RESEARCH PAPER

Assessment Of Knowledge Attitude Practice(Kap) *And* Prescription Adherence Of Heart Failure Patients On Guideline Directed Medical Therapy."

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ABSTRACT:
Objective: Medication is a critical part of HF treatment & adhering to medication regimens is a key behavior in HF self-care. Unfortunately, adherence among patients with HF is low, negatively affecting clinical outcomes and leading to increased HF exacerbations, reduced physical function, and higher risk for hospital admission and death So our study mainly focused on knowledge attitude and practice and medication adherence in heart failure patients in order to improve quality of life.
Methods: A prospective observational study design was used to conduct this study at DrPSIMS Sciences and Research Foundation, The K A P scores were analyzed in comparision with baseline and 1st follow up and 1st follow up with 2nd follow up using unpaired-t test for knowledge , attitude, and practice individually.
Results: The results are as such with Knowledge that K-1 & K-2 (<0.0001) significance K-2 & K-3 (<0.0001). Assessing patients knowledge, attitude, practices and imparting knowledge will make a pavement to their change in their life style since , this study is conducted in a rural area , and most ofthe patients are farmers, housewives patient counselling helps to improve their KAP score and increase in medication adherence which definitely affects the quality of life , reduced hospitalizations which is a major concern and decrease in mortality.
Conclusions: Patient counselling helps to improve their KAP score and increase in medication adherence which definitely affects the quality of life , reduced hospitalizations which is a major concern and decrease in mortality

Keywords: 1.KAP-Knowledge, Attitude, Practice 2.HF-Heart Failure 3.QOL-Qulality of Life

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Introduction: Heart failure (HF) is a clinical syndrome with symptoms and signs caused by cardiac dysfunction resulting in reduced longevity. Inability of the heart to keep up with the demands on it and, specifically, failure of the heart to pump blood with normal efficiency Heart failure may be due to failure of the right or left or both ventricles [1] The incidence and prevalence rates of heart failure have increasing trends worldwide, both in developed and developing countries, particularly with the increasing aging in various populations [2] HF is increasing in India with an estimated prevalence of about 8-10 million with a mortality rate of about 0.1-0.16 million/year [3] HF in the community is a fundamental prerequisite to screen for and prevent the conditionThe American Heart Association/American College of Cardiology (AHA/ACC) have categorized HF into 3 stages (A, B, C/D) [4] Moreover, the high health illiteracy among the patients suffering heart failure poses more burden on healthcare providers to adopt strategies that can help these patients deal with their chronic lifelong illness [5] A study was conducted in the northeast coast of Malaysia regarding knowledge, attitude, and practice (KAP) on the risk of CVD among Kelantanese women [6] But unfortunately, no such study was conducted in order to asses knowledge attitude and practice in heart failure patients Therefore, this study was conducted to determine KAP of patients who have been diagnosed as heart failure and patient is on guideline directed medical therapy. Exploring the knowledge and attitudes towards heart failure management can help patients with heart failure to manage their disease effectively. The ejection fraction (EF) is an important measurement in determining how well your heart is pumping out blood and in diagnosing and tracking heart failure significant proportion of patients with heart failure happen to have a normal ventricular ejection fraction at echocardiography during examination. Heart failure with reduced ejection fraction is a clinical syndrome of dyspnea, exercise intolerance and/or edema resulting from an impairment of ejection of blood, usually documented by a left ventricular ejection fraction of 40% or less on 2-

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Dechocardiography [7]Guideline-directed medical therapy (GDMT) for heart failure with reduced ejection fraction (HFrEF) is recommended prior to primary prevention implantable cardioverter-defibrillator (ICD) placement. Adherence to this recommendation and associated outcomes are unknown [8,9] Medication is a critical part of HF treatment, and adhering to medication regimens is a key behavior in HF self-care. Unfortunately, adherence among patients with HF is low, negatively affecting clinical outcomes and leading to increased HF exacerbations, reduced physical function, and higher risk for hospital admission and death.[10,11,12] So our study mainly focused on knowledge attitude and practice and medication adherence in heart failure patients in order to improve quality of life and to minimise mortality hence we clearly aimed to assess the prescription adherence to improve the quality of life.

Material and Methods

Research design and setting

A prospective observational study design was used to conduct this study at Dr Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation.

