

A study is to evaluate the Effectiveness of Self-Instructional Module (SIM) on Knowledge regarding Heart Smart Diet among clients with Hypertension in selected Urban areas of Bangalore, Karnataka

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Abstract: Background and purpose of the study: Health is one of those terms which most people find it difficult to define although they are confident of its meaning. During the past few decades there has been a reawakening that health is a fundamental human right, and a worldwide social goal; that it is essential to the satisfaction of basic human needs and to an improved quality of life; and it is to be attained by all people. In the last five decades the global population has more than doubled, so as the diseases too. Hypertension is a major public health problem in India and other developing countries. It has been a significant problem and contributor to other cardiovascular diseases⁴. An ICMR study regarding the prevalence of hypertension in urban and rural residents demonstrated 29% and 25% respectively. Various studies estimate a prevalence rate of hypertension among urban population is 36.4% and for rural population is 21.2% in India. It is the responsibility of a community health nurse to educate the community regarding this serious problem. Thus, the investigator felt the need to provide an self-instructional module (SIM) which can provide information regarding Heart Smart Diet for the clients with hypertension to keep their heart safe as hypertension is the major risk factor for stroke and other cardiovascular diseases. **Objective:** (1) To assess the pre-test knowledge scores of clients with hypertension regarding Heart Smart Diet by using structured knowledge questionnaire.(2)To determine the effectiveness of Self - Instructional Module regarding Heart Smart Diet among clients with Hypertension by using same structured questionnaire.(3)To find the association between pre-test knowledge scores regarding Heart Smart Diet among clients with hypertension and selected demographic variables. **Design:** One group pretest posttest design (pre-experimental design) was selected for the study.

Subjects: The participants were 60 hypertensive clients in selected urban area in Bangalore. **Sampling method:** A purposive sampling technique was used to select the sample of the study. **Data collection tool:** A structured knowledge questionnaire on heart smart diet was used to collect data from the subjects. **Data analysis:** The obtained data were analyzed using descriptive and inferential statistics and interpreted in terms of objectives and hypotheses of the study. The level of significance was set at 0.05 levels. **Results:** the overall pretest, posttest and enhancement of mean knowledge scores regarding heart smart diet among clients with hypertension. The mean pretest knowledge was 0.49% with SD 0.50%. The mean posttest knowledge found to be 0.42 % with SD 0.49%. However, the enhancement was proved as mean (1.6%) and SD of (0.16%). Further, the paired t-test value (20.92*) shows statistical significance at level of $p < 0.05$ with df (59), establishing the effectiveness of SIM. **Conclusion:** Regarding effectiveness of SIM , the mean pretest knowledge was 0.49% with SD 8%. The mean posttest knowledge found to be 0.42 % with SD 8.16%. However, the enhancement was proved as mean (1.6%) and SD of (0.16%). The paired t-test value is (20.92*). These findings indicate that the Self instructional module was effective in enhancing the knowledge of the hypertensive clients regarding heart smart diet

Key words: self-instructional module; Hypertension; cardiovascular disease; knowledge

INTRODUCTION

Health is one of those terms which most people find it difficult to define although they are confident of its meaning. During the past few decades there has been a reawakening that health is a fundamental human

right, and a worldwide social goal; that it is essential to the satisfaction of basic human needs and to an improved quality of life; and it is to be attained by all people. In the last five decades the global population has more than doubled, so as the diseases too¹. Interestingly hypertension is one of the chronic diseases which have shown in the largest decline in mortality in some countries during the past four decades. It is often called as Silent Killer because it can remain undetected for years. Hypertension is the abnormal elevation of blood pressure. Blood pressure is the pressure exerted on the artery walls by the blood flowing through it. Blood pressure has two readings, systolic and diastolic pressure, which is expressed in millimeters of mercury (mm of Hg). The normal level of blood pressure is 120/80 mm of Hg. The World Health Organization criterion for Hypertension is B.P \geq 160/90 mm of Hg. The higher the blood pressure, the greater the risk and lower the expectancy for life². Currently one third of the global deaths are caused by cardiovascular diseases. The World Health Organization estimates that globally about 600 million people are suffering with hypertension and are at risk of heart attack, stroke, and heart failure. About 15-37 percent of adult population in the world has hypertension. A study by American Heart Association shows about 140 million people in America suffer from hypertension. Worldwide, high blood pressure is estimated to cause 7.1 million deaths every year, about 13% of the global fatality total. Across World Health Organization regions researches shows that 62% of strokes and 49% of heart attacks are caused by, high blood pressure. Hypertension causes 5 million premature deaths a year world wide³. The Heart Smart Diet is a physician-recommended diet for people with hypertension. This modified plan of diet contains the food items which are newly added and excluded from normal daily eating menu.⁴

