠٦): مقياس المستوى الاجتماعى الاقتصادى للأسرةة، الطبعة الثالثة المعدلة، مكتبة الأنجلو المصرية.

المقدمة:

بعد نجاح جراحة زرع الكلى فى الخمسينيات من القرن الماضى، بدأ الانتباه الى دراسة معدل الاضطرابات النفسية فى متلقى زرع الكلى.

الدراسات الميدانية أثبتت أن نسبة الأضطرابات النفسية المختلفة تزداد لدى متلقى زرع الكلى. كما أظهرت الدراسات أن الأعراض المرضية و الأعراض الجانبية للأدوية المستعملة بعد الجراحة قد تؤدى الى ظهور أمراض نفسية.

ان الشعور بالذنب تجاه المتبرع يؤدى الى تدهور غير متوقع للحالة النفسية لمتلقى زرع الكلى و ذلك بالرغم من نجاح جراحة زرع الكلى. و هذا قد يسبب ضغوط على أفراد الأسرة مما يؤثر سلبيا على العلاقة بين المريض وبين المحيطين به فيزيد من صعوبة شفاء المريض.

كما أظهرت الدراسات أن الاضطرابات النفسية كالاكتئاب والقلق قد تؤثر على تطور الحالة الصحية للمريض و على النشاط المناعى لجسمه.

كذلك أثبتت الدراسات أن جودة حياة متلقى زرع الكلى تتحسن بعد جراحة زرع الكلى و مع ذلك تظل أقل من الشخص السليم.

دواعي البحث:

العلاقة بين الامراض النفسية و جودة حياة متلقى زرع الكلى لم تدرس بشكل كافى بمصرحيث أن منظمة الصحة العالمية رصدت مرجع مصرى واحد حول زرع الكلى بمصر.

فرضية البحث:

الاعتلال النفسي و سوء جودة الحياة مرتفعان لدى متلقى زرع الكلى.

هدف العمل:

مراجعة الدراسات السابقة و دراسة الاعتلال النفسى و جودة الحياة لدى متلقى زرع الكلي فى عينة مصرية .

منهج البحث:

فى هذه الدراسة المقطعية تم أخذ عينة عشوائية متراكبة (٢٣٠ متلقى زرع الكلى) من عيادات الكلى بمعهد ناصر منذ الأول من يناير حتى الأول من يوليو ٢٠٠٧. جميع الحالات طبق عليها التالى: (١) استبيان متلقى زرع الكلى المعدل، (٢) المستوى الاجتماعى الاقتصادى للاسرة ***(الشخص، ٢٠٠٦)*** (٣) النسخة العربية لاستبيان الصحة العامة -٢٨ ***(Abd-El-Hakeem, 1988)***، (٤) النسخة المصرية لمقياس بيك للاكتئاب (د-٢) BDI- II ***(غريب، ٢٠٠٠)***، (٥) النسخة المصرية لمقياس احتمالية الانتحار***(البحيرى، ٢٠٠٣)***، (٦) النسخة العربية لاستبيان جودة الحياة لمنظمة الصحة العالمية- ١٠٠ مترجم من كلية الطب جامعة الاسكندرية، (٧) متلقى زرع الكلي الذين يعانون من صحة نفسية سيئة (اللذين حصلوا على ٥ درجات او اكثر بواسطة استبيان الصحة العامة) طبق عليهم قائمة الاعراض النفسية بالتصنيف الدولى العاشر للامراض النفسية.

النتائج تم تحليلها بواسطة النسخة الثانية عشر للبرنامج الاحصائى للعلوم الاجتماعية. المعلومات النوعية وصفت بالنسبة المئوية والتكرارية، و المعلومات الكمية وصفت بالمتوسط والانحراف المعيارى .قُورنت المتغيرات المتدرجة بطريقة كاى- المربعة الاحصائية و قُورنت المتغيرات المتصلة بالطريقة الارتباطية الاحصائية.

وبعد فحص النتائج و عمل تحليل إحصائي وجدنا ما يلي:

٦% فقط (١٣/ ٢٣٠) من متلقى زرع الكلى يبلغون أكثر من ٥٠ سنة وقت جراحة زرع الكلى. معظم متلقى زرع الكلى ذكور (١٦٥/ ٢٣٠ ، ٧٢%)، متزوجون (١٦٩/ ٢٣٠ ، ٧٥%)، مسلمون (١٧٢/ ٢٣٠ ، ٧٥%)، قرويون (١٦٢/ ٢٣٠ ، ٧٢%)، متعلمون (١٦٥/ ٢٣٠ ، ٧٢%)، فى وظائف متدنية (١١١/ ٢٣٠ ، ٤٨% فى المستوى الاول و الثانى من الوظائف). جميع متلقى زرع الكلى من الطبقة الدنيا بالمستوى الاجتماعى الاقتصادى، و يعانون من مشاكل مادية حول الجراحة و الادوية المثبطة للمناعة عقب الجراحة و فحوص المتابعة. جميع متلقى زرع الكلى عولجوا بالغسيل الدموى قبل الجراحة (٢٣٠/ ٢٣٠ ، ١٠٠%) ثلاث مرات اسبوعيا، ثلاث ساعات بالجلسة، و تراوحت مدة العلاج من شهر الى ٧ سنوات بمتوسط ١.٤ +- ٠,٦ سنة. أكثر من ٣/١ متلقى زرع الكلى (٢٣٠/٨٧) يعانون من أمراض عضوية أخرى قبل الجراحة بخلاف القصور الكلوى و أكثر من ٢/١ متلقى زرع الكلى (٢٣٠/١٤٠) يعانون من أعراض جانبية للادوية المثبطة للمناعة بعد الجراحة و أكثرها حدوثا التورم (٢٣٠/٣٠).

. جميع متلقى زرع الكلى(٢٣٠/ ٢٣٠ ، ١٠٠%) تلقوا الكلى المزروعة من أحياء . أكثر من ٤/٣ متلقى زرع الكلى تلقوا الكلى المزروعة من متبرعين غير أقارب و ٣/١ متلقى زرع الكلى اللذين تلقوا الكلى من أقاربهم تلقوها من أمهاتهم . مريض واحد فقط (١/ ٢٣٠ ، ٠,٤%) أجرى الجراحة مرة سابقة و٦.٥ % (٢٣٠/١٥) يعانون من أعراض رفض مناعى للكلى

المزروعـــة والتـــى تـــم الســـيطرة عليهـــا بـــالعلاج.

. جميـع متلقـى زرع الكلـى(٢٣٠/ ٢٣٠ ، ١٠٠%) لا يشعرون بالذنب تجاه المتبرعين. ٧٢ % (٢٣٠/١٦٥) يعانون من صحة نفسية سيئة. ٣٩ % (٢٣٠/٩٠) يعانون من اضطربات نفسية وفق التصنيف الدولى العاشر للامراض و أكثر الأمراض حدوثا هو الاكتئاب ثم القلق. ٨ % (٢٣٠/١٩) من متلقى زرع الكلى يعانون من اكتئاب شديد وفق النسخة المصرية لمقياس بيك للاكتئاب و ١١ % (٢٣٠/٢٦) من متلقى زرع الكلى يعانون من اكتئاب متوسط و ٥.٦٥ % (٢٠٣/١٣) من متلقى زرع الكلى يعانون من احتمالية انتحار متوسطة وفق النسخة المصرية لمقياس احتمالية الانتحار و لا أحد يعانى من احتمالية انتحار شديدة. ٧.٨ % (٢٠٣/١٧) من متلقى زرع الكلى يعانون من أفكار انتحارية و ٢٠% (٢٣٠/٤٦) يعانون من اليأس.

بالرغم من رضا متلقى زرع الكلى عن الجراحة نفسها حيث لايضطرون ألى الذهاب ألى مراكز الغسيل الكلوى ثلاث مرات اسبوعيا الا أن جميعهم غير راضون عن جودة حياتهم الاجتماعية و٤/٣ منهم غير راضون عن جودة حياتهم فى المجالات الأخرى باستثناء المجال الروحى حيث ١٥.٦ % (٢٣٠/٣٥) منهم فقط غير راضون عنه وفق النسخة العربية لاستبيان جودة الحياة لمنظمة الصحة العالمية-١٠٠.

متلقى زرع الكلى كبار السن (>٥٠ -٦٠ سنة) و الاناث واللذين امضوا اقل من سنة يعالجون بالغسيل الدموى قبل الجراحة ومن مرعليه أقل من سنة بعد الجراحة يعانون من صحة نفسية

سيئة. جميع متلقى زرع الكلى المطلقون يعانون من اضطربات نفسية بينما نسبة عالية من المتزوجين يعانون من اضطربات نفسية مقارنتا بالعزاب منهم. الاكتئاب ينتشر بين أصحاب المهن المتدنية و عسر المزاج و احتمالية الانتحار تنتشر بين المهن العليا. حدة الاكتئاب تزيد بين كبار السن(>٥٠ -٦٠ سنة) و المتعلمين والمستوى الجتماعى المتدنى و المتوسط التدنى واللذين يعانون من أعراض جانبية للادوية المثبطة للمناعة بعد الجراحة. احتمالية الانتحار تنتشر بين أصحاب التعليم الثانوى والمستوى الجتماعى المتدنى حيث تنتشر العدوانية و الافكارالانتحارية،وقد وجد ارتباط ايجابى بين العدوانية و المستوى الاجتماعى. التقدير السلبى للذات ينتشربالمستويات التعليمية الاعلى وقد وجد ارتباط ايجابى بين التقدير السلبى للذات و المستوى الوظيفى. كما وجد ارتباط ايجابى بين اليأس و المستوى التعليمى و ارتباط سلبى بين اليأس و السن .

العوامل الأخرى كالدين ومحل الاقامة و المعاناة من أمراض عضوية أخرى قبل الجراحة بخلاف القصور الكلوى ونوعية المتبرع لا تأثير لها على الحالة النفسية لمتلقى زرع الكلى.

جميع مجالات جودة الحياة باستثناء المجال الاجتماعى و الكلى يتأثر بالمستوى الوظيفى و بالسن. المجال النفسى و الاستقلالى يتأثر بالمستوى التعليمى حيث يقل فى خريجى المعاهد وأصحاب التعليم الثانوى. كما وجد ارتباط ايجابى للمجال الاستقلالى بالسن و المستوى التعليمى و الوظيفى و وجد ارتباط ايجابى للمجال النفسى بالسن و ارتباط سلبى بالمستوى التعليمى. وجد ارتباط ايجابى للمجال الجسدى والكلى بالسن. و أخيرا وجد ارتباط ايجابى للمجال البيئى بالمستوى الوظيفى.

توصيات البحث:

١- الاهتمام بالاعلان عن وحدات زرع الكلى بمصر فى المحافل العلمية العالمية وتسجيل انجازتها و متابعة نشاطها.

٢- يجب مساعدة متلقى زرع الكلى ماديا و ذلك بسبب التكلفة الحالية لعملية زرع الكلى و للادوية و الفحوصات المطلوبة مدى الحياة.

٣- بحث الاسباب وراء عدم متابعة متلقى زرع الكلى فى العيادات الخارجية بمستشفى عين شمس التخصصى بالرغم من اجرائهم الجراحة بها .

٤- وجود طبيب نفسى فى الفريق الطبى بوحدة زرع الكلى لتحضير المرضى قبل الجراحة ومتابعتهم بعدها، كما يجب توعية الفريق الطبى بوحدة زرع الكلى بضرورة استشارة الأطباء النفسيين في حالة ظهور أية أعراض نفسية لمساعدتهم و لرفع العبء النفسى عن المريض.

٥- مطلوب المزيد من الابحاث: (١) لدراسة المرضى قبل عملية زرع الكلى و المرضى المسجلين فى قائمة الانتظار (٢) دراسة المتبرعين بالكلى (٣) دراسة عمليات زرع الاعضاء الاخرى خلاف الكلى.

1. The renal transplant units present in Egypt must be registered internationally whereas they are not reported in the International Fedration of Renal Registeries (2003).

2. PRTR must be supported financially because RTS, post operative immunosuppressive drugs and follow up investigations are expensive.

3. We must investigate why PRTR doing RTS in Ain Shams Specialized Hospital don't follow up in the outpatient clinics of the hospital.

4. The presence of liason psychiatrist in the renal transplant unit is important to prepare the patient for RTS, to support the mental health of the patient, and to follow up the case. It is also important to train the medical staff to recognize and respond appropriately to patients who have psychological problems.

5. Further research is required about other organ transplantations, preoperative stage and patients awaiting RTS, and renal donors.

All cases are collected from one place (Naser Institute).

All cases are under the category of very low, low, or low middle social classes.

All cases are underwent RTS under government or Health insurance sponsoring.

