Statistical Analysis

1. We use **Kolomgorov-Smirnov Goodness of Fit for Normality test**. Our data were not normally distributed as indicated also by frequency histogram.

2. We use non parametric tests for comparison between the different groups:

> **Mann-Whitney test** for comparison between two   different groups
>
> **Wilcoxon sign-rank test** for comparison between the same group before and after treatment
>
> **Kruskal-Wallis and one way ANOVA test** for comparison between more than two groups.

3. The correlation between two different variables was done by the **Spearman rank correlation** coefficient (r) this is a nonparametric statistic that does not require the assumption of normality and constant variance of the residuals. This test measures the strength of the linear relationship between two different variables. The value for **r** lies between ─1 and 1, inclusive. If this computed value is : 1, this indicates a complete positive correlation, whereas if the value is ─1, this is a complete negative correlation, and if the value is 0, this indicate no correlation.

4. All measurement values are expressed as mean $\pm$SD and 95% confidence interval (CI).

5. Statistical significance was considered with a level of $P < 0.05$.

6. This statistical work was done using SPSS package (SPSS Corporation, Chicago – Illinois) and Statmost package (Data Most Corporation, Salt Lake City, Utah) (***Guller and DeLong, 2004***).

RESULTS

The study was carried out on two hundred pregnant women in the late third trimester, only 40 cases completed the study, The others escaped, some due to minor side effects like nausea and vomiting during oral hydration, and others due to inability to drink 2L of water over a 2 hour period .

Table I : Clinical characteristics of women with normal and decreased AFI before the study.

The present study showed the following results :

Table I : The clinical characteristics of normal (No = 20)and oligohydramnios groups(No = 20) .

Group / Character	Normal group (No=20) X ± SD	Oligohydramnios group (No=20) X ± SD	Significance
Age	25.6±3.0	24.2±2.5	P< 0.415
Gravidity	3.0±0.8	2.2±1.2	P<0.361
Parity	2.0±0.8	1.0±0.7	P<0.233
Gestational age	37.3±0.8	38.3±0.5	P<0.522
Body weight	75.3± 0.8	74.2±1.2	P<0.321

This table shows that normal and oligohydramnios groups were matched as regard age , gravidity , parity , gestational age and body weight .

Table II : Mean AFI among the group with normal AFI (No = 20) and group with oligohydramnios (No = 20) before maternal hydration.

Pre AFI Study group	X ± SD	T	Significance
Normal AFI (No=20)	11.5±1.4	t1 = 0.44	< 0.001 Ns
Decreased AFI (No=20)	5.6± 0.5	t2 = 8.8	<0.001*

This table shows that there was a significant difference in the mean AFI between

normal and oligohydramnios groups.

X (Mean)

SD (Standard Deviation)

* (Significant)

N (number)

Table III : Mean urine specific gravity among group with normal AFI (No = 20) and group with oligohydramnios (No = 20)before maternal hydration .

pre urine sp.gr Study group	X ± SD	T	Significance
Normal AFI (No=20)	1018.2±2.64	t1 = 2.53	< 0.05
Decreased AFI (No=20)	1017.7± 1.78	t2 = 3.17	<0.01

This table shows that there was a significant difference in the mean urine specific gravity between normal and oligohydramnios groups.

Table IV: The effect of oral maternal hydration on mean AFI in gravidae with normal AFI (No = 10).

AFI Time	X ± SD	X ± SD of the difference	%	paired t	Significance
Pre. ttt	11.2 ± 1.7				
		1.3 ± 0.5	16.0	8.22	<0.001
Post. ttt	12.5± 1.9				

This table shows a highly significant increase in mean AFI after oral maternal hydration in gravidae with prehydration normal AFI.

Table V : The effect of oral maternal hydration on urine specific gravity in gravidae with normal AFI (No =10).

Sp.gr Time	X ± SD	X ± SD of the difference	%	Paired t	Significance
Pre. ttt	1019.1±2.64	4.3 ± 2.1	66.0	6.47	<0.001
Post. ttt	1014.8± 3.47				

This table shows a highly significant decrease in mean urine specific gravity after maternal hydration in gravidae with prehydration normal AFI .

Table VI : The effect of intravenous maternal hydration on mean AFI in gravidae with normal AFI (No =10) .

AFI Time	X ± SD	X ± SD of the difference	%	paired t	Significance
Pre. ttt	11.6± 2.3	1.38 ± 0.4	13.0	10.9	<0.001
Post. ttt	12.98±2.36				

This table shows a highly significant increase in mean AFI after intravenous maternal hydration in gravidae with normal AFI.

Table VII : The effect of intravenous maternal hydration on mean specific urine gravity in gravidae with normal AFI (No=10) .

Sp.gr Time	X ± SD	X ± SD of the difference	%	paired t	Significance
Pre. ttt	1015.6.7±2.68	4 ± 2.2	7.0	5.75	<0.001
Post. ttt	1011.6±1.76				

This table shows a highly significant decrease in mean urine specific gravity after maternal hydration in gravidae with AFI.

Table VIII: The effect of oral maternal hydration on mean AFI in gravidae with decreased AFI (No=10).

AFI / Time	X ± SD	X ± SD of the difference	%	Paired t	Significance
Pre. ttt	5.3 ± 0.4	2.98 ± 0.8	25.0	11.77	<0.001
Post. ttt	8.28± 0.8				

This table shows a highly significant increase in mean AFI after oral maternal hydration in gravidae with oligohydramnios .

