

**ASSOCIATION BETWEEN BODY MASS INDEX AND HYPERTENSION
IN A VIEW TO PREPARE INFORMATION BOOKLET ON PREVENTION
OF COMPLICATIONS AMONG HYPERTENSIVE PATIENTS**



**A DISSERTATION SUBMITTED TO THE TAMILNADU
DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI,
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
OF MASTER OF SCIENCE
IN NURSING**

APRIL 2016

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BY

301412201

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**ASSOCIATION BETWEEN BODY MASS INDEX AND
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ON PREVENTION OF COMPLICATIONS AMONG HYPERTENSIVE PATIENTS

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IN NURSING
APRIL – 2016**



Certified that this is the bonafide work of

301412201

At the Annammal College of Nursing,

Kuzhithurai.

*Submitted in partial fulfillment of the requirements for
the degree of Master of Science in Nursing from the Tamilnadu*

Dr. M.G.R. Medical University, Chennai.

Examiners

1. _____

2. _____

Prof. Mrs. J.M.Jerlin Priya., M.Sc (N)., Ph.D,

Principal

APRIL-2016

DECLARATION

I hereby declare that the present dissertation title “**An explorative study to find out the association between body mass index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district**”, is the outcome of the original research work undertaken and carried out by me under the guidance of **Prof. Mrs. J.M Jerlin Priya M.Sc (N), Ph.D, Principal cum professor** in the Department of Medical Surgical Nursing, and **Mrs. Starina flower M.Sc.(N).**, Assistant professor in Department of Medical Surgical Nursing. I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in the university or any other university.

301412201

M Sc (N) II year

ACKNOWLEDGEMENT

I am extremely grateful to all those who contributed to the successful completion of this study. First, I thank the **Lord Almighty** for providing strength and support throughout this study.

It is my honour to thank our beloved Chairman **Dr. Sheeba Jayalal, MBBS., DGO.,** and our beloved honourable Secretary **Dr. Jayalal MS., FICS., DLS(Germany)., MBA., FIAGES.,** for providing entire facility and encouragement for conducting this study.

I take pride in expressing my heartfelt thanks to great personality **Prof Mrs. Jerlin Priya., M.Sc (N)., Ph.D,** Principal, for the invaluable guidance, continued support, expert suggestions, kind co-operation, encouragement and round the clock support which helped me in completion of this dissertation.

My heartfelt thanks to **Mrs. Sujatha. M.Sc(N).,** Vice Principal, Class Coordinator for her encouragement and support given during this work.

At this moment I convey my profound gratitude to **Mrs. Starina flower, M.Sc.(N).,** Assistant professor in Department of Medical Surgical Nursing and the other staff of the department, who helped me by giving constant help, affection, and moral support throughout the study.

I express my thanks to the **entire faculty of Annammal College of Nursing, Kuzhithurai,** for their co-operation and encouragement.

I extend my thanks to **Mr. Anto John Britto M.Sc., M.Ed., M.Phill., P.G., BBM.,** Professor of Bio Statistics, for his valuable opinion, suggestions and guidance in analysis and interpretation of data.

I thank **Mrs. Mary Shajitha.,** Librarian, for helping me in referring journals and books.

I thank all the **office staff** for their help in taking photocopies of study reviews.

I express my deep sense of gratitude and heartfelt thanks to the **experts** who have validated and edited my study and who devoted their valuable hours in solving my doubts and in providing meticulous attention.

I thank all the **research participants** for their complete co operation towards me.

I express my deep sense of gratitude and heartfelt thanks to **Annammal hospital management and staffs** for their support and guidance.

It's my great pleasure to express my deep sense of special gratitude to my **loving parents, sister, and my dear friends** for their continuous help and support throughout the study and encouraging me to overcome the tides of heavy schedules and problems in the path of progress in this study.

301412201

M.Sc(N)II year

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VI	List of experts.
VII	Research Participants consent form. [English and tamil]
VIII	Certificate of English Editing.
IX	Certificate of Tamil Editing.
X	Tool for data collection (English and Tamil). Tool: I Sociodemographic variable proforma, Clinical variable proforma, Biophysiological variable proforma. Tool : II Body mass index
XI	Master code sheet.

ABSTRACT

“ASSOCIATION BETWEEN BODY MASS INDEX AND HYPERTENSION IN A VIEW TO PREPARE INFORMATION BOOKLET ON PREVENTION OF COMPLICATIONS AMONG HYPERTENSIVE PATIENTS”

INTRODUCTION

Hypertension has become a systemic disease with more incidence and prevalence rate among the modern generation. Dietary and lifestyle changes can lower blood pressure and decrease the risk of health complications, although treatment with medication is still often necessary in people for whom lifestyle changes are not enough or not effective. The treatment of moderately high arterial blood pressure with medications is associated with an improved [life expectancy](#). Hypertension is the most important [preventable risk factor for premature death](#) worldwide. It increases the risk of [ischemic heart disease](#), [stroke](#), [peripheral vascular disease](#), and other cardiovascular disease, including [heart failure](#), [aortic aneurysm](#), diffuse [atherosclerosis](#), [chronic kidney disease](#), and [pulmonary embolism](#). Hypertension is also a risk factor for [cognitive impairment](#) and [dementia](#). Other complications include [hypertensive retinopathy](#) and [hypertensive nephropathy](#)

Dietary and lifestyle changes can improve blood pressure control and decrease the risk of health complications, although drug treatment is still often necessary in people for whom lifestyle changes are not enough or not effective.

A number of important contributory factors for hypertension have been identified, including overweight/obesity, excessive dietary sodium intake, low physical activity, smoking, and high alcohol intake. Previous studies have shown that being overweight or obese is associated with a higher risk for hypertension. Hypertension, a condition developed as a result of high blood pressure and is strongly correlated with Body Mass Index. Obesity was noted to be a single best predictor of hypertension incidence, and was regarded as a major controllable contributor to hypertension. Overweight and obesity is conveniently determined from Body Mass Index.

STATEMENT OF THE PROBLEM

An explorative study to find out the association between Body Mass Index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district

THE OBJECTIVES OF THE STUDY

- To find out the association between Body Mass Index and Hypertension among hypertensive patients.
- To find out the association between selected socio demographic variables, clinical variables and Hypertension among hypertensive patients
- To prepare an information booklet on prevention of early and late complications of hypertension.

HYPOTHESES

H₁: There will be a significant association between Body Mass Index and Hypertension.

H₂: There will be significant association between socio demographic variables, clinical variables and Hypertension.

RESEARCH METHODOLOGY

The study was conducted among hypertensive patients, for assessing the association between Body Mass Index and Hypertension. At first a rapport was established with the patients and the purpose of the study was explained to them. The sample of 100 was selected by using non- probability convenient sampling technique. On the first day of data collection, the investigator introduced him and explained the nature, purpose of the study to the clients. Verbal and written Consent was obtained to participate in the study and confidentiality of their responses was assured. Hypertensive patients were identified and their blood pressure, height, weight and abdominal girth were collected. Demographic variables and clinical variables were collected using demographic variable proforma and clinical variable proforma. Body Mass Index was calculated according to the universally accepted formula.

DATA ANALYSIS

The data was edited, coded and entered in excel sheets. Analysis was done using both descriptive and inferential statistics. Frequency and percentage distribution of socio demographic, clinical variables and Biophysiological variables were presented. Chi square value

was calculated to find the association between Body Mass Index and Blood pressure and also the association between Socio demographic variables, clinical variables and Body Mass Index.

RESULT AND SUMMARY

On analysing data, a strong association between Body Mass Index and Hypertension was found. Regarding socio demographic variables there was association between Age, sex, occupational status and marital status with hypertension. Whereas, no association was there for educational level, residing place, family income and type of family with Hypertension. Regarding Clinical variables, there was association between Type of food and Frequency of meal with hypertension. Whereas no association was found for Co morbid illness and Common cooking methods with Hypertension.

CONCLUSION

The study revealed that there is association between age, sex, occupational status and marital status with hypertension whereas, no association was found for educational level, residing place, family income and type of family with Hypertension. On analyzing data, we can deduce that 42% of the sample were overweight 52% were of normal weight and 6 % were underweight .There is significant association between Systolic blood pressure and Body Mass Index. There is significant association between Diastolic blood pressure and Body Mass Index. Hence the researcher concluded that there is an association between Body Mass Index and Hypertension.

CHAPTER I

INTRODUCTION

- *Background of the study*
- *Need for the study*
- *Statement of the problem*
- *Objectives of the study*
- *Hypotheses*
- *Operational definitions*
- *Assumptions*
- *Delimitations*

- *Conceptual framework*

CHAPTER II

REVIEW OF LITERATURE

- *Empirical studies related to incidence and prevalence of Hypertension.*
- *Empirical studies related to risk factors of Hypertension.*

- *Empirical studies related to influence of Body mass index on Hypertension*

CHAPTER III

RESEARCH METHODOLOGY

- *Research approach*
- *Research design*
- *Variables*
- *Settings*
- *Population*
- *Sample*
- *Sample size*
- *Sampling technique*
- *Sampling criteria*
- *Development of the tool*
- *Description of the tool*
- *Validity*
- *Reliability*
- *Pilot study*
- *Data collection procedure*
- *Plan for data analysis*

- *Ethical consideration*

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

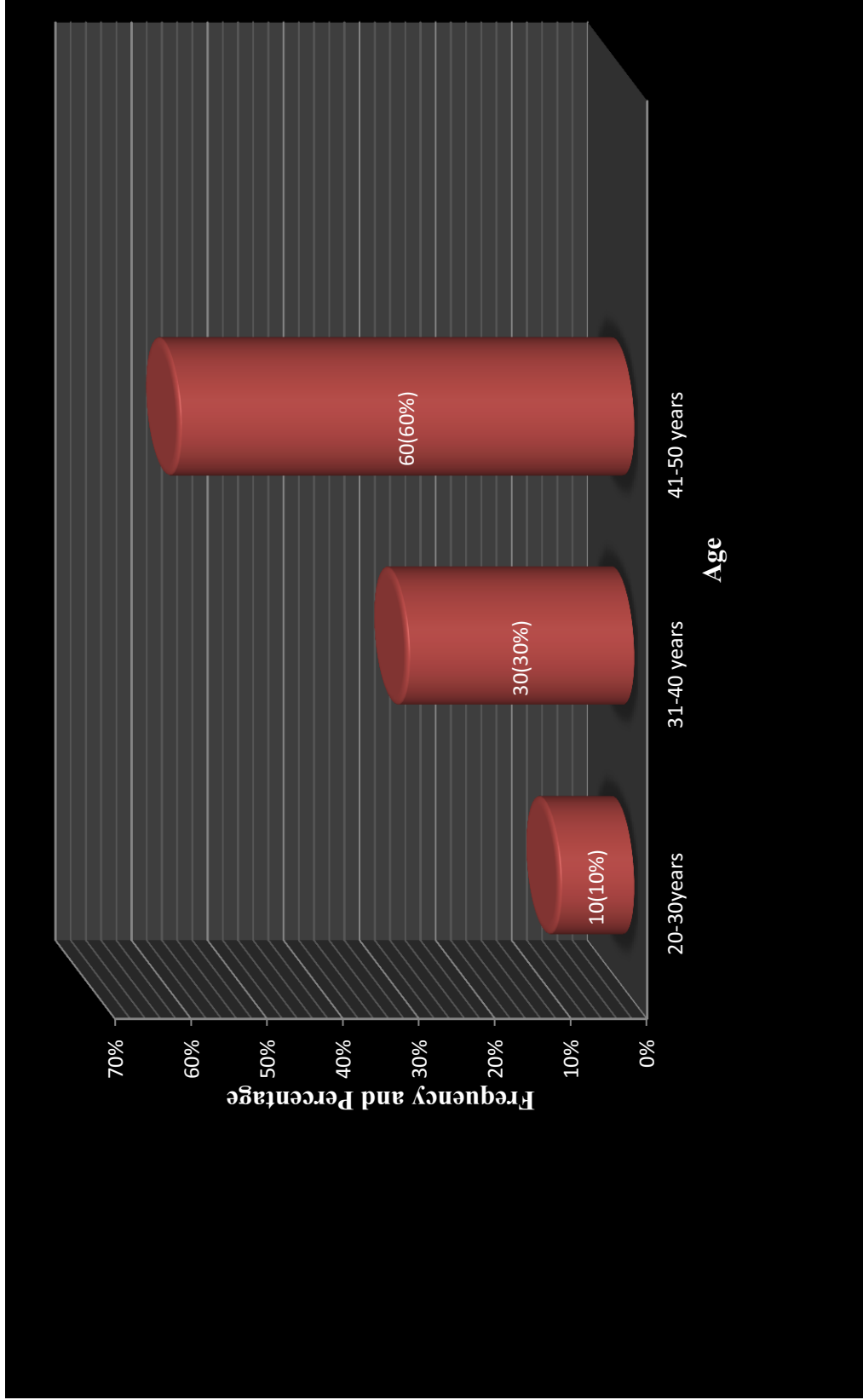


Fig3: Frequency and percentage distribution of patients with hypertension with regard to age