Appendix 3
General Health Questionnaire (GHQ28)

إستبيان الصحه العامه

نحن نود أن نعرف ما إذا كانت لديك أي شكوى صحيه في فترة الأسابيع القليلة السابقة، أي نستفسر عن صحتك بشكل عام . نرجو منك الأجابة على كل الأسئلة التالية و ذلك بوضع خط أكثر الأجابات تطابقا مع حالتك و تذكر أننا نود النعرف على شكواك الحاليه القريبة و ليس تلك الشكوى التي كانت لديك في الماضي. من المهم أن تحاول الأجابة على جميع الأسئلة و نشكرك مقدما على تعاونك معنا.

الأسم: السن: تاريخ الميلاد:

النوع: التليفون:

الوظيفة أو المنهة بالتفصيل: مستوى التعليم:

الحالة الأجتماعية: عدد الأولاد:

في الفترة الأخيرة:

GHQa1)) هل كنت تشعر أنك بخير و أن صحتك جيدة؟

٠-أفضل من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أقل بكثير من المعتاد

GHQa2)) هل كنت تشعر أنك في حاجة إلى مقوى جيد؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQa3)) هل كنت تشعر بهبوط عام و أنك لست كما ينبغي؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQa4)) هل كنت تشعر أنك مريض؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQa5)) هل كنت تعاني من أي الأم بالرأس

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQa6)) هل كنت تشعر وكأن شيء ما يحيط برأسك أو يضغطها؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQa7)) هل كنت تشعر بحالات مفاجئه من البرودة أو السخونة؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb1)) هل نقصت ساعات نومك بسبب التفكير و القلق؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb2)) و إذا غلبك النوم هل تجد صعوبة في أن تظل نائما؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb3)) هل تشعر بشكل دائم أنك مجهد؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb4)) هل أصبحت سريع الأستثاره و عصبي المزاج؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb5)) هل أصبحت تشعر بالخوف أو الرعب دون سبب وجيه؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb6)) هل تشعر أن المشاكل قد تراكمت من حولك؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQb7)) هل تشعر أنك عصبي و متوتر طوال الوقت؟

٠- لم يحدث أبدا ١-ليس أكثر من العتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQc1)) هل نجحت في أن تبقى منهمكا او مشغولا؟

٠-أكثر من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أقل بكثير من المعتاد

GHQc2)) هل أصبحت تحتاج لوقت أطول في أنجاز عملك؟

٠-أسرع من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أطول بكثير من المعتاد

GHQc3)) هل تشعر أنك بشكل عام تجيد ما تفعله؟

٠-أفضل من المعتاد ١- تقريبا

٢- أسوء من المعتاد ٣-أسوء بكثير من المعتاد

GHQc4)) هل أنت راضي بالمستوى الذي تؤدى به أعمالك؟

٠-أكثر من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أقل بكثير من المعتاد

GHQc5)) هل تشعر أنك تقوم بدور مفيد فيما تنجزه من أعمال؟

٠-أكثر من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أقل بكثير من المعتاد

GHQc6)) هل تشعر أنك قادر على أتخاذ القرارات؟

٠-أكثر من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أقل بكثير من المعتاد

GHQc7)) هل تستطيع الأستمتاع بنشاطك اليومى العادي؟

٠-أكثر من المعتاد ١- كالمعتاد

٢- أقل من المعتاد ٣-أقل بكثير من المعتاد

GHQd1)) هل تشعر أنك شخص لا قيمه له؟

٠- لم يحدث أبدا ١-كالمعتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQd2)) هل تشعر أنه لا أمل في الحياه على الأطلاق؟

٠- لم يحدث أبدا ١-كالمعتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQd3)) هل تشعر أن الحياه لا تستحق أن تعيشها؟

٠- لم يحدث أبدا ١-كالمعتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQd4)) هل راودتك فكرة التخلص من حياتك؟

٠- قطعا لم يحدث ١-لا أظن

٢-راودتني الفكرة ٣-قطعا حدث

GHQd5)) هل شعرت أحيانا أنك لا تستطيع أن تفعل شيء لأن أعصابك متوترة؟

٠- لم يحدث أبدا ١-كالمعتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQd6)) هل تمنيت ان تموت بحيث تبتعد عن كل ما حولك؟

٠- لم يحدث أبدا ١-كالعتاد

٢-أكثر من المعتاد ٣-أكثر بكثير من المعتاد

GHQd7)) هل وجدت أن فكرة التخلص من حياتك تراود ذهنك أحيانا؟

٠- قطعا لم يحدث ١-لا أظن

٢-راودتني الفكرة ٣-قطعا حدث

It is a self report questionnaire, not a time limited tool. It is a four domain scale questionnaire comprising 28 items distributed over four domains. The most common scoring method is bi-modal (0-0-1-1). In order to arrive at scale score, the responses are scored as "0" for "no" and "sometimes" and "1" for other response categories. The item scores are summated to scale score. Five or more indicate the presence of a disorder. The validity and reliability are determined ***(Werneke et al, 2000).***

It is a self report questionnaire, not a time limited tool. It comprises 36 items distributed over four subscales:

- suicidal ideation- questions 5, 12, 14, 15, 17, 19, 23, 28, 29, 31, 33, 36
- hopelessness- questions 4, 7, 20, 21, 24, 25, 30, 32
- -ve self evaluation- questions 2, 6, 10, 11, 18, 22, 26, 27, 35
- hostility- questions 1, 3, 8, 9, 13, 16, 34

In order to arrive at scale score, the responses are scored according to the "*Key for Scoring*" illustrated below and summated. The summated score is converted to probability scores as in the "*Key for score conversion*" illustrated below, also. Risk of suicide is subclinical if probability score is 0-35 in males (0-39 in females). It is mild if probability score is 36-43 in males (40-50 in females). It is moderate if probability score is 44-51 in males (51-62 in females). It is severe if probability score is >52 in males (>63 in females). Subscales scores are summated There is suicidal ideation if its score is >16 in males (15 in females). There is hopelessness if its score is >28 in males (26 in females). There is -ve self evaluation if its score is >20 in males (18 in females). There is hostility if its score is >14 in males (13 in females). The validity and reliability are determined ***(Bedrosian & Beck, 1979).***

It is a self report questionnaire, not a time limited tool. It comprises 21 items. The scoring method is (0-1-2-3). The item scores are summated to scale score. 0-23 in males (0-26 in females) indicate no or minimal depression. 24-36 in males (27-39 in females) indicate mild depression. 37-49 in males (40-52 in females) indicate moderate depression. 50-63 in males (53-63 in females) indicate severe depression. The validity and reliability are determined ***(Beck et al, 1996a & Beck et al, 1996b).***

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Suicide Probability Scale
Key for score

مقياس احتمالية الانتحار
" مفتاح التصحيح"

التقدير العبارات	أبـدا أو قلـــيلا مـــن الوقت	بعضا من الوقت	كثيرا من الوقت	معظم أو طول الوقت
١	١	٣	٣	٤
٢	٤	٢	١	١
٣	١	١	٢	٣
٤	١	٢	٢	٤
٥	١	١	٢	٤
٦	٣	٣	١	١
٧	١	٤	٥	٥
٨	١	٢	٣	٥
٩	١	٢	٤	٥
١٠	٣	٢	صفر	٢
١١	٢	٢	١	٢
١٢	صفر	٢	٣	٥
١٣	١	٢	٤	٥
١٤	صفر	١	٣	٤
١٥	١	٢	٣	٤
١٦	١	٣	٤	٥
١٧	١	٢	٣	٤
١٨	٤	٣	صفر	١

التقدير العبارات	أبـدا أو قلـــيلا مـــن الوقت	بعضا من الوقت	كثيرا من الوقت	معظم أو طول الوقت
١٩	١	١	٢	٤
٢٠	١	٢	٤	٤
٢١	١	٣	٤	٥
٢٢	٣	٢	١	٢
٢٣	١	٢	٣	٤
٢٤	١	٤	٥	٥
٢٥	١	٣	٤	٥
٢٦	٣	٢	١	١
٢٧	٣	٢	١	١
٢٨	صفر	٢	٣	٤
٢٩	١	٢	٣	٤
٣٠	١	٣	٤	٥
٣١	١	١	٢	٣
٣٢	١	٣	٥	٥
٣٣	١	٣	٣	٥
٣٤	١	٢	٤	٥
٣٥	٢	٢	١	١
٣٦	صفر	٣	٤	٤

Suicide Probability Scale
Key for score conversion

الدرجات الاحتمالية المقابلة للدرجات الكلية لمقياس احتمالية الانتحار

(رشد - اناث)

الدرجات الكلية	الدرجات الاحتمالية
٨٧	٤٨
٨٦	٤٧
٨٥	٤٧
٨٤	٤٧
٨٣	٤٦
٨٢	٤٦
٨١	٤٥
٨٠	٤٥
٧٩	٤٥
٧٨	٤٤
٧٧	٤٤
٧٦	٤٣
٧٥	٤٣
٧٤	٤٣
٧٣	٤٢
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٦٨	٤٠
٦٧	٤٠
٦٦	٣٩
٦٥	٣٩
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٦٢	٣٨
٦١	٣٧
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٥٧	٣٦
٥٦	٣٥
٥٥	٣٥
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٥٣	٣٤
٥٢	٣٤
٥١	٣٣
٥٠	٣٣
٤٩	٣٣
٤٨	٣٢

(رشد - ذكور)

الدرجات الكلية	الدرجات الاحتمالية
٩٤	٥٨
٩٣	٥٨
٩٢	٥٧
٩١	٥٧
٩٠	٥٦
٨٩	٥٦
٨٨	٥٥
٨٧	٥٥
٨٦	٥٤
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٨٤	٥٣
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٧٧	٥٠
٧٦	٤٩
٧٥	٤٩

الدرجات الكلية	الدرجات الاحتمالية
٤٧	٣٢
٤٦	٣١
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٣٩	٢٩
٣٨	٢٨
٣٧	٢٨

الدرجات الكلية	الدرجات الاحتمالية
٧٤	٤٨
٧٣	٤٨
٧٢	٤٧
٧١	٤٧
٧٠	٤٦
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٦٨	٤٥
٦٧	٤٥
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٥٦	٣٩
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الدرجات الكلية	الدرجات الاحتمالية
٥٤	٣٨
٥٣	٣٨
٥٢	٣٧
٥١	٣٧
٥٠	٣٦
٤٩	٣٦
٤٨	٣٥
٤٧	٣٥
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٣٨	٣٠
٣٧	٣٠
٣٦	٢٩
٣٥	٢٩
٣٤	٢٨
٣٣	٢٨

I. Historical Background of renal transplantation:

(1) Mythe :

Historically, in ancient civilizations, man had already imagined changes in the morphology, structure and function of the human body. Mythical literature richly describes transplantation as a cure for disease. The Egyptian sphinx is the oldest example of whole body segment transplantation (fig. 1) ***(Bollinger & Stickel, 1994).***

Figure 1: The Egyptian sphinx is the oldest example of whole body segment transplantation ***(Grimal, 1996)***

An Indian legend from the 12th century B.C. recounts the powers of Shiva, who xenotransplanted an elephant head onto a child to produce the Indian god Gaesha. In ancient China, Yue-Jen (407-310 B.C.) induced anaesthesia lasting 3 days by "the absorption of extremely strong wine, opened up the chest of two

soldiers and after examining them, exchanged their hearts and transplanted them". Later, in the Christian era myths and legends gave way to miracles based on acts of faith. In connection with transplantation the most famous miracle was recorded in the 13th century, in the golden legend of the 'Lives of Saints'. It was performed by Saint Cosmas and Saint Damian during the reign of Diocletian in 280. On the basis of the legend they grafted a leg taken from the cadaver of a Moor on a sexton (fig.2) This archival but miraculous mythological world has been a favourite theme of different painters. For example, in Picasso's *Guernica* we can see the Minotaur with a bull's head, a rendering of whole body segment transplantation (fig. 3) ***(Bollinger & Stickel, 1994).***

Figure 2: Fra Angelico: Saint Cosmas and Saint Damian grafting a leg taken from a cadaver on a sexton ***(Bollinger & Stickel, 1994).***

Figure 3: Picasso: *Guernica* (detail with the Minotaur). Musée Picasso, Paris ***(Bollinger & Stickel, 1994).***

(2) Fact:

Tissue grafting began in plants and until the 12th century this technique was referred to by the word “grief”, derived from the Greek word for stylet, the tool used to perform the operation. Although attempts were made to transplant every type of organ in animals, very rapidly the **kidney** was adopted as the experimental model because of its bilateral nature and the large calibre of its vessels with a well isolated pedicle. In 1900 just a few years before Alexis Carell finally revolutionized vascular suturing, Erwin Payr introduced an improved technique of vascular anastomosis using special resorbable metal tubes for connection of the vessel ends. Payr himself, then working at the University of Graz, Austria, was an experienced transplantation surgeon. He had performed large numbers of thyroid transplantations and was probably the first to transplant parathyroid glands. In January 1902 at the Vienna Medical Society Meeting, the surgeon Emerich Ullmann (fig.4) reported the first case of renal autotransplantation (fig.5) performed in the neck of a dog ***(Küss & Bourget, 1992).*** .

