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A PILOT STUDY TO EVALUATE HEALTH RELATED QUALITY OF LIFE IN PREGNANT WOMEN WITH IRON DEFICIENCY ANAEMIA IN TERTIARY HOSPITAL IN NORTH INDIA

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ABSTRACT

Objective: In pregnant woman, presence of iron deficiency anemia (IDA) is associated with a low quality of life (QOL). However, till date no study has evaluated the effect of mild to moderate anaemia on QOL in pregnant females. In this regard, this is the first study to evaluate the HRQOL in pregnant women with IDA and factors associated with the overall QOL. **Methods:** We screened a total of 1270 participants, out of which 1170 participants were excluded. Finally, 100 participants fulfilled inclusion /exclusion criteria were included in the study. Data of all these 100 patients (50 in anaemia and 50 in control group) were collected and analysed. We evaluated HRQOL using three QOL measurement scales: SF-36, FACIT-fatigue and the FACT-An questionnaire. **Results:** No difference was found between two groups with regards to FACIT-Fatigue and FACT-An score. While using the SF-36 scale, control arm showed better QOL scores compared to test group (pregnant woman with IDA). Thus this finding highlights the relatively poorer QOL in pregnant anaemics with mild-moderate IDA. **Conclusion:** This study expanded our understanding of the QOL in pregnancy in relation to anemia. More studies with larger sample size are needed to further elucidate the impact of anemia in pregnancy.

KEYWORDS

Pregnancy, IDA, HRQOL, SF-36, FACIT-fatigue and FACT-An questionnaire.

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INTRODUCTION

As pregnancy is associated with emotional and physical changes compared to the non-pregnant state, a vast change in quality of life (QOL) parameters can be seen during pregnancy. Even in uncomplicated pregnancies, the changes in physical

and emotional domains can contribute to poorer QOL and has potential to affect maternal and infant health¹. Regarding QOL in pregnant women, few studies have been published in the literatures^{2,3}. The impact of Iron deficiency anaemia (IDA) on health related QOL in pregnant women during the last trimester of pregnancy has been evaluated in turkese population⁴.

However, till date no study has evaluated the effect of “mild to moderate anaemia” on QOL in pregnant females (>20 weeks of gestation) without any other concomitant medical or surgical disorder. In this regard, this is the first study to evaluate the same in pregnant females (>20 weeks of gestation) with mild to moderate anaemia without any concomitant medical or surgical disorder.

Again, regarding data of QOL of anaemic pregnant females from Indian population, to the best of our knowledge there is no study published in the literature primarily exploring the QOL in anaemic pregnant women in India. However studies conducted on Indian women exploring “oral health” related QOL during pregnancy showed significantly poorer HRQOL among pregnant women⁵. Understandings of QOL have been shown to vary across different countries and people⁶. Lack of adequate studies in this field necessitates further research to evaluate the influence of anaemia on the QOL of pregnant women, including her level of fatigue and ability to cope with stress owing to pregnancy. Therefore, the present study was planned to evaluate the HRQOL in pregnant women with IDA and factors associated with the overall QOL in a tertiary care hospital in North India.

MATERIAL AND METHODS

Setting and Participants

The present study is a pilot study to evaluate QOL in pregnant women with IDA attending the antenatal clinic (ANC) of department of Obstetrics and Gynaecology (OBG), PGIMER, Chandigarh, India and meeting the predefined inclusion/exclusion criteria will be included in the present study. Eligible participants will be divided into 2 groups as follows:

Group 1: Married pregnant women (uncomplicated), N=50

Inclusion criteria

Age 20-40 years

Willing to provide an informed consent to participate in study

Without any medical/ surgical disorder

Exclusion criteria

Not willing to provide an informed consent

With any comorbid medical/ surgical disorder

Group 2: Married Pregnant women with anaemia, N=50

Inclusion criteria

Age 20-40 years

Period of gestation >20 weeks.

