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The clinical study of Qarha -E- hazmiyah (Peptic ulcer) and comparative evaluation of unani formulation in its management

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Abstract

Aim
1. To evaluate the effects of Unani medicine in case of peptic ulcer.
2. To evaluate the various etiological factors prevalent in Indian conditions.
3. To assess the therapeutics efficiency of Unani medicine.
4. To provide cheap easily available non complicatory drugs.
5. To prevents various surgical hazards of modern system of medicinal to minimize surgical needs. 60 cases were selected for this study of both sexes with different dietary habits, temperament, *mijaz*, occupation, socio-economical condition blood group and hygiene ages ranging from 20-70 years mean main 31-40 years the criteria of selection of cases in this study was based on previous history, clinical sign and symptoms and clinical examination, inspections, X-Ray barium meals and endoscopy test as per detailed Performa mentioned. Laboratory investigations, CBC, ESR, and general routine investigation were advised. The chief sign and symptoms guide towards the disease a few cases were committed from study before selection as they were having systemic disease as like TB, Ulcerative colitis, Jaundice, Chronic disease and chronic infective disease.

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Materials and Methods: The design of the study was clinical response to the Unani treatment before and after trails by two different groups of Unani medicine and their comparative study for a period of 60 days and a fortnightly follow up. The clinical manifestations of patients were recorded in Performa. Details regarding age, sex, diet, occupation, socioeconomic status, addiction, pain abdomen, site, periodicity etc noted. Natural pain and relation of pain to ingestion of food, history of acidity oh haematemesis and malena were noted. Apart from the above clinical feature the confirmation of the case of *Qarah-e-hazmi* (peptic ulcer) were based on the endoscopic reports. Though the routine investigation were performed such as barium meal x-ray, CBC, ESR, Stool examination etc., as these tests are unreliable, cases only confirmed after endoscopic examinations. Patients were also instructed to avoid ingestion of antacid for 24 hours. Generally, no pre medication is given. The fibroscopic is passed with the patient lying in the lateral position. The instrument is guided over the tongue by the left index finger and patient asked to swallow. When the tip was in the esophagus it is steadily pushed into stomach, keeping the esophagus throughout. The esophagus is examined in detail during initial introduction as well as later during withdrawal of the instrument, as distal end enters the stomach; the entire surface of the gastric mucosa is examined. A view of the fundus of the stomach is obtained by retro flexion of the instrument in 'U' or 'J' shape passing his instrument into duodenum is easily accomplished under direct vision unless the pylorus is too scared to allow passage of the instrument. Entire mucosa of the duodenum is examined for any evidence of ulcer. In this study 60 cases were subjected for endoscopy, performed in different diagnostic centers. In this study two ways of statistical representation are elicited through graphs, photographs and statistical table.

Conclusion: After the completion of the study and interpretation of the data, it can be easily concluded that *qarah-e-hazmi* can be better treated and managed with Unani drugs under the principals of the line of treatment of Unani systems which gives importance in diet control along with medications and diet control restrictions. As per the follow up records we can come to a conclusion that the drugs used for the treatment of *qarah-e-hazmi* has revealed that in majority of the cases along with the healing of ulcers, it had also controlled recurrence of the ulcer *(qarah)*.
The drugs are easily available, economical, their mode of administration was easy as it was palatable. Above all, the surgical intervention can be avoided unnecessarily.

Keywords: Qarha -E- Hazmiyah (Peptic Ulcer), X-Ray barium meals and endoscopy

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Introduction

According to eminent ancient of Unani physician describe the *Qarah-e-Hazmi* (peptic Ulcer) is due to imbalance of humours in the body in which the *safra* (bile) is main factor to produce an ulcer in stomach and in duodenum as well.

The *Dam* and *Balgham* also give rise to ulcer in stomach and duodenum [1].

According to eminent ancient physician, Peptic ulcer is caused by temperament (*mizaj*) changes due to use of hot beverages, spicy food, alcoholic drinks, bad dietary habits, tobacco chewable smoking producing frequent squeeze and retention of humours in the body. *Mizaj* of *meda* upsets stomach due to *su-e-mizaj-har yabis*(hot-dry) causes abnormal accumulation of fluid *khilt-e-safra* (yellow bile) As there are many Unani medicines which are very effective in, not only symptomatic management but also in rooting out the causes and assisting the body in the healing process of the ulcers without any further complications. Thereby avoiding the surgical investigation in the treatment of *Qurah-e-Hazmi*, the Unani system of medicine, based on the theory of *akhlat and mizaj* (temperament) is of vital significance particularly in this disease as it is believed that one of the major cause of *Qurah-e-Hazmi* is hyper acidity, which is normal phenomenon in almost every individual. The disease can be easily controlled and rectified with simple medicines [2, 3].