Figure 4: Emerich (Imre) Ullmann. Institute for the History of Medicine, Vienna University ***(Küss & Bourget, 1992).***

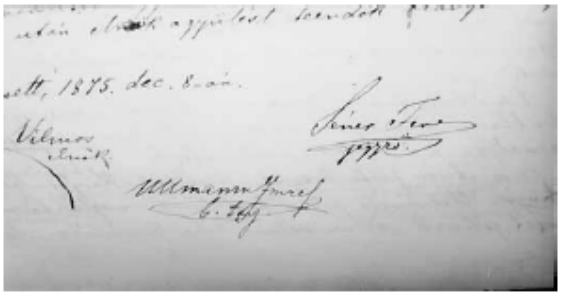

Figure 5: The signature of Ullmann on minutes of the meeting ***(Küss & Bourget, 1992).***

In the same year, he presented the first xenotransplantation of the kidney (a goat with a dog's kidney). These publications immediately had a great impact on the medical word. After his

failed attempt to transplant a pig's kidney into a young uraemic woman he stopped his research in this field in order to devote himself to other lines of surgical research. However, his idea survived him, because, nowadays, nearly 100 years later, pigs appear to be the most suitable donors for human renal xenotransplantation. In 1936, the first human cadaveric renal transplant performed by Voronoy in Russia, survived four days and due to genetic incompatibility between the donor and the recipient, homologous transplantation seemed doomed to failure. Renal transplantation between monozygotic twins confirmed the necessity of genetic identity and led to a realisation of the need for immunosuppression in prolonging graft survival. The first documented kidney transplant in the United States was performed June 17, 1950, on Ruth Tucker, a 44-year-old woman with polycystic kidney disease, at Little Company of Mary Hospital in Evergreen Park, Illinois, a Chicago suburb. Even without immunosuppressive therapy -- the development of effective antirejection drugs was years away. Thereafter, renal transplantations were undertaken in 1954 in Boston and Paris. The Boston transplantation was done between identical twins to eliminate any problems of an immune reaction. Dr. Josef Murray performed the world's first successful renal transplant between genetically non-identical -patients (fig.6). The donor is still alive; the recipient died eight years after the transplantation. ***(Küss & Bourget, 1992).***

Figure 6: Josef Murray and his 1954 first sucessful renal transplantation surgery ***(Küss & Bourget, 1992).***

The first kidney transplant in the United Kingdom did not occur until 1960, when Michael Woodruff performed one between identical twins in Edinburgh. The first long term surviving allograft in Paris was done in 1960. Until the routine use of medications to prevent and treat acute rejection, introduced in 1964, deceased donor transplantation was not performed. The kidney was the easiest organ to transplant, tissue-typing was simple, the organ was relatively easy to remove and implant, live donors could be used without difficulty, and in the event of failure, kidney dialysis was available from the 1940s ***(Küss & Bourget, 1992).***

II. Medical and Surgical Aspects of renal transplantation:

(1) Indications and preoperative preparation:

Recipient criteria are end stage renal failure patients (GFR approximately 10 ml/min), whose physical/psychosocial condition allows treatment with acceptable complication risk and who are well informed and motivated. Donor criteria are those healthy individuals with acceptable organ quality, no risk of transmission of diseases (i.e. malignancy, infection), consenting according to legislation, matched to recipient (bloodgroup, x-match), close and long-lasting relationship. Matching of donor and recipient include compatible blood group, negative cross match test, HLA-matching /HLA-antibodies, age matching, and CMV serology ***(Collaborative Transplant Study group, 2000).***

(2) Proceedure:

The transplant surgery lasts about three hours. The donor kidney will be placed in the lower abdomen and its blood vessels (fig.7) connected to arteries and veins in the recipient's body. Since in most cases the barely functioning existing kidneys are not removed, the kidney is usually placed in a location different from the original kidney (often in the iliac fossa), and as a result it is often necessary to use a different blood supply. The renal artery of the kidney, previously branching from the abdominal aorta in the donor, is often connected to the external iliac artery in the recipient. The renal artery of the new kidney, previously draining to the inferior vena cava in the donor, is often connected to the external iliac vien in the recipient. When this is complete, blood will be allowed to flow through the kidney again, so the ischemia time is minimized. In most cases, the kidney will soon start producing urine. Depending on its quality, the new kidney usually begins functioning immediately. Since urine is sterile,

this has no effect on the operation (fig.8). The final step is connecting the ureter from the donor kidney to the bladder. Finally, the incision is sutured (fig.9) ***(Brook & Nicholson, 2003).***

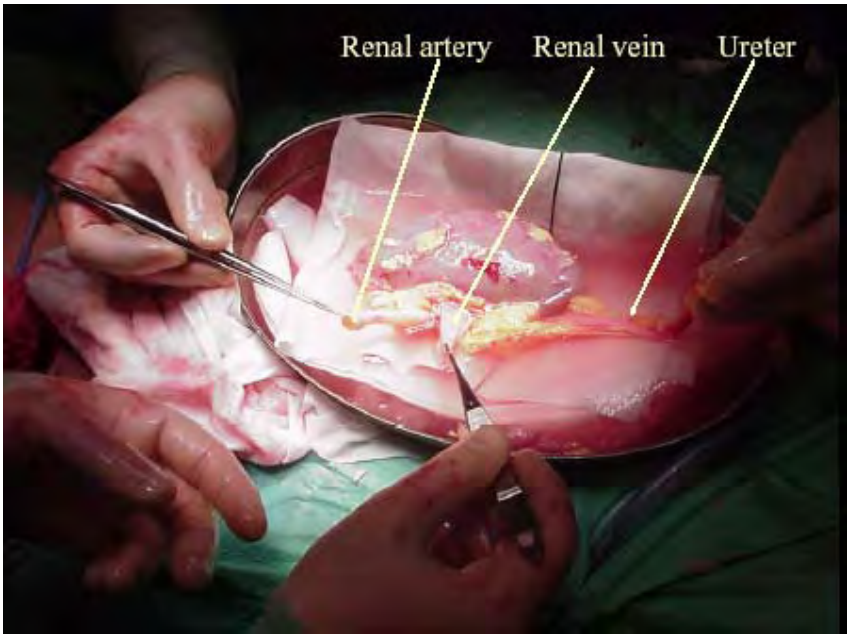

Figure 7: The donor kidney and its blood vessels ***(Brook & Nicholson, 2003).***

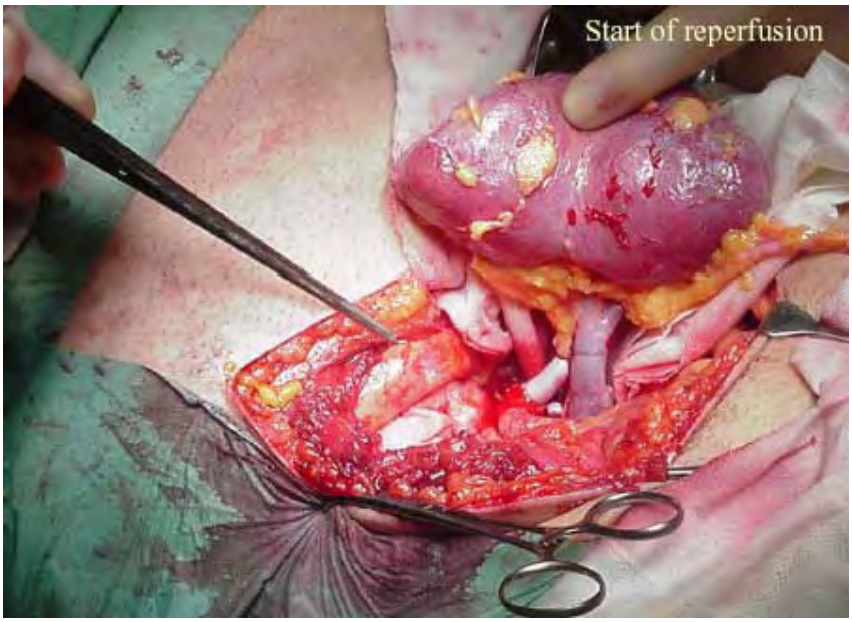

Figure 8: blood allowed to flow through the kidney ***(Brook & Nicholson, 2003).***

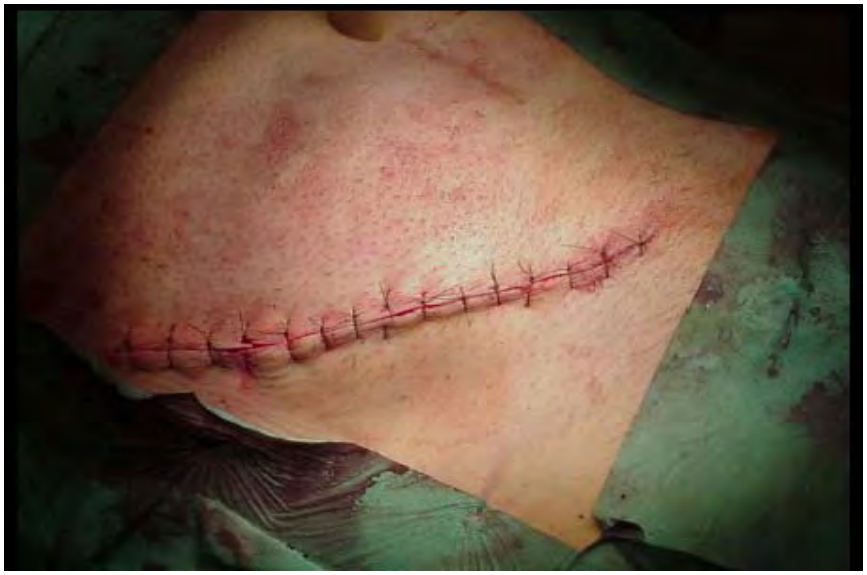

Figure 9: Finally, the incision is sutured ***(Brook & Nicholson,***

2003).

(3) Post operative care and complications:

Post operative care include bladder catheter (approximately 5 days), rapid patient ambulation, daily measurements:– Urine output– Temperature, weight– Lab: Creatinine, electrolytes, blood counts, ultrasonography of the graft, dialysis if needed and education of the patient. Complications after surgery include acute rejection (28 % of patients), delayed graft function (17 % of patients), ureteric problems (15 % of patients), vascular problems (8 % of patients), lymphocele (9 % of patients), CMV-infections (7 % of patients). Side effects of medications including gastrointestinal inflammation and ulceration of the stomach and esophagus, hirsitism (excessive hair growth in a male-pattern distribution), hair loss, obesity, acne, diabetes mellitus (type 2), hypercholesterolemia and others ***(Collaborative Transplant Study group, 2000).***

Hospital stay is typically for four to seven days. If complications arise, additional medicines may be administered to help the kidney produce urine. Medicines are used to suppress the immune system from rejecting the donor kidney. These medicines must be taken for the rest of the patient's life. NICE has today issued guidance on the use of immunosuppressive therapy for renal (kidney) transplantation. The aim of immunosuppressant treatments after kidney transplantation is to suppress the immune system to reduce the likelihood of acute rejection and to prolong the survival of the transplanted organ. The most common medication regimen today is: *Tacrolimus*, *Mycophenolate*, and *prednesilone.* Some patients may instead take *azathioprine*, *sirolimus* or *cyclosporine.* The most promising are mizorbine, deoxyspergualin, brequinar sodium, leflunomide and monoclonal antibody preparations **(*Vanrenterghem, 1997).***

(1) Tacrolimus was first isolated from the culture broth of a soil sample “Streptomyces tsukabaensis” from the tsukuba area

in northern Japan by Kino et al ***(Tolou-Ghamari ,1999).*** Because of its narrow therapeutic range and variable pharmacokinetics, tacrolimus requires therapeutic drug monitoring. Tacrolimus inhibits lymphocyte pathway in both CD $^{+4}$ and more markedly, CD $^{+8}$ T-cells by forming pentameric complex with its binding protein, calmodulin, calcium and calcineurin, so inhibiting the phosphatase activity of calcineurin and the dephosphorylation of transcription factors ***(Braun & Schulman,1995).***

(2) Mycophenolate Mofetil (MMF) was approved for use in 1995, in combination with cyclosporin and prednisone, in preventing rejection in renal transplant patients. It selectively and reversibly inhibits inosine monophosphate dehydrogenase (IMPDH), an enzyme that plays a pivotal role in synthesis of new DNA ***(Eugui et al, 1991).***

(3) Cortisone could reverse the acute rejection of renal allografts the combination of azathioprine and cortisone was used clinically to optimise benefit and reduce toxicity ***(Vanrenterghem, 1997).***

