RESEARCH ARTICLE

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Assessment of Patient Information Leaflet (PIL) Usefulness in Enhancing Knowledge, Attitude and Practice in Patients with Metabolic Syndrome

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Abstract

Metabolic syndrome is a condition associated with risk factors related to cardiovascular and Type-2 diabetes. This caused a 2.5 fold increase in cardiovascular deaths and a 5 times high risk in diabetes development. The aim of the present study is to determine the usefulness and impact of Patient Information Leaflet (PIL) on enhancing Knowledge, Attitude and Practice (KAP) in patients having metabolic syndrome by comparing pre and post KAP scores. The current study is prospective and interventional and was done in metabolic syndrome patients at General Medicine department in NRI General Hospital, Guntur. All the patients aged 18 years and above and both sex, with a confirmed diagnosis of obesity, Type 2 diabetes mellitus, hypertension, or hypercholesterolemia. The patients who gave their willingness to participate in the study were only included in study. Pre KAP and post KAP scores was analyzed using paired t test to determine the level of significance. The corresponding mean age (years), systolic and diastolic blood pressures (mmHg), fasting blood glucose level (mg/dl) and body mass index (kg/m^2) of all the study population (n=71) was 61.30±8.9, 153.42±25.70, 88.72±12.80, 203.02±67.59 and 32.62±8.61 respectively. The corresponding mean pre scores of total, knowledge, attitude and practice was 3.33±4.20, 0.597±0.90, 3.819±20 and -1.055±2.50 respectively. Post intervention, the mean post scores of total, knowledge, attitude and practice was 13.34±3.10, 3.91±1.90, 5.889±0.60 and 3.514±1.8 respectively. The post scores were improved because of patient information leaflet (intervention). This study shows that in order to practice better disease care, individuals need the assistance and direction of a clinical pharmacist.

Major Findings: It was observed with this study that there is an increase in the scores of knowledge, attitude and practice on metabolic syndrome with the usage of the Patient Information Leaflet (PIL) provided during the study to the patients.

Keywords: Attitude, Knowledge, Metabolic Syndrome, Practice, Patient Information Leaflet

1. Introduction

Metabolic Syndrome (MetS) also called as syndrome X or insulin resistance syndrome is a combination of various metabolic conditions, that include dyslipidemia, insulin resistance, hypertension, and obesity, which are highly linked to Type 2 diabetes mellitus and can cause atherosclerotic cardiovascular disease[1]. Metabolic

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syndrome was defined by several criteria. According to World Health Organization (WHO), it requires the presence of any one of conditions like diabetes mellitus, impairment in glucose tolerance, impairment in fasting glucose levels or resistance to insulin, and two conditions like blood pressure of ≥140/90 mm/Hg, dyslipidaemia where the levels of triglycerides ≥1.695 mmol/L, high density lipoprotein cholesterol (HDL-C) (≤0.9 mmol/L in males and ≤1.0 mmol/L in females) and central obesity (waist to hip ratio - >0.90 in males and >0.85 in females or body mass index > 30 kg/m^2)[2]. According to the data given by the National Health and Nutrition Examination Survey (NHANES), in the past 15 years, the prevalence of MetS was approximately increased by 5% in the United States[3]. According to the criteria suggested by International Diabetes Foundation (IDF), the age based MetS prevalence is ought to be around 40%. The occurrence of MetS is rising simultaneously with the increased cases of obesity and aging. Although the precise underlying cause of MetS is unknown, insulin resistance and abdominal obesity were identified as major risk factors that may play a role in pathogenesis[4].

An excess of circulating fatty acids, produced by an enlarged adipose tissue mass, is a crucial factor in the development of insulin resistance. Insulin-mediated glucose absorption is inhibited by Free Fatty Acid (FFA), which lowers insulin sensitivity in muscle[5]. A higher rate of flux of free fatty acids derived from adipose tissue to the liver through the splanchnic circulation is predicted by some theories in relation to an increase in visceral adipose tissue, whereas an increase in subcutaneous fat in the abdomen may release lipolysis products into the systemic circulation and prevent more direct effects on hepatic metabolism[6]. Hepatic triglyceride production is elevated in the context of insulin resistance due to an increased flow of free fatty acids into the liver. One of the generally acknowledged causes of hypertension in patients with Metabolic Syndrome is insulin, which, when administered intravenously to healthy individuals, acts as a vasodilator and has downstream effects on the kidney's ability to reabsorb sodium, which in turn causes hypertension[7]. Non pharmacological therapy relieves the conditions due to MetS[8]. They include weight management, reduction in dietary sodium uptake, healthy diet intake, physical activity, moderate alcohol intake, cessation of smoking and dietary potassium enhancement. Pharmacological therapy should target in decreasing dyslipidemia, blood pressure and blood glucose[9].