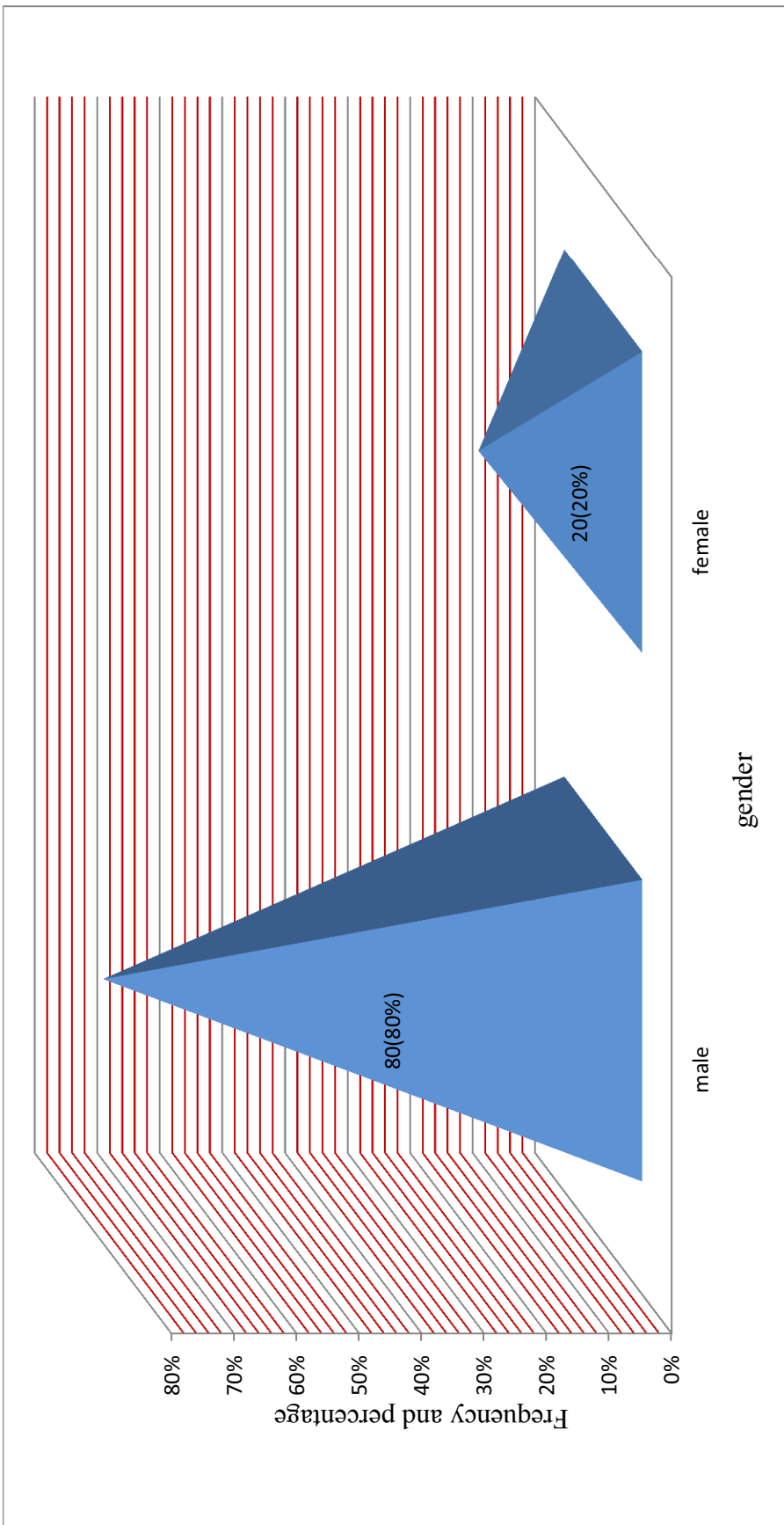


Fig4: Frequency and percentage distribution of patients with hypertension with regard to gender

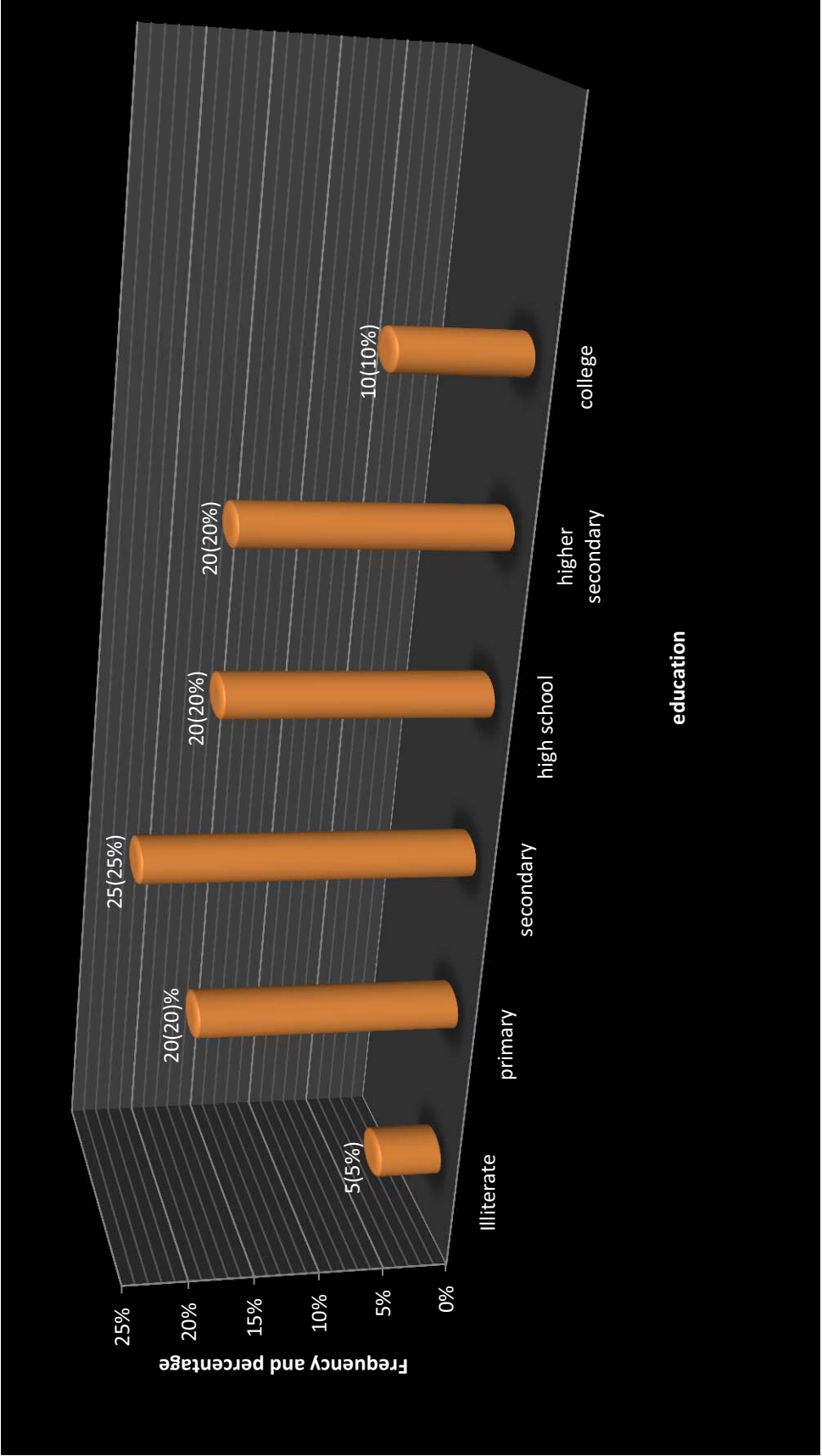


Fig5:Frequency and percentage distribution of patients with hypertension with regard to education

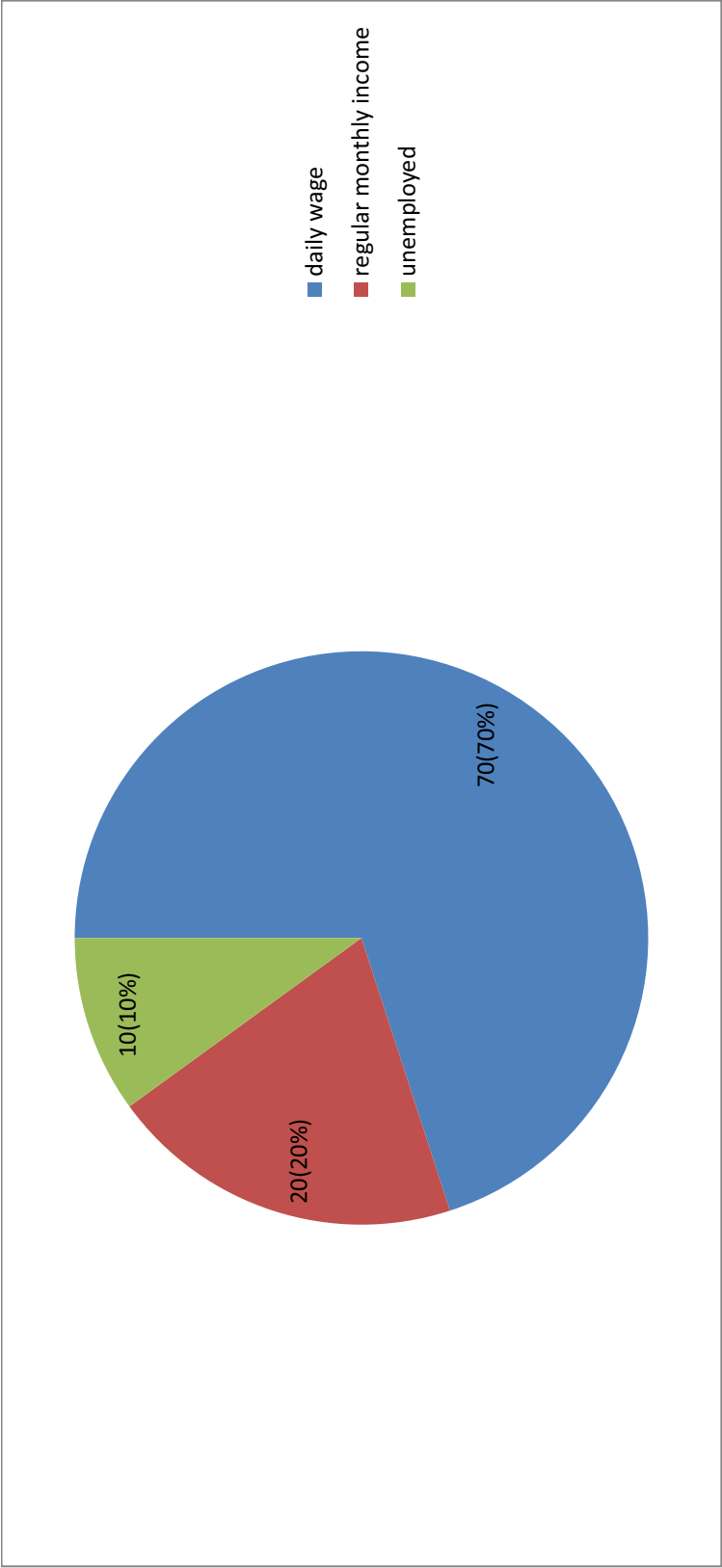


Fig6:Frequency and percentage distribution of patients with hypertension with regard to occupation