(4) Azathioprine was used in transplantation but its low efficacy was associated with considerable myelotoxicity ***(Vanrenterghem, 1997).***

(5) Sirolimus (rapamycin) impedes progression of the proliferation cycle in IL-2 stimulated T-cells, and reduces the translation of certain mRNA encoding for ribosomal proteins and elongation factors, thereby decreasing protein synthesis. A second, later effect of rapamycin in IL-2-stimulated T-cells is an inhibition of the enzymatic activity. Sirolimus has been shown to be efficacious alone or in combination with other immunosuppressive drugs, such as cyclosporin, in prolongation of renal-allograft survival ***(Carlson et al, 1993).***

(6) Cyclosporin was introduced for immunosuppression in transplantation in the early 1980s rendered a new age for transplantation. Its efficacy allowed rapidly expanding

indications within and outside transplantation and permitted both the relaxation of restrictions in donor selection as well as in the preservation of grafts ***(Kahan, 1993).*** In T-cells cyclosporin inhibits the calcium/calmodulin-dependent phosphatase calcineurin thereby preventing the activation of T-cell specific transcription factors ***(Ho, 1996).*** Oral cyclosporin therapy was complicated by inconsistency in the absorption of the conventional formulation (Sandimmun). A considerable reduction in this variability was achieved following introduction of a microemulsified formulation Neoral in the mid 1960's ***(Levy et al, 1994).*** Additional comparisons of Neoral with Sandimmune in both volunteers and renal graft recipients have demonstrated a greater independence of absorption on and a greater consistency of absorption profiles. Monitoring of cyclosporin concentrations in blood is an invaluable and essential aid in adjusting dosage to ensure adequate immunosuppression while minimising toxicity. Cyclosporin is extensively metabolised to more than 25 metabolites in liver and small intestine mainly responsible and implicated in several drug interactions ***(Muller et al, 1994).***

III. Renal transplantation as a life extending procedure:

Recent studies have indicated that renal transplantation is a **life-extending** procedure. The typical patient will live ten to fifteen years longer with a kidney transplant than if kept on dialysis. The years of life gained is greater for younger patients, but even 75 year-old recipients (the oldest group for which there is data) gain an average four more years' life. People generally have more energy, a less restricted diet, and fewer complications with a kidney transplant than if they stay on dialysis. At least three professional athletes have made a comeback to their sport after receiving a transplant: Sean Elliott and Alonzo Mourning; and New Zealand rugby legend Jonah Lomu. Australian Aboriginal activist Charles Perkins is the longest surviving receiver of a kidney transplant, living twenty-eight years on his donor organ. Denice Lombard of Washington, D.C., received her father's kidney on August 30, 1967 aged 13 and is still alive and healthy thirty-nine years later. When a transplant fails a patient may opt for a second transplant, and may have to return to dialysis for some time. Some studies seem to suggest that the longer a patient is on dialysis before the transplant, the less time the kidney will last. It is not clear why this occurs, but it underscores the need for rapid referral to a transplant program. Ideally, a kidney transplant should be pre-emptive, i.e. take place before the patient starts on dialysis. Percent of graft survival is illustrated in figure 10. ***(Wikipedia, the free encyclopedia, 2007).***

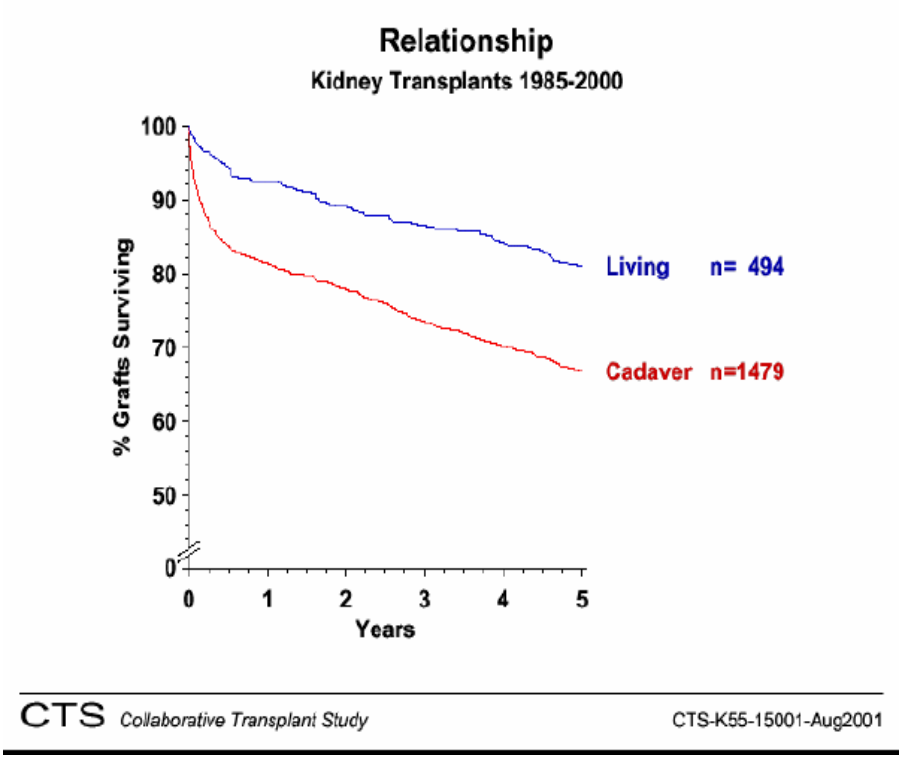

Fig. 10: Percent of graft survival in relation to post operative time elapsed in years ***(Collaborative Transplant Study group, 2000).***

IV.Epidemiology of renal transplantation:

(1) International renal transplant data based on the US renal data system

Table 1 shows the rate of new renal transplantation per million population for the years 1998, 1999, and 2000 in 26 countries. In year 2000, the United States, Spain, Austria, and Norway exhibited the highest renal transplantation rates per million population (46-52 new transplants per million population). By comparison, half of the listed countries had a renal transplantation rate of $\leq$25 new transplants per million

population. These rates provide a good comparative measure of kidney donation rates from the general population for patients with end-stage renal disease (ESRD) ***(International Federation of Renal Registries,2003)***.

Table 1. Transplant Rates Per Million General Population

Country	**2000**	**1999**	**1998**
Australia	28	24	28
Austria	49	53	47
Bangladesh	0.36	0.21	0.26
Brunei	5.9	6.0	3.1
Bulgaria	7	12	6
Canada	38	35	34
Chile	18	18	18
Czech Republic	34	31	33
Finland	37	30	36
Germany	27	28	29
Greece	12	15	16
Hungary	25	22	24
Italy	.	24	.
Japan*	.	.	<1
Netherlands	36	31	31
New Zealand	28	29	28
Norway	46	46	46
Philippines	3.5	2.6	2.3
Poland	21	16	14
Russia	3.0	3.3	3.2
Spain**	48	51	50
Sweden	32	34	40
Taiwan	12	7	9
United Kingdom	.	29	30
United States	52	50	50
Uruguay	20	13	19

(International Federation of Renal Registries, 2003)

Table 2 shows statistics of renal transplantation by country, year and donor type in the year 2003 according to Wikipedia free encyclopedia.

Table 2: Statistics of Renal Transplantation by Country, Year and Donor Type in the year 2003:

Country	Cadaveric donor	Living donor	Total transplants
France	1991	136	2,127
Italy	1489	135	1,624
Spain	1991	60	2,051
United Kingdom	1,297	439	1,736
United States	8,667	6,479	15,137

(Wikipedia, the free encyclopedia, 2007)

Table 3 indicates, the number of ESRD patients alive with a functioning kidney transplant per million population for the years 1998, 1999, and 2000. This prevalence of a functioning transplant was highest in Austria, Finland, Norway, Sweden, and the US (350-440 functioning transplants per million population). These results are largely a reflection of transplant activities in the years prior to the years shown and are influenced by the survival of the functioning transplant and of the transplant recipients.

Table 3. Prevalent Rates of a Functioning Renal Transplant Per Million General Population

Country	2000	1999	1998
Australia	273.3	265.3	259.6
Austria	407.4	385.8	364.2
Bangladesh	2.6	2.4	2.3
Brunei	41.4	36.3	31.0
Bulgaria	43.4	36.1	31.1
Canada	289.8	273.0	255.1
Chile	126.9	117.4	108.8
Czech Republic	240.0	217.8	189.6
Finland	353.2	331.8	316.9
Germany	230.2	177.5	179.0
Greece	139.4	135.4	125.0
Hungary	153.8	141.7	135.0
Italy	.	151.1	127.7
Netherlands	317.2	298.6	287.8

New Zealand	264.7	256.1	245.5
Norway	436.9	420.4	401.4
Poland	97.9	76.8	74.7
Russia	17.1	15.3	13.1
Sweden	377.6	371.3	362.9
United Kingdom	.	.	211.4
United States	375.4	357.3	342.9
Uruguay	104.9	93.2	80.9

(International Federation of Renal Registries,2003)

The Sind Institute of Urology and Transplantation (siut.org SIUT) is the only hospital in the world giving free-of-cost transplantation treatment ***(Wikipedia, the free encyclopedia, 2007).***

Table 4 shows the countries with at least one transplant center but with no data in the worldwide transplant center directory ***(International Federation of Renal Registries, 2003)***.

Table 4: Countries With at Least One Transplant Center But With No Data in the Worldwide Transplant Center Directory

Country	Number of Transplant Centers
Ecuador	10
Lithuania	3
Malaysia	6
Morocco	1

(International Federation of Renal Registries,2003)

(2) Age:

Renal transplantation is not the preferable renal replacement therapy in elderly patients with end stage disease. After transplantation, older multimorbid patients gained less improvement than younger patients. Also in these older patients, the time from transplantation to the point where patients have an advantage from the transplant procedure is almost twice as long as in younger patients. After one year of surgery the likelihood of survival is higher than for matched wait listed old dialysis patients, but there is no discussion that overall survival is higher than on dialysis. Renal transplantation is more cost effective than dialysis treatment ***(Jassal et al, 2003).***

(3) Sex:

While the public and policy-makers place a priority on equity in the organ allocation process, several studies suggest that women may be less likely than men to receive a renal transplant. To address these issues, two nationally representative cohorts of incident patients were examined: (1) 7594 adults with ESRD onset between 1986 and 1993 for whom detailed data were available from the medical record on health status; and (2) 3217 patients <20 yr old who developed ESRD between 1988 and 1993. Patients were followed from initiation of dialysis for up to 10 years until first activation on the United Network of Organ Sharing renal transplant waiting list. Access to the list for female and male patients with ESRD was compared with adjustment for demographic, socioeconomic, and clinical factors. Crude rates of wait-listing per 100 person-years of ESRD were lower for female patients than male patients in both the pediatric (28.89 versus 34.18) and adult (3.94 versus 6.54) populations. Despite adjustment for numerous confounding factors, this gender-based disparity persisted in multivariate analysis. Among children with

ESRD, female patients were 14% less likely to be listed than male patients (relative hazard 0.86; 95% confidence interval, 0.78 to 0.93), and in the adult group, women were 18% less likely to be activated for transplant than men (RH 0.82; 95% CI, 0.72 to 0.93). These findings suggest that female patients of all ages with ESRD face barriers in being activated for cadaveric renal transplantation. Greater attention to this issue is necessary to improve equity in the organ allocation system and potentially improve the outcomes of female patients with ESRD ***(Garg et al, 2000).***

(4) Religion:

In principle, *Judaism* supports and encourages organ donation in order to save lives (pikuach nefesh). This principle can sometimes override the strong objections to any unnecessary interference with the body after death, and the requirement for immediate burial of the complete body. *Pirke D'Rav Eliezer, Chapter 48* "One who saves a single life - it is as if he has saved an entire world." Sacrifice and helping others are key themes across all forms of *Christianity,* and therefore a decision to donate organs is seen as a positive thing. Christians are encouraged to help others in need. They look upon organ donation as an act of love, and a way of following Jesus' example. Healing and saving life is a great gift. Jesus sent his twelve disciples out with the imperative to heal disease and illness. *Matthew chapter 10:8* "Heal the sick - freely ye have received, freely give." One of the basic aims of the *Muslim* faith is the saving of life. This is a fundamental principle of the Muslim Law, Shariah, and Allah greatly rewards those who save others from death. Violating the human body, whether living or dead, is normally forbidden in Islam. However, the Shariah waives this prohibition in a number of instances: first in cases of necessity; and secondly in saving another person's life. It's this Islamic legal maxim 'al-darurat tubih al-mahzurat' (necessities

overrule prohibition) that has great relevance to organ donation. *Holy Qur'an, chapter 5 vs. 32* "Whosoever saves the life of one person it would be as if he saved the life of all man kind." There are no rules in *Buddhism* for or against organ donation, but a wish to relieve suffering is central to Buddhist faith. The decision about organ donation must be made by each individual. People may decide for or against it, without one choice being seen as right, and the other wrong. Although the relief of suffering is a fundamental part of Buddhism, the needs and wishes of a potential donor shouldn't be compromised by the wish to save a life. There's no religious law that prohibits *Hindus* from donating their organs and tissues. There are many references that support the concept of organ donation in Hindu scriptures. Daan is the original word in Sanskrit for donation, meaning selfless giving. In the list of the ten Niyamas (virtuous acts) Daan comes third. *Sikhs* have no objections to the donation and transplantation of organs. The Sikh faith stresses the importance of performing noble deeds. There are many examples of selfless giving and sacrifice in Sikh teachings by the ten Gurus and other Sikhs. Sikhs believe life after death is a continuous cycle of rebirth but the physical body isn't needed in this cycle - a person's soul is their real essence ***(BBC Health, 2007).***