Materials and Methods

The design of the study was clinical response to the Unani treatment before and after trails by two different groups of Unani medicine and their comparative study for a period of 60 days and a fortnightly follow up. The clinical manifestations of patients were recorded in Performa. Details regarding age, sex, diet, occupation, socioeconomic status, addiction, pain abdomen, site, periodicity etc noted. Natural pain and relation of pain to ingestion of food, history of acidity oh haematemesis and malena were noted. Apart from the above clinical feature the confirmation of the case of *Qarah-e-hazmi* (peptic ulcer) were based on the endoscopic reports. Though the routine investigation were performed such as barium meal x-ray, CBC, ESR, Stool examination etc., as these tests are unreliable, cases only confirmed after endoscopic examinations. Patients were also instructed to avoid ingestion of antacid for 24 hours. Generally, no pre medication is given. The fibroscopic is passed with the patient lying in the lateral position. The instrument is guided over the tongue by the left index finger and patient asked to swallow. When the tip was in the esophagus it is steadily pushed into stomach, keeping the esophagus throughout.

The esophagus is examined in detail during initial introduction as well as later during withdrawal of the instrument, as distal end enters the stomach; the entire surface of the gastric mucosa is examined. A view of the fundus of the stomach is obtained by retro flexion of the instrument in 'U' or 'J' shape passing his instrument into duodenum is easily accomplished under direct vision unless the pylorus is too scared to allow passage of the instrument. Entire mucosa of the duodenum is examined for any evidence of ulcer.

In this study 60 cases were subjected for endoscopy, performed in different diagnostic centers. In this study two ways of statistical representation are elicited through graphs, photographs and statistical table.

Sample Size: 60 patients (30 in each group)

Study Design: Randomised, single blind comparative study.

Criteria for Selection of subjects

Clinically diagnosed patients of uncomplicated peptic ulcer attending moalajat OPD of Deoband Unani medical college, hospital and Research Centre, confirmed by UGIT endoscopy were selected for the study.

Inclusion Criteria

Patients of either sex
10-60 years of age.
Haemodynamically stable and diagnosed patients with the complaints of abdominal pain and tenderness, epigastric burning, nausea and vomiting as main complaints. Ulcer and erosion confirmed by upper GIT Endoscopy.

Exclusion criteria

Patients below the age of 10 years and above 60 years
Patients with diabetes mellitus
Patients with chronic liver disease with chronic kidney disease
Haemetemsis
Malena
Severe respiratory diseases
Severe cardiovascular diseases
Pregnant and lactating women
Patients with malignancy
Patient not willing to participate in study

Investigations

Investigations were carried out to exclude the patients with pathological conditions described under exclusion criteria and establish the safety of the test drug. Following investigations were done in every subject before starting and after completion of the treatment.
CBC
ESR
Stool Examination
Barium meal X-ray
Endoscopic Examination

Written Informed Consent

Patients fulfilling the above mentioned inclusion criteria were provided with the information sheet having details regarding the nature of the study, the drugs to be used, method and duration of treatment, his responsibilities and confidentiality of records etc. These details were also explained verbally to the patients. Patients were given enough time to go through the contents of written informed consent sheet. They were given the opportunity to clear any doubt about the study. After their satisfaction and willingness to participate, the patients were requested to sign the informed written consent form.

Duration of protocol

The duration of protocol was ascertained to 60 days.