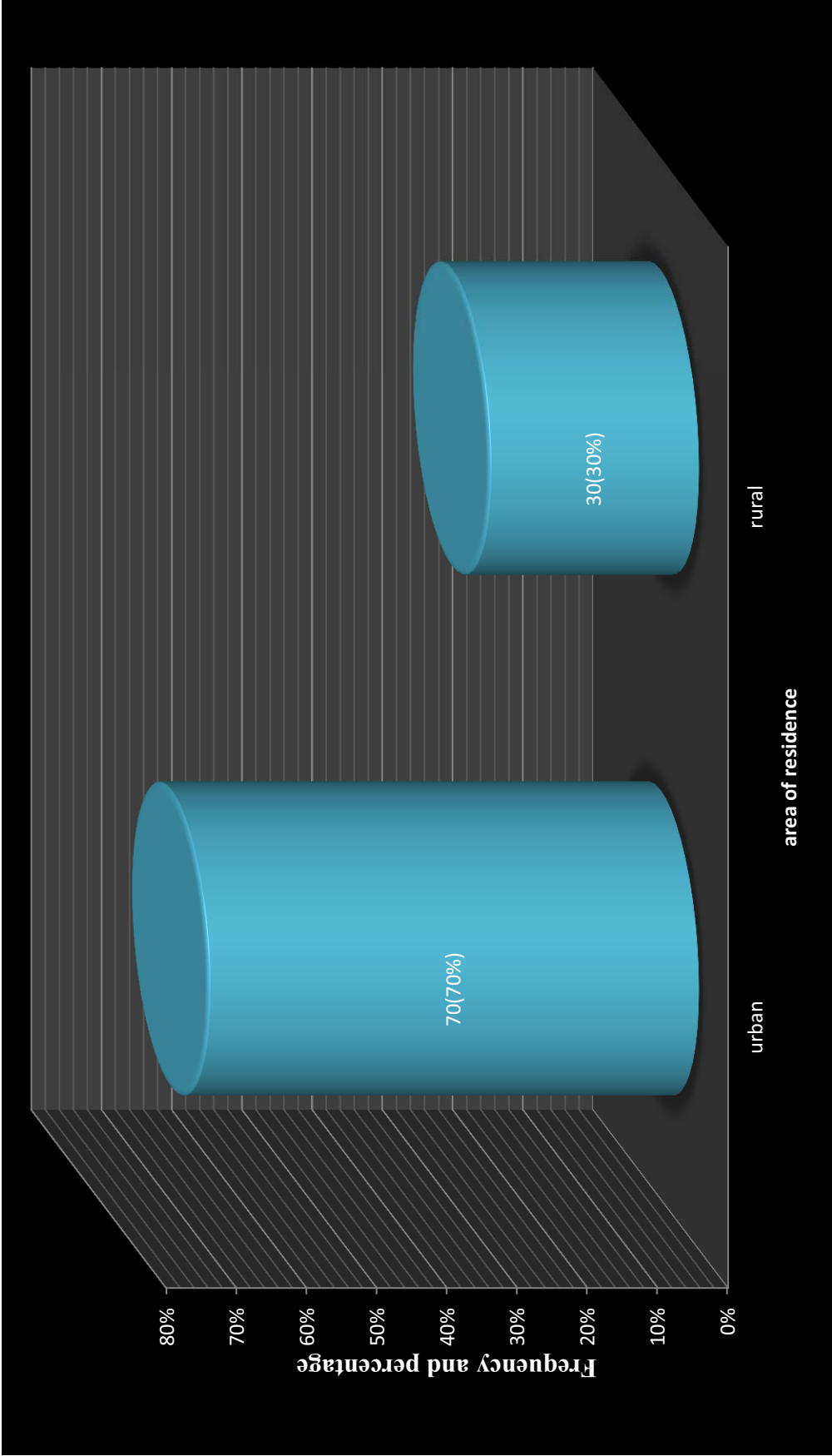


Fig 7:Frequency and percentage distribution of patients with hypertension with regard to area of residence

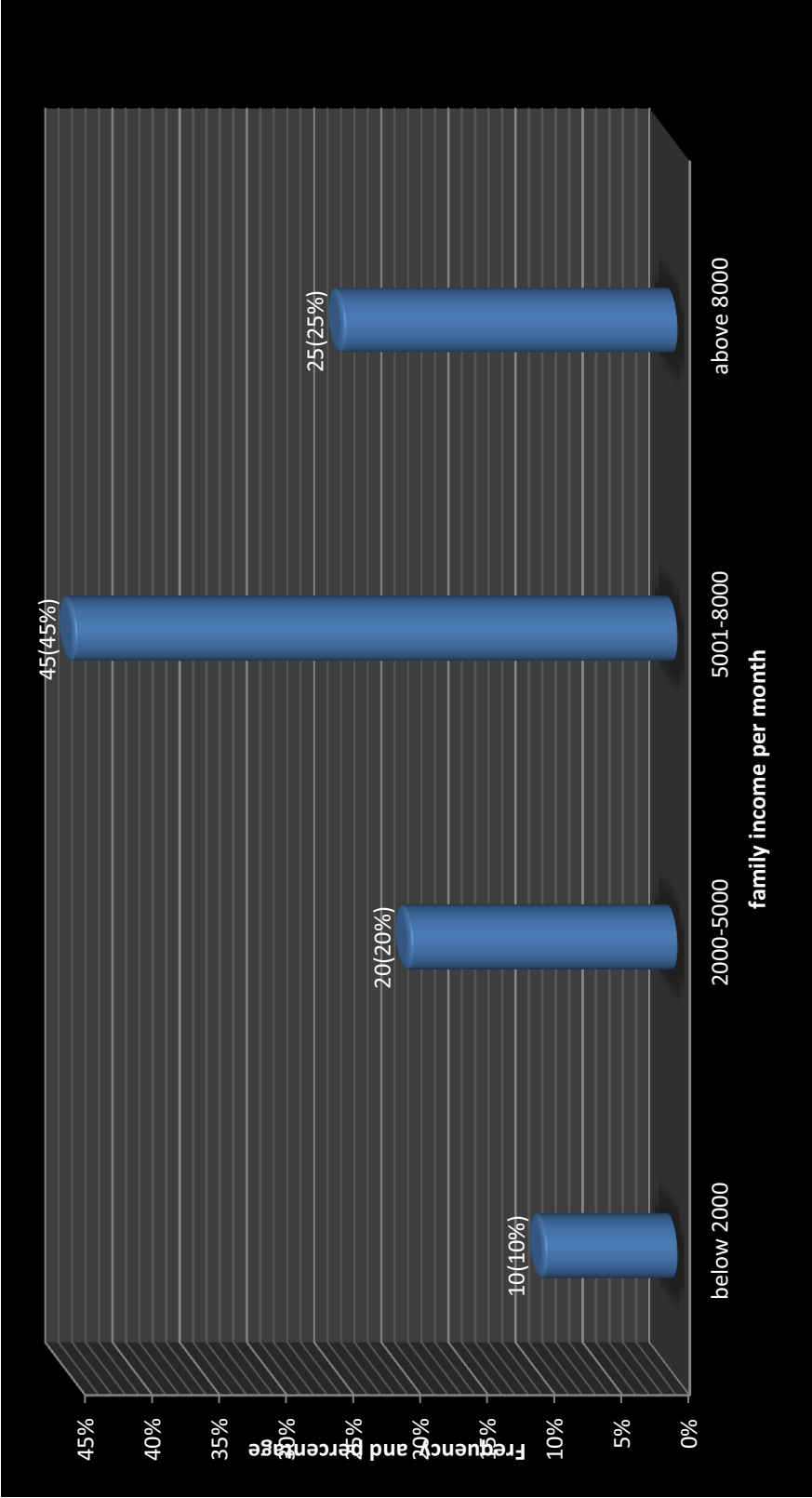


Fig8:Frequency and percentage distribution of patients with hypertension with regard to family income per month



Fig 9:Frequency and percentage distribution of patients with hypertension with regard to type of family

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DISCUSSION

CHAPTER VI

SUMMARY

CONCLUSION

IMPLICATIONS

RECOMMENDATIONS

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REFERENCES

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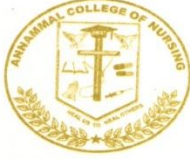
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ANNEXURES

ANNEXURE-I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY



Annammal College of Nursing

(Approved by Govt. of Tamilnadu, TN Nurses & Midwives Council,
Indian Nursing Council and Affiliated to The Tamilnadu Dr. MGR Medical University)

Annammal Hospital Campus, KUZHITHURAI - 629 163

K.K. Dist, Tamil Nadu. Ph : 04651 - 260614, Fax : 04651 - 260605

www.annammalnursing college.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayal MBBS, DGO

Chairperson

From

Date :

Prof. Mrs. J. M. Jerlin Priya, M.Sc(N), Ph.D.,
Principal,
Annammal College of Nursing,
Kuzhithurai.

To

Our Motto : "Heal us to Heal others"

Respected sir,

Sub: Seeking permission to conduct the research study – reg.

Mr. Arun R. R. II year M.Sc (N) student of Annammal College of Nursing, Kuzhithurai is approaching you to conduct research on "An explorative study to find out the association between Body Mass Index and Hypertension in a view to prepare information booklet on prevention of complications among Hypertensive patients in selected hospitals at Kanyakumari district". Which he has to complete as a partial fulfillment of university requirement for the award of Master of Science in Nursing Degree

In this regards I humbly request you to give permission to conduct the study in your hospital

Thanking you



Yours faithfully,

Principal

Annammal College of Nursing
Kuzhithurai, K.K. Dist., - 629 163

"What we are is gift of god and What we become is gift to god"

ANNEXURE –II

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY



Annammal Hospital, Kuzhithurai, K.K.Dist - 629163
Phone: 04651-260555, 260511 | Cell: +91 9788860031 - 24, Fax: 04651-260605
E-mail: annammalhospital@yahoo.in

26-11-2015

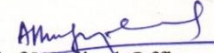
Arun R R a student of M.Sc Nursing program from Annammal College of Nursing, Kuzhithurai., conducted a study on

“An explorative study to find out the association between Body Mass Index and Hypertension in a view to prepare information booklet on prevention of complications among Hypertensive patients in selected hospitals at Kanyakumari District”

As part of his study he educated the staff regarding infection control measures also he conducted his research in our hospital in an excellent manner with good dedication and in a pleasant way.

We wish all the very best to **Arun R R** for a very successful and fruitful career.




Chief Medical Officer

Dr. SHEERA JAYALAL, MBBS., DGO
REG NO. 80622
CHIEF MEDICAL OFFICER
ANNAMMAL HOSPITAL
KUZHITHURAI

What we are is Gift of God and
What we become is Gift to God

ANNEXURE III

ETHICAL CLEARANCE CERTIFICATE

Valid from : 2015

Valid to : 2016

Name of the Investigator: Mr. Arun R.R

The Ethical committee meeting held on 07-03-2015 had reviewed the project titled "An explorative study to find out the association between body mass index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospitals at Kanyakumari district". The proposal was submitted before the ethical committee for the acceptance and found to be acceptable on ethical grounds. The ethical committee held responsibility and accountability for the investigator for any other administrative approvals that may pertain to this research. This has to be carried out according to conditions outlined in the original protocol submitted for ethical review.

This certificate of approval is valid for the time period provided, there is no change in the methodology protocol or consent process and documents.

Any significant change should be reported to guide for its considerations in advance for its implementation.

Signature of Ethical Committee members:

1. **Dr. Sheeba Jayalal M.B.B.S.,D.G.O.,**
Chief Medical Officer

2. **Dr. Jayalal M.S.,F.I.C.S.,(Germany),M.B.A.,F.I.A.G.E.S**
Chief Surgeon

3. **Dr. Shanthi Appavu M.Sc(N),,PhD**
Nursing Research Advisor

4. **Prof. Mrs. Jerlinpriya M.Sc (N),,PhD**
Research Guide

ANNEXURES IV



Annammal College of Nursing

(Approved by Govt. of Tamilnadu, TN Nurses & Midwives Council,
Indian Nursing Council and Affiliated to The Tamilnadu Dr. MGR Medical University)
Annammal Hospital Campus, KUZHITHURAI - 629 163
K.K. Dist, Tamil Nadu. Ph : 04651 - 260614, Fax : 04651 - 260605
www.annammalnursing college.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayalal MBBS, DGO
Chairperson

Date :

To

Respected Madam/Sir,

Sub: M.Sc Nursing Programme – Dissertation - Validation of study tool
request-reg.

Mr. Arun R.R, a bonafide II Year M.Sc (N) student of Annammal College
of Nursing, Kuzhithurai is approaching you to obtain validation of his study tool
pertaining to his dissertation in partial fulfillment of the requirements for the degree of
Master of Science in Nursing. The selected topic is

“A explorative study to find the relationship between selected anthropometric
measurements and blood pressure among adults in selected hospitals at Kanyakumari
District”

In this regards I humbly request you to kindly extent possible technical
guidance and support for successful completion of dissertation.

I enclosed here with a checklist for your evaluation

Thanking you

Yours faithfully,



Principal
Annammal College of Nursing
Kuzhithurai, K.K. Dist.- 629 163

Our Motto : "Heal us to Heal others"

“ What we are is gift of god and What we become is gift to god”

ANNEXURE V
VALIDATION FOR RESEARCH TOOL

Instructions

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly place tick mark in the appropriate column and give remarks.

SI NO	CRITERIA	1	2	3	REMARKS
1	Content ➤ Adequacy ➤ Relevance ➤ Organized				
2	Language ➤ Simplicity ➤ Clarity ➤ Relevant				
3	Scoring ➤ Easy to score ➤ Clarity ➤ Relevant				
4	Practicability ➤ Procedure ➤ Utility ➤ Feasibility				

Interpretation of column

Column I : Meets the criteria.