Having mild anaemia (Hb 100-109gm/l) and moderate anemia (Hb 70-99gm/l)

Willing to provide an informed consent

Without any medical/ surgical disorder

Exclusion criteria

Severe anaemia (Haemoglobin level <70gm/l)

Not willing to provide an informed consent

With any other medical/ surgical disorder

Study design: Observational cross sectional study.

Data collection

Data was collected via interview with eligible subjects during their scheduled visits in the OPD at the institute. Each woman was asked to sign a written informed consent before participating in this study. Confidentiality and privacy was ensured in all subjects participating in study at each stage. Before each interview, information sheet explaining the study purposes and overall procedure throughout this study in brief written in plain language was given to each participant. The participants was free to ask any question related to project at any time and that they could withdraw from the study if they felt uncomfortable during or after the interviews. The study participants interviewed using the HRQOL questionnaires once during their routine OPD visit. The following questionnaires were administered to the participants: Short form (SF)-36, Functional assessment for cancer therapy-Anaemia (FACT-An), Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-Fatigue).

Short form (SF)-36⁷

Short Form Health Survey (SF-36) is a set of generic, coherent, and easily administered quality-of-life measures. These measures rely upon patient self-reporting and are now widely utilized by managed care organizations and by Medicare for routine monitoring and assessment of care outcomes in adult patients⁷.

It evaluates eight domains of health:

Physical functioning

Bodily pain

Role limitations due to physical health problems

Role limitations due to personal or emotional problems

Emotional well-being

Social functioning

Energy/fatigue

General health perceptions

Interpretation

All items are scored so that a high score defines a more favourable health state. In addition, each item is scored on a 0 to 100 range so that the lowest and highest possible scores are 0 and 100, respectively. Scores represent the percentage of total possible score achieved. Then the items in the same scale are averaged together to create the 8 scale scores. Items that are left blank (missing data) are not taken into account when calculating the scale scores. Hence, scale scores represent the average for all items in the scale that the respondent answered.

Functional assessment for cancer therapy-Anaemia (FACT-An)⁸

The Functional Assessment of Cancer Treatment-Anemia (FACT-An) is a disease-specific scale that has been widely used to measure the effect of anemia on the QOL of cancer patients. The Functional Assessment of Cancer Therapy (FACT) Measurement System is a comprehensive compilation of questions which measure health-related QOL in patients with cancer and other chronic illnesses.

The FACT-Anaemia scale (FACT-An) consists of FACT-G plus Anemia subscale to assess anemia-related HRQOL concerns and was developed in 1994. The FACT-An is an extension of the FACT-G questionnaire.

The FACT-G consists of a core set of 27 generic QOL questions. The core questions measure four major aspects of QOL:

Physical well-being (PWB, seven items),

Social-family well-being (SWB, seven items),

Emotional well-being (EWB, six items) and

Functional well-being (FWB, seven items).

The FACT-An consists of these four FACT-G subscales and a 20-item FACT Anaemia subscale. Of the 20-item FACT Anemia subscale items, 13 relate to fatigue⁸.

Scoring

Each FACT-An item is scored on a 0-to-4-point likert scale, giving a range of scores from 0 to 188.

Interpretation

Higher scores indicate better HRQOL.

Functional Assessment of Chronic Illness Therapy- Fatigue (FACIT-Fatigue)⁹

The Functional Assessment of Chronic Illness Therapy (FACIT) Measurement System is a collection of QOL questionnaires targeted to the management of chronic illness including cancer. It is considered appropriate for use with patients with any form of cancer and has also been used and validated in older chronic illness conditions (e.g., HIV/AIDS, multiple sclerosis) and in the general population (using a slightly modified version). There are currently over 250 questions in the FACT item bank. The FACIT fatigue questionnaire was developed to assess fatigue associated with anaemia.

FACIT-Fatigue scale is a 13-item questionnaire that assess self-reported fatigue and its impact upon daily activities and function. It was developed to meet a growing demand for the precise evaluation of fatigue associated with anaemia in cancer patients.