(5) Country:

The United States performs more organ transplants than any other country. Japan was likewise a pioneer in transplantation surgery. However, between 1969 and 1999, Japan shut down heart transplantation and refused to allow cadaveric organ donation. It continued to allow and perform living donor transplants of kidneys, and developed and perfected techniques for living donor transplantation of a portion of the liver. Why the difference? Japan did not legally acknowledge brain death as death until 1997, and then it is only acknowledged for patients who are over 15 years of age, and have previously declared

formally that they wish to be organ donors. Those who do not meet these criteria are treated as alive even after a declaration of brain death, and are kept on respirators until heart failure occurs. One difference is in the Japanese beliefs about the nature of the self. For a traditional Japanese person, the self or soul is diffused throughout the body. In the western, post-Cartesian view, the self is associated only with the brain. It is the brain that makes a person who he is in United States' culture, and therefore when the brain is dead, the individual is dead. Another difference in attitude between the United States and Japan is in the difference between how the two peoples view gift-giving. The Christian tradition is one of altruism, loving and giving gifts to strangers. In the Japanese tradition gift-giving is reciprocal. The idea of giving someone a body part when that person is neither a friend nor a relative is very strange to the Japanese mind. The most important differences that relate to this difference in practice between the U.S. and Japan is the difference in attitudes towards western medicine. Japanese have a great distrust of western medical doctors. There are constant reports in the Japanese media about medical schools that sell diplomas or doctors who have bought their way into medical school or cheated on the exams. Doctors in Japan make the majority of their money off of prescriptions, rather than examination, diagnosis, and nonpharmaceutical treatment ***(Lock, 2002)***.

V. Psychiatric morbidity among renal transplant Recipients:

The postoperative prevalence of psychiatric *disorders* for adult transplant recipients is highest the first 3 months posttransplant. The incidence of psychiatric disorders in the adult recipients with living-related kidney transplant (LRKT) is (28%) ***(Fukunishi et al, 2001).*** The prevalence of such difficulties (Table 5) appears to be generally similar to the general population ***(Nickels, 2001)***.

Table 5: prevalence rate of psychiatric disorders among adult renal transplant recipients

prevalence rate of psychiatric disorders among recipients	time elapsed since surgery
28%	0-3 months
2%	4-12 months
1%	1-3 years

(Nickels, 2001)

Psychiatric diagnosis varies according to time elapsed since surgery (Table 6) ***(Nickels, 2001)***.

Table 6: psychiatric disorders among adult renal transplant recipients

psychiatric disorders among recepients	time ellapsed since surgery
Delirium, depression, dysthymia, adjustment, brief psychosis, somatisation, substance abuse, PTSD	0-3 months
Dysthymia, brief psychosis	4-12 months
depression	1-3 years

(Nickels, 2001)

(i) Paradoxical psychiatric syndrome (PPS):

PPS in recipients and donors after living donor transplantation refers to psychiatric disorders manifested in a paradoxical form, which occur despite successful transplantation without tissue rejection or other medical complications. PPS is closely related to conflicted feelings, including guilt toward the living donors, although much remains unknown. Such recipients have strong feelings of guilt toward their donors, and they cannot verbalize their inner feelings. In adult recipients PPS was seen in 5%. On the other hand, DSM psychiatric disorders are found among recipients with PPS, and included major depression, somatization disorder, and conversion disorder. This suggests that PPS implies a cluster of psychiatric symptoms ***(Fukunishi et al, 2003).*** Eighty percent of the adult recipients with adult child-to-parent donors exhibited paradoxical psychiatric syndrome (PPS). Among the affected recipients, guilt-based psychiatric disorders of various types occurred despite successful operative outcome for both donor and recipient. The higher rate of psychiatric disorders among adult recipients was associated with the occurrence of PPS among recipients of an adult-child allograft. These results signal a new challenge for consultation psychiatrists working with transplant patients ***(Fukunishi et al, 2001).***

(ii) Depressive disorders:

Major depression was observed in 25% of patients after a successful renal transplantation ***(Araplasan et al, 2004).*** ***O'Donnell &Chung (1997)*** reported that the frequency of depression is 25% to 30% among end-stage renal disease (ESRD) patients, especially after the initiation of renal replacement therapy. It has also been recognized increasingly among renal transplant recipients. ***Reithar et al (1992)*** reported that in the general population the prevalence of depression ranges between 2% and 9%***. Rocha et al (2001)*** reported that depression reduces

self-esteem leading to non-compliance with therapy, which may also affect graft and patient survival**.** ***Tennen & Affleck (2006)*** found that the presence of depression was not related to age (but younger patients feel limited in their daily life) or gender (but perceived social support is less in women). Low education and the perception of medical care as being a substantial economic burden predict greater depressive symptoms among the chronically ill**.**

A lower percentage of depression was observed among married patients, suggesting that spouses adapt to this situation quickly and provide support to their partners. Lower marital satisfaction has been reported to be related to depression in the renal transplant recipient (***Daneker et al, 2001).*** The lower depression percentage among married patients may be due to the psychosocial support of the spouses (***Daneker et al, 2001).***

There was an inverse correlation between depression and functional graft duration among patients with transplant failure ***(Teran-Escandon et al, 2001).*** Low education and the perception of medical care as being a substantial economic burden predict greater depressive symptoms and poorer functional status among the chronically ill ***(Tennen & Affleck, 2006).*** The higher depression scores in the recipient group probably reflect the type of mental state that results from a prolonged experience with a debilitating, chronic illness such as end-stage renal disease ***(Tanriverdi et al, 2003).***

Patients awaiting a cadaveric donor have been reported to have a greater risk for severe depressive disorders than patients with an available living-related donor. These patients are evaluated systematically at 6-month intervals; current diseases are treated so they can be ready for a cadaveric transplantation at any time. This close follow-up probably brings about a decrease in depression ***(Teran-Escandon et al, 2001).***

Placing greater numbers of patients on transplant waiting lists decreases depression with a better outcome during dialysis

therapy ***(O'Donnell &Chung, 1997).*** These patients are evaluated systematically at 6-month intervals; current diseases are treated so they can be ready for a cadaveric transplantation at any time. This close follow-up probably brings about a higher quality of life and decreases depression ***(Teran-Escandon et al, 2001).*** Use of psychotherapy should also be considered before and after transplantation, since many patients become demoralized by the many stressors they face (eg, ill health, loss of independence ***(Robinson et al, 2005).*** Sharing the physical and psychologic problems with another person together with marital satisfaction decreased depression in married patients ***(Kimmel et al, 2000).***

Although there is no absolute contraindication in selecting an antidepressant in renal disease increased sensitivity to drug-induced side effects must be considered ***(Cohen et al, 2004).*** Antidepressants listed according to decreasing order of CYP3A4 inhibition include: fluvoxamine, nefazodone, fluoxetine, sertraline, TCAs, paroxetine,and venlafaxine ***(DiMartini et al, 2005).*** Due to their tolerability and limited drug-to-drug interactions, SSRIs other than fluvoxamine and fluoxetine are the primary choice for antidepressant therapy. ECT has been significantly more effective in treating depressive symptoms than pharmacotherapy. A recent meta-analysis done on 2003, found that ECT remains effective, as determined by pre- and post treatment scores on depression scales. In patients with resistant depressive illness and severe disease who cannot tolerate additional medications, treatment teams must consider the choice of ECT for complete treatment ***(Jayaram & Casimir, 2005).***

(iii) Anxiety disorders:

The specific emotional responses associated with receiving a transplant range from mild anxiety or worry regarding the viability of the graft, to 'extreme' cases of more pervasive fear of rejection. Post-transplant anxiety can be due to emotional

reactions: to some aspect of the transplant process, to medication side effects, or may represent a specific anxiety syndrome. Pretransplant anxiety disorders may continue post-transplant. The incidence of anxiety symptoms in post-transplant patients is not clear ***(Kong & Molassiotis , 1999).*** Because the symptoms of anxiety and uremia are similar, the diagnosis becomes difficult. Reasons for neglect to detect emotional disorder include the physician's lack of confidence in procedure for detection and sometimes a supposition that if it was discussed the patient may consider that his complaint was not being taken seriously ***(Valderrabano et al, 2001).*** The patient was the best judge of his/her own state. There may, of course, be situations in which the patient deliberately attempts to mislead the clinician by exaggerating the emotional element of his illness but this is not common; alternatively the emotional aspect may be suppressed if it is supposed that this will lead to a diagnosis of psychiatric illness. Large numbers of patients precluded any attempt to conduct enquiry into emotional aspects of illness. Informing the patient inaccurately and perhaps, by stressing the role of somatic illness, aggravates the patient's condition. It was agreed that, in order to make it short it should focus on the two aspects of emotional disorder which the clinician considered had most relevance i.e. anxiety and depression ***(Fallowfield, 1993)***.

(iv) Adjustment disorder:

The transplant literature has highlighted that the receipt of a new kidney may give rise to a new set of stressors, psychosocial challenges and adaptive demands ***(Wainwright et al, 1999).*** These include the need to adhere to a post-transplant regimen with all the potential medication side effects ***(Bunzel et al, 2000).*** Theories of stress and coping, self-regulation, personality, and social processes have shaped the foundation for identifying determinants of adjustment to chronic disease. The socioeconomic variables, culture/ethnicity, and gender-related

processes are more distal contributors to adjustment. Emotionally expressive coping predicts decreased distress. Optimism's emotionally protective effects appear to work by bolstering the use of approach-oriented coping strategies and affective social support, as well as reducing disease-related threat appraisals and avoidant coping. Conceptualization, operationalization (e.g., the use of retrospective reports of positive change), and adaptive consequences of finding meaning and benefit can promote adjustment ***(Tennen & Affleck , 2006).***

Investigators also have begun to examine positive affect and perceived personal growth as indicators of adjustment, for several reasons. First, many individuals with chronic disease report positive adjustment**.** Second, positive adjustment is not simply the absence of distress. A disease that disrupts life does not preclude the experience of joy and individuals who find positive meaning in their illness are not immune to significant distress. Third, positive and negative affect represent relatively distinct dimensions and potentially have different determinants and consequences. Fourth, positive affect may buffer or repair negative mood. For example, the presence of positive affect appears to reduce the magnitude of the relation between pain and negative affect in rheumatic disease patients. Finally, the depiction of chronic disease as guaranteeing unrelenting suffering can provoke inordinate despair in those who face serious disease ***(Calhoun & Tedeschi 2006).***

(v) Post traumatic stress disorders (PTSD):

The threat to life that is inherent in organ transplantation has raised the question of whether organ transplantation could be experienced by recipients as a traumatic event. Before the mid-1990s, it was believed that posttraumatic stress symptoms only occurred in response to extraordinary events such as war, child abuse or molestation, or exposure to natural disaster. However, over the past 10 years, there has been a growing body of literature

demonstrating that a small but significant number of report of posttraumatic stress responses to medically life-threatening situations such as cancer and diabetes ***(Landolt et al, 2003).*** By evaluating 64 renal transplant recipients, 36% of the study population had symptoms consistent with depression and/or posttraumatic stress disorder ***(Wallace et al, 2004)***. There are three main symptoms of post-traumatic stress disorder, including: re-experiencing, or "reliving" the trauma, continuously avoiding reminders of the trauma and emotional numbing. Symptoms of posttraumatic stress disorder (PTSD) after life-threatening medical illness have been found to predict poor outcome in preliminary studies of adults and children. More than 16% of the recepients met all symptom criteria for PTSD ***(Landolt et al, 2003).***

Current clinical efforts are under way to prevent the development of posttraumatic stress responses in medical settings through "trauma-aware" care, which focuses on decreasing the helplessness and fear that transforms a stressful procedure or event into a traumatic one ***(Mintzer et al, 2005).*** Not everyone who experiences a traumatic event, such as the examples above, will develop PTSD. For some people, mental, physical, or social factors may make them more likely to develop PTSD. Some factors that may increase the risk of developing PTSD are previous psychological problems as history of trauma, high levels of mental distress, ineffective coping skills, genetic and other biologic factors, hormone imbalance and limited social and/or emotional support ***(Anxiety Disorder Association of America, 2004).***