Unani Formulation
Group 'A'

0Aslusoos (*Glycyrrhiza glabra liquorice*)
Badiyan (*Foeniculum vulgare*)
Kishneez Khusk (*Coriandrum sativum*)
Gile Armani (Armenian bole)

Group 'B'

Tabhasheer (*Bambusa arundinacea*)
Khurfa (*Portulaca oleracea*)
Dammul akhawain (*Dracaena cinnabari*)
Marwareed (Pearl)

Table 1: Age distribution of patients studied

Age in years	Group A	Group B	Total
20-30	7(23.3%)	8(26.7%)	15(25%)
31-40	4(13.3%)	12(40%)	16(26.7%)
41-50	9(30%)	5(16.7%)	14(23.3%)
51-60	10(33.3%)	5(16.7%)	15(25%)
Total	30(100%)	30(100%)	60(100%)
Mean ± SD	44.10±11.28	39.40±11.00	41.75±11.29

Samples are age matched with P=0.108, student t test

Table 2: Gender distribution of patients studied

Gender	Group A	Group B	Total
Female	10(33.3%)	10(33.3%)	20(33.3%)
Male	20(66.7%)	20(66.7%)	40(66.7%)
Total	30(100%)	30(100%)	60(100%)

Samples are gender matched with P=1.000, Chi-Square test

Table 3: Religion distribution in two groups of patients studied

Religion	Group A	Group B	Total
Hindu	14(46.7%)	15(50%)	29(48.3%)
Muslim	15(50%)	15(50%)	30(50%)
SK	1(3.3%)	0(0%)	1(1.7%)
Total	30(100%)	30(100%)	60(100%)

P=1.000, Not Significant, Fisher Exact Test

Table 4: Socio Economic Status distribution in two groups of patients studied

Socio Economic Status	Group A	Group B	Total
I	10(33.3%)	13(43.3%)	23(38.3%)
II	12(40%)	13(43.3%)	25(41.7%)
III	5(16.7%)	4(13.3%)	9(15%)
IV	3(10%)	0(0%)	3(5%)
Total	30(100%)	30(100%)	60(100%)

P=0.401, Not Significant, Fisher Exact Test

Table 5: Occupation distribution in two groups of patients studied

Occupation	Group A	Group B	Total
House Wife	9(30%)	8(26.7%)	17(28.3%)
Business Man	5(16.7%)	10(33.3%)	15(25%)
Labour	8(26.7%)	5(16.7%)	13(21.7%)
Employed	7(23.3%)	4(13.3%)	11(18.3%)
Student	1(3.3%)	2(6.7%)	3(5%)
Unemployed	0(0%)	1(3.3%)	1(1.7%)
Total	30(100%)	30(100%)	60(100%)

P=0.492, Not Significant, Fisher Exact Test

Table 6: Dietary Habits distribution in two groups of patients studied

Dietary Habits	Group A	Group B	Total
Irregular	23(76.7%)	25(83.3%)	48(80%)
Regular	7(23.3%)	5(16.7%)	12(20%)
Total	30(100%)	30(100%)	60(100%)

P=0.519, Not Significant, Chi-Square Test

Table 7: Pain in Abdomen distribution in two groups of patients studied at different points of time

Pain in Abdomen	Day 0	Day 15	Day 30	Day 45	Day 60	% difference
Group A (n=30)						
Absent	0(0%)	2(6.7%)	9(30%)	18(60%)	21(70%)	70.0%
Present	30(100%)	28(93.3%)	21(70%)	12(40%)	9(30%)	-70.0%
Group B (n=30)						
Absent	0(0%)	0(0%)	5(16.7%)	18(60%)	27(90%)	90.0%
Present	30(100%)	30(100%)	25(83.3%)	12(40%)	3(10%)	-90.0%
P value	1.000	0.492	0.222	1.000	0.053+	-

Chi-Square/Fisher Exact Test

Table 8: Epigastric burning sensation- distribution in two groups of patients studied at different time points

Epigastric Burning Sensation	Day 0	Day 15	Day 30	Day 45	Day 60	% difference
Group A (n=30)						
Absent	0(0%)	1(3.3%)	7(23.3%)	13(43.3%)	20(66.7%)	66.7%
Present	30(100%)	29(96.7%)	23(76.7%)	17(56.7%)	10(33.3%)	-66.7%
Group B (n=30)						
Absent	0(0%)	14(46.7%)	23(76.7%)	27(90%)	27(90%)	90.0%
Present	30(100%)	16(53.3%)	7(23.3%)	3(10%)	3(10%)	-90.0%
P value	1.000	<0.001**	<0.001**	<0.001**	0.028*	-

Chi-Square/Fisher Exact Test

Discussion

Age: Peptic ulcer may be found in any age group, from adolescence to the geriatric age but it is more common in third and forth decades of life. In the present study youngest patient was 20 years old and the oldest was 60 years, with maximum number of patients 16 being in 31 to 40 years while second majority 15 was in the age group of 51 to 60 years. This study correlates with findings of Avijeet *et al.* recoded maximum number of patients in 31 to 40 years age category. Mean age of patient in present study was 44 years for A group and 39 years (Table 1) however Avijeet *et al.* revealed mean age as 37 years.