Ethics Approval

Ethical approval (CDSCO Reg.No:ECR/804/Dr.PSIMS &RF-IEC/AP/2018) the main study was obtained from the institutional ethics committee (Human studies)The main study was registered in the I.E.C(UG/358/18). Ethical principles of health care research were followed

Participants

A consecutive sample of patients (n =136) was recruitedover a 6 month period with heart failure with reduced ejection fraction (HFrEF) and patient who met the eligibility criteria

Eligibility Criteria

A total of 140 patients were selected out of that sample we exclude 8 patients because the eligibility criteria for our study is patient with age >=18 years old and willing to participate and patient with reduced ejection fraction are included in our study

A sample size of approximately 123 patients would besufficient to give 90% power to detect an increase of 10% in the mean score iat the 5% significance level. The sample size wasincreased from this level to allow for dropouts and attrition.

Assessment instruments

Knowledge Attitude Practice Assessment

Once consent was received, the KAP instrument was given to the patient. Patients were instructed to complete the questionnaire independently and without assistance. Missing answers in survey responses were scored as incorrect answers. Results of the KAP instrument as completed by the enrolled patients were compiled with demographic and clinical information, including duration of treatment, from the patients' medical records. The primary outcome was the level of knowledge as determined by the score on the KAP questionnaire. The KAP questionnaire is made up of 30 multiple choice questions. Each question was worth different points. .After the baseline investigation, the patient was given awareness about the HF-therapy which includes patient counseling points like monitoring adverse effects, dietary modifications, medication indication, need for medication adherence. After patient counseling , the KAP scores were again recorded during first and second follow-up.

Assessment of Medication adherence (using Morisky scale)

An association between patients' adherence and improved quality of life and decreased hospital readmissions has been observed in the study. The study objective was to assess patient adherence to treatment using the MMAS-4, the association between knowledge , attitude, practices and increase in medication can be observed. The Morisky scale (Pedersin et al., 2014) is a commonly used, validated; 4-item self-reported adherence measure that has been shown to be predictive of medication adherence.Non-adherence was strongly associated with adverse events

Statistical analyses

Continuous variables with a normal distribution [age] were expressed as means (x) with standard deviations.The statistical significance between the groups was tested using analysis of variance is analysed by using unaired t- test and The associations between variables were assessed using the univariate Pearson correlatory coefficients or the Spearman rank correlatory coefficients.

Study Procedure

A total of 136 patients (n =136) who met the inclusion criteria were recruited in the study. A suitable data collection form was designed for use in the study. All the necessary data including the patient demographic details, disease history, diagnosis, treatment chart, case notes and data on laboratory investigations were collected from patient interview, patient case reports ,Treatment chart, ESC guidelines, MMAS-4 scale knowledge, attitude ,practice assessment (KAP) scale and documented in a suitably designed data collection form for the study. All the recorded data was reviewed independently. The collected data were analyzed and interpreted.

Results:

KAP scores of patients involved in the study group:

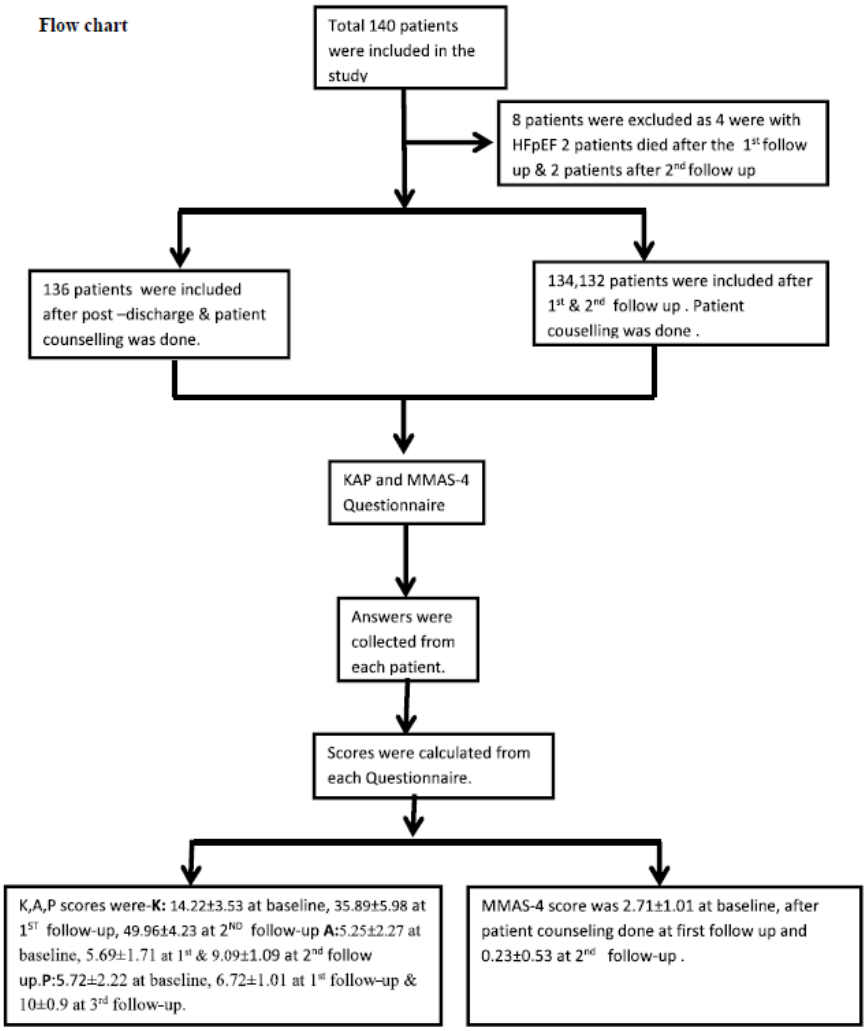
In study group, the K, A ,P scores were K: 14.22±3.53 at baseline, 35.89±5.98 at 1st follow-up, 49.96±4.23 at 2nd follow-up A:5.25±2.27 at baseline, 5.69±1.71 at 1st & 9.09±1.09 at 2nd follow up.P:5.72±2.22 at baseline, 6.72±1.01 at 1st follow-up & 10±0.9 at 3rd follow-up

	K-1	K-2	K-3

	N	N%	MEAN	SD	N	N%	MEAN	SD	N	N%	MEAN	SD
AGE												
20-40	8	5.8823	14.176409	3.750587	7	5.1470	35.600357	7.139066	6	4.4117	49.630972	6.307356
41-60	77	56.617	14.31169	3.624695	77	56.617	35.97403	6.45424	77	56.617	50.22078	3.626015
61-80	46	33.823	13.30435	2.889595	45	33.088	34.62222	4.667532	44	32.352	48.79545	4.981732
80 AND ABOVE	4	2.9411	16.75	3.593976	4	2.9411	40.75	4.924429	4	2.9411	51	2.708013
GENDER												
MALE	103	75.735	14.09709	3.513321	102	75	36.36275	5.038052	100	73.529	50.01	4.186305
FEMALE	33	24.264	14.60606	3.656667	32	23.529	34.40625	8.257389	32	23.529	49.84375	4.436719
MARITAL STATUS												
MARRIED	97	71.323	14.39175	3.633056	95	69.852	36.15789	6.125141	94	69.117	50.59574	3.788265
UNMARRIED	4	2.9411	15	5.773503	4	2.9411	40.25	6.344289	3	2.2058	53.33333	3.785939
WIDOW/WIDOWER/DIVORSED	35	25.735	13.94286	3.133715	35	25.735	34.94286	5.713466	35	25.735	48. 28571	5.009235
EDUCATIONAL STATUS												
PRIMARY EDUCATION	29	21.323	14.03448	3.530305	29	21.323	35.31034	4.943274	28	20.588	50.71429	3.408672
SECONDARY EDUCATION	27	19.852	15.33333	4.314555	27	19.852	38.22222	9.078009	27	19.852	52.14815	3.570216
GRADUATED	10	7.3529	16	4.268749	9	6.6176	39.11111	6.39227	8	5.8823	54	3.162278
ILLITERATES	69	50.735	13.6087	2.961604	69	50.735	34.82609	4.365495	68	50	48.41176	3.88351

The K, A , P scores were analyzed in comparision with baseline and 1st follow up and 1st follow up with 2nd follow up using unpaired-t test for knowledge , attitude, and practice individually. The results are as such with Knowledge that K-1 & K-2 (<0.0001) significance K-2 & K-3 (<0.0001).