(vi) Erectile dysfunctions ED:

Those patients who suffer from end stage renal disease (ESRD) and functioning renal transplants have increased incidence of ED compared to the general population. Studies of patients with ESRD reveal a range between 38%-80%**.** Not only

is their sexual dysfunction more common, but its severity is more advanced with significant numbers of them lacking any sexual activity. Furthermore, the onset of ED in this group of patients may occur at a much younger age ***(Malavaud et al,2000).*** The etiology of ED in the transplant recipients is generally multifactorial. In renal transplant recipients, ED may be related to the transplant surgical procedure ***(Patel & Lees,1999)***. Diabetes mellitus, hyperlipidemia and hypertension may all contribute to damage to the erectile tissue with increased fibrosis and loss of muscle cells. Testosterone in uremic patients is generally depressed either by decreased production or by increased clearance. Hyperprolactinemia, on the other hand, is a common finding in the ESRD patients and the incidence reaches well over 50%. This will generally depress serum testosterone levels, thus leading to loss of libido and ED. This is generally reversed following transplantation ***(Carson & Krishan, 1999)***. Anti-hypertensive agents, by lowering blood pressure, may diminish penile perfusion and cause ED, or due to their pharmacological effect as over expression of alpha sympathetic activity by beta blockers can either lead directly to erectile dysfunction ***(Okabe et al, 1999).*** Psychological factors such as depression and anxiety increases their performance impairment ***(Malavaud et al, 2000).*** There are reports indicating that following successful renal transplantation erectile function can significantly improve. This can be attributed to a sense of well being contributed by correction of their anemia and increased levels of testosterone ***(Burns et al, 1997).***

(vii) Sleep disorders

Sleep problems are not as common among transplant as dialysis patients, but still higher than the general population. Poor sleep seems to be a part of depressive symptomatology. Two surveys revealed a high prevalence of sleep problems of 50% to 80% in ESRD patients on chronic hemodialysis and continuous

peritoneal dialysis ***(Curtin et al, 2002)***. Poor sleepers were younger (mean age: 31 vs 37); less educated (mean years of education: 7.80 vs 9.55), and more depressed (mean BDI scores 13.63 vs 7.18) ***(Eryilmaz et al, 2005).*** Comparing patients on dialysis to patients who had received a renal transplant showed that transplant recipients had fewer symptoms than patients on dialysis ***(Parfrey et al, 1987).*** The prevalence of disturbed breathing during the night is even higher in patients with end-stage renal disease. The causes of this increased prevalence are unknown, and it is likely that the underlying pathomechanisms differ from those responsible in the general population. It was shown that the total number of disordered breathing events seems not to be acutely altered by conventional haemodialysis treatment. On the other hand, the breathing disorder may resolve after successful renal transplantation. This suggests that the pathogenesis involves an unstable breathing pattern, possibly caused by an altered metabolic state and uraemia ***(Bernd et al, 2002).***

Renal transplantation shows a strong, positive influence on restless leg syndrome (RLS) symptoms in hemodialysis patients. Correction of serum phosphate and serum iron can affect RLS in renal transplant patients ***(Azar & Hatefi, 2007).***

The improved quality of sleep observed in patients who had received a renal transplant, who maintain a preserved renal function, definitely rules out the possibility that the retention of 'middle molecules' or, conversely, the loss of some hypno-inducing endogenous substance by dialysis, may determine sleep disorders in hemodialysis patients. Finally, it must be acknowledged that sleep quality could have been influenced by a broad range of negative health behaviors, like alcohol and coffee intake or smoking, but potentially associated with decreased sleep efficiency. Sleep quality in renal transplanted patients is low but may be secondary to different factors, like co-morbidities linked to renal diseases or psychological factors ***(Massimo et al, 2005).***

(viii) Psychosis:

Incidence of psychoses is 7.5/1000 person-years (PY) after renal transplantation compared with 7.2/1000 PY for all patients on chronic dialysis and 9.6/1000 PY for dialysis patients aged 65 yr or younger. Graft loss due to noncompliance is significantly more common after psychosis (9.0% *versus* 3.7% in patients not hospitalized for psychosis; $P < 0.001$) ***(Kevin et al, 2003).*** Psychoses are associated with increased risk of death and graft loss after renal transplantation, possibly mediated through medical non-adherence ***(Kampman et al, 2002).*** Non-adherence as a specified cause of graft loss is significantly more common in patients hospitalized for psychosis than in patients not hospitalized for psychosis ***(Kubo et al, 2001).***

Due to recommendations for screening for mental health–related disorders before transplant, it might be expected that psychosis would be significantly less common after renal transplantation than among dialysis patients ***(Melamed et al, 2005).*** Almost all renal transplant recipients are on maintenance corticosteroids, a known contributor to drug-related psychosis. Patients could have received higher doses of corticosteroids, or had metabolic, infectious, or autoimmune complications, interventions, or stressors that would increase susceptibility to psychotic reactions. Renal insufficiency could result in higher levels of certain medications (particularly calcineurin inhibitors) that could cause psychotic symptoms ***(Lee et al, 2002).*** Commonly used antipsychotic agents such as haloperidol have no significant interactions with either corticosteroids or calcineurin inhibitors, and their dosage is not affected by renal function ***(McDonald et al, 2002).***

(ix) Psychiatric disorders which may cause complications after renal transplant surgery:

1. Substance abuse:

Immunologic graft loss is related to noncompliance with transplant medications, which occurred primarily in recipients with a pretransplantation history of substance abuse and is not related to an inability to pay for medications at the time of graft loss. A change in criteria for acceptance of transplant candidates with a prior history of substance abuse might significantly improve graft survival in this patient population ***(Butkus et al, 2001).***

Patients on dialysis who have a history of multiple episodes of substance abuse can receive transplants successfully. However, these patients need extremely close follow-up. Patients with a history of drug or alcohol abuse should show evidence of participation in a rehabilitation program and successful avoidance of drugs and alcohol. A substance-abuse screen is useful to document abstinence ***(David et al, 2002).*** The experience of most transplantation programs is that 6 months of successful participation in rehabilitation is sufficient to indicate correction of the underlying problem. Psychiatric illness that is controlled by active treatment is not an absolute contraindication to transplantation ***(David et al, 2002).***

2. Eating disorders:

Extremes of Body mass index are associated with significantly worse patient and graft survival, but not with acute graft rejection ***(Meier-Kriessche et al, 2002).*** Development of end-stage renal disease in young women with long duration of eating disorder is reported. Long standing hypokalemia is noted and a renal biopsy in one show chronic tubulo-interstitial disease and non-specific glomerulosclerosis consistent with hypokalemic nephropathy ***(Abdel-Rahman & Moorthy, 1997).***

VI. Quality of life (QoL) in renal transplant patient:

(1) Quality of life (QoL):

(a) QoL as an evolving concept:

The well-being or QoL of a population is an important concern in economics and political sciences. It is measured by social and economic environment. There are many components to well-being. A large part is standard of living, the amount of money and access to goods and services that a person has; these numbers are fairly easily measured. Others like freedom, happiness, art, environmental health, and innovation are far harder to measure. This has created an inevitable imbalance as programs and policies are created to fit the easily available economic numbers while ignoring the other measures that are very difficult to plan for or assess ***(From Wikipedia, the free encyclopedia, 2007).***

QoL is defined in terms of both subjective and objective indices. Traditionally, researchers have focused on the objective indicators. These include such externally manifested and measurable indices as employment status, income, socioeconomic status, and size of support network ***(Bishop & Feist-Price, 2001).*** However, focusing solely on objective indicators has been found to account for only a small amount of the variance in overall QoL ratings ***(Diener et al, 1999).*** There appears to be little correlation between objective indicators and subjective measures of overall well-being, QoL, life satisfaction, or personal happiness ***(Myers & Diener, 1995).*** Such findings have lead to the suggestion that overall QoL is largely regulated by internal mechanisms ***(Gilman et al,2004).***

Researchers have increasingly focused on more subjective components of QoL, including for example, self-reported

attitudes, perceptions, and aspirations. This focus is increasingly prevalent in the rehabilitation counseling literature ***(Noreau & Sheppard, 1995).*** This specific definition of the broader QoL construct has alternately been referred to as subjective QoL and subjective well-being ***(Ormel et al,1999).***

Over the last two decades, researchers in different fields of human study, and using different methodological approaches, have identified a fairly consistent set of core domains as important determinants of QoL. Although the number of domains varies somewhat, those typically identified include:
(a) psychological well-being (defined in such terms as life satisfaction, and freedom from depression or anxiety);
(b) physical well-being;
(c) social and interpersonal well-being;
(d) financial and material well-being;
(e) employment or productivity, and
(f) functional ability ***(Frisch, 1999).***

The World Health Organization defined QoL as "*the individual's perception of their life status concerning the context of culture and value system in which they live and their goals, expectations, standards, and concerns*". It is thus a concept that entails several meanings and relates to the individual's level of satisfaction in different spheres of life ***(Bittencourt et al, 2004).***

(b) QoL in history:

Debate on QoL is millennia-old, with Aristotle giving it much thought in his Nicomachean Ethics and eventually settling on the notion of eudaimonia, a Greek term often translated as happiness, as central. The neologism liveability (or livability), from the adjective *liv(e)able*, is an abstract noun now often applied to the built environment or a town or city, meaning its overall contribution to the quality of life of inhabitants. Understanding quality of life is today particularly important in

health care, where monetary measures do not readily apply. Decisions on what research or treatments to invest the most in are closely related to their effect on a patient's quality of life. The term has often been used, since the 1980s and esp. 1990s, in connection with the presence or absence of so-called victimless crimes, its users in this sense citing the incidence of these to gauge the inherent level of disorder in a society at a particular time. Users of the term in this application — who tend to be political and/or social conservatives — often refer to victimless crimes by the alternate name of "QoL crimes." In conjunction with this, American sociologist James Q Wilson has articulated what he calls the "Broken Window Theory", which asserts that relatively minor problems left unattended (such as public urination by homeless individuals) send a subliminal message that disorder in general is being tolerated, and as a result, more serious crimes will end up being committed (the analogy being that a broken window left unrepaired exudes an image of general dilapidation). Wilson's theories have been expounded by many prominent American mayors. Their cities have instituted so-called zero tolerance policies, i.e. that do not tolerate even minor crimes ***(From Wikipedia, the free encyclopedia, 2007).***

(2)Health-related quality of life (HRQoL):

(a) Concept:

The concept of HRQoL is differentiated from generalized QoL. We need to take account not only of the distress and impairments resulting from poor health, but also of the positive features in the non-health-related areas of their lives that may make them wish to endure the negative aspects of poor health and its treatment side effects ***(Lawton, 1999).***

The measures often used in the study of health care are 'quality-adjusted life years' (QALYs) and the related 'disability-adjusted life years' (DALYs); both equal 1 for each year of full-health life, and less than 1 for various degrees of illness or

disability. Thus the cost-effectiveness of a treatment can be assessed by the cost per QALY or DALY it produces. Assessing treatments in this way avoids the much greater problems associated with putting a monetary value on life, as required in other areas of economics; saying that a treatment *costs* $5000 per QALY (i.e. per year of life) does not say or assume anything about the monetary *value* of a year of life or about the real quality of that life. Whether it is worth living depends on the way of life or lifestyle. It may be questionable whether living two more years alone in a senior living facility is really adding value to life or whether it is depleting it, and disgracing human life and society itself ***(Wikipedia, the free encyclopedia, 2007).***

(b) History:

There is a growing field of research concerned with developing, evaluating and applying QoL measures within health related research (e.g. within randomised controlled trials), especially health service research. Many of these focus on the measurement of health related quality of life (HRQoL), rather than a more global conceptualisation of quality of life. They also focus on measuring HRQoL from the perspective of the patient and thus take the form of self completed questionnaires. The International Society for Quality of Life was founded in response to this research and is a useful source of information on this topic ***(From Wikipedia, the free encyclopedia,2007).***

(3) Quality of life in chronic illness:

(a) Concept:

Chronic illness is defined as a state of disease with irrevocable pathological change, lasting for more than 3 months and eventually causing permanent disability. The incurability of these illnesses degrades the quality of life. People with chronic illness require training, long-term education, observation, care, and rehabilitation. They require long-term treatment and they

increase the national costs for health care. In contrast to persons with congenital disabilities, for whom research suggests that the process of body image and identity development is likely to be similar to that of children without disabilities , persons who experience later-onset chronic illness or acquired disability (CIAD) may find their sense of self suddenly and dramatically challenged or altered ***(Livneh & Antonak, 1997).***

(b) History:

Yet despite the decades of research committed to understanding the dynamics of psychosocial adaptation, a review of the rehabilitation literature suggests a surprising lack of conceptual clarity and limited consensus about such fundamental questions as the nature of the process of adaptation and the appropriate conceptualization of outcome ***(Frank & Elliott, 2000).***

In the course of the decades long exploration of the adaptation to disability process theories from fields of study outside of rehabilitation counseling have frequently contributed to both rehabilitation counseling practice and theoretical understanding. Consistent with this approach, over the last two decades rehabilitation researchers have suggested with increasing frequency that concepts from quality of life (QoL) research may provide an appropriate framework in which to understand the adaptation process ***(Livneh, 2001).***

Early approaches to understanding the process of psychosocial adjustment to CIAD were based on a medical, or psychopathological model, and on the idea that "specific types of disabilities brought about specific types of personality characteristics or psychological problems" ***(Shontz, 2003).*** It was believed that there existed "a direct relationship between the condition and psychosocial impairment" ***(Elliott, 1994).*** Such theories failed, however, to reflect either the individuality or the complexity of the process of adaptation. Further, these early

models neglected to consider the interaction between the individual and his or her social and physical environment. Over time, it was increasingly observed that neither diagnosis nor degree of impairment, irrespective of other factors, served as important predictors of an individual's overall adaptation ***(Williamson et al, 1994).***

Sequential or stage theories, in which adaptation is described in terms of movement through a predictable and terminal series of stages of adjustment, gained increasing acceptance in the 1970's and 1980's ***(Parker et al, 2003)***. The premise of such theories has been questioned in recent years. For example, the concept of a final stage of adjustment has repeatedly been rejected as unrealistic**.** Counselors working from this perspective may come to expect and identify as normal such reactions as depression and denial, and withhold or delay services until the client exhibits these responses according to the counselor's expectations ***(Kendall & Buys, 1998).*** Stage theories have also been criticized as lacking both empirical validity and sufficient complexity to accurately represent the adaptation process, particularly in terms of progressive conditions ***(Elliott, 1994).***

The conceptual framework of adaptation proposed by ***Livneh and Antonak (1997)*** and ***Livneh (2001)*** has been described as illustrative of the differences between early and modern approaches. Livneh and Antonak proposed that four groups of variables influence adaptation outcomes, including (1) social-demographic variables, (2)disability-related variables, (3)personality attributes, (4)and physical/social environment. However, as has been suggested about stage or phase models, ecological models are primarily descriptive rather than predictive. Because they fail to identify the motivating force behind the generally recognized movement toward adaptation, such models have limited utility in terms of informing counseling intervention ***(Shontz, 2003).***

Devins' theory of illness intrusiveness is where chronic illness acts to disrupt an individual's life. This disruption may be interpreted in terms of its impact on well-being. Specifically, chronic illness-induced lifestyle disruptions are proposed to compromise psychosocial well-being by reducing (a) positively reinforcing outcomes of participating in meaningful and valued activities, and (b) feelings of personal control, by limiting the ability to obtain positive outcomes or avoid negative ones. The impact of CIAD on QoL occurs through two mechanisms: by reducing satisfaction and by reducing control. Related to this latter mechanism, Devins further suggested that interventions that increase the individual's control over the CIAD or its treatment will act to ameliorate this impact.This second avenue also has significant implications for clinical intervention ***(Devins & Shnek, 2001).***

The Disability Centrality Model: when an individual experiences significant negative impact from the onset of a CIAD, three potential responses, or outcomes may result: (a) importance change- People experience a shift in the importance of domains so that previously central, but highly affected domains become less central to overall QoL, and peripheral but less affected domains, in which more satisfaction may be realized, become more central; (b) control change- Through processes that increase perceived control, such as self-management, treatment, or environmental accommodation, the negative impact in important domains is reduced and these domains remain central, or; (c) neither change situation occurs, and the person continues to experience a reduced overall QoL ***(Endler et al, 2001***).

Research among persons with chronic illnesses suggests that interventions that increase perceived control are associated with increased psychological and behavioral well-being. A clinically useful distinction has been suggested between primary and secondary control ***(Heckhausen & Schulz, 1995).*** *Primary*

control refers to behaviors or cognitions that are aimed at altering the external environment and efforts to change the environment to meet the changing needs of the individual. *Secondary* control refers to changes in internal cognitive or psychological processes. These changes act to reduce the impact of uncontrollable and aversive realities through mechanisms such as altering expectations, disengaging from or changing unachievable goals, or reframing a negative experience in a positive way ***(Misajon, 2002).***

Two points of general consensus have consistently emerged across theories. The first is that the process of adaptation to the onset of disability involves a *multidimensional* response. The second is that this process is highly *individual* and unique.

(4) Quality of life in chronic renal patients:

(a) Predialysis patients:

Health-related quality of life (HRQoL) of predialysis patients with chronic renal failure (CRF) has received less attention than that of dialysis patients. Among these predialysis CRF patients, the decline in HRQoL was faster than that in the general population, and was associated with an increase in serum creatinine and decline in hematocrit ***(Fukuhara et al, 2007).***

(b) Dialysis patients:

Several recent studies have shown that subjective measure of QoL via self-administered questionnaires is a predictor of hospitalization and mortality in dialysis patients ***(Mapes et al ,2003).*** The task is even more essential when it pertains to patients with ESRD, whose life prolongation via renal replacement therapy has left them with a different and less-well-known life style ***(Kalantar-Zadeh et al, 2001).*** Patients on maintenance hemodialysis or chronic peritoneal dialysis experience decreased QOL and significantly greater rates of protein-energy malnutrition and inflammation, together also

known as malnutrition-inflammation complex syndrome. Moreover, dialysis patients have a worse QOL and higher rates of hospitalization and mortality compared with the normal population ***(Kalantar-Zadeh et al, 2003).*** Although the MICS has been correlated with both hospitalization and mortality rates, there are not many studies to examine whether this syndrome is associated with adverse QoL ***(Isenring,2003).*** Several studies have reported that for the physical functioning is the same or even slightly greater in patients undergoing dialysis compared with the nondialytic population ***(Kalantar-Zadeh et al, 2002).***

Comparing the QoL in patients undergoing maintenance hemodialysis and chronic peritoneal dialysis and it was found that perception of QoL among these two groups was similar before adjustment but that patients undergoing peritoneal dialysis scored higher for mental processes after adjustments ***(Diaz-Buxo et al 2000).*** Assessing nutritional status in 69 patients on maintainance hemodialysis, it was found that more severe degrees of malnutrition were associated with poorer QoL ***(Laws et al 2000).***

Examining the relationship between social functioning and laboratory values and it was found that the social functioning was significantly correlated with serum albumin, creatinine, and hemoglobin. The nutritional and inflammatory state measured by subjective global assessment, body mass index, and laboratory values, including hemoglobin, albumin, and C-reactive protein (CRP) were assessed. Twelve-month prospective hospitalization rates and mortality were used as the clinical outcomes. There were significant inverse correlations between Social Functioning 36 questionaire SF 36 scores and the body mass index percentage**.** Hypoalbuminemic, anemic, and obese patients on maintainance hemodialysis had a worse QoL. Even though obesity, unlike undernutrition, is not generally an indicator of poor outcome in maintainance hemodialysis, obese patients on maintainance hemodialysis were at higher risk for morbidity and

mortality ***(Lowrie et al 2003).***

Studying educative activity with chronic renal patients undergoing an hemodialytic treatment using a model called "awareness education", and providing an improvement in the patient's quality of life data were selected and encoded in six generating topics: chronic renal failure CRF, causes of CRF, hemodialytic treatment, chronic renal patient's limitations and possibilities when undergoing an hemodialytic treatment, renal transplantation and family support. The discussion groups were developed. After that stage, satisfactory changes in the chronic renal patients' quality of life who participated in the teaching-learning process have been observed. This has enabled us to conclude that there has been a development of the naïve consciousness for the criticism about their situation, owing to some changes in their reality ***(Cesarino et al, 1998).***

(5) Quality of life in renal transplant patients:

(a) Donors:

Before a potential living renal donor donates a kidney, he or she undergoes an extensive work-up that includes an interview, physical examination, laboratory tests, and ultrasonography (US). A detailed radiologic examination of the kidneys concludes this work-up. The purpose of the radiologic examination is to determine the number, location, and length of the renal arteries and to detect anomalies or diseases of the renal vasculature. In addition, it is used to screen for renal disease that may have escaped detection during an earlier examination ***(Bakker et al, 1999).*** The transplantation team uses this information to decide whether or not it is safe for the potential donor to undergo removal of one kidney. Furthermore, the team can decide which kidney to use, on the basis of findings in regard to the renal vasculature and on the basis of the presence of abnormalities ***(Shokeir et al, 1994).*** Researchers in a number of studies have assessed the accuracy and feasibility of alternative techniques,

such as gadolinium-enhanced magnetic resonance (MR) angiography or computed tomographic (CT) angiography. These techniques can depict both the arterial and venous vasculature and the collecting system and parenchyma. CT angiography has capabilities similar to those of MR angiography, but CT angiography has a higher resolution than does MR angiography and is, furthermore, technically more robust. The disadvantages of CT angiography, however, are that the patient is exposed to ionizing radiation and that iodinated contrast material is needed. Nonetheless, both MR angiography and CT angiography are less expensive than digital substraction angiography DSA ***(Rankin et al, 2000).***

Few data have been published that can be used to quantify the QoL of renal donors. On the basis of the available qualitative literature, it was assumed the donors were perfectly healthy. Further research into the QoL of renal donors is necessary, however, because preserving the QoL of the donor is a high priority ***(Westlie et al,1993).***

More important for the radiologic examination are the sensitivity and specificity with respect to detection of renal disease, since these influence both costs and QALYs in regard to both donor and recipient. A high transplantation rate is more cost effective from the combined perspective of both donor and recipient because of the benefits to the recipient. Because false-positive results imply no transplantation, a high specificity is required, and DSA has the greatest specificity of 100%. At higher prevalence of disease, sensitivity becomes more important, and for the transplantation rate to be high, a high false-negative rate (implying transplantation), and thus low sensitivity, is required. This explains why MR angiography is the most cost-effective option when prevalence of disease is high and sensitivity for detection of disease is low. With consideration of only the donor's results, it can be seen that the counterintuitive results from the combined perspective are indeed caused by the benefit

to the recipient (both in terms of QALY gains and cost savings) through a higher transplantation rate ***(Beregi et al,1999).***

The choice of how to combine the outcomes of two subjects, in this case, the donor and the recipient, is not as straightforward as it may seem. According to Hippocrates's principle of "first do no harm," we may believe that the donor's survival and quality of life should weigh more in the overall analysis. According to the utility theory applied in the context of cost-effectiveness analysis of health care, all QALYs are considered the same, regardless of who benefits from the gained QALYs. In accordance with this theory, we valued a QALY of a donor the same as a QALY of the recipient. It may, however, be argued, that a QALY of the donor should be weighed more heavily than a QALY of the recipient, because the donor gives up QALYs for the benefit of the recipient. Such an argument would be based on the notion that "losses loom larger than gains". Altruistic motives of the donor were not considered in this model, since the desire to donate is extremely difficult, if not impossible, to quantify ***(Gold et al,1996).***

Most published reports have indicated an improved sense of well being, QoL and a boost in self-esteem for living kidney donors ***(Peters et al, 2000).***

(b) Recipients:

Comparing 65 patients with ESRD with 76 renal transplant recipients using several scales, data from this study suggested that QoL improved after renal transplant ***(Overbeck et al. 2005).***

Using a multidimensional QoL scale (WHOQLBrief.) to assess 100 renal transplant recipients between the ages of 25 to 46, improved QoL was reported for all the recipients with no differences in the physical and psychological domains (***Lazzaretti et al, 2004)***.

In a meta-analysis renal transplantation was shown as generally accepted as the optimal treatment for most patients with

end-stage renal disease (ESRD). The benefits of renal transplantation have usually been described in terms of: a better QoL**,** reduced medical expenses and prolongation of life. The patients' health-related quality of life (HRQoL) has been considered to be a treatment goal in addition to survival. There is ample evidence in support of the relatively higher HRQoL associated with transplantation relative to dialysis treatments ***Cameron et al. (2000)***.