NEED FOR THE STUDY

Hypertension is a major public health problem in India and other developing countries. It has been a significant problem and contributor to other cardiovascular diseases⁴. An ICMR study regarding the prevalence of hypertension in urban and rural residents demonstrated 29% and 25% respectively. Various studies estimate a prevalence rate of

hypertension among urban population is 36.4% and for rural population is 21.2% in India.⁵

A study conducted by National Institutes of Health has been proven to lower blood pressure by this modified diet. In addition to be a low salt (or low sodium) plan, the Heart Smart Diet provides additional benefits to reduce blood pressure. This diet contains high fiber, potassium, calcium, and magnesium, low to moderate fat and it is also rich in fruits, vegetables, and whole grains the diet is a healthy plan, designed for the whole family⁶. An experimental study on a dietary approach to prevent hypertension was conducted among African Americans. The objective of the study was to find out the effectiveness of change in dietary pattern on hypertension. Participants of the study were 459 adults with untreated systolic blood pressure <160 mm of Hg and diastolic blood pressure 80-95 mm of Hg. After a three week run-in a control diet typical of Americans, they were randomized to 8 week receiving the control diet. The controlled diet lowered the systolic blood pressure significantly in the total group by 11.6/5.3 mm of Hg. The researcher concluded that control diet may offer an alternative to drug therapy in clients with hypertension and as a population approach, may prevent hypertension⁷. An experimental study on 'Effects of Comprehensive Lifestyle Modification on Diet, Weight, Physical Fitness, and Blood Pressure Control' was conducted in Maryland. Study was objected to compare the 18-month effects of 2 multi component behavioral interventions versus advice only on hypertension status, lifestyle changes, and blood pressure. 810 samples were 16 selected for the study with pre-hypertension. Reductions in blood pressure at 18 months were greater for participants in the established and the established plus Dietary Approach to Stop Hypertension groups than for the advice only group. The researcher concluded that persons with pre- hypertension and stage 1 hypertension can sustain multiple lifestyle modifications that improve control of blood pressure and could reduce the risk for chronic disease⁸. Cardiovascular disease contributed to 2.3 million deaths in India in 1990 and is projected to double by the year 2020. Hypertension is directly responsible for 57% of stroke deaths and 24% of coronary heart diseases deaths in India. In an evaluation of multiple examinations in various

Indian populations, there appear to be higher levels in urban versus rural subjects, with a strong correlation between changing lifestyle factors and the increase in hypertension in India. Among different states in India, Karnataka occupies eighth place with regard to population. In India, about 30% of people live in cities and Karnataka state 34.0% of people live in urban communities⁹.

A cross sectional survey was conducted in 2017, to assess Hypertension knowledge, heart healthy lifestyle practices and medication adherence among 385 adults with hypertension in Maryland USA. Data was collected by using an 11-item measure to assess hypertension knowledge 17 and obtained self-reports on dietary changes, engagement in aerobic exercise and medication adherence. The results showed that patients with low hypertension knowledge were less likely to reduce their salt intake (OR=0.44 [95% CI: 0.24-0.72]) and eat less to lose weight (OR=0.48 [95% CI: 0.26-0.87]) than patients with high hypertension knowledge. The study concluded that intensifying education strategies to improve patients' knowledge of hypertension may enhance their engagement in heart healthy lifestyle practices for optimal blood pressure control.¹⁰

The investigator, during his posting observed many people in the urban community with Hypertension. Even though they are educated they are not bothered of what to eat, what not to eat in order to keep their heart safe. This is due to the sedentary life style habits. These clients are following hypertensive medications strictly but not practicing the modified diet plan except a reduction in salt consumption. It is the responsibility of a community health nurse to educate the community regarding this serious problem. Thus, the investigator felt the need to provide a self instructional module (SIM) which can provide information regarding Heart Smart Diet for the clients with hypertension to keep their heart safe as hypertension is the major risk factor for stroke and other cardiovascular diseases.