The present study focused on assessing the usefulness of Patient Information Leaflet (PIL) in enhancing Knowledge, Attitude and Practice (KAP) using pre and post KAP scores in metabolic syndrome patients.

2. Methods

2.1 Sampling and Participants

This study was conducted in general medicine department at NRI General Hospital, Guntur which is a tertiary care teaching hospital. 81 patients from the general medicine department's In-Patient (IP) and Out-Patient (OP) departments who met the study's inclusion and exclusion criteria were chosen for the prospective interventional study, which evaluated patients' knowledge, attitudes, and practices before and after intervention (PIL) in patients with metabolic syndrome.

2.1.1 Source of Data

The study's necessary and essential data were gathered from patient case sheets, OP cards, and other pertinent laboratory investigations. The scores of individual patients were obtained after interviewing the patients or their caretakers.

2.1.2 Study Duration

The investigation was carried out over a six-month period from November, 2017 to April, 2018.

2.1.3 Study Criteria

The following parameters were taken into consideration when conducting the study. The study comprised voluntary participants who were 18 to 65 years of age, of any gender, and had a verified diagnosis of obesity, Type-2 diabetes mellitus, hypertension, or hypercholesterolemia. The study excluded patients with serious physical or mental illnesses, those who were pregnant, and those who had merely been diagnosed with hypertension, diabetes, or obesity.

2.1.4 Ethical Approval

The institutional human ethical committee of the Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, Guntur, gave its approval for this investigation (IEC/06/2017).

2.2 Procedure

After obtaining the subjects' verbal consent, an informed consent form has also been supplied to the patients and post approval, the study was conducted. A structured questionnaire was designed to interview the patients in order to assess their basic knowledge, attitude and practice regarding the metabolic syndrome and then counselling was provided verbally about the disease and life style modifications by using patient information leaflet. If the answer provided by the patient is correct, then the score was given as +1, if it is incorrect then the score was given as -1, if the respondent says don't know then the score was given as 0. Then impact of PIL on KAP was assessed in study population by comparing pre and post KAP scores.

2.2.1 Data Analysis

To evaluate the patients' knowledge, attitudes, and practices about metabolic syndrome, all of the data was analyzed. To enter the data, an excel sheet was created. After patient interviews, the total, knowledge, attitude, and practice scores were recorded and their corresponding mean values were computed.

2.2.2 Statistical Analysis

The paired t test was used to examine the data at a significance level of 5% ($p<0.05$), which allowed for the determination of the interventional treatment's relevance. For all the statistical parameter testing, graph pad prism software was used.

3. Results and Discussion

Nowadays, patient information leaflets were being provided to patients in some hospitals. Providing a PIL could enhance the knowledge, attitude and practice of patients about their disease state and medications[10]. But most of the people don't pay required attention to PIL due to their lack of knowledge and they also think that their physician has already provided enough information on their medication[11]. The current study has developed and gave PIL about MetS to the patients and assessed their KAP. Based on the inclusion criteria, 81 patients in all were included in the study, of which 71 patients were monitored for the duration of the investigation. The data of the remaining 10 patients was lost during the course of follow up.

3.1 Demographic Profiles

3.1.1 Distribution of Sample Population

Among 71 patients, majority of patients with metabolic syndrome fall under 60-69 age group (36.6%) followed by 50-59, 70-79 and 40-49 age groups. The mean (±SD) age (years) of sample population was found to be 61.3 ± 8.9. The above mean age was found to be similar with past study[12]. Out of 71 patients, 38 (53.5%) patients were men and 33 (46.5%) patients are women. Of them, 38 (53.5%) patients were literates and 33 (46.5%) patients are illiterates.