The Attitude results between A-1 & A-2 has no significance and A-2 & A-3 with (<0.0001). Practice results show < 0.0001 significance for P-1 & P-2 and for P-2 & P-3 (<0.0001) significance.The KAP scores were analyzed by one way ANOVA followed by Tukey's multiple comparision test. Results indicated that KAP score has significantly ($p<0.001$) increased in first follow-up and second follow-up in comparison to base line scores.



MMAS-4 Scores of patients involved in the study group:

MMAS-4 score was 2.71±1.01 at baseline, after patient counseling done at first follow up and 0.23±0.53 at 2nd follow-up .This further implied that medication adherence substantially improved as it is clearly evident from the decreased MMAS-4 Scores. (Decreased scores indicates increased medication adherence as per MMAS-4 scale).(fig.1)

MMAS-4 Scores of study group were analyzed by unpaired-t test. Results indicated that In study group at baseline that is after patient counseling at first follow-up (n=134), showed significance with next review that is at second follow-up(n=132) . The significance between MMAS-I & MMAS –II was (<0.0001).

We observed that there is significant improvement in the patients knowledge and medication adherence towards Heart Failure , its therapy and their practices.

	MMAS-1				**MMAS-2**			
	N	**N%**	**MEAN**	**SD**	**N**	**N%**	**MEAN**	**SD**
AGE								
20-40	7	5.8823	2.629085	1.043746	6	4.4117	6.30735	0
41-60	77	56.617	2.649351	1.048385	77	56.617	0.272727	0.59904
61-80	45	33.823	2.888889	1.027402	44	32.352	0.181818	0.445793
80 AND ABOVE	4	2.9411	2.5	0.57735	4	2.9411	0.25	0.5
GENDER								
MALE	102	75.735	2.715686	1.056591	100	73.529	0.23	0.547815
FEMALE	33	24.264	2.65625	0.970845	32	23.529	0.25	0.508001
MARITAL STATUS								

MARRIED	95	71.323	2.536842	1.039748	94	69.117	0.255319	0.585417
UNMARRIED	4	2.9411	2.5	1.732051	3	2.2058	0	0
WIDOW/WIDOWER/ DIVORSED	35	25.735	3.171429	0.78537	35	25.735	0.2	0.40584
EDUCATIONAL STATUS								
PRIMARY EDUCATION	29	21.323	3.034483	0.944259	28	20.588	0.285714	0.599824
SECONDARY EDUCATION	27	19.852	2.444444	1.086042	27	19.852	0.185185	0.483341
GRADUATED	9	7.3529	2.222222	0.971825	8	5.8823	0.125	0.353553
ILLITERATES	69	50.735	2.724638	1.027333	68	50	0.235294	0.549563

CO-RELATION :

Co-relation was performed between Knowledge and Attitude : K-1 & A-1 , K-2 & A-2 , K-3 & A-3.
Attitude and Practice : A-1 & P-1 , A-2 & P-2 , A-3 & P-3 lastly with Knowledge and Practice: K-1& P-1 , K-2 & P-2 , K-3 & P-3 using Pearson Co-relation with values of r: are depicted in the table