Column II : Partially meets the criteria.

Column III: Does not meets the criteria.

Designation

Signature of the Expert

ANNEXURE VI

LIST OF EXPERTS

1. **Dr. Andrew Prabhin Sathish M D**
Physician
S P Multispeciality Hospital
Parassala.
2. **Mrs. Sheeba. C MSc(N)** Reader ,
Department of Medical Surgical nursing,
Christian College of Nursing,
Neyyoor.
Kanyakumari District.
3. **Mrs. Merlin Suja. MSc(N)** Reader
Department of medical surgical nursing
C.S.I. College of nursing,
Marthandam
Kanyakumari District
4. **Mrs. Moona. J. Cicil. MSc(N)**, Associate Professor,
Department of medical surgical nursing,
Christian College of Nursing,
Neyyoor,
Kanyakumari District
5. **Mrs. Y. Vinitha Bai. MSc(N)** Associate Professor,
Department of medical surgical nursing,
C. S.I. College of Nursing,
Marthandam,
Kanyakumari District
6. **Mrs. Vini. William. MSc (N)** Associate Professor,
Department of medical surgical nursing,
Thassaih College of Nursing,
Marthandam,
Kanyakumari District
7. **Mr. Anto John Britto. M.Sc., M.Ed., M.Phil., PGDBM.,**
Bio Statistician,
Scott Christian college Nagercoil,
Kanyakumari District

ANNEXURE VII
RESEARCH PARTICIPANT CONSENT FORM

Dear participant,

I am Arun R R II yr M.Sc Nursing student of Annammal College of Nursing, Kuzhithurai. As a part of my academic requirement, I am conducting a study on ‘Association between body mass index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district’. The findings of the study will be helpful in prevention of further complication among hypertensive patients. The study does not possess any threat to your health and wellbeing, rather increases your knowledge. I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I hereby consent to participate and undergo the study.

Place:

Date:

Signature of the participant

Muha;r;rpapy; g';F bgWgtUf;fhd xg;g[jy; gotk;

md;ghh;e;j g';F bgWnthnu/

ehd; md;dk;khs; brtpypah; fy;Y]hpapy; brtpypah; gapw;r;rpapy; KJfiygl;lk;
bgWtjw;f;F gapw;r;rpapd; xU gFjpahf vil cauk; tpfpj FwpaPL kw;Wk; cah; ,uj;j mGj;jj;jpd;
TI;likg;g[gw;wp Muha;r;rp Fwpj;j jfty; g[j;jfj;ij cUthf;ft[k; cs;nsd;. ,e;j Muha;r;rpapd; Kot[fs;
kw;Wk; jfty; g[j;jfk; gaDs;sjhf mika[k;.

,jdhy; ,e;j Muha;r;rpapy; eP';fs; g';Fbgw c';fSila gjpy;fs; btspg;gilahft[k;/ cz;ikahft[k;
,Uf;f ntz;Lk;. c';fSila xg;g[jy; kw;Wk; xj;JiHg;iga[k; ju ntz;Lfpnwd;. c';fSila bgah; kw;Wk;
jfty;fs; ntW v';Fk; btspaplg;glkhl;lhJ.

Muha;r;rpahshpd; ifbahg;gk;

..... vd;w ehd; ,e;j Muha;r;rpapy; g'F bgw KG kdJld; rk;kjpf;fpnwd;.

g';F bgWnthhpd; ifbahg;gk;.

ANNEXURE VIII
CERTIFICATE OF ENGLISH EDITING

TO WHOMEVER IT MAY CONCERN

This is to certify that the dissertation, "An explorative study to find out the association between body mass index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district" by Mr. Arun R R, IInd year MSc(N) student of Annammal College of Nursing was edited for English language appropriateness by

.....




Signature

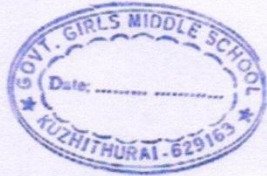
SHEEBA JACOB
H.S.S. TEACHER (ENGLISH)
GOVT. HIGHER SECONDARY SCHOOL
PAZHAMTHOTTAM, ERNAKULAM


ANNEXURE IX
CERTIFICATE OF TAMIL EDITING

TO WHOMEVER IT MAY CONCERN

This is to certify that the dissertation, "An explorative study to find out the association between body mass index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district" by Mr.Arun R R,, IInd year MSc(N) student of Annammal College of Nursing was edited for Tamil language appropriateness by

.....



Signature  29/1/16
READMASTER
GOVT GIRLS MIDDLE SCHOOL
KUZHITHURAI

ANNEXURE X

DESCRIPTION OF THE TOOLS

Kindly place a tick mark against the option which you feel as appropriate

TOOL I

SOCIO DEMOGRAPHIC VARIABLE PROFORMA

1) Age in years

a) 20-30

b) 31-40

c) 41-50

2) Sex

a) Male

b) Female

3) Education.

a) illiterate

b) primary

c) Secondary

d) High school

e) Higher secondary

f) College

4) Occupation

- a) Daily wage
- b) Regular monthly income
- c) Unemployed

5) Area of Residence

- a) Urban
- b) Rural

6) Family income per month in rupees

- a) Below 2000
- b) 2000-5000
- c) 5001-8000
- d) Above 8000

7). Type of Family

- a) Nuclear
- b) Joint

CLINICAL VARIABLES

A .Diet

1) what type of food do you prefer?

- a) vegetarian
- b) non vegetarian

2) what is the frequency of your meal?

- a) 2 times/day
- b) 3 times /day
- c) 4 times /day
-

d) more than 4 times

3) What is your common cooking method?

a) Frying

b) Baking

c) Stewing

d) Boiling

e) steaming

B..Co morbid illness

1) Do you have any cardiovascular problems?

a) yes b)no

if yes specify.....

2) Do you have any kidney disease?

a) yes b)no

if yes specify.....

3) Are you diabetic?

a) yes b)no

if yes specify.....

4) Do you have any other problems?

a) Yes b) no

if yes specify.....

BIOPHYSIOLOGICAL VARIABLES

1) Height

- a) <140 cm
- b) 140-159 cm
- c) 160-180 cm
- d) >180 cm

2) Weight

- a) <50 kg
- b) 50-70 kg
- c) 71-90 kg
- d) >90 kg

3) Abdominal girth

- a) <80 cm
- b) 80-99 cm
- c) 100-120 cm
- d) >120 cm

4) Blood pressure in mm/hg

- Systolic

- a) <90
- b) 90-120
- c) 121-140
-

d)141-180

e) >180

• Diastolic

a) <60

b) 60-80

c) 81-100

d)101-120

e) >120

TOOL II

Body Mass Index $\frac{\text{Weight in kg}}{\text{Height in meter}^2}$ in kg/m^2

a) <18

b) between 18 and 24

c) >24

nehahspapd; bghJtptuk;

vjpnuhf;fg;gl;lfl;l;ppy; rhp[√]vdFwpapLf

1. taJtuk;g[

m) 20 taJKjy; 30 taJtiu

M) 31 taJKjy; 40 taJtiu

,) 41 taJKjy; 50 taJtiu

2. ghypdk;

m) Mz;

M) bgz;

3. fy;tpjFjp

m) gog;gwpt[,y;yhjth;

M)bjhlf;fepiyf;fy;tp

,) ,ilepiyf;fy;tp

<) cah; epiyf;fy;tp

c) nky; epiyf;fy;tp

C) fy;Y}hpf;fy;tp

4. bjhHpy;

m) jpdf;Typntiybra;gth;

M)epiyahdkhjtUkhdk; <l;Lgth;

,) ntiyaw;wth;

5. ,Ug;gplk;

m) efuk;

M)puhkk;



6. FLk;gj;jpd; khjtUkhdk; +ghapy;

m) +gha; 2000/- f;Ff; Fiwthf

M) +gha; 2000 Kjy; +gha;5000 tiu

,) +gha; 5000 Kjy; +gha; 8000 tiu

<) +gha; Kjy; 8000/-f;Fnky;

7. FLk;gtif

m) jdpf;FLk;gk;

M)TI;Lf;FLk;gk;

kUj;Jtrk;ke;jkhdfhuzpfs;

czt[gHf;fk;

1. eP';fs; vt;tifahdczt[KiwiaifahSfpwPh;fs;>

m) irtk;

M)mirtk;;

,) fyitcz[t

2. jpdKk; vj;jid Kiwcz[t cl;bfhs;tPh;fs;>

m) xUehs; 2 Kiw

M)xUehs; 3 Kiw

,) xUehs; 4Kiw

<) xUehs; 4Kiwf;Fnky;

3. bghJthf ve;j tifahd rikay; Kiwia gpd;gw;WfpwPh;fs;>

m) tWj;jy;/ bghhpj;jy;

M)btJg;g[jy;;

,) tjf;Fjy;

<) bfhjpf;fitj;jy;

c) Mtpapy; ntfitj;jy;

TI;L Mnuhf;fpakw;w neha;fs;

1. eP';fs; ,Uja nehahspah>

m) Mk;

M) ,y;iy

Mk; vdpv; nehia Fwpg;gpLf.....

2. eP';fs; rpWePuf nehahspah>

m) Mk;

M) ,y;iy

Mk; vdpv; nehia Fwpg;gpLf.....

3. eP';fs; rh;f;fiunehahspah>

m) Mk;

M) ,y;iy

4. c';fSf;F ntW VjhtJ nfhshW cs;sjh>

m) Mk;

M) ,y;iy

Mk; vdpv; vd;d>.....

ignahgp!pahy\$pf;fy; fhuzpfs;

1. cauk; (br.kP)

- a). <140
- b) 140-159
- c) 160-180
- d) >180

2. vil (fpnyh fpuhk;)

- a) <50
- b) 50-70
- c) 71-90
- d) >90

3. tapw;W Rw;wst[

- a) <80
- b) 80-99
- c) 100-120
- d) 120

4. ,uj;j mGj;jk; (mm/hg)

rp!;nlhypf;

- a) <90
- b) 90-120
- c) 121-140
- d) 141-180
- e) >180

5. lah!;nlhypf;

- a) <60
- b) 60-80
- c) 81-100
- d) 101-120
- e) >120

ANNEXURE XI

MASTER SHEET

Sl. No	Age	Sex	Education	Occupation	Residing area	Family income per month	Type of family
1	a	a	b	c	b	a	b
2	b	a	c	b	a	b	a
3	c	b	b	b	a	c	b
4	a	a	c	c	b	c	a
5	c	a	c	a	a	d	b
6	b	a	b	b	a	a	a
7	a	a	d	a	a	c	b
8	c	a	a	a	a	c	a
9	b	a	c	c	b	b	b
10	c	a	d	a	a	c	a
11	c	a	c	a	a	a	a
12	c	b	d	c	b	c	b
13	b	a	a	a	a	c	a
14	c	a	d	a	a	b	b
15	c	a	c	c	a	c	a
16	b	a	c	a	b	a	a
17	c	a	c	b	a	c	b
18	b	a	e	a	b	c	a
19	a	a	a	c	a	a	b
20	c	a	f	a	a	d	a
21	c	a	b	b	b	c	b
22	b	a	d	a	a	c	a
23	b	a	d	a	b	c	b
24	b	a	c	b	a	c	a
25	c	a	b	a	a	b	b
26	c	b	e	a	a	b	a
27	c	a	f	c	b	c	b
28	c	a	b	a	a	b	a
29	a	a	e	a	b	d	b
30	b	a	f	c	a	b	b
31	c	a	a	a	a	c	a
32	c	a	f	b	b	c	b
33	b	a	d	a	a	d	a
34	c	a	e	a	b	a	a
35	c	a	b	b	a	c	b
36	b	a	f	a	a	d	a
37	c	a	c	a	b	c	b
38	c	b	d	b	a	c	a
39	b	a	b	a	a	b	b
40	c	a	d	a	b	d	a
41	a	a	c	b	a	b	b
42	c	a	f	a	b	c	a
43	c	a	d	a	a	b	a
44	b	b	c	a	a	d	a
45	c	a	e	a	b	c	b
46	b	a	c	a	b	d	a
47	c	b	d	b	a	c	a