FACIT-F score domains

The FACIT-F covers

Physical fatigue (e.g., feeling tired),

Functional fatigue (e.g., trouble finishing things),

Emotional fatigue (e.g., frustration), and

Social consequences of fatigue (e.g., limits social activity).

Scoring

The responses to the 13 items on the FACIT fatigue questionnaire are each measured on a 4-point Likert

scale. Thus, the total score ranges from 0 to 52. High scores represent less fatigue.

Interpretation

For all FACIT scales and symptom indices, the higher the score the better the QOL.

Statistical considerations

Statistical analysis was performed using SPSS. In case of normally distributed continuous data, data was represented as mean±SD. Continuous data not following normal distribution was represented as median (range). In case of categorical data, data was presented as percentage. Relationship between two continuous variables was evaluated using correlation (Pearson's or spearman depending upon distribution of the data). While evaluating the relationship between a normally distributed continuous variable and the grouping variable, independent t test was used. In case data is not normally distributed, Mann Whitney U test. We considered $p < 0.05$ as statistically significant. Linear regression was used to determine the predictors of quality of life (SF-36 score in our case). The model was evaluated by F-test. Collinearity was evaluated using tolerance and VIF matrix. Goodness of fit of the model was evaluated by R^2 value.

Ethics approval

The study was started after approval by Institutional Ethics Committee at PGIMER, Chandigarh (letter no. INT/IEC/2019/001540). The study was also registered with Clinical Trials Registry of India (CTRI/2019/08/020740). Informed consent was obtained from each participant before enrolling in the study. Each of the participants was informed that they were free to withdraw from the study at any point throughout the study. Confidentiality and privacy of participants were maintained throughout the study.

RESULTS AND DISCUSSION

Participant details

We screened a total of 1270 participants, out of which 1170 participants were excluded due to non-fulfilment of inclusion/exclusion criteria ($n=1135$) and 35 participants declined to participate. Finally, 100 participants fulfilled inclusion /exclusion criteria were included in the study. Data of all these 100

patients (50 in the anaemia group and 50 in the control group) were collected and all the 100 cases were analysed. The details of the screening and participant selection process are showed in Figure No.1.

Baseline socio-demographic characteristics

The details of baseline characteristics of the included population are showed in Table No.1. The average age in the anaemia group (test group) was 26.76 ± 4.04 years. 76% participants from the anaemia group were inhabitants of rural area. Most of the participants were educated (12th pass 34%, graduate 32%, 10th pass 16%, post graduate 10% and rest 8% studied up to 8th standard or below). All the participants were housewives. Most of the participants were Hindu (70%), which was followed by Sikh (24%) and Muslim population (4%). Mostly had monthly income in the range of Rs. 15001-Rs. 35000 (66% of participants). Mean BMI in the anaemia group was 23.18 ± 2.20 .

The average age in the control group were 27.58 ± 3.59 years. 62% of the participants were inhabitants of rural area. Most of the participants were educated (Graduate 56%, 12th pass 24%, post-graduate 8%, 10th pass 8% and rest 8% studied up to 8th standard or below). 90% of the participants were housewives. Most of the participants were Hindu (78%), which was followed by Sikh (16%) and Muslim population (4%). Most had monthly income up to Rs. 15000 per month (46% of participants). Mean BMI in the control group was 23.48 ± 2.50 .

Both the groups were similar in terms of age, education, occupation, crowding index, random blood sugar level (RBS), glycosylated haemoglobin (HBA1c) level, systolic blood pressure (B.P.) and diastolic blood pressure (B.P.).

Haemoglobin level in the anaemia group were 9.67 ± 0.62 gm/dl, which was significantly lower compared to the control group 12.22 ± 0.47 ($p < 0.05$).