CONCEPTUAL FRAMEWORK BASED ON MODEL

The conceptual framework for this study is based on modified open system model by J W Kenny (1995).

METHODOLOGY

RESEARCH APPROACH:

In view of the nature of the problem under study and to accomplish the objectives of the study, an evaluative approach was found to be appropriate to describe the effectiveness of self-Instructional module (SIM) on knowledge regarding heart smart diet among clients with hypertension in selected urban areas of Bangalore.

RESEARCH DESIGN:

The research design used in this study is Pre-experimental design (one group pretest and posttest design) to describe the effectiveness of self-Instructional module (SIM) on knowledge regarding heart smart diet among clients with hypertension in selected urban areas of Bangalore.

Schematic representation of Research design of the study

Group	Pre-test	Intervention	Post-test
Hypertensive clients	O1	X	O2

KEYS

O1= Pre-test to assess the knowledge level regarding heart smart diet among clients with hypertension.

X= Administration of self-instructional module regarding heart smart diet among clients with hypertension

O2 =Post-test to assess the knowledge level regarding heart smart diet among clients with hypertension.

VARIABLE

Dependent Variable

In this study, knowledge level of hypertensive clients regarding heart smart diet is the dependent variable.

Independent variable

In this study, self-instructional module on regarding heart smart diet is the independent variable.

Socio- demographic

Variables Demographic variables are the characteristics of hypertensive clients such as age, gender, Religion, educational status, duration of illness and previous exposure to source of information regarding heart smart diet.

SETTING OF THE STUDY

The study was conducted in selected community area (Hennur, Hegde nagar, Thani Sandra)

POPULATION:

Target population: Hypertensive clients.
 Accessible population: In this study, accessible population consists of hypertensive clients available at the time of study and who meet the inclusion criteria.

SAMPLING:

Sample
 In the present study, samples are the Hypertensive clients who meet inclusion criteria.

Sampling technique: In this study, sample comprises of 60 Hypertensive clients of in selected community areas, Bangalore.

Sample Size: In this study, the purposive sampling technique was used to select the samples based on inclusion and exclusion criteria.

SAMPLING CRITERIA:

Inclusion criteria
 Clients with hypertension who are:

- Residing in the urban area.
- Both male and female with Blood Pressure \geq 140/90 mm of Hg.

Exclusion criteria
 Clients with hypertension who:

- Already have knowledge regarding Heart Smart Diet.
- Work as a health care professional.
- Are having any complications of hypertension and suffer from any other chronic illness

DEVELOPMENT OF THE TOOL:

In this study the data collection was done by structured knowledge questionnaire.
SECTION A:- It consists of demographic proforma consisting of age, gender, religion, educational status, duration of illness previous knowledge regarding heart smart diet.

SECTION B:- It consists of 30 knowledge questionnaire regarding heart smart diet.

Score interpretation:
 The structured knowledge questionnaire consisted of 30 objective type questions with a single correct answer. Every correct answer was awarded a score of one (1) and every incorrect/ unanswerd was awarded zero (0). The maximum score on the structured knowledge questionnaire was thirty (30). A scoring item was prepared showing item numbers and correct responses.

The different levels of knowledge are categorized as follows:

Score (%)	Knowledge
< 50	Inadequate
51-75	Moderate
>75	Adequate

Content Validity:
 Validations were submitted to 3 experts. The experts were post graduates in 3 were in the field community Health Nursing and statistician (1). There was 100% agreement on most of the items. Minor suggestions were given. Modification of item was done according to the suggestions given by experts.