3.1.2 Risk Factors Associated with Metabolic Syndrome

Metabolic syndrome is associated with risk factors like frequent smoking and alcoholism. The subjects were assessed for their risk factors of smoking and alcoholism and the data of subjects was given in Table 1.

3.1.3 Baseline Diagnostic Parameters of Study Population

The mean baseline diagnostic parameters in study population (n=71) were calculated. The obtained values are similar with past studies which showed SBP, DBP and BMI as 150.90, 95.60 and 26.30 respectively[13]. The results were indicated in Table 2.

3.2 Pre and Post Intervention (PIL) Score Analysis among Sample Population

A Patient Information Leaflet (PIL) was supplied to the patients which has information regarding metabolic syndrome, signs and symptoms, pathophysiology and the measures to be taken to control MetS.

3.2.1 Comparison of Total Pre and Post Intervention (PIL) Scores

The total scores (knowledge, attitude and practice) of subjects before (pre-score) and after intervention (post-score) were calculated. The obtained total pre scores were

Table 1. Risk factors associated with metabolic syndrome

S. No	Risk Factor	No. of Patients (n=71)	% of Patients
1	Smokers	19	26.77
2	Alcoholics	19	26.77

poor which were similar with past studies[14]. The total scores were found to be improved after intervention. The data was given in Table 3.

3.2.2 Comparison of Pre and Post Intervention (PIL) Scores on Knowledge

The obtained knowledge pre scores were less and are similar with previous studies[15]. The knowledge scores were increased after intervention. The results were given in the Table 4.

Table 2. Baseline diagnostic parameters of study population

S. No	Diagnostic Parameters	Mean	Mean ± S.D*
1	SBP (mmHg)	153.42	153.42 ± 25.7
2	DBP (mmHg)	88.72	88.72 ± 12.80
3	Fasting Blood Glucose (mg/dL)	203.02	203.02 ± **67.59**
4	BMI (Kg/m^2)	32.62	32.62 ± **08.61**

**S.D indicates standard deviation*

Table 3. Comparison of total pre and post intervention (PIL) scores of knowledge, attitude and practice

S. No	KAP	Total Scores Obtained	Mean ± SD	P value
1	Pre –PIL	240	3.33 ± 4.20	< 0.0001
2	Post-PIL	961	13.34 ± 3.10	

Table 4. Comparison of Pre and Post Intervention (PIL) scores on knowledge

S. No	Knowledge	Scores Obtained	Mean	Mean ± SD	P value
1	Pre –PIL	43	0.597	0.597 ± 0.9	< 0.0001
2	Post-PIL	282	3.91	3.91 ± 1.9	

Table 5. Comparison of pre and post intervention (PIL) scores on attitude

S. No	Attitude	Scores Obtained	Mean	Mean ± SD	P value
1	Pre –PIL	275	3.819	3.819 ± 2.1	< 0.0001
2	Post-PIL	424	5.889	5.889 ± 0.6	

Table 6. Comparison of pre and post intervention (PIL) scores on practice

S. No	Practice	Scores Obtained	Mean	Mean ± SD
1	Pre –PIL	-76	-1.055	-1.055 ± 2.5
2	Post-PIL	253	3.514	3.514 ± 1.8

3.2.3 Comparison of Pre and Post Intervention (PIL) Scores on Attitude

The attitude pre scores were low and matched with previous studies[16]. The obtained attitude post scores were found to be improved after intervention. The data was indicated in Table 5.

3.2.4 Comparison of Pre and Post Intervention (PIL) Scores on Practice

Among the study population (n=71), the practice scores were obtained before (pre-score) and after intervention (post-score). The obtained practice pre scores were similar with past studies[17]. The post scores were found to be improved after intervention. The results were indicated in Table 6.

3.2.5 Comparison of Total Scores Before and After PIL in Different Age Groups

The obtained total pre and post scores in different age groups were found to be improved after intervention and statistically significant with p<0.0001. The age group of 40-49 years have shown highest percentage increase in score (85.29%). This shows that age and understanding are important in perceiving medical information as suggested in previous studies[18]. The data was represented in Figure 1.