Baseline obstetrical characteristics of groups

Both the groups were comparable in terms of age of first pregnancy (24.90 ± 2.75 years in the anaemia group and 25.82 ± 2.63 years), gravida (1.62 ± 0.98 in the anaemia group and 1.50 ± 0.76 in the control group) and period of gestation (185.90 ± 41.10 days in the anaemia group and 194.86 ± 38.28 days in the

control group). In the anaemia group, 60% were in the second trimester and 40% were in the third trimester, while, in the control group, 46% were in the second trimester and 54% were in the third trimester. Data showed in Table No.1.

Effect of anaemia on quality of life

Quality of life: SF-36

Participants in the Anaemia group showed significantly lower level of physical functioning (mean domain score 76.8 ± 13.04 in the control group versus 62.2 ± 17.2 in the test group, $p < 0.001$). Similarly, lower "role limitations due to physical health" domain score was seen in the anaemia group compared to the control group [domain score 100(0-100) in the control group and 25(0-100) in the test group, $p < 0.001$]. Regarding "role limitations due to emotional problems", the control group had higher QOL ($p < 0.001$) score [median score 100 (Range 0-100)] compared to the test group [median score 33.3 (Range 0-100)]. In the social functioning domain, the control group had higher QOL score (82.25 ± 15.98) compared to the test group (72.25 ± 19.11) and the difference between the two groups was statistically significant ($p = 0.006$). In the vitality domain (Energy/Fatigue), higher quality of life score was found in the control group (67.4 ± 14.5) compared to the test group (59.7 ± 15.98) and the difference between the two groups was statistically significant ($p = 0.013$).

Regarding pain domain the QOL was higher in the control group (mean QOL score 85.7 ± 14.65) compared to the test group (mean QOL score 71.4 ± 24.8). Similar findings were also found in the health change domain, where the control group showed higher QOL score (59.5 ± 18.8) compared to the test group (46 ± 15) and the difference was significant in both the cases ($p < 0.01$). In the SF-36 Total score/Global Score, the control group showed an overall higher QOL score (80.94 ± 11.77) compared to the test group (63.92 ± 17.74) and the difference between the two groups was statistically significant. The data are shown in Table No.2.

FACT-An QOL score

With regards to the FACT-An sub-domain scores and the total score, no difference was seen between the two groups in terms of sub-domain scores

[Physical Well-being (PWB), Social Well-being (SWB), Emotional Well-being (EWB), Functional Well-being (FWB), Anaemia Sub Scale (AnS), FACT-An Trial Outcome Index (FACT-An TOI), FACT-G total score and FACT-An total score. Data showed in Table No.3 and Figure No.2.

FACIT-Fatigue

The mean FACIT-fatigue scale score was 37.18 ± 9.27 in the anaemia group and 42.68 ± 8.13 in the control group. As the data was normally distributed, we used independent t test for comparison. No difference was seen between the two groups with respect to FACIT-fatigue scale score ($p = 0.456$). Data showed in Figure No.3.

Correlation between Hb level and quality of life scores (overall pregnant female population)

The hemoglobin level showed positive correlation with serum ferritin level ($r = 0.542$, $p < 0.001$). Among all the QOL scales used in our study showed good correlation among each other. The Pearson's correlation coefficient between SF-36 and FACT-An was 0.808 ($p < 0.001$). Again the correlation coefficient between SF-36 and FACIT-fatigue was 0.017 ($p < 0.001$). Both the scales (FACT-An and FACIT-Fatigue scale) showed good correlation among each other ($r = 0.923$, $p < 0.001$).

However among all these scales only SF-36 score showed highest correlation with hemoglobin levels ($r = 0.442$, $p < 0.001$) compared to FACT-An Scale ($r = 0.271$, $p = 0.006$) and FACIT-Fatigue ($r = 0.273$, $p = 0.006$).

The SF-36 score also showed good positive correlation with the serum ferritin levels ($r = 0.329$, $p = 0.001$). Data showed in Table No.4.

Discussion

IDA is one of the most common nutritional disorder, which can lead to adverse pregnancy outcomes. In pregnant woman, presence of IDA is associated with a low quality of life.