Table IX : The effect of oral maternal hydration on mean specific urine gravity in gravidae with decreased AFI (No=10).

Sp.gr Time	X ± SD	X ± SD of the difference	%	paired t	Significance
Pre. ttt	1016.7±2.78				
		4 ± 1.3	41.0	9.72	<0.001
Post. ttt	1012.7±2.56				

This table shows a highly significant decrease in mean urine specific gravity after intravenous maternal hydration in gravidae with oligohydramnios

Table X :The effect of intravenous maternal hydration on mean AFI in gravidae with decreased AFI(No=10) .

AFI Time	X ± SD	X ± SD of the difference	%	paired t	Significance
Pre. ttt	5.1 ± 0.4				
		2.64 ± 0.9	28.0	9.27	<0.001
Post. ttt	7.74± 0.96				

This table shows a highly significant increase in mean AFI after intravenous maternal hydration in gravidae with oligohydramnios.

Table XI: The effect or intervanous maternal hydration on mean specific urine gravity in gravidae with AFI (No=10).

Sp.gr Time	X ± SD	X ± SD of the difference	%	Paired t	Significance
Pre. ttt	1018.7±1.55				
		5.2 ± 1.3	41.0	12.64	<0.001
Post. ttt	1013.5± 2.1				

This table shows a highly significant decrease in mean urine specific gravity after intravenous maternal hydration in gravidae with oligohydramnios.

Table XII : Mean AFI among groups with normal AFI and in groups with decreased AFV after oral and intravenous maternal dehydration .

Post AFI Study group	X ± SD	T	Significance
(A) normal AFI Oral hydration (n=10)	12.5±1.9	t1 = 0.41 t2 = 6.44	>0.05 Non Significant <0.001 highly significant
(B) normal AFI I.V. hydration (n=10)	12.98±2.36	t3 = 7.2 t4 = 5.7	<0.001 highly significant <0.001 highly significant
(C) decreased AFI Oral hydration (n=10)	8.28 ± 0.8	t5 = 4.6 t6 = 1.58	<0.001 highly significant >0.05 Non Significant
(D) decreased AFI I.V. hydration (n=10)	7.74± 0.96		

This table shows a highly Significant increase in mean AFI in groups with normal AFI and groups with decreased AFI after oral and intravenous maternal hydration .

T1= A.VS.B   T2= A.VS.C   T3= A.VS.D

T4= B.VS.C   T5=B.VS.D   T6= C.VS.D

Table XIII : Mean urine specific gravity among groups with normal AFI and groups with decreased AFI after maternal oral and intravenous dehydration .

Post SP.gr Study group	X ± SD	T	Significance
(A) normal AFI Oral hydration (n=10)	1014.8±3.47	t1 = 2.4 t2 = 1.45	<0.05 significant >0.05 Non Significant
(B) normal AFI I.V. hydration (n=10)	1011.6±1.76	t3 = 1.55 t4 = 1.12	>0.05 Non Significant >0.05 Non Significant
(C) decreased AFI Oral hydration (n=10)	1012.7 ± 2.56	t5 = 2.2 t6 = 0.76	<0.05 Significant >0.05 Non Significant
(D) decreased AFI I.V. hydration (n=10)	1013.5± 2.1		

This table shows a Significant decrease in mean urine specific gravity in groups with normal AFI and groups with decreased AFI after oral and intravenous maternal hydration .

T1= A.VS.B   T2= A.VS.C   T3= A.VS.D

T4= B.VS.C   T5= B.VS.D   T6= C.VS.D

Table XIV : Mean AFI of studied groups before and after oral and intravenous maternal hydration .

Delta AFI Study group	X±SD	T	Significance
(A) normal AFI Oral hydration (n=10)	1.3±0.5	t1 = 0.41 t2 = 6.44	>0.05 Non Significant <0.001 Significant
(B) normal AFI I.V. hydration (n=10)	1.37±0.4	t3 = 7.2 t4 = 5.7	<0.001 Significant <0.001 Significant
(C) decreased AFI Oral hydration (n=10)	2.8 ± 0.6	t5 = 4.6 t6 = 1.58	<0.001 Significant >0.05 Non Significant
(D) decreased AFI I.V. hydration (n=10)	2.7± 0.75		

This table shows a Significant change in mean AFI before and after oral and intravenous maternal dehydration .

T1= A.VS.B   **T2= A.VS.C**   **T3= A.VS.D**

T4= B.VS.C   **T5= B.VS.D**   **T6= C.VS.D**

Table XVI :Mean urine specific Gravity of studied groups before and after maternal oral and intravenous hydration.

Delta SP.gr Study group	X ± SD	T	Significance
(A) normal AFI Oral hydration (n=10)	2.8±2.5	t1 = 0.36 t2 = 1.23	>0.05 Non Significant >0.05 Non Significant
(B) normal AFI I.V. hydration (n=10)	1.3±0.8	t3 = 2.7 t4 = 1.66	< 0.01 Significant >0.05 Non Significant
(C) decreased AFI Oral hydration (n=10)	3.9 ± 1.3	t5 = 4.4 t6 = 2.2	<0.001 Significant <0.05 Significant
(D) decreased AFI I.V. hydration (n=10)	5.2± 1.3		

This table shows a Significant change in mean urine specific gravity before and after oral and intravenous maternal dehydration .

T1= A.VS.B   T2= A.VS.C   T3= A.VS.D

T4= B.VS.C   T5= B.VS.D   T6= C.VS.D