The transplant literature has also highlighted that the recipient of a new kidney may give rise to a new set of stressors, psychosocial challenges and adaptive demands (***Wainwright et al, 1999).*** These include:

1) The need to adhere to a post-transplant regimen with all the potential medication side effects ***(Bunzel et al, 2000).***

2) The specific emotional responses associated with receiving a transplant. These range from mild anxiety or worry regarding the viability of the graft, to 'extreme' cases of more pervasive fear of rejection ***(Kong et al, 1999).***

3) Emotions related to the act of donation, including feelings of gratitude, indebtedness and guilt towards the donor or the donor family, are also frequently reported by transplant recipients. In particular, feelings of guilt were found to be more prominent in LRD transplant recipients irrespective of recipients' age, time elapsed since transplantation, time on dialysis and income. The significantly higher levels of guilt reported by living related donor LRD recipients are understandable given the different relationship between the transplant recipients and donor and their family and the recognition of the sacrifice made by the donor. Most LRD kidney transplant recipients continue to have a relationship with the donor. The sacrifice made by the donor, the physical cost of donation and the perceived ongoing risk of having only one kidney may understandably lead to feelings of

guilt. Although their incidence rates are very low both early post-operative as well as later risks are attached to living donor transplantation. Although the recipient of a LRD kidney may well have increased levels of guilt and there have been some reports of depression and disrupted family relationships after donation to a family member ***(Johnson et al, 1999).***

Although QoL generally improves following transplantation, it is suggested that there are organ-based differences in the recipient's perception of QoL. Liver and kidney-pancreas transplant recipients may be more medically complex and require more intense interventions to achieve the same level of QoL found in nondiabetic renal transplant recipients. The differences in perceptions of QoL among different transplant groups were investigated by Winsett and colleagues using the Sickness Impact Profile and the Center for Epidemiological Studies - Depression instrument. Responses to these instruments were obtained at the time of transplantation and again at 6 months posttransplantation from 125 nondiabetic renal transplant recipients, 52 liver transplant recipients, and 49 kidney-pancreas transplant recipients. Improvements in QoL were reported in all organ groups by 6 months posttransplantation. Kidney and kidney-pancreas transplant recipients had similar QoL outcomes; however, liver transplant recipients reported poorer QoL scores. Liver transplant recipients also reported more depressive symptoms at the time of transplantation, but improved significantly at 6 months posttransplantation. Kidney and kidney-pancreas transplant recipients improved from baseline as well, although they did not report levels of depression at the time of transplantation. This study suggests that although liver transplant recipients are clinically depressed and have a poorer perception of their QoL at the time of transplantation compared with other organ transplant groups, they improve significantly after transplantation and may achieve a similar level of QoL as nondiabetic renal recipients ***(Winsett et al, 2002).***

Living related donors LRD transplants have been considered to offer a number of advantages over cadaver kidney transplants, (1) in particular the reduction in both warm and cold ischaemia times. (2) In addition, the elective nature of the surgery allows a more complete evaluation and preparation of the recipient and donor so the transplant operation can be performed when donor's and recipient's health and preparation for transplantation is optimal. (3) It may permit a shorter delay between starting dialysis and transplantation and also a chance to avoid the potential negative consequences and medical risks of chronic dialysis. Systematically investigated HRQoL in LRD compared with cadaver transplant recipients reported no differences between the two transplant groups. Transplant patients have 2 SDs below the general population mean. Such a score corresponds to the 2.5th percentile of the distribution of HRQoL scores in the general population ***(Valderrabano et al, 2001).***

The clinical outcomes of kidney transplantation such as graft and recipient survival rates have been found to be substantially better when organs are from either related or unrelated living donors ***(European Best Practice Guidelines EBPG Expert Group on Renal Transplantation, 2000).***

Prior to transplant, patients with renal disease demonstrate substantial HRQoL burden, while kidney transplant is associated with substantial HRQoL improvements. The occurrence of rejection is associated with less HRQoL improvement. Endpoint HRQoL values were significantly different ($p<0.05$) by treatment, favoring FK506 ***(Shield et al, 1997).***

As expected, the assessment of QoL using the general WHOQoL-Bref statistically corroborated the notion that renal transplant patients with functioning grafts have a better QoL when compared to those who restarted dialysis after graft loss. The instrument has proved to have good discriminant validity. Bearing in mind that, as renal failure advances, patients start to

have more symptoms that interfere with their daily activities, more advanced stages of renal disease could directly impact in the individual's perception of their QoL. Likewise, the dialysis therapy (either hemodialysis or continuous ambulatory dialysis peritoneal, has also an impact on the assessment of patients' QoL since not all symptoms are eliminated with treatment. Renal transplant, advocated as a treatment that would assure the individual to be back to their daily activities can also be associated with not very satisfactory scores of QoL, particularly in those individuals experiencing acute graft rejection or adverse events resulting from immunosuppressive therapy. Another factor to bear in mind is that after the introduction of more powerful immunosuppressive drugs, patient and graft survival has increased creating a new set of chronic rejection patients who restart dialysis. Restarting dialysis can also have a negative impact on the assessment of QoL, particularly in those who used to be active transplant patients. On the other hand, those individuals who had frequent complications after their transplant may see restarting dialysis as a way of improving their QoL. Thus, the authors believe that the best approach to these patients is applying serial questionnaires for assessing QoL to allow for therapy adequacy and a multidisciplinary approach, and defining specific preventive programs to each particular group aiming at improving their QoL. Serial questionnaire application could be also a way of assessing these programs' efficacy ***(Bittencourt et al, 2004).***

Comparing QoL, graft function, and side effects in 98 renal transplant recipients with different prednisone dosages was done. Recipients were divided into 5 groups: (1) no prednisone, (2) 1 to 5 mg/day, (3) 5 to 7.5 mg/day, (4) 7.5 to l0 mg/day, (5)and more than l0 mg/day.

Three psycho-emotional measures from the Sickness Impact Profile were found to differ in the group receiving the highest prednisone dose (greater than 10 mg/day). This group reported

poorer social interaction, poorer self esteem, and decreased preoccupation with self.

This was not a randomized study. Subjects were selected for the low dose steroid group because they were considered at risk for the side effects of prednisone, including weight gain, infection, hospitalization, posttransplant diabetes, and aseptic necrosis of the hip ***(Hathaway et al, 1996)***.

In a prospective study on the QoL of 113 renal transplant recipients, patients were randomized to an experimental immunosuppressive therapy (cyclosporine with prednisone [n = 64]) or conventional therapy (antilymphocyte globulin, prednisone, and azathioprine [n = 49]). Transplant recipients on cyclosporine scored better on health satisfaction, physical well-being, and selfesteem, than those on conventional therapy, partly because they had fewer side effects ***(Simmons et al, 1988).*** A comparison between symptom occurrences of the subjects receiving a three-drug immunosuppression regimen as opposed to a two-drug immunosuppression was done. An analysis of variance (ANOVA) revealed no statistically significant difference in the mean number of symptoms between these two groups ***(Dew, 1998).*** The side effects of immunosuppressive medication and the resultant distress have been associated with decreases in HRQoL among transplant recipients**.** It should be recognized, however, that despite the observed significant associations between psychological factors and mental HRQoL, a large proportion of the variance in HRQoL remained unexplained. Numerous factors not measured are likely to impinge upon HRQoL in this population **(*DeGeest et al, 2000).***

In an editorial examining QoL in organ recipients, *over 200 articles* were *reviewed* on QoL in transplant recipients. The literature supported improved physical function and global QoL but recipient status in specific functional areas did not equal that of healthy cohorts. A step wise linear regression analysis of QoL,

examining symptom occurrence and symptom distress, revealed that symptom occurrence made a 23.3% contribution to QoL. The most frequently reported symptoms were sleep problems (88%), overeating (82%), fatigue (77%), and changes in body appearance (75%), mood swings (68%), changed facial appearance (67%), swollen ankles (66%), and decreased interest in sex (65%), headache (65%), and increased hair (64%). Comparing this finding to the most frequently reported symptoms, the 5 most distressful symptoms of sleep (75%), overeating (73%), fatigue (70%), changes in body appearance (66%), and mood swings (63%) were also the most frequently reported symptoms. There were moderately negative significant relationships between symptom occurrence and QoL and also between symptom distress and QoL ***(Dew, 1998).***

Measuring rehabilitation 5 to 9 years posttransplant in 237 recipients and comparing those with diabetes (n = 45) to those without diabetes (n = 192) was done. In the non-diabetic group, 32% had excellent physical function, 50% had moderately good physical function with some physical complaints, 8% were in poor condition, and 10% were in chronic rejection. In comparison, no recipient with diabetes was rated in excellent condition, 56% were in moderately good condition, and 44% were in poor condition. Both those with diabetes and those without diabetes revealed improvement in emotional well-being after renal transplantation. Those without diabetes were more favorably adjusted than those with diabetes on measures of selfesteem, independence, and depression. Social well-being showed that both groups were better satisfied with their major life roles posttransplantation. Eighty-two percent of the males without diabetes were employed, but only 23% of the males with diabetes ***(Simmons and Kamstra, 1990)***. No statistically significant differences in QoL scores when subjects with diabetes were compared with subjects without diabetes. However, subjects with diabetes did report more disability (40%) as

opposed to subjects without diabetes (18%), and subjects with diabetes had more reports of depression (60%) as opposed to subjects without diabetes (49%) ***(Dew, 1998).***

No statistical difference in overall symptom occurrence scores among subjects by race or individual symptom ***(Dew,1998).*** But another study showed that although transplantation dramatically improves QoL, some segments of the patient population, namely African-Americans and women, do not benefit to the same extent as others. Nurses need to recognize sociocultural differences in patients and how these differences affect care requirements ***(Johnson et al, 1998).***

The overall symptom occurrence score by age group was not statistically significant. There were no differences on individual symptoms by age group ***(Dew,1998).***

Examining psychological adjustment to illness in 97 renal transplant recipients using the Derogates Psychological Adjustment to Illness Scale (PAIS-SR) showed that there were no significant differences between males and females except in the psychological domain where women reported more stress. ***Hathaway et al (1987)***. Male subjects reported symptoms identical to the symptoms reported by the sample as a whole: sleep problems, overeating, fatigue, changed body appearance, and mood swings. They also reported swollen ankles, headache, decreased concentration, facial changes, and increased hair as frequent symptoms. Female subjects reported sleep problems, changed facial appearance, fatigue, changed body appearance, and overeating as the 5 most frequently occurring symptoms with changes in facial appearance in females replacing overeating as the second symptom in general sample. Female subjects also reported overeating, increased hair, decreased interest in sex, depression, and bruising as frequent symptoms. Bruising was ranked 10th as a symptom by female subjects but was 14th in the

general ranking. A statistical difference by gender was found on 6 symptoms: fatigue, changed facial appearance, changed body appearance, fragile skin, fever, and pain. Female subjects reported these symptoms more frequently than did male subjects ***(Dew, 1998).*** Although clinical trials evaluating the HRQoL in patients after renal transplantation are relatively scarce, the few published papers yielded rather similar results. In general HRQoL improved after successful kidney transplantation compared to dialysis, this effect was more pronounced in male than in female patients ***(Fiebiger et al, 2004).***

Recipients who identified a significant other in their lives were better adjusted. Recipients who were working had significantly higher scores on vocational, domestic, and social adjustment. Although transplant recipients often express greater satisfaction with their life after transplant, this finding is not always reflected in better adjustment on the impact of illness in all domains often affected in chronic illness. The rehabilitation potential is not always achieved ***(Hathaway et al, 1987)***. Renal transplant patients perceived their social support and QoL at moderate to high levels, and there was a significant positive relationship between social support and QoL. In addition, social support was also positively correlated with each domain of QoL at a moderate level. The levels of social support received have also been found to be important in many chronic illnesses and to predict HRQoL in transplant recipients ***(Jofre et al, 1998).***

Objective QoL is positively correlated with ability to work and lack of functional impairment. Also correlated were the subjective QoL indicators of life satisfaction and well being. Factors that negatively affected QoL are older age and increased co-morbidity. Active support of rehabilitation by the treatment center is noted to have a positive effect on QoL. Using ability to work as the indicator for objective QoL, 59.3% of patients on home hemodialysis, 24.7% of patients on peritoneal dialysis, and

74.1 % of transplant recipients were able to work. Younger age, more education, and less comorbidity are related to better QoL after adjustment. Transplant recipients had higher scores on three subjective indicators of QoL well-being, life satisfaction, and psychological effect ***(Evans, 1990).***

By comparing the QoL of 97 renal transplant recipients and 83 patients on dialysis was done by a self-developed questionnaire based on symptom acuity level, wellbeing, general affect, life satisfaction, and subjective quality of life. Symptom score for transplant recipients was 55.1 and 51.6.for patients on dialysis. Using an importance scale with a range of 0 (not important) to 1 (very important), the symptoms identified by transplant patients as important were tiredness, sleep disturbance, joint pain, and headache. The investigators attributed these low scores to unrealistic expectations of the transplant recipients which lowered their perceptions of QoL and made them less satisfied with the outcome ***(Parfrey et al, 1987)***. Using a structured interview guide to determine the expectations of 57 renal transplant candidates regarding their expectation of QoL after transplantation, their expectations included longer life with fewer health problems, fewer symptoms related to dialysis, no dialysis, more dietary freedom, more time for social activity, return to work, resume previous activities, more free time, improved marital and other relationships, and less money spent on health care. QoL for this group was not normal as defined for a general population but continued to have a chronic illness focus ***(Hathaway et al, 1990).***