	K1-A1			K2-A2			K3-A3		
	R VALUE	CI	P	R VALUE	CI	P	R VALUE	CI	P
AGE									
20-40	0.4818	-0.3376 to 0.8858	0.2267	0.4652	-0.4433to0.9022	0.2929	-0.1958	-0.8693to0.7322	0.7100
41-60	0.3141	0.0969 to 0.5028	0.0054	0.1306	-0.09629to0.3445	0.2577	0.07765	-0.1490to0.2965	0.5021
61-80	0.1835	-0.1128 to 0.4499	0.2221	0.1232	-0.1768to0.4022	0.4203	0.2028	-0.1002to0.4714	0.1867
80 AND ABOVE	0.1136	-0.9514 to 0.9689	0.8864	-0.7461	-0.9943to0.7600	0.2539	0.1714	-0.9452to0.9725	0.8259
GENDER									
MALE	0.2808	0.09222 to 0.4499	0.0041	0.1821	-0.01286to0.3638	0.0670	0.05899	-0.1391to0.2525	0.5599
FEMALE	0.3627	0.02211 to 0.6279	0.0380	0.08567	-0.2712to0.4218	0.6411	0.3876	0.04494to0.6487	0.0284
MARITAL STATUS									
MARRIED	0.2400	0.04254 to 0.4194	0.0179	0.1400	-0.06340to0.3322	0.1761	-0.03604	-0.2370to0.1679	0.7302
UNMARRIED	0.9611	-0.0006506 to 0.9992	0.0389	0.9195	-0.3583to0.9983	0.0805	0.9799	-	0.1280
WIDOW/WIDOWER/DIVORSED	0.3392	0.006630 to 0.6042	0.0462	0.05302	-0.2853 to 0.3796	0.7623	0.3722	0.04435 to 0.6276	0.0277
EDUCATIONAL STATUS									
PRIMARY EDUCATION	0.04258	-0.3291 to 0.4029	0.8264	0.1331	-0.2454to0.4765	0.4912	0.1369	-0.2490 to 0.4853	0.4873
SECONDARY EDUCATION	0.5099	0.1609 to 0.7455	0.0066	0.1525	-0.2416to0.5034	0.4477	0.06636	-0.3219 to 0.4355	0.7422
GRADUATED	0.2491	-0.4515 to 0.7597	0.4877	0.4040	-0.3557to0.8422	0.2809	0.3450	-0.4753to0.8445	0.4026
ILLITERATES	0.2524	0.01668 to 0.4616	0.0364	0.08177	-0.1580to0.3125	0.5042	0.1082	-0.1337 to 0.3380	0.3798

DISCUSSION:

Cardiovascular disease caused more than 2·1 million deaths in India in 2015 at all ages, or more than a quarter of all deaths. At ages 30–69 years, of 1·3 million cardiovascular deaths, 0·9 million (68·4%), the probability of dying from i heart Failure increased during 2000–15, from 10·4% to 13·1% in men and 4·8% to 6·6% in women. Heart disease mortality rates in rural areas increased rapidly and surpassed those in urban areas [13] Our results shows the comparison between knowledge , attitude and practice in three different follow-up periods i.e post discharge , after completion of 1 month after post discharge and final one is followed by third month and Our results had an significant association between knowledge , Attitude and practice. Significance of our study is identified by using unpaired t test and result indicate patients has a low mean level of knowledge(K1) (14.22) in first

review whereas attitude(A1) is also having low mean levels (5.35) and even practice(P1) share the same results as knowledge and practice by having low mean levels (5.72) toward CVD risk reduction and for the second review i.e after completion of 1 month the result indicate patients has a low median level of knowledge(K2) (35.89) in second review whereas attitude(A2) is having low mean levels (5.69) and even practice(P1) share the same results as knowledge by having median levels (6.72), as for the third review i.e after completion of 3 month followed by post discharge the result indicate patients has a high level of knowledge(K3) (49.96) in third review whereas attitude(A3) is having median levels (9.09) and even practice(P1) share the same results as knowledge by having high levels (10).when it comes to the significance our data showed when it compared to (K1 & K2) p=<0.0001 that shows there is significance between knowledge in first review and second review after post discharge , when we compare the (K2 & K3) the results shows there is high significance p=<0.0001.

Significance of Attitude our data showed when it compared to (A1 & A2) p=0.1657that shows there is no significance between Attitude in first review and second review after post discharge , when we compare the (A2 & A3) the results shows there is high significance p=<0.0001.

Significance of Practice our data showed when it compared to (P1 & P2) p=<0.0001 that shows there significance between Practice in first review and second review after post discharge , when we compare the (P2 & P3) the results shows there is high significance p=<0.0001.

In comparison to other studies on CVDs and risk factors, this population also demonstrated wide gaps in knowledge as well as a discrepancy between knowledge and practices with attitudes [14,15,16,17]

Recently, Kontogeorgos et al, demonstrated that patients with HFrEF have higher mortality rates compared to patients with HFpEF [18]

In our study we included heart failure patients with reduced ejection fraction wheras we excluded the heart failure patients with preserved ejection fraction in order to find out the mortality rates in heart failure patients with reduced ejection fraction.