Content reliability
 The reliability of the structured knowledge questionnaire was established by using split half method. To establish the reliability, the tool was administered to 6 Hypertensive clients of Somashettyhalli area who fulfilled the inclusion criteria. The reliability quotient obtained was (r 0.72) which was highly positive.

Ethical Considerations:
 Written permission from the principal and informed consent from the subjects were obtained before conducting the study. No ethical issue was confronted while conducting the study.

RESULTS:

PLAN FOR DATA ANALYSIS

Descriptive Statistics

- Baseline proforma containing sample characteristics were analyzed by using frequency and percentage distribution.
- The knowledge level of the hypertensive clients was assessed before and after administration of self-instructional module was calculated using descriptive statistics like frequency, mean, mean percentage and standard deviation.

Inferential Statistics

- The effectiveness of self-instructional module was analyzed by paired' test.
- Association between mean pre-test knowledge scores of respondents with their selected demographic variables were analyzed by chi-square test

Part I: Description of Respondents by Demographic Characteristics:

The study summarizes that demographic characteristics of hypertensive patients among 60, with regards 10 (16.7 %) were 40 to 45 years of age, 27 (45%) were having 46 to 55 years of age and 23 samples (38.3%) were 56 to 65 years of age. In case of sex, majority of the hypertensive patient 38 (63.3%) were male and 22 female was (36.7%). Findings related to types of family 45 (75%) were comes under nuclear family and 22 (25%) were comes under join family. Regarding family monthly income 44 (73.3%) were earning rupees 3000 to 8000, 10 (16.7%) were earning rupees 8001 to 14000, 5 (8.3%) were earning 14001 to 20000 and 1 (1.7%) were earning rupees above 20001. Regarding marital status 52 (86.7%) were married, 8(13.3%) were unmarried and 0(0%) were divorced. Regarding food habits, 8 (13.3%) were vegetarian and 52 (86.7%) were non vegetarian. Regarding occupation, 17 (28.3%) were government job,5 (8.3%)were private job,14 (23.4%) were home maker and 24 (40%) were retired .Regarding education ,8 (13.3%) were illiterate, 15 (25%) were primary education, 31 (51.7%) were secondary education,6 (10%)were graduate and above. Regarding personal habits 7 (11.7%) were smoking,13 (21.7%) were alcoholism,17 (28.3%) were smoking and 23 (38.3%) were no such habits. Regarding any family history of hypertension,33 (55%) were having hypertension and 27 (45%) were not having hypertension. Regarding duration of hypertension, 27 (45%) were diagnosed less than one

year, 11 (18.4%) were diagnosed 2 to 3 years, 17(28.3%) were diagnosed 4 to 5 years and 5 (8.3%) were more than 5 years. Regarding source of information about hypertension, 20 (38.3%) were friends and relatives, 11 (18.4%) were health personals, 29 (48.3%) were mass media and 0 (0%) were from others. Regarding treatment, 20(33.3%) were taking treatment and 40 (66.4%) were not taking treatment regularly.

Part II: Pre- test Knowledge Scores of Respondents on heart smart diet among clients with hypertension

Table 3: Classification of Respondent Pre- test Knowledge level on heart smart diet among clients with hypertension

Knowledge Level	Category	Respondents	
		Number	Percent
Inadequate	≤50% Score	35	58.33%
Moderate	51-75Score %	25	41.66%
Adequate	> 75 % Score	00	00

Data in the Table 3 represents the frequency and percentage distribution of respondents on pretest knowledge level on heart smart diet among clients with hypertension. Majority 58.33% of them had inadequate knowledge (≤50%) scores, 41.66% of them had moderate knowledge (51-75%) scores and none of them had adequate knowledge (>75%) score in pretest regarding heart smart diet among clients with hypertension

Table 4: Aspect wise Pre- test Mean Knowledge scores regarding heart smart diet among clients with hypertension