Sex: Peptic ulcer tends to affect males more commonly than females. There is marked variation in the sex ratio with geographical locations suggesting that probably habits and environmental factors, in addition to diet, have a role to play in the causation of peptic ulcer. In the present trial 40 of them were male and 20 of them were female (Table 2). Sex ratio male to female was 2:1. Most of the study findings concluded that the male preponderance of this disease.

Religion: Out of 60 patients, 30 patients were of Muslim community, 29 patients were from Hindu and 1 patient was from Sikh community. Among these patients most patients were using mixed dietary habit i.e. full of spicy food which aggravates peptic ulcer formation.(Table 3) *Qarahe* usually occurs in mixed dietary habit which contains more spice and oil this is also coincides with *Ibn Sina'* view.

Socio Economic Status

It is observed from present study that the maximum patients were from Upper (I) (23 Patients) and Upper Middle (II) (25) income group i.e. 80% recorded in high income group. This correlates that higher class society lives in more stressful conditions which promotes peptic ulceration. (Table 4)

Occupation

In present study maximum patients were froim such occupations whichj belongs with stress full works are full of anxiety which promotess peptic ulcerations. (Table 5)

Diet

Out of 60 patients, 48 patients were of irregular dietary habit while only 12 were of regular dietary habit. Irregular diet patterns aggravate peptic ulcerations which favours present study. (Table 6)

Objective Parameters

The objective parameters (Pain in abdomen, Epigastric burning sensation, Nausea and Vomiting, Ulcer number and size) were recorded at baseline, after 15th day, 30th day, 45th day and 60th day and analyzed statistically before and after treatment for each group.

After doing statistical analysis of group A Patients and group B Patients for Epigastric burning sensation, nausea and vomiting and ulcer size and number, Drugs of group B shows highly significant role in aforementioned objective parameters.

Drugs of group B also shows significant role in the management of peptic ulcer but when we compare between these two groups group B drugs shows far more significant than drugs of group A.

For statistical analysis of objective parameters (Pain in abdomen, Epigastric burning sensation, Nausea and Vomiting, Ulcer number and size) of both groups Chi-Square/Fisher Exact Test was used in which group B drugs we are found more significant than group A drugs.

In this study for statistical analysis of pain in abdomen VAS (Visual Analogue Scale) 0-10 for (Intensity of abdominal pain) and 5PLS (5 point Likert Scale) for (Severity of symptoms) was used which as follows;

Visual Analog Scale (VAS)

Visual Analogue Scale (VAS) score adopted for the assessment intensity of pain (Baseline: 4-8 and Pain relief <4).

Five Point Likert Scales (5PLS)

This severity scale was used to measure the severity of the symptoms such as epigastric pain, epigastric burning, postprandial fullness /early satiety, nausea and vomiting.
1. No complaints
2. Few complaints
3. Moderate complaints
4. Many complaints; and
5. 5-serious complaints that significantly affect daily life (Base line- 3, 4, 5 and Symptom relief -1, 2)

In this study VAS (for Intensity of abdominal pain) of group A was (8.17±1.23) Mean and SD respectively at base line and after completion of study VAS was (3.73±1.44) Mean and SD respectively, at *P*<0.001 which was statistically highly significant (by using Chi-Square/Fisher Exact Test).

In this study VAS (for Intensity of abdominal pain) of group B was (8.07±1.23) Mean and SD respectively at base line and after completion of study VAS was (2.00±1.39) Mean and SD respectively at *P*<0.001 which was also statistically highly significant (by using Chi-Square/Fisher Exact Test).

When we compare group A and group B for VAS after completion of treatment that was (3.73±1.44) for group A and (2.00±1.39) for group B i.e. group B is far more significant than group A when analysed statistically (by using Chi-Square/Fisher Exact Test).