48	c	a	b	a	a	b	b
49	a	b	b	a	a	d	a
50	c	a	e	a	a	c	b
51	b	b	e	a	b	d	a
52	c	a	b	a	a	c	a
53	c	a	d	b	a	a	b
54	b	b	b	a	b	c	a
55	c	a	e	a	a	d	a
56	b	a	d	b	a	c	b
57	c	b	c	a	a	b	a
58	c	a	e	a	b	d	a
59	c	a	b	a	a	c	a
60	b	a	d	a	a	d	b
61	c	b	b	a	a	c	a
62	c	a	d	b	b	b	b
63	c	a	c	a	a	c	a
64	c	a	e	a	b	b	b
65	c	b	d	a	a	c	a
66	c	a	b	a	b	d	b
67	a	a	d	c	a	c	a
68	c	b	d	a	b	a	b
69	c	a	c	a	a	d	a
70	b	a	c	a	b	d	a
71	c	a	e	a	a	c	b
72	c	a	a	b	a	b	a
73	b	b	c	a	a	c	a
74	c	a	c	a	a	d	a
75	c	a	c	a	a	c	a
76	b	b	c	a	b	d	b
77	c	a	f	a	a	c	a
78	c	a	b	a	a	c	a
79	b	a	d	b	b	b	b
80	c	b	e	a	a	c	a
81	a	a	c	a	a	b	b
82	c	a	d	a	a	d	a
83	c	a	b	a	a	d	a
84	c	a	e	b	a	c	a
85	c	b	e	a	a	a	b
86	c	a	c	a	a	c	a
87	b	a	f	a	a	d	a
88	c	b	e	b	a	c	a
89	b	a	f	a	b	c	b
90	c	a	f	a	a	d	a
91	c	a	b	b	a	b	a
92	b	b	e	a	a	d	b
93	c	a	c	a	b	b	a
94	c	a	e	a	a	c	a
95	b	a	e	a	a	b	a
96	c	a	e	a	a	c	b
97	b	a	b	a	a	d	a
98	a	b	e	a	a	c	b
99	c	a	c	c	a	d	a
100	b	a	b	b	b	a	b

CHAPTER I

INTRODUCTION

“God gives us what we can handle. It is for us, how to handle it”

-Jeffry Archer

Hypertension has become a systemic disease with more incidence and prevalence rate among the modern generation. Dietary and lifestyle changes can lower blood pressure and decrease the risk of health complications, although treatment with medication is still often necessary in people for whom lifestyle changes are not enough or not effective. The treatment of moderately high arterial blood pressure with medications is associated with an improved life expectancy. Hypertension is the most important preventable risk factor for premature death worldwide. It increases the risk of ischemic heart disease, stroke, peripheral vascular disease, and other cardiovascular disease, including heart failure, aortic aneurysm, diffuse atherosclerosis, chronic kidney disease, and pulmonary embolism. Hypertension is also a risk factor for cognitive impairment and dementia. Other complications include hypertensive retinopathy and hypertensive nephropathy.

Dietary and lifestyle changes can improve blood pressure control and decreases the risk of health complications, although drug treatment is still often necessary in people for whom lifestyle changes are not enough or not effective.

A number of important contributory factors for hypertension have been identified, including overweight/obesity, excessive dietary sodium intake, low physical activity, smoking, and high alcohol intake. Previous studies have shown that being overweight or obese is associated with a higher risk for hypertension. Hypertension a condition developed as a result of high blood pressure is strongly correlated with Body Mass Index. Obesity was noted to be a single best predictor of hypertension incidence, and was regarded as a major controllable contributor to hypertension. Overweight and obesity is conveniently determined from Body Mass Index.

BACKGROUND OF THE STUDY

Globally, high blood pressure is estimated to cause 7.1 million deaths, about 13% of the total, according to world health organization. About 62% of cerebrovascular disease and 49% of ischaemic heart disease are attributable to suboptimal blood pressure. Overweight and obesity increases the risk of high blood pressure, coronary heart disease, ischemic stroke, Type II diabetes mellitus and certain cancers. Worldwide about 58% of diabetes mellitus and 21% of ischemic heart disease are attributable to Body Mass Index over 21 kg/ meter square. The relationship between Body Mass Index and Blood pressure has long been the subject of epidemiological research

As of 2000, nearly one billion people or 26% of the adult population of the world had hypertension. It was common in both developed (333 million) and underdeveloped (639 million) countries. However, rates vary markedly in different regions with rates as low as 3.4% (men) and 6.8% (women) in rural India and as high as 68.9% (men) and 72.5% (women) in Poland. In Europe hypertension occurs in about 30-45% of people as of 2013.

High blood pressure is the most common chronic medical problem prompting visits to primary health care providers in USA. The American Heart Association estimated the direct and indirect costs of high blood pressure in 2010 as \$76.6 billion. In the US 80% of people with hypertension are aware of their condition, 71% take some antihypertensive medication, but only 48% of people are aware that they have hypertension adequately control it. Adequate management of hypertension can be hampered by inadequacies in the diagnosis, treatment, and/or control of high blood pressure. Health care providers face many obstacles in achieving blood pressure control, including resistance in taking multiple medications to reach blood pressure goals. People also face the challenges of adhering to medicine schedules and making lifestyle changes. Nonetheless, the achievement of blood pressure goals are possible, and most importantly, lowering blood pressure significantly reduces the risk of death due to heart disease and stroke, the development of other debilitating conditions, and the cost associated with advanced medical care.

About 33% urban and 25% rural Indians are hypertensive. Of these, 25% rural and 42% urban Indians are aware of their hypertensive status. Only 25% rural and 38% of

urban Indians are being treated for hypertension. One-tenth of rural and one-fifth of urban Indian hypertensive population have their blood pressure under control. The pooled prevalence of hypertension for the rural and urban south Indian population was 21.1% and 31.8% respectively.

In Tamil Nadu, it is estimated that 40 percent of the adult population in urban areas and 25 percent of the adult population in the rural areas are affected by hypertension. The males are predominantly affected with ratio of 2:1 to females. The astonishing fact is 30 percent of the affected people are not getting treatment.

NEED FOR THE STUDY

Hypertension emerges from a complex interplay of genetic, environmental and behavioral factors. Owing to the hereditary component of hypertension, the disorder is considered to have its origin in the childhood. Children and adolescents with high Blood Pressure tend to maintain those levels of Blood Pressure in adulthood. As the symptoms of childhood and adolescent hypertension are largely nonspecific, most children with hypertension are likely to be undiagnosed since there is no established standard for hypertension among adolescents.

A cross-sectional study was conducted of all the people belonging to the Punjabi community, residing in Roshanara area and Jaina building in Delhi, for the past 20 years and aged 18-50 years. The men were engaged in transport business and women were mainly housewives. Prevalence of prehypertension among overweight/obese suggested an early clinical detection of prehypertension and intervention including life style modification, particularly weight management. Associations between Body Mass Index (BMI) and blood pressure (BP) have been consistently observed, but remain poorly understood.

A cross sectional school based study was done among 934 students aged 14-17 years studying Class IX to Class XII in selected four schools of Kancheepuram district. A pre tested questionnaire was used to collect information regarding the socio demographic details, diet pattern and physical activity. Height, weight and blood pressure were also measured. From the study results it was seen that both obesity and hypertension were prevalent among adolescents even in rural areas. Also, high BMI has a significant association with hypertension. To conclude, both obesity and hypertension have to be

identified and managed from a younger age, so as to avoid major complications at a later stage.

Emilola J Abayomi., conducted an explorative study about the relationship between Body Mass Index and blood pressure in a diverse population. Obesity measured in terms of Body Mass Index has been used as the predictor for hypertension; though Body Mass Index is the most common, it may not accurately assess obesity in different population. This thesis attempted to capture the true relationship of blood pressure and Body Mass Index. The results showed that there was not a significant difference of R_2 values across cohorts. This means the strength of the relationship is consistent in diverse populations. Since the overall R_2 values were low we can conclude the relationship between blood pressure and Body Mass Index is weak in different population.

F Tesfaye., NG Nawi did a region specific study at three demographic surveillance sites (DSS) in Ethiopia, Vietnam and Indonesia. A total of 8014 individuals in the age group 25–64years, from DSS in Ethiopia, Vietnam and Indonesia participated in the study. The samples from Ethiopia and Indonesia included both urban and rural residents, whereas only rural residents were represented in the sample from Vietnam. Overall, 52.5% of the study participants were female subjects. A significant positive correlation between BMI and SBP or DBP was observed in all the population sub-groups, although the correlation coefficients were weak (less than 0.30). The correlations were comparable across male and female subjects, with the exception of female subjects in Ethiopia

Farooq et al., (2011) conducted a study to assess the prevalence, awareness and control of hypertension in Chennai, representing urban south India. 26001 individuals were screened using random sampling method. Anthropometric measurements and lipid estimate were done for all subjects. Result showed that Hypertension was present in one fifth of the urban population.

In the modern world all our activities are aimed at economic development. As a developing nation, India has to give more importance to the health of the individuals. Hypertension is a huge barrier which we have to cross if we want to achieve those feet. As there is limited and unclear data of its co relation with Body Mass Index, I chose this as my research topic and thus could contribute to the knowledge pool.

STATEMENT OF THE PROBLEM

An explorative study to find out the association between Body Mass Index and Hypertension in a view to prepare Information Booklet on prevention of complications among Hypertensive patients in Annammal hospital at Kanyakumari district

OBJECTIVES OF THE STUDY

The objectives of the study are

- To find out the association between Body Mass Index and Hypertension among Hypertensive patients.
- To find out the association between selected socio demographic, clinical variables and Hypertension among hypertensive patients
- To prepare an Information Booklet on prevention of complications of Hypertension.

HYPOTHESES

H₁ : There will be a significant association between Body Mass Index and Hypertension.

H₂ : There will be significant association between Socio demographic, clinical variables and Hypertension among hypertensive patients

OPERATIONAL DEFINITION

Explorative study

It refers to the quest of identifying the relationship between Body Mass Index and Hypertension.

Association

It refers to the way in which the Body Mass Index and Hypertension are connected.

Body Mass Index

Body Mass Index is a value derived from Height and Weight of a person. It is a general health indicator.

Hypertension

Hypertension is the persistent increase of Blood pressure over 140/90 mm Hg.

Information Booklet

A small, thin book with paper covers providing concise information about any subject. In this study, it refers to the information regarding complications of Hypertension

Complications

Complications are secondary disease conditions occurring due to an existing disease condition. In this study the complications include, Coronary artery disease, Peripheral artery disease, Myocardial infarction, Stroke, Hypertensive crisis, Renal failure, Encephalopathy, Retinopathy, sudden death etc.

Hypertensive patient

Patients who are already diagnosed with hypertension and in treatment with antihypertensive medications in selected hospitals

Blood pressure

Blood pressure is the pressure exerted by the blood on the blood vessels. It is measured with a sphygmomanometer at the outpatient department between 9 am and 12 pm.

ASSUMPTION

The study assumes that

- Fluctuations from the normal Body Mass Index will affect the normal blood pressure as it increase the fat deposition in blood vessels and thus narrows them.
- Hypertensive patients are in higher risk of complications as their natural blood pressure controlling mechanism is hindered and obesity fosters increase of blood pressure.
- Demographic variables and clinical variable have an impact in blood pressure fluctuations. Certain disease conditions and medications cause rise in blood pressure. Similarly food intake, eating habits also influence the blood pressure.

DELIMITATION

The study was delimited to

- the sample size of 100.
- data collection period of 30 days
- selected study settings

CONCEPTUAL FRAMEWORK

Conceptual framework deals with concepts assembled together by the writer in relevance to the research problem which provides certain framework of reference for clinical practice, research, and education.

The conceptual framework used in the present study is adopted from General System Theory introduced by Ludwig Von Bertalanffy (1968). According to this theory, a system is a group of elements that interact with one another in order to achieve the goal.

An individual is a system because she receives input from the environment. This input consists of information, material or energy that enters the system. This input, when processed, provides an output. All living systems are open, in that there is a continual exchange of matter, energy, and information.

This system is cyclical in nature, and continues to be so, as long as the four components -input, process, output, and feedback keep interacting with each other. If there are changes in any of the components, there will be alterations in all the components. Feedback from within the system or from the environment provides information which helps the system to determine whether it is meeting its goal.

In the present study, concepts can be explained as follows

Input

It consists of information, material, or energy that enters the system. In this study, the input includes demographic variables such as age, sex, education, occupation, family monthly income, place of living, type of family, Clinical variables such as diet and co morbid illness and Biophysiological variables including Height, Weight and Abdominal girth. A universally acclaimed formula is used for calculating the Body Mass Index.

Process

It is the action needed to accomplish the desired tasks, to achieve the desired output. In this study, it refers to collecting desired data with the help of demographic variable proforma, clinical variable proforma, and biophysiological variable proforma.

Output

It refers to the energy, matter or information disposed by the system as a result of its process. In the present study, it refers to the proof of relationship between Body Mass Index and Hypertension.

Feedback

Feedback is a process whereby output of the system is redirected as part of the input to the same system. Feedback is not included in this study.

Environment

Individual environment is a consent that influences the system. Environment refers to the outpatient department in selected hospitals at kanyakumari district.