The patients in this study were relatively middle aged with a mean age of 14.31 ± 41-60 yearsOur finding is in contrast to what was reported from the United States of America (USA) (61 ± 18 years) and Europe (71.3 ± 12.7 years) on the mean ages of patients hospitalised for HF [19,20] Mortality of CHF during the 9-month follow-up was 2.94% in our study

Previous study reported a mortality rate of 22% during 6-month follow-up in their study in 2005 [21]

However, other studies showed different mortality rate of 2% after one year follow-up [22]

One of prognostic factor on CHF is EF. mortality and morbidity was severe as in patients with reduced EF 23 Physical inactivity was associated with increased risk of all-cause death and cardiac death but not HF hospitalization. There are two plausible explanations for this finding. First, inactive patients were less likely to be hospitalized due to increased competing risk of death. Second, one can speculate that active patients may have been more aware of deterioration in their physical functioning due to worsening HF, thus prompting medical attention and subsequent hospitalizations which may have negated any beneficial effect of exercise. The latter explanation is speculative and deserves study [24,25,26,27] In our study the sample size is about(n=136) out of that 51% have been involved in some degree of physical activity and 48% are physically inactive so our study analyses show that physical inactivity in patients with chronic HF was not associated with nearly twice the risk of all-cause death

Medication adherence has previously been reported as a marker for adherence to other treatments or behaviours that may affect health outcomes [28 ,29] In our study MMAS-4 score was 2.71±1.01 at baseline, after patient counseling done at first follow up and 0.23±0.53 at 2nd follow-up .This further implied that medication adherence substantially improved as it is clearly evident from the decreased MMAS-4 Scores. (Decreased scores indicates increased medication adherence as per MMAS-4 scale) In our study we also include then MMAS Scale in order to find out the adherence after completion of first review we include MMAS scale in order to find the adherence by using the significance test and our results showed that there is a significance between second and third review after post discharge.

Vaidya et al demonstrated there is a limited knowledge of cardiovascular health with 60% being unable to identify any heart attack symptoms.[30] In contrast our study found a significant correlation between knowledge and attitudes/practice scores in our study.The Health Belief Model states that the likelihood of taking action to prevent illnesses depends on factors such as perceived susceptibility, disease severity, and the benefits and barriers of behaviour change.[31] As a result, having better knowledge would then alter the balance of the model constructs, leading to better attitudes and practices.

There are many factors influencing a person's health behaviour, and knowledge and attitude are only 2 components in the pathway. For example, in the social cognitive theory, constructs and other personal and environmental determinants also play crucial roles. Valente et al also suggested that each behaviour change model utilises different order of KAP with each individuals fitting into each model differently [32]Thus, although it would be worthwhile to focus on public health interventions to improve the knowledge of the population, the limitations of such measures should be recognised

LIMITATIONS:

We had some limitations in our study. We did not assess biochemical markers related to CHF. Furthermore, the

underlying disease of CHF of our patients was not determined.

Conclusion

Knowledge Attitude Practices (KAP) along with Guideline Directed Medical Therapy (GDMT) play a key role in improving patients medication adherence. Increase in the knowledge towards the disease, its signs and symptoms , treatment helps to change their attitude towards the disease and in- turn leads to changes in their daily practices Poor doctor- patient communication can also be overcome by the involvement of clinical pharmacist in management through effective counselling regarding the medication, importance of medication adherence, life style and dietary modifications with fluid restrictions. More over clinical pharmacist can also act as a good communicator between physician and patient. Thus, assessing patients knowledge , attitude, practices and imparting knowledge will make a pavement to their change in their life style since , this study is conducted in a rural area , and most ofthe patients are farmers, housewives and un-employees , patient counselling helps to improve their KAP score and increase in medication adherence which definitely affects the quality of life , reduced hospitalizations which is a major concern and decrease in mortality

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Research Ethics Committee: Study was performed according to the Helsinki Declaration Ethical approval (CDSCO Reg.No:ECR/804/Dr.PSIMS&RF-IEC/AP/2016) the main study was obtained from the institutional ethics committee (Human studies)The main study was registered in the I.E.C(UG/358/18) got approved by the Research Ethics Committee (REC) or the Institutional Review Board (IRB) of the Dr.PSIMS&RF where the Study was performed.

Conflict of Interest: "No potential conflict of interest relevant to this article was reported".

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