In this study 5PLS (5 point Likert Scale) for (Severity of symptoms)of group A was (4.17±0.79) Mean and SD

respectively at base line and after completion of study 5PLS was (2.93±0.78) Mean and SD respectively, at *P*<0.001 which was statistically highly significant (by using Chi-Square/Fisher Exact Test).

In this study 5PLS (5 point Likert Scale) for (Severity of symptoms) of group B was (4.37±0.61) Mean and SD respectively at base line and after completion of study 5PLS (5 point Likert Scale) for (Severity of symptoms) was (1.60±0.56) Mean and SD respectively at *P*<0.001 which

was also statistically highly significant (by using Chi-Square/Fisher Exact Test).

When we compare group A and group B for 5PLS (5 point Likert Scale) for (Severity of symptoms) after completion of treatment that was (2.93±0.78) for group A and (1.60±0.56) for group B i.e. group B is far more significant than group A when analysed statistically (by using Chi-Square/Fisher Exact Test).

Table 9: Nausea and vomiting distribution in two groups of patients studied at different study points

Nausea and vomiting	Day 0	Day 15	Day 30	Day 45	Day 60	% difference
Group A (n=30)						
Absent	24(80%)	24(80%)	24(80%)	26(86.7%)	27(90%)	10.0%
Present	6(20%)	6(20%)	6(20%)	4(13.3%)	3(10%)	-10.0%
Group B (n=30)						
Absent	25(83.3%)	25(83.3%)	27(90%)	29(96.7%)	29(96.7%)	13.4%
Present	5(16.7%)	5(16.7%)	3(10%)	1(3.3%)	1(3.3%)	-13.4%
P value	0.739	0.739	0.472	0.353	0.612	-

Chi-Square/Fisher Exact Test

Table 10: Ulcer Number

Ulcer Number	Before Treatment	After Treatment	% difference
Group A (n=30)			
0	0(0%)	18(60%)	60.0%
1	7(23.3%)	8(26.7%)	3.4%
2	8(26.7%)	3(10%)	-16.7%
3	6(20%)	1(3.3%)	-16.7%
4	8(26.7%)	0(0%)	-26.7%
5	1(3.3%)	0(0%)	-3.3%
6	0(0%)	0(0%)	0.0%
Group B (n=30)			
0	0(0%)	29(96.7%)	96.7%
1	7(23.3%)	0(0%)	-23.3%
2	6(20%)	1(3.3%)	-16.7%
3	6(20%)	0(0%)	-20.0%
4	4(13.3%)	0(0%)	-13.3%
5	6(20%)	0(0%)	-20.0%
6	1(3.3%)	0(0%)	-3.3%
P value	0.286	<0.001**	-

Chi-Square/Fisher Exact Test

Table 11: Ulcer Size

Ulcer Size	Before Treatment	After Treatment	% difference
Group A (n=30)			
<5	3(10%)	27(90%)	80.0%
5-10	26(86.7%)	3(10%)	-76.7%
>10	1(3.3%)	0(0%)	-3.3%
Group B (n=30)			
<5	2(6.7%)	29(96.7%)	90.0%
5-10	19(63.3%)	1(3.3%)	-60.0%
>10	9(30%)	0(0%)	-30.0%
P value	0.020*	0.612	-

Chi-Square/Fisher Exact Test

Table 12: Ulcer Size

Ulcer Size	Group A	Group B	Total	P value
Before Treatment	6.87±1.87	9.00±3.44	7.93±2.95	0.004**
After Treatment	1.33±1.83	0.33±1.30	0.83±1.65	0.017*

Table 13: VAS distribution in two groups of patients studied at different study points

VAS	Day 0	Day 15	Day 30	Day 45	Day 60	% difference
Group A (n=30)						
0	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0.0%
1-3	0(0%)	0(0%)	0(0%)	2(6.7%)	12(40%)	40.0%
4-6	3(10%)	9(30%)	15(50%)	22(73.3%)	18(60%)	50.0%

7-10	27(90%)	21(70%)	15(50%)	6(20%)	0(0%)	-90.0%
Group B (n=30)						
0	0(0%)	0(0%)	0(0%)	0(0%)	6(20%)	20.0%
1-3	0(0%)	0(0%)	2(6.7%)	10(33.3%)	20(66.7%)	66.7%
4-6	4(13.3%)	11(36.7%)	20(66.7%)	20(66.7%)	4(13.3%)	0.0%
7-10	26(86.7%)	19(63.3%)	8(26.7%)	0(0%)	0(0%)	-86.7%
P value	1.000	0.785	0.072+	0.002**	<0.001**	-