SUMMARY

This chapter has dealt with the objectives, the operational definitions, variables, assumptions and hypotheses which are predictive statements of the relationship between the independent and dependent variables, and delimitations of the study. The conceptual framework of the present study was based on the Ludwig's General System Theory

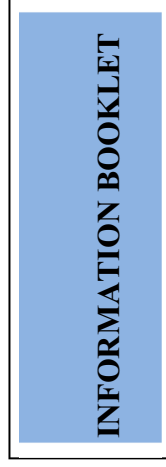
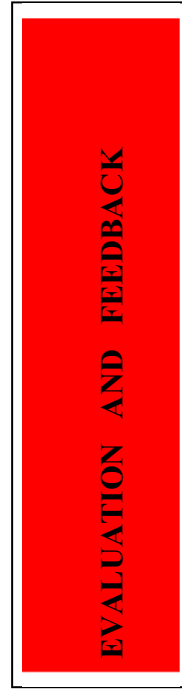
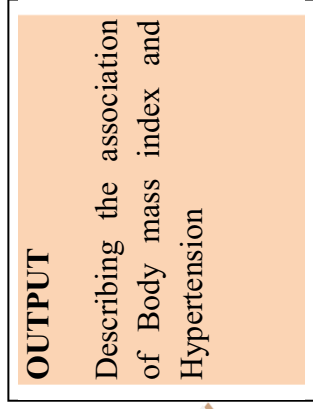
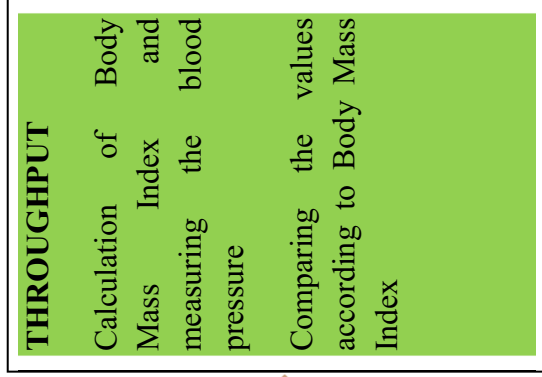
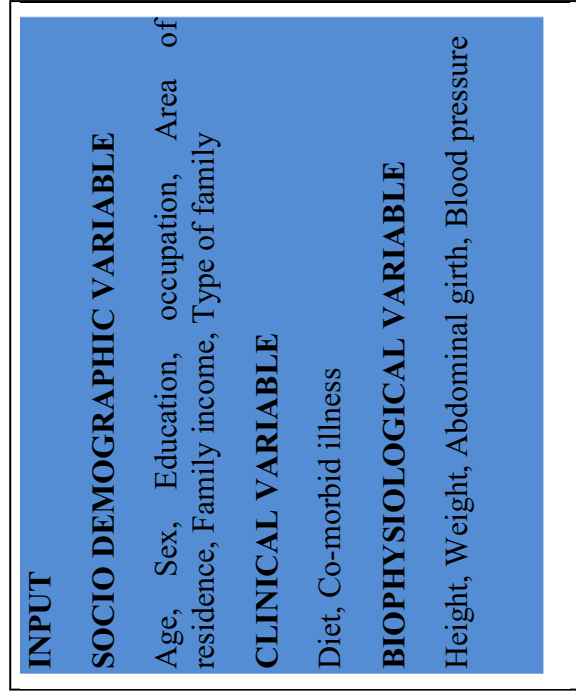


Fig 1: MODIFIED CONCEPTUAL FRAMEWORK BASED ON GENERAL SYSTEM THEORY BY LUDWING VON BERLANFFY (1968)

CHAPTER-II

REVIEW OF LITERATURE

i

Review of literature is a key step in research process. It refers to an extensive, exhaustive and systematic examination of publications relevant to the research project. Nursing research may be considered as a continuing process in which knowledge gained from earlier studies is an integral part of research in general.

(Basavanthappa B.T, 1998)

Literature review refers to the activities involved in searching for information on a topic and developing a comprehensive picture of the state as knowledge on that topic.

(Polit and Hungler, 1993)

Therefore the investigator studied and reviewed the related literature to broaden the understandings about the topic to gain insight into the selected problem under study.

The literature has been reviewed under the following headings

- I. Empirical studies related to incidence and prevalence of Hypertension.
- II. Empirical studies related to risk factors of Hypertension.
- III. Empirical studies related to influence of Body Mass Index on Hypertension

I EMPIRICAL STUDIES RELATED TO INCIDENCE AND PREVALENCE OF HYPERTENSION.

Raghupathy Anchala., Nanda K. Kannuri., (2014) conducted a region-specific systematic review and meta-analysis of the prevalence, awareness, and control of hypertension among Indian patients. Medline, Web of Science, and Scopus databases from 1950 to 2013 were used. Of the total 3047 articles, 142 were included. Of these, 25% rural and 42% urban Indians are aware of their hypertensive status. Only 25% rural and 38% of urban Indians are being treated for hypertension. One-tenth of rural and one-fifth of urban Indian hypertensive population have their BP under control.

Shankar Radhakrishnan., Manivanan E kambaram., (2012) conducted a study related to the incidence and prevalence of hypertension and diabetes mellitus

among tribal population of Tamil nadu, (Yercaud). A total of about 525 tribal population above 40 years were screened for diabetes, the random blood glucose levels and blood pressure, Body Mass Index, dietary patterns, and physical activity levels . Their knowledge about diabetes was also assessed by a set of 10 questions. Among the various risk factors smoking, alcohol and positive family history were found to have a statistical significant association for males whereas among females only the family history was found to have a statistically significant association for both diabetes and hypertension.

Sushil K. Bansal., Vartika Saxena., (2012) conducted a prospective door to door study to find out the prevalence of hypertension and hypertension risk factors in a rural Indian community (Uttarakhand). All residents were interviewed related to the demographics of the individuals, dietary habits, alcohol consumption, tobacco use, psychosocial stress, past medical history and drug history. Blood pressure and anthropometric data were recorded. Rates of hypertension in the rural community under study are similar to those seen in high-income countries and in urban India. With the exception of age, all the risk factors identified were potentially modifiable.

Midha T., Idris M Z., (2009) conducted a community-based cross-sectional study on the prevalence and determinants of hypertension in the urban and rural population of a north Indian district (Lucknow). Two-stage stratified random sampling technique was used. The sample size was 800 subjects (355 men, 445 women) aged 20 years and above, 400 from urban area and 400 from rural area. A pre-tested structured questionnaire was used. The prevalence of hypertension was 32.8% in the urban population and 14.5% in the rural population. About 9.2% of the hypertensive's had coexisting diabetes mellitus. Mean weight, Body Mass Index and waist circumference of hypertensive's was significantly higher. In rural area, similar association was seen except alcoholism and diabetes.

Mohan B., Kumar N., (2004) conducted a study on the prevalence of sustained hypertension and obesity in urban and rural school going children in Ludhiana. . A total of 2467 apparently healthy adolescent school children aged between 11-17 years from urban area and 859 students from rural area were taken as subjects. The mean systolic and diastolic blood pressure of hypertensive population in both urban and rural population was significantly higher than systolic and diastolic blood pressure in their

normotensive counterparts Prevalence of sustained hypertension is on the rise in urban area even in younger age groups. Blood pressure is frequently elevated in obese children as compared to lean subjects. This is possibly related to their sedentary lifestyle, altered eating habits, increased fat content of diet and decreased physical activities.

World Health Organization, Hypertension Study Group, (2001) conducted a community-based sample study to evaluate the prevalence, awareness, treatment and control of hypertension among elderly individuals in Bangladesh and India. 1203 elderly individuals (670 women; mean age, 70 years) was selected using a multistage cluster sampling technique from two sites in Bangladesh and three sites in India. A visit to a physician in the previous year, higher educational attainment and being female emerged as important correlates of hypertension awareness. The findings emphasize the need to implement effective and low cost management regimens based on absolute levels of cardiovascular risk appropriate for the economic context.

II. EMPIRICAL STUDIES RELATED TO RISK FACTORS OF HYPERTENSION

V. K. Tiwari., (2014) conducted a comparative systematic review study to identify risk factors of hypertension. All published studies conducted in India and China with study sample of at least 130 adult population living in urban and rural areas describing the prevalence and risk factors (age and sex, unhealthy diet, overweight and obesity, alcohol, physical inactivity, tobacco) of hypertension in India and China were included for this review. A total of 60 relevant articles were extracted, 36 articles met the inclusion criteria. The review shows that China has faced more challenges than India. This has been found that the per capita salt in-take is higher than five grams in both the countries as recommended by the World health organization.

Abdul Rashid Khan., (2010) conducted a cross sectional study to find out the prevalence of hypertension and its associated risk factors in rural communities. This study was conducted among all consenting residents' above 18 years. Besides the baseline demographic information, blood pressure was measured according to the American Heart Association Guidelines. 50 out of 168 people were hypertensive, giving a prevalence rate of 29.8%. 50.0% of those found with hypertension were undiagnosed and 48.0% of those

who were diagnosed with hypertension had uncontrolled blood pressure. Logistic regression analysis showed that age, history of alcohol consumption and Body Mass Index were found to be independently associated with hypertension.

III. EMPIRICAL STUDIES RELATED TO INFLUENCE OF BODY MASS INDEX ON HYPERTENSION

Raja Danasekaran., Vinoth R., (2015) conducted a cross sectional school based study to find out the relation between Body Mass Index and hypertension among Class IX to Class XII adolescents (14-17 years) in Kancheepuram district, Tamil Nadu. The study was done among 934 students in four schools of Kancheepuram district. A pre tested questionnaire was used to collect information regarding the socio demographic details, diet pattern and physical activity. Height, weight and blood pressure were also measured. From the study results, it was seen that both obesity and hypertension were prevalent among adolescents even in rural areas. Also, high Body Mass Index has a significant association with hypertension.

Sheen Helen., (2013) did a descriptive correlational design study on Blood Pressure, Stress and Body Mass Index among 200 BSc. Nursing students in Udupi District, South India. Back ground information proforma, Stress rating scale, Sphygmomanometer and stethoscope, Weighing machine, measuring tape were used as tool. Non probability purposive sampling was used. While comparison significant difference was found in mean stress score of four groups of students. There is significant positive correlation between Body Mass Index and Blood pressure.

Anita Verma., Pratik Patel., (2013) conducted a study to find out the relation of Body Mass Index & hypertension in natives of Gujarat among both genders of the different age groups (20-70 years). They compared the association of hypertension with Body Mass Index in 2000 adults from urban population of Gujarat, India and decided Body Mass Index cutoffs to predict hypertension in this population. The prevalence of hypertension in men from Gujarat urban population was 48.51% and in women was 39.39%. The overall analyses suggested optimal Body Mass Index average of 25.6 from adults of Gujarat urban population. The average was found high and it was 0.43 units higher in women/men than in men/women and the average was also found high in the

older/younger (20-40 y) than in the younger/older (41-70 y) participants. It has been observed that there is an ethnic difference in the association between Body Mass Index and hypertension and in optimal Body Mass Index cut off for the population of urban Gujarat.

N.K.Mungreiphy., 1Satwanti Kapoor., (2011) did a cross-sectional study to find the prevalence of overweight/obesity and hypertension, and to study the association between Body Mass Index, blood pressure, and age among 257 Tangkhul Naga males of Northeast India (20–70 years). The subjects were divided into five different age groups to study age trend. Mean systolic, and diastolic Blood pressure was higher among subjects with elevated Body Mass Index and among older subjects. Blood pressure was found lowest among the youngest age group and higher among the elderly subjects. Body Mass Index was also found to be associated with age independently. Although the magnitude of correlation differed, there was significant positive correlation among Body Mass Index, age, systolic and diastolic Blood pressure.

R Bonita., (2007) conducted a study to find out the association between Body Mass Index and Blood pressure across three populations in Africa and Asia. The three study samples were composed of predominantly rural and peri-urban populations, engaged in farming or manual labour. Race or ethnicity, biological, behavioural and environmental factors, including diet and nutrition, have been implicated as determinants of BP within and across populations. A significant positive correlation between Body Mass Index and Blood pressure was observed in all the population sub-groups, although the correlation coefficients were weak (less than 0.30). The correlations were comparable across male and female subjects, with the exception of female subjects in Ethiopia, where the correlation was much lower. Significant correlation of Body Mass Index to Blood pressure, in men and women, was reported by studies in Tanzania and Nigeria.

Brown C D., (2000) conducted a national survey to correlate Body Mass Index and the prevalence of hypertension among adults. Crude age-adjusted, age-specific means and proportions, and multivariate odds ratios that quantify the association between hypertension and Body Mass Index, controlling for race/ethnicity, education, and smoking habits are presented. More than one-half of the adult population is overweight.

The prevalence of high blood pressure and mean levels of systolic and diastolic blood pressure increased as Body Mass Index increased at ages younger than 60 years.

