

### Effects of Long Term Lithium Treatment on Renal Function

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Lithium Carbonate is used as the first line therapy for bipolar disorders; however, some studies have suggested an association between progressive renal impairment and long term Lithium treatment.

The aim of the present study is to assess the renal function of psychiatric patients, who were on long term lithium treatment and to determine an association, if any, between these two factors. Glomerular filtration rate (GFR) is an important index that reflects the functional status of the kidney; therefore, creatinine clearance (CL) was calculated to assess GFR of these patients.

Thirty seven patients of the psychiatry clinic (21 females and 16 males), Teaching Hospital, Peradeniya who were on Lithium for more than one year were included in the study. Written consent was obtained from the patient or care takers (when patient was incapable of giving valid consent). Information on age, sex, dose and duration of Lithium treatment and serum Lithium concentration was collected from the patients' record books. Height, weight, skinfold thickness and serum creatinine concentration were measured. The standard Cockcroft-Gault formula was applied to determine CL. Standard reference values were taken from the National Kidney Foundation, USA.

**Table 1.** Degree of renal impairment according to creatinine clearance values

Degree of renal impairment	No. of patients	Percentage (%)
Stage 1- Normal kidney function (GFR 90-130ml/min)	4	10.8
Stage 2- Mild reduction in kidney function (GFR 60-90 ml/min)	14	37.83
Stage 3- Moderate reduction in kidney function (GFR 30-60 ml/min)	19	51.35
Stage 4- Severe reduction in renal function (GFR 15-30 ml/min)	0	0
Stage 5- Kidney failure (GFR 0-15 ml/min)	0	0
<b>Total</b>	<b>37</b>	<b>100</b>

A mild (37.83%) to moderate (51.35%) decline in the renal function observed in the study population (Table 1) may be attributed to their Lithium usage. Significant negative correlation of 0.509 between serum Lithium levels and GFR ( $p = 0.0013$ ) suggests the possible impact of high serum Lithium levels on renal function. There was a significant effect of serum Lithium on creatinine clearance (ANOVA,  $F = 7.14$ ,  $p = 0.012$ ). Thus, regular monitoring of renal function of patients on long term lithium treatment is recommended. The use of mood stabilisers such as carbamazepine in patients who have already developed renal impairment or those with impending renal impairment due to long term use of lithium, should be considered.