Chi-Square/Fisher Exact Test

Table 14: VAS-Comparison in two groups of patients studied

VAS	Group A	Group B	Total	P value
Day 0	8.17±1.23	8.07±1.23	8.12±1.22	0.754
Day 15	7.17±1.15	7.13±1.38	7.15±1.26	0.919
Day 30	6.53±1.01	5.47±1.38	6.00±1.31	0.001**
Day 45	5.23±1.25	4.03±1.33	4.63±1.41	0.001**
Day 60	3.73±1.44	2.00±1.39	2.87±1.65	<0.001**

Table 15: 5PLS distribution in two groups of patients studied at different study points

5PLS	Day 0	Day 15	Day 30	Day 45	Day 60	% difference
Group A (n=30)						
1	0(0%)	0(0%)	0(0%)	0(0%)	1(3.3%)	3.3%
2	0(0%)	0(0%)	0(0%)	0(0%)	7(23.3%)	23.3%
3	7(23.3%)	8(26.7%)	11(36.7%)	12(40%)	15(50%)	26.7%
4	11(36.7%)	17(56.7%)	15(50%)	15(50%)	7(23.3%)	-13.4%
5	12(40%)	5(16.7%)	4(13.3%)	3(10%)	0(0%)	-40.0%
Group B (n=30)						
1	0(0%)	0(0%)	0(0%)	0(0%)	13(43.3%)	43.3%
2	0(0%)	0(0%)	2(6.7%)	14(46.7%)	16(53.3%)	53.3%
3	2(6.7%)	11(36.7%)	17(56.7%)	16(53.3%)	1(3.3%)	-3.4%
4	15(50%)	17(56.7%)	11(36.7%)	0(0%)	0(0%)	-50.0%
5	13(43.3%)	2(6.7%)	0(0%)	0(0%)	0(0%)	-43.3%
P value	0.223	0.498	0.044*	<0.001**	<0.001**	-

Chi-Square/Fisher Exact Test

Table 16: 5PLS- Comparison in two groups of patients studied

5PLS	Group A	Group B	Total	P value
Day 0	4.17±0.79	4.37±0.61	4.27±0.71	0.279
Day 15	3.90±0.66	3.70±0.60	3.80±0.63	0.224
Day 30	3.77±0.68	3.30±0.60	3.53±0.68	0.006**
Day 45	3.70±0.65	2.53±0.51	3.12±0.83	<0.001**
Day 60	2.93±0.78	1.60±0.56	2.27±0.95	<0.001**

Conclusion

After the completion of the study and interpretation of the data, it can be easily concluded that *qara-e-hazmi* can be better treated and managed with Unani drugs under the principals of the line of treatment of Unani systems which gives importance in diet control along with medications and diet control restrictions. As per the follow up records we can come to a conclusion that the drugs used for the treatment of *qarah-e-hazmi* has revealed that in majority of the cases along with the healing of ulcers, it had also controlled recurrence of the ulcer *(qarah).*

The drugs are easily available, economical, their mode of administration was easy as it was palatable. Above all, the surgical intervention can be avoided unnecessarily.

With the above few lines I would like to concludes my study on *qarah-e-hazmi* (peptic ulcer) and add that much work has yet to be done in consonance with the changing times and use of scientific methods in alleviating the sufferings of the humanity with classical herbal medicines

Statistical Methods

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean ± SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance. The following assumptions on data is made,

Assumptions

1. Dependent variables should be normally distributed.
2. Samples drawn from the population should be random.

Cases of the samples should be independent

Student t test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters. Leven`s test for homogeneity of variance has been performed to assess the homogeneity of variance.

Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups, Non-parametric setting for Qualitative data analysis. Fisher exact test used when cell samples are very small.

Significant figures

+ Suggestive significance (P value: $0.05 < P < 0.10$)

* Moderately significant (P value: $0.01 < P \leq 0.05$)

** Strongly significant (P value: $P \leq 0.01$)

Statistical software

The Statistical software namely SPSS 18.0, and R environment ver.3.2.2 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

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