N=60

Knowledge Aspects	Stat ements	MaxS core	Knowledge Scores			
			Mean	SD	Mean (%)	SD (%)
General information	6	6	0.49	0.50	8.16	8
Meal Planning	5	5	0.51	0.50	10.2	10
Heart smart diet	19	19	0.46	0.49	2.42	2.57
		30	1.46	1.49	20.78	20.57

The data presented in the table-4 shows the aspect wise mean pretest knowledge scores of respondents regarding heart smart diet among clients with

hypertension. It shows that the participants had highest mean percentage score 10.2% in meal planning, 8.16% regarding general information, 2.42% in area of heart smart diet. The combined mean percentage score was 20.78%

PART III: Post- test Knowledge Scores of Respondents on heart smart diet among clients with hypertension

TABLE- 5 Classification of Respondent Post- test Knowledge level on hypertensive clients regarding heart smart diet among clients with hypertension

Knowledge Level	Category	Respondents	
		Number	Percent
Inadequate	≤ 50 % Score	00	00
Moderate	51-75% Score	58	96.66
Adequate	> 75 % Score	02	3.33
Total		60	100.0

Data in the Table 5 represents the frequency and percentage distribution of respondents on pretest knowledge level regarding heart smart diet among clients with hypertension. Majority 96.66% of them had moderate knowledge (≤50%) scores, 3.33% of them had adequate knowledge (51-75%) scores and none of them had inadequate knowledge (>75%) score in pretest regarding heart smart diet among clients with hypertension.

TABLE -6 Aspect wise Post- test Mean Knowledge scores regarding heart smart diet among clients with hypertension

n=60

Knowledge Aspects	State ments	Max. Score	Knowledge Scores			
			Me an	SD	Mean %	SD %
General informati on	6	6	0.42	0.49	7	8.16
Menu planning	5	5	0.60	0.48	12	9.6
Heart smart diet	19	19	0.51	0.49	2.68	2.57
Combine d	30	30	1.53	1.46	21.68	20.33

The data presented in the table-6 shows the aspect wise mean post-test knowledge scores of

respondents regarding level regarding heart smart diet among clients with hypertension. It shows that the participants had highest mean percentage score 12% in the menu planning, 7% regarding general information, 2.68% in heart smart diet. The combined mean percentage score was 21.68%. *PART*

IV: Comparison of pre- test and post- test knowledge scores to evaluate the effectiveness of self- instructional module.

TABLE – 7 Overall Pre-test and Post-test Mean Knowledge scores regarding heart smart diet among clients

Aspect s	Max. Score	Knowledge Scores				Paire d 't' Test
		Mea n	SD	Mea n (%)	SD (%)	
Pre- test	30	0.49	0.50	8.16	8	20.92
Post- test	30	0.42	0.49	7	8.16	
Enhanc ement	30	0.91	0.99	1.6	0.16	

* Significant at 5% level $t(0.05,59df) = 1.96$

Data in Table 7 projects the overall pretest, posttest and enhancement of mean knowledge scores regarding heart smart diet among clients with hypertension. The mean pretest knowledge was 0.49% with SD 0.50%. The mean posttest knowledge found to be 0.42 % with SD 0.49%. However, the enhancement was proved as mean (1.6%) and SD of (0.16%). Further, the paired t test value (20.92*) shows statistical significance at level of $p < 0.05$ with df (59), establishing the effectiveness of SIM.

PART V: Association between Demographic variables and Pre-test Knowledge level on heart smart diet among clients with hypertension

The study depicts the association of Hypertensive client’s level of knowledge on prevention of stroke with their monthly income, the calculated value of chi-square ($\chi^2 = 1.37$) was less than the value at 0.05 level of significant. So, there is a significant association exist between the monthly income of Hypertensive patients with their knowledge. The above table depicts the association of Hypertensive clients level of knowledge on prevention of stroke with their Age calculated value of chi-square ($\chi^2 =$

2.03), Gender calculated value of chi-square ($\chi^2 = 0.12$), Type of family calculated value of chi-square ($\chi^2 = 0.08$), Marital status calculated value of chi-square ($\chi^2 = 0.11$), Diet calculated value of chi-square ($\chi^2 = 0.08$), Occupation calculated value of chi-square ($\chi^2 = 2.5$), Education calculated value of chi-square (0.2), Personal habits calculated value of chi-square ($\chi^2 = 1.63$), Family history calculated value of chi-square ($\chi^2 = 0.62$), Duration of Hypertension calculated value of chi-square $\chi^2 = (0.12)$, Source of information calculated value of chi-square ($\chi^2 = 0.18$), Hypertensive treatment calculated value of chi-square ($\chi^2 = 0.70$) were less than the table value at 0.05 level of significance. So, there was no significant association exist between the demographic variables of Hypertensive patients with their knowledge.