3.2.6 Comparison of Total Scores Before and After PIL in Males and Females

Among the study population (n=71), the total scores in males and females were assessed before and after intervention and they were found to be improved after intervention. The results were given in Table 7.

3.2.7 Comparison of Total Scores Before and After PIL in Literates and Illiterates

The total pre and post scores in literates and illiterates were found to be increased after intervention. This shows

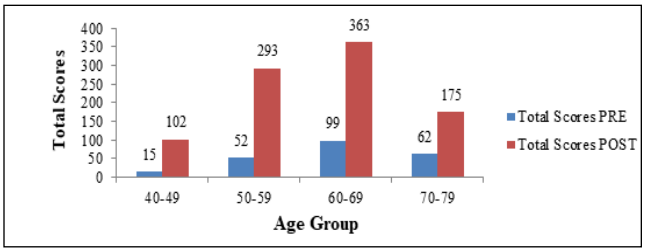


Figure 1. Comparison of total mean scores before and after PIL in different age groups.

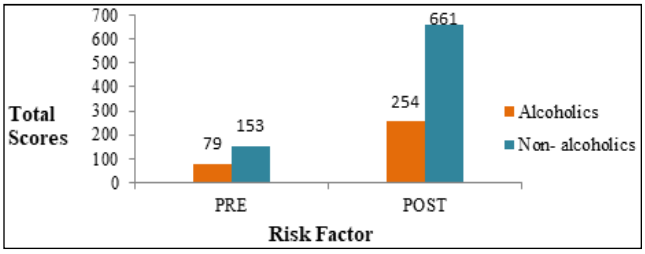


Figure 2. Comparison of total pre and post intervention (PIL) scores in alcoholics and non-alcoholics

Table 7. Comparison of total scores before and after PIL in males and females

S. No	Gender	Total Scores		Mean ± SD		P Value
		PRE	POST	PRE	POST	
1	Male	133	557	3.5 ± 4.24	14.66 ± 2.75	< 0.0001
2	Female	100	393	3.03 ± 4.42	11.91 ± 2.88	< 0.0001

Table 8. Comparison of total scores before and after PIL in literates and illiterates

S. No	Literacy Status	Total Scores		Mean ± SD		P Value
		PRE	POST	PRE	POST	
1	Literate	92	447	2.96 ± 4.57	14.4 ± 2.89	< 0.0001
2	Illiterate	127	460	3.43 ± 4.23	12.43 ± 3.06	< 0.0001

that literacy and understanding the patient information leaflet could alter the patients' perspective towards the treatment of disease as stated in past studies[19]. The results were given in Table 8.

Table 9. Comparison of total pre and post intervention (PIL) scores in smokers and non-smokers

S. No	Risk Factor	Total Scores		Mean ± SD		P Value
		PRE	POST	PRE	POST	
1	Smokers	85	275	4.5 ± 3.9	14.5 ± 2.2	< 0.0001
2	Non-Smokers	148	675	6.84 ± 4.3	12.98 ± 3.2	< 0.0001

3.2.8 Comparison of Total Pre and Post Intervention (PIL) Scores in Smokers and Non-Smokers

The total pre and post scores in smokers and non-smokers were improved after intervention. The data was indicated in Table 9.

3.2.9 Comparison of Total Pre and Post Intervention (PIL) Scores in Alcoholics and Non-Alcoholics

In alcoholics and non-alcoholics, the total score was increased after intervention. The results were represented in Figure 2.

Post study, a Patient Information Leaflet (PIL) was supplied in the Department of General medicine and asked the physicians and nurses to make patients aware regarding metabolic syndrome. Also, during patient counselling, it is made sure that the patients with metabolic syndrome were educated and supplied with the PIL. This ensures the fulfilment of duties of a pharmacist in educating the patient in all aspects regarding health[20].

4. Conclusions

According to the current study, individuals need assistance and direction in order to manage their diseases more effectively. Patients may experience problems with chronic conditions such as metabolic syndrome as a result of inadequate information, attitude, and practice. Clinical interventions including lifestyle changes and disease counselling may encourage patients to take a more active role in managing their conditions. Thus, the study comes to the conclusion that a clinical pharmacist can significantly contribute to patients'

increased understanding, disposition, and management of metabolic syndrome.

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