Regarding quality of life in pregnant woman, a few studies evaluated quality of life in pregnant woman. Morin *et al* evaluated quality of life changes during pregnancy (first trimester to parturition)². Calou *et al* evaluated the different predictors of quality of life in pregnant woman³.

In terms of evaluating the effects of anaemia on quality of life in pregnant woman, Yilmaz et al evaluated the effect of anaemia in last trimester of pregnancy⁴ and studies have been done in different locations e.g France¹⁰. However, till now no study has evaluated the effect of mild to moderate anaemia on quality of life in pregnant females without any other concomitant medical or surgical disorder. In this regard, this is the first study to evaluate the same in pregnant females with mild to moderate anaemia without any concomitant medical or surgical disorder.

In our study, we evaluated the quality of life in pregnant females using three QOL measurement scales: SF-36, FACIT-fatigue and the FACT-An questionnaire. The SF-36 is a widely used HRQOL evaluation tool and is being increasingly used as a measurement of health related quality of life across various disease domains¹¹. Quality of life have been evaluated with the help of SF-36 in the settings of chronic back pain¹², ankylosing spondylosis¹³ and multiple other disease settings.

The FACIT-fatigue scale is already validated in the settings of IDA¹⁴. Psychometric assessment demonstrated that the FACIT-fatigue scale was stable over time (ICC=0.87) and internally consistent ($\alpha=0.93$). The scale demonstrated convergence with other conceptually relevant scales such as SF-36 Vitality ($r=0.74$)^{14,15}. Similar result is also reported by another study¹⁶. FACIT-fatigue scale has sound measurement properties and is an appropriate and interpretable assessment of fatigue among IDA patients with various underlying conditions^{14,16}. A higher FACIT-Fatigue score is associated with lower fatigue and better QOL¹⁷.

The third HRQOL measuring tool, the FACT-An questionnaire is already extensively evaluated in the settings of chronic kidney disease¹⁸. A higher FACT-An score is associated with better quality of life¹⁸.

In our study, no difference was found between two groups with regards to FACIT-Fatigue and FACT-An score. There can be two situations, the first one is really there is no difference, or the Questionnaire used is insensitive to the small physical and other domain changes in anaemic pregnant woman.

In our study, while using the SF-36 scale, the control arm showed better quality of life scores compared to the test group (pregnant woman with iron deficiency anemia) in the domains 'physical functioning', 'role limitations due to physical health', 'role limitations due to emotional problems', 'social functioning', 'energy/fatigue', 'pain', 'health change' and 'SF-36 total score'. Thus this finding highlights the relatively poorer quality of life in pregnant anaemics with mild-moderate iron deficiency anemia. Similar results were also obtained by Yilmaz et al, 2019⁴. IDA had a negative effect on QOL is highlighted in both our study and study by Yilmaz et al, 2019. However, no difference was seen between both the groups in terms of 'emotional well-being' and 'general health' domains of SF-36.

Another important observation from our study is high correlation observed between SF-36 total score with haemoglobin level and serum ferritin level. Similar high correlation was also observed by Yilmaz et al, 2019.

When QOL was measured using the FACT-An scale, no difference was seen in any of the FACT-An sub-domain scores and the FACT-G and FACT-AN total score.

All the three QOL scores showed strong correlation among each other ($r>0.7$ in all the cases). However, among these only SF-36 showed highest correlation with the Haemoglobin concentration among pregnant ladies ($r=0.442$, $p<0.001$) and serum ferritin level ($r=0.329$, $p=0.001$). Again, among all the QOL scores, only SF-36 and its sub-domain scores were sensitive to detect the changes of QOL owing to anaemia among pregnant females.

IDA is a common medical disorder, which can adversely affect the well being of the pregnant woman and development of the foetus and is linked with increased morbidity and foetal death. Our study expanded our understanding of the quality of life in pregnancy in relation to anemia. More studies with larger sample size are needed to further elucidate the impact of anemia in pregnancy.