N. L. Nanaware., (2000) conducted a study on correlation of Body Mass Index with blood pressure among school going children and adolescents. Study population consisted of 400 male students between the age group of 8-16 years which were grouped as Group I: 8-12 yrs and Group II: 13-16 yrs with 200 students in each. The recognition of obesity in the present study as important factors associated with increased risk of developing elevated BP among children and adolescents helped to target prevention towards high-risk individuals in this age group. This is especially important because of evidence linking adolescent obesity with metabolic abnormalities and risk of cardiovascular diseases in adulthood.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology involves the systematic procedures by which the researcher starts from the identification of the problem to its final conclusion. It involves steps, procedure and strategies for gathering and analyzing data in a research investigation.

Denise F. Polit (2011)

This chapter deals with the research methodology adapted for the proposed study and the different steps undertaken after gathering and organizing data for the investigation. It includes research approach, research design, variables , settings, population, sample, sample size , sampling techniques, sampling criteria, development of the tool, description of the tool, validity , reliability , pilot study, data collection procedure , plan for data analysis and ethical clearance.

The present study was aimed at determining the association between selected Body Mass Index and Hypertension among hypertensive patients in selected hospitals at Kanyakumari district.

RESEARCH APPROACH

A research approach tells the researcher what to collect and how to analyze it. It also suggest possible conclusion to be drawn from the data, in view of the nature of the problem under study and to accomplish the objectives of the study.

Denise F.Polit(2011)

The quantitative research approach was considered as most appropriate for finding the relation between Body Mass Index and Hypertension.

RESEARCH DESIGN

Research design is the researcher's overall plan for answering the research question.

Polit(2004)

Research design is the arrangement of condition that aims to combine relevance to the research purpose with economy in procedure. The researcher used exploratory descriptive research design suitable for finding the relation between Body Mass Index and Hypertension.

VARIABLES

Variables are defined as “an attribute that varies, that is, takes on different values”.

Denise F. Polit (2011)

Variables are the qualities, properties, or characteristics of persons, things or situations that change or vary and are manipulated or measured in research.

Dependent variable

Dependent variable is defined as “the variable hypothesized to depend on or be caused by another variable of interest”.

Denise F. Polit (2011)

In this study, the dependent variable is Hypertension.

Independent variable

Independent variable is defined as “the variable that is believed to cause or influence the dependent variable”.

Denise F. Polit (2011)

In this study the independent variable is Body Mass Index.

Extraneous variable

A variable that confronts the relationship between the independent and dependent variable and that needs to be controlled either statically or in the research design.

Denise F. Polit (2011)

In this study, it refers to age, education, sex and occupation, area of residence, family monthly income, type of family, food and medications.

SETTING

Setting refers to the physical location and condition in which data collection takes place.

Denise.F. Polit(2011)

The setting was chosen on the basis of the availability of samples and the cooperation extended by the management. The study was conducted in Annammal hospital. It is a 150 bedded multi specialty hospital with 60 hypertensive outpatients.

POPULATION

A population is defined as “the entire set of individuals or objects having some common characteristics”.

Denise F. Polit(2011)

In this study, the population consists of hypertensive patients getting treatment in hospitals.

Target population

Target population is the group of population that the researcher aim to study and to whom the study findings will be generalized.

Denise F. Polit (2011)

In this study, the target population comprises of hypertensive patients getting treatment in hospitals at Kanyakumari district.

Accessible population

The accessible population is the list of population that the researcher finds in study.

Denise.F. Polit (2011)

The accessible population of the present study is hypertensive patients getting treatment in Annammal hospital at Kanyakumari district.

SAMPLE

Sample is defined as “A subset of a population comprising those selected to participate the study”.

Denise F. Polit(2011)

The sample consists of outpatient adults in Annmmal hospital at Kanyakumari district.

SAMPLE SIZE

Sample size is defined as “the number of people who participate in the study”.

Denise F. Polit(2011)

The sample size for the present study comprises of 100 adults who satisfied the inclusion criteria.

SAMPLING TECHNIQUE

Sampling technique is defined as “the process of selecting a portion of the population to represent the entire population”.

Denise F. Polit (2011)

The participants of the study were selected by non probability purposive sampling technique. The researcher selected the participants based on the inclusion criteria.

SAMPLING CRITERIA

Sampling criteria involves selecting cases that meet some predetermined criterion of importance. The criteria for sample selection are mainly depicted under two heading, which includes the inclusion criteria and exclusion criteria.

Inclusion Criteria

The study included hypertensive patients who

- fall in the age group of 25-50 years.
- are willing to participate in the study.
- are in treatment under outpatient department.

Exclusion Criteria

The study excluded adults who

- are too sick to participate
- are not willing.

SELECTION AND DEVELOPMENT OF THE TOOL

Tool development is a complex and time consuming process. It consists of defining the construct to be measured, formulating the items, assessing the items for content validity, developing instructions for respondents, pre-testing, estimating the reliability and conducting pilot-study.

Data collection is the gathering of information needed to address a research problem. Data collection instruments were developed through an extensive review of literature.

The tool was prepared on the basis of objectives of the study. The following methods were used for the development of the tool by the investigator.

- Review of literature from books, journals, other publication and websites.
- Discussion with subject experts like guides, physician.
- Review of the standardized tool.

DESCRIPTION OF THE TOOLS

TOOL I

It comprises of three sections that includes Socio demographic variable proforma, clinical variable proforma and biophysiological variable proforma.

SECTION 1 - SOCIO DEMOGRAPHIC VARIABLES PROFORMA

This instrument consists of demographic variables such as age, sex, education, occupation, area of residence, family income and type of family.

SECTION 2 - CLINICAL VARIABLES PROFORMA

This instrument consists of clinical variables such as diet and co morbid illness.

SECTION 3 - BIOPHYSIOLOGICAL VARIABLES PROFORMA

This consists of measuring the patient's height, weight, abdominal girth and blood pressure.

TOOL II

The Body Mass Index of each sample will be calculated using specific formula.

VALIDITY OF THE TOOL

Validity is defined as” a degree to which an instrument measures what is intended to measure”.

Denise.F. Polit (2011)

To ensure the content validity the prepared data collection tool along with the problem statement, objectives, operational definitions, hypotheses, sampling technique and the criteria checklist designed for validation were submitted to ten experts including eight medical and surgical nursing personnel, one physician and one statistician. The experts were requested to judge the items for relevance, appropriateness and degree of agreement for the study. All the experts gave their consensus and then the tool was finalized.

RELIABILITY OF THE TOOL

Reliability refers to the accuracy and consistency of measuring the tool. The reliability of the tool for knowledge were established by test, re-test method where Karl Pearson's coefficient of correlation (r). The reliability for knowledge "r"=0.9, which showed a positive correlation. The score indicates a high correlation and the tools were considered as highly reliable for proceeding the study.

PILOT STUDY

Pilot study is defined as, "a small- scale version or trial run, done in preparation of a major study."

Denise F. Polit (2011)

Pilot study was conducted in Annammal Hospital, Kuzhithurai. Initial permission was sought from the institution and formal permission was sought from the hospital for conducting the study in selected setting. The pilot study was conducted in the month of October for a period of one week. Consent was obtained from the participants. 10 outpatient adults were selected. The data was collected using the prepared tool and it was analysed statistically. Results of the pilot study, gave the evidence that the tools were reliable. Finding of pilot study also revealed that it was feasible and practicable to conduct the study at the selected setting and criteria measures were found to be effective.

DATA COLLECTION PROCEDURE

Data collection is the gathering of information needed to address a research problem.

Denise F. Polit (2011)

Data was collected from out patients in Annammal hospital at Kanyakumari district. At first a rapport was established with the patients and the purpose of the study was explained to them. The sample of 100 was selected by using non- probability convenient sampling technique. On the first day of data collection, the investigator introduced him and explained the nature and purpose of the study to the clients. Verbal and written consent was obtained to participate in the study and confidentiality of their responses was assured. Hypertensive patients were identified and their blood pressure, height, weight and abdominal girth were collected. Demographic variables and clinical

variables were collected using demographic variable proforma and clinical variable proforma. Body Mass Index was calculated according to the universally accepted formula.

SL. NO	DATE	NUMBER OF SAMPLES IN ANNAMMAL HOSPITAL
1	1-12-15	5
2	2-12-15	6
3	3-12-15-	7
4	4-12-15	8
5	5-12-15	4
6	6-12-15	5
7	7-12-15	7
8	8-12-15	3
9	9-12-15	5
10	10-12-15	3
11	11-12-15	2
12	12-12-15	2
13	13-12-15	3
14	14-12-15	2
15	15-12-15	2
16	16-12-15	2
17	17-12-15	2
18	18-12-15	1
19	19-12-15	2
20	20-12-15	3
21	21-12-15	2
22	22-12-15	2
23	23-12-15	2
24	24-12-15	3
25	25-12-15	2
26	26-12-15	3
27	27-12-15	3
28	28-12-15	4
29	29-12-15	2
30	30-12-15	3

PLAN FOR DATA ANALYSIS

The data analysis is the systematic organization and synthesis of research data and testing of hypothesis by using the obtained data.

Polit & Black, 2007

The data was analyzed according to the objectives and hypothesis of the study. Data was analyzed, tabulated and interpreted by using both descriptive and inferential statistics such as mean, standard deviation, chi square, paired 't' test.

Descriptive statistics

Frequency and percentage distribution was used to analyze the demographic variables, clinical variable and bio physiological variable

Inferential statistics

Chi – square test was used to find out the association between Hypertension and Body Mass Index of hypertensive patients.

ETHICAL CONSIDERATION

- Permission was obtained from the ethical committee of Annammal hospital, Kuzhithurai , Kanyakumari district.
- Formal permission was obtained from the institutional review board and ethical Committee of Annammal College of Nursing, Kuzithurai, Kanyakumari district
- Written consent was obtained from each patient before starting the data collection.
- Assurance was given to each patient regarding the confidentiality of the data collected.

SUMMARY

This chapter has dealt with the selection of research approach, research design, setting, population, and sample, sampling technique, sampling criteria, development of study instruments, validity, and reliability of study instrument, pilot study, data collection procedure and plan for data analysis. The following chapter deals with analysis and interpretation of data using descriptive and inferential statistics.

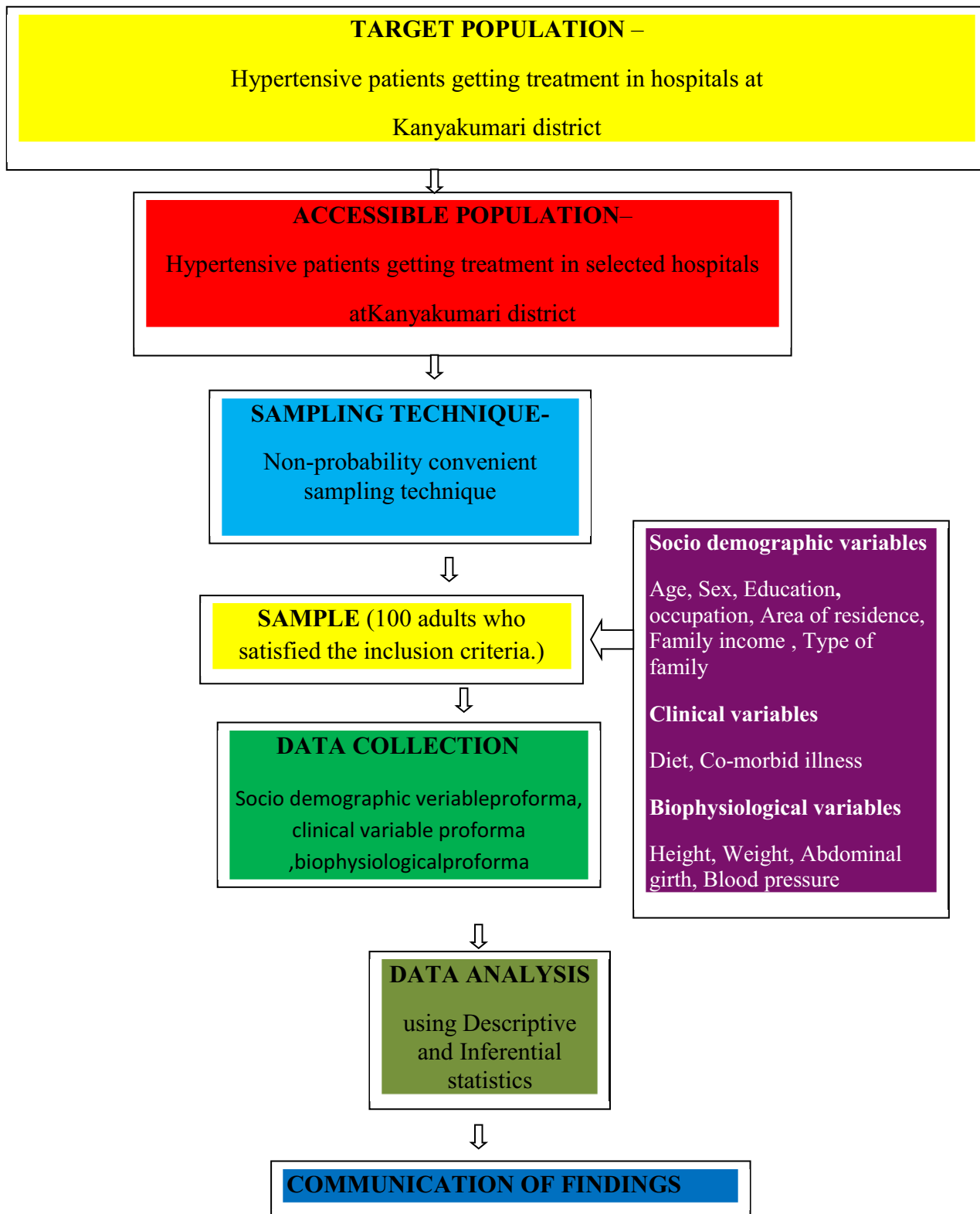


Fig2: Schematic representation of research design

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Data analysis is defined as the method of organizing data in such a way that the research questions can be answered. Interpretation is the process of the results and of examining the simplification of the findings with in a broader context.