MAIN FINDINGS OF THE STUDY

1. To assess the pre-test knowledge scores of clients with hypertension regarding Heart Smart Diet by using structured knowledge questionnaire. In the present study, Majority 58.33% of hypertensive clients had inadequate knowledge ($\leq 50\%$) scores, 41.66% of them had moderate knowledge (51-75%) scores and none of them had adequate knowledge ($>75\%$) score in pretest regarding heart smart diet. In the present study, the overall pretest knowledge scores of the hypertensive clients regarding heart smart diet were found to be inadequate with mean percentage of 8.16% and a standard deviation of 8%.
2. To determine the effectiveness of Self - Instructional Module regarding Heart Smart Diet among clients with Hypertension by using same structured questionnaire
The mean pretest knowledge was 0.49% with SD 8%. The mean posttest knowledge found to be 0.42 % with SD 6.01%. However, the enhancement was proved as mean (8.95%) and SD of (8.16%). Further, the paired t-test value (20.92*) shows statistical significance at level of $p < 0.05$ with df (59), establishing the effectiveness of SIM. Hence Research hypotheses H1 is proved and accepted.
3. To find the association between pre-test knowledge scores regarding Heart Smart Diet among clients with hypertension and selected demographic variables.

The association of Hypertensive patient's level of knowledge on heart smart diet with their monthly income, the calculated value of chi-square (1.37) was less than the table value at 0.05 level of significant. So there is a significant association exist between the monthly income of Hypertensive patients with their knowledge. The association of Hypertensive Patients level of knowledge on heart smart diet with their Age calculated value of chi-square (2.03). Gender calculated value of chi-square (0.12), Type of family calculated value of chi-square (0.08), Marital status calculated value of chi-square (0.11), Diet calculated value of chi-square (0.08), Occupation calculated value of chi-square (2.5), Education calculated value of chi-square (0.2), Personal habits calculated value of chi-square (1.63), Family history calculated value of chi-square (0.62), Duration of Hypertension calculated value of chi-square (0.12), Source of information calculated value of chi-square (0.18), Hypertensive treatment calculated value of chi-square (0.70) were less than the table value at 0.05 level of significance. So there was no significant association exist between the demographic variables of Hypertensive patients with their knowledge.

CONCLUSION

The chapter enlightens the importance of this research study. The purpose of this study was to evaluate the effectiveness of self-instructional module (SIM) on knowledge regarding Heart Smart Diet among clients with Hypertension in selected urban area of Bangalore City.” This research revealed that there is a significant difference in knowledge of hypertensive clients regarding heart smart diet after reading self instructional module. The study statistically proved that there is an association between knowledge level and selected socio demographic variables of the hypertensive clients.

NURSING IMPLICATION

Nursing Education

The present study helps the nurse educator gives priority to uphold the value of education regarding heart smart diet among hypertensive clients residing in urban and rural areas of community.

Nursing Practice

Self-instructional module is considered an effective education strategy to improve the knowledge of the hypertensive clients regarding heart smart diet. The study will help the nurses to upgrade their knowledge and develop their skill regarding heart smart diet.

Nursing Administration

In co-operation with the hospital authorities, nurse administrator, community health department, public health center should take initiative to organize educational program for hypertensive clients regarding heart smart diet.

Nursing Research

There is a need for extensive and intensive research in this area so that strategies for educating hypertensive clients regarding heart smart diet can be achieved. Student nurse researcher can also be motivated to conduct studies in this area.

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