Table No.1: Baseline demographic and obstetrics characteristics in the study participants. Data is represented as N (%) and mean ± SD

S.No	Socio-demographic characteristic	Test Group (N=50)	Control Group (N=50)
1	Age, (mean ± SD)	26.76 ± 4.04	27.58 ± 3.59
Area [n (%)]			
2	Rural	38 (76%)	31 (62%)
3	Urban	12 (24%)	19 (38%)
Education [n (%)]			
4	8 th and below	4 (8%)	2 (4%)
5	10 th pass	8 (16%)	4 (8%)
6	12 th pass	17 (34%)	12 (24%)
7	Graduate	16 (32%)	28 (56%)
8	Post-Graduate	5 (10%)	4 (8%)
Occupation [n (%)]			
9	Housewife	50 (100%)	45 (90%)
10	Working	0	5 (10%)
Monthly Income [n (%)]			
11	Up to INR 15000	16 (32%)	23 (46%)
12	INR 15001-INR 35000	33 (66%)	22 (44%)
13	>INR 35000	1 (2%)	5 (10%)
14	Age at first pregnancy, mean±SD	24.90 ± 2.75	25.82 ± 2.63
15	Gravida, mean±SD	1.62 ± 0.98	1.50 ± 0.76
16	POG (days), mean±SD	185.90 ± 41.10	194.86 ± 38.28
17	POG (trimester)		
18	Second Trimester, n (%)	30 (60%)	23 (46%)
19	Third Trimester, n (%)	20 (40%)	27 (54%)
20	Haemoglobin level gm/dl (mean ±SD)	9.67 ± 0.62	12.22 ± 0.47
21	Serum ferritin level µg /L (mean ± SD)	8.43 ± 1.31	21.09 ± 8.43

Table No.2: SF-36 total score and SF-36 sub-domain scores between the pregnant with anaemia group versus the control group. Data presented as mean ± SD or median (range) depending upon the distribution of the data

SF-36 domain	Group	n	Mean	SD	Median	IQR	Range	Mean difference	T test p value	Mann Whitney p value	Bootstrap p value	Log transformed p value
Physical functioning	Con	50	76.8	13.04	75	15	45-95	14.6	<0.001	<0.001	0.001	<0.001
	Test	50	62.2	17.2	62.5	25	30-95					
General Health	Con	50	71.6	15.4	72.5	20	40-95	3.70	0.249	0.328	0.225	0.244
	Test	50	67.9	16.41	70	21.25	25-95					
Role Physical	Con	50	87	21.57	100	25	0-100	51.5	<0.001	<0.001	0.001	<0.001
	Test	50	35.5	37.14	25	75	0-100					
Role Emotional	Con	50	86.6	27.7	100	0	0-100	34.0	<0.001	<0.001	0.001	<0.001
	Test	50	52.6	35.05	33.3	66.6	0-100					
Social Functioning	Con	50	82.25	15.98	75	25	37-100	10	0.006	0.017	0.005	0.008
	Test	50	72.25	19.11	75	25	12-100					
Emotional Well-being	Con	50	90.1	14.64	96.0	9	52-100	0.40	0.883	0.133	0.899	0.996
	Test	50	89.7	12.33	92	8	40-100					
Energy/	Con	50	67.4	14.5	70	15	25-90	7.70	0.013	0.018	0.015	0.023

Fatigue	Test	50	59.7	15.98	60	21.25	10-85					
Pain	Con	50	85.7	14.65	85	22.5	45-100	14.25	0.001	0.002	0.004	<0.001
	Test	50	71.4	24.8	77.5	37.5	0-100					
Health Change	Con	50	59.5	18.8	50	25	25-100	13.50	<0.001	<0.001	0.001	<0.001
	Test	50	46	15	50	25	25-100					
SF-total	Con	50	80.94	11.77	83.37	15.47	49.38-95.63	17.01	<0.001	<0.001	0.001	<0.001
	Test	50	63.92	17.74	65.01	22.7	15.94-96.38					

Table No.3: FACT-An scores between the two groups. Data presented as mean ± SD

S.No	FACT-An Overall Score	HRQoL Score		
		Test Group (N=50)	Control Group (N=50)	P value
1	Physical Well-being (PWB)	23.70 ± 4.032	23.76 ± 4.809	0.195
2	Social Well-being (SWB)	25.50 ± 3.265	26.10 ± 2.140	0.110
3	Emotional Well-being (EWB)	22.74 ± 1.871	22.72 ± 1.959	0.815
4	Functional Well-being (FWB)	20.08 ± 3.664	23.18 ± 2.775	0.634
5	Anaemia Sub Scale (AnS)	59.56 ± 12.010	68.22 ± 10.247	0.313
6	FACT-An Trial Outcome Index (FACT-An TOI)	103.24 ± 17.621	115.16 ± 15.813	0.608
7	FACT G total Score	92.02 ± 10.187	95.76 ± 8.854	0.861
8	FACT-An Total Score	151.58 ± 21.244	163.98 ± 17.887	0.450

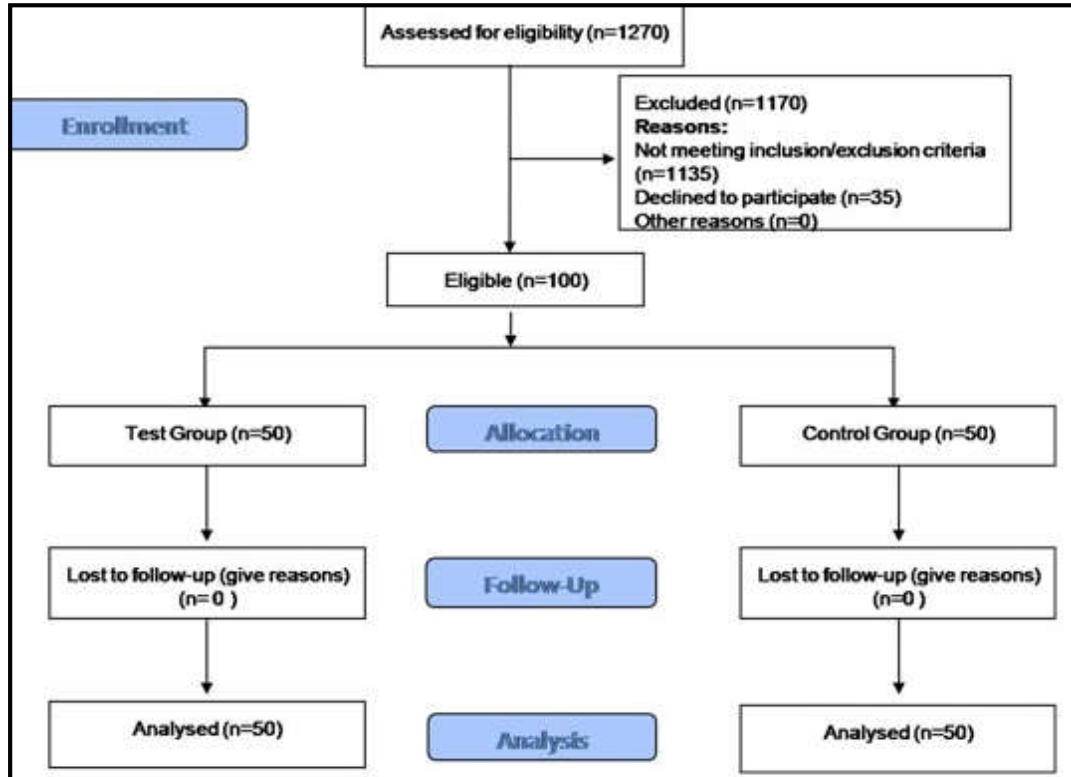


Figure No.1: Participant flow chart of the study

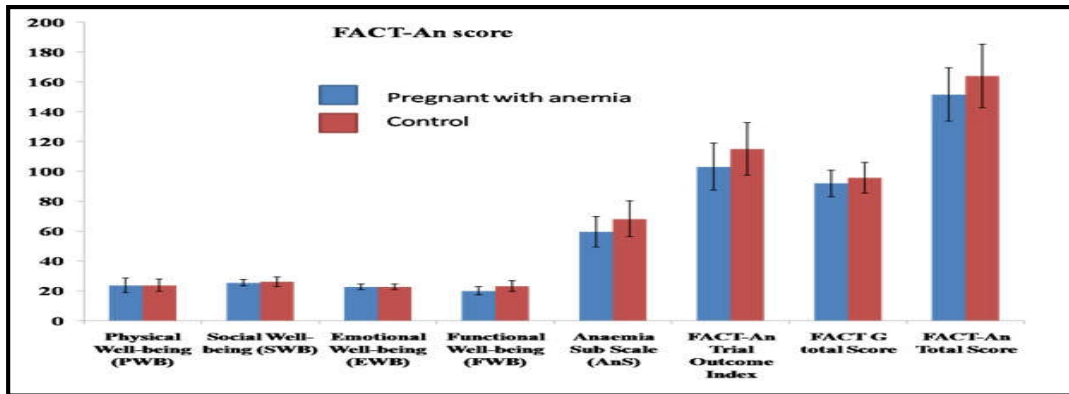


Figure No.2: FACT-An and its different sub-domain scores
*represents $p < 0.05$ when compared to the control in the same domain.

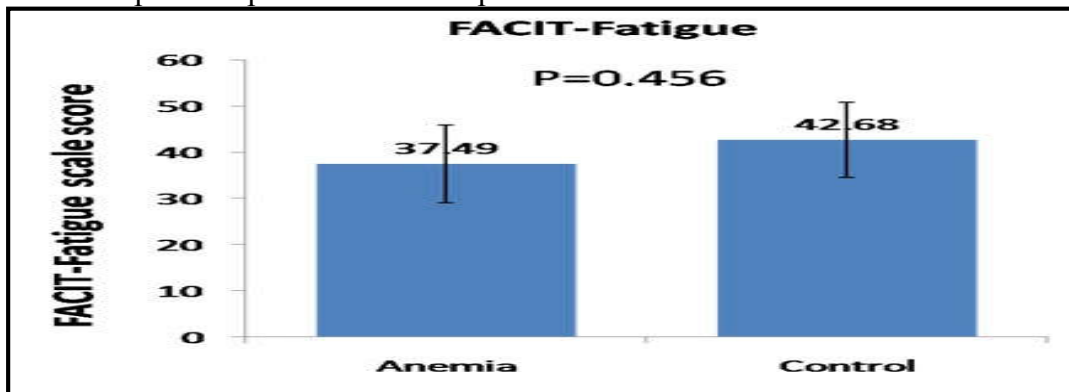


Figure No.3: FACIT-Fatigue score between the two groups.
Data represented as Mean \pm SD

CONCLUSION

All the three QOL scores showed strong correlation among each other ($r > 0.7$ in all the cases). However, among these SF-36 showed highest correlation with the haemoglobin concentration among pregnant ladies ($r = 0.442$). Among all the QOL scores, only SF-36 and its sub-domain scores were sensitive to detect the changes of QOL owing to anaemia among pregnant females. In multivariate linear regression analysis also, even after adjustment of possible confounders, Haemoglobin percentage came out to be a significant predictor of QOL in pregnant woman with otherwise a normal pregnancy.

SYNOPSIS

The findings of the present study highlight the relatively poorer QOL in pregnant women with mild-moderate IDA and haemoglobin came out to be a significant predictor of QOL in pregnant women with otherwise a normal pregnancy.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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