(Polit and Beck, 2004)

Statistics is a field of study concerned with techniques or methods of collection of data, classification, summarizing, interpretation, drawing inferences, testing of hypotheses, making recommendation, etc.

(Mahajan, 2004)

This chapter deals with the analysis and interpretation. Analysis and interpretation of data of this study was done using descriptive and inferential statistics.

OBJECTIVES OF THE STUDY

The objectives of the study are

- To find out the association between Body Mass Index and Hypertension among Hypertensive patients.
- To find out the association between selected socio demographic, clinical variables and Hypertension among hypertensive patients
- To prepare an Information Booklet on prevention of complications of Hypertension.

HYPOTHESES

H₁: There will be a significant association between Body Mass Index and Hypertension.

H₂: There will be significant association between selected socio demographic, clinical variables and Hypertension among hypertensive patients

ORGANIZATION OF THE FINDINGS

The data collected were edited, tabulated, analyzed, interpreted and findings obtained were presented in the form of tables and diagrams represented under the following sections.

Section I

- Data pertaining to frequency and percentage distribution of demographic variable among hypertensive patients.
- Data pertaining to frequency and percentage distribution of clinical variable among hypertensive patients
- Data pertaining to frequency and percentage distribution of biophysiological variable among hypertensive patients
- Data pertaining to frequency and percentage distribution of body mass index among hypertensive patients

Section II

- Data pertaining to association of Body Mass Index and blood pressure among patients with hypertension
- Data pertaining to association of socio demographic variables and Hypertension
- Data pertaining to association of clinical variables and Hypertension

SECTION I

Table 1: Data pertaining to frequency and percentage distribution of socio demographic variables of Hypertensive patients n=100

Sl.No	Socio demographic variables	f	%
1.	Age a) 20-30years b) 31-40years c) 41-50 years	10 30 60	10 30 60
2.	Gender a) Male b) Female	80 20	80 20
3.	Education a) Illiterate b) primary c) secondary d) high school e) Higher secondary f) College	05 20 25 20 20 10	05 20 25 20 20 10
4.	Occupation a) Daily wage b) Regular monthly income c) Unemployed	70 20 10	70 20 10
5.	Residing place a) Urban b) Rural	70 30	70 30
6.	Family income per month in rupees. a) Below 2000 b) 2000-5000 c) 5001-8000 d) Above 8000	10 20 45 25	10 20 45 25
7.	Type of family a) Nuclear b) Joint	60 40	60 40

Table 1 represents the frequency and percentage distribution of socio demographic variables of patients with Hypertension including age, sex, and educational level, occupational status, area of residence, monthly income and type of family.

With regard to age, majority of 60(60%) were found in the age group of 41-50 years, 30(30%) were in the age group of 31-40 years, 10(10%) were in the age group of 20-30 years. With regard to sex, majority of 80 (80%) were males and least of 20 (20%) were females.

With regard to educational level, majority of 25(25%) obtained secondary level education, 20(20%) in each obtained primary level education, high school education, higher secondary level education, 10(10%) completed graduation and 5(5%) were illiterate.

With regard to occupational status, majority of 70(70%) were daily wage workers, 20(20%) were regular monthly income workers and 10(10%) were unemployed.

With regard to area of residence majority of 70(70%) belonged to urban background and remaining 30(30%) were from rural area .

With regard to monthly income majority of 45(45%) were getting monthly income of Rs.5001-8000, 25(25%) were getting more than Rs 8000 per month, 20(20%) were getting of Rs 2000-5000 and least of 10 (10%) are getting less than Rs. 2000 per month.

And finally when it comes to type of family, 60(60%) belongs to nuclear family and 40(40%) belongs to joint family.

Table 2: Data pertaining to frequency and percentage distribution of clinical variables of hypertensive patients.

n=100

S. NO	CLINICAL VARIABLES	f	%
1	DIET Type of food a) vegetarian b) non vegetarian	30 70	30 70
2	Frequency of meal a) 2 times/day b) 3times/day c) 4times/day d)more than 4 times	20 50 20 10	20 50 20 10
3	Common cooking method a) frying b)baking c) stewing d)boiling e) steaming	25 10 10 30 25	25 10 10 30 25
1	CO MORBID ILLNESS Cardiovascular diseases a) yes b) no	20 80	20 80
2	Kidney disease a) yes b) no	27 73	27 73
3	Diabetes mellitus a) yes b) no	35 65	35 65
4	Other problems a) yes b) no	15 85	15 85

Table 2 depicts the frequency and percentage distribution of clinical variables of patients with hypertension. It shows that 70(70 %) of the sample population were non vegetarian, while 30 (30%) were vegetarian. With regard to the frequency of meal, a majority of 50(50%) took food 3 times a day, 20(20%) took food 2 times a day, another 20(20%) took food 4 times/day and a least percentage of 10(10%) took more than 4 times a day. The most common method of cooking was boiling 30(30%). Frying and steaming ranges second with 25(25%) each, the least common methods were baking and stewing with 10(10%) each. With regard to co morbid illness, 80(80%) were free of cardiovascular disease, while 20(20%) had cardiovascular problems, 27(27%) had kidney problems while, 73(73 %) are free of kidney problems. In case of diabetes, 35(35 %) were diabetic and 65(65%) were non diabetic.85 (85%) did not have any other problems, while 15(15%) did have other problems.

Table 3: Data pertaining to frequency and percentage distribution of Biophysiological variables of patients with hypertension

n=100

S. No	Biophysiological Variables	f	%
1	Height a) <140cm b) 140-159cm c) 160-180cm d)>180cm	00 24 70 06	00 24 70 06
2	Weight a) <50kg b) 50-70kg c) 71-90kg d)>90kg	00 82 14 04	00 82 14 04
3	Abdominal girth a) <80cm b) 80-99cm c) 100-120cm d)>120cm	04 20 50 26	04 20 50 26
4	Blood pressure in mm/hg Systolic a) <90 b) 90-120 c) 121-140 d)141-180 e)180<	00 22 36 42 00	00 22 36 42 00

5	Diastolic		
	a) <60	00	00
	b) 60-80	28	28
	c) 81-100	65	65
	d)101-120	07	07
e)120<	00	00	

Table 3 shows the frequency and percentage distribution of Biophysiological variables of patients with hypertension. With regard to height, maximum of 70(70%) belonged to the group between 160 and180 cm height, 24(24%) belonged to the category of 140- 159 cm height and 6(6%) had more than 180cms height. Regarding weight, 82(82%) belonged to 50-70 kg weight, 14(14%) had 71- 90kg weight. 4(4%) had more than 90 kg weight. None of them belongs to the category of below 50 kg height. Regarding abdominal girth, majority 50(50%) had 100-120cms of abdominal girth, 26(26%) had more than 120cms, 20(20%) were between 80-99cms, 4 (4%) had less than 80cms. Regarding Systolic blood pressure, 42(42%) have their Blood pressure between 141-180 mm/Hg,36 (36%) had 121-140 mm/Hg and 22(22%) had 90-120. Regarding Diastolic blood pressure, majority of 65(65%) had Blood pressure between 81-100 mm/Hg, 22(22%) had 60-80mm/Hg and a mere 7(7%) had 101-120mm/Hg.

Table 4: Data pertaining to frequency and percentage distribution of Body Mass Index of patients with hypertension

n=100

S. NO	BODY MASS INDEX	f	%
1	Body Mass Index in kg/m ²		
	a) Under weight(<18 kg/m ²)	06	06
	b) Normal weight(18-24 kg/m ²)	52	52
	c) Over weight(>24 kg/m ²)	42	42

Table 4 represents the frequency and percentage distribution of hypertensive patients with regard to Body Mass Index. We can deduce that 42(42%) of the samples were overweight, 52(52%) were of normal weight and 6 (6 %) were underweight.

SECTION II

Testing of hypothesis

H₁ : There will be a significant association between Body Mass Index and Hypertension

Table 5: Data pertaining to association of Body Mass Index and Systolic blood pressure among patients with hypertension

n=100

Body Mass Index	<90mm/Hg	90-120 mm/Hg	121-140 mm/Hg	141-180 mm/Hg	>180 mm/Hg	X²	P value
Over weight	0	0	4	38	0	88.001	df-4 0 ***
Normal weight	0	16	32	4	0		
Under weight	0	6	0	0	0		

***** P< 0.0001**

Table 5 shows the frequency distribution of hypertensive patients with regard to the Body Mass index and systolic Blood pressure. We can deduce that 42(42%) of the samples were overweight, 52(52%) were of normal weight and 6 (6 %) were underweight. Majority of the hypertensive patients 42(42%) had 141-180 mm/Hg systolic Blood pressure, 36(36%) had Blood pressure of 121-140 mm/Hg and a mere 22(22%) had 90-120 mm/Hg Blood Pressure. The chi square value is 88.01, P value is 0 which is significant at level of P<.0001.

Table 6: Data pertaining to association of Body Mass Index and Diastolic blood pressure among patients with hypertension

n=100

Body Mass Index	<60mm/Hg	60-80 mm/Hg	81-100 mm/Hg	101-120 mm/Hg	>120 mm/Hg	X²	P value
Over weight	0	2	34	6	0	32.537	df-4 .00000149 ***
Normal weight	0	20	31	1	0		
Under weight	0	6	0	0	0		

***** P< 0.0001**

Table 6 shows the frequency distribution of hypertensive patients with regard to the Body Mass index and diastolic Blood pressure. We can deduce that 42(42%) of the samples were overweight, 52(52%) were of normal weight and 6 (6 %) were underweight. Majority of the hypertensive patients 65(65%) had 81-100 mm/Hg diastolic Blood pressure, 28(28%) had Blood pressure of 60-80mm/Hg and a mere 7(7%) had 101-120 mm/Hg Blood Pressure. The chi square value is 32.53, P value is .00000149 which is significant at level of P<.0001.

Hence it shows the significant association between blood Pressure and Body Mass Index. So the Hypothesis H₁ was accepted.

Table 7: Data pertaining to association of Socio demographic variables and Systolic blood pressure among patients with hypertension.

Testing of Hypothesis

H₂ : There will be significant association between selected demographic variables, Clinical variables and Hypertension

n=100

S.No	Socio demographic variables	<90 mm/Hg	90-120 mm/Hg	121-140 mm/Hg	141-180 mm/Hg	180< mm/Hg	X ²	P value
1.	Age							
	a)20-30years	0	0	0	.	0	16.35	df-4
	b)31-40years	0	6	14	10	0		0.002
	c) 41-50 years	0	16	22	22	0		6 ***
2.	Gender							
	a)Male	0	20	24	36	0	6.49	df -2
	b)Female	0	2	12	6	0		0.04 *
3.	Education							
	a)Illiterate	0	2	2	1	0	4.49	df-10
	b)primary	0	4	8	8	0		
	c)secondary	0	7	8	10	0		
	d)high school	0	2	9	9	0		0.89
	e)Higher sec	0	5	5	10	0		
	f) College	0	2	4	4	0		
4.	Occupation							
	a)Daily wage	0	18	30	22	0	17.57	df-4
	b)Regular monthly income	0	4	6	10	0		.001
	c) Unemployed	0	0	0	10	0		***
5.	Residing place							
	a)Urban	0	16	25	29	0	.101	df-2
	b)Rural	0	6	11	13	0		.95

6.	Family income per month in rupees.							
	a) Below 2000	0	2	4	4	0	2.22	df-6
	b) 2000-5000	0	6	7	7	0		.897
	c) 5001-8000	0	8	15	22	0		
	d) Above 8000	0	6	10	9	0		
7.	Type of family							
	a) Nuclear	0	12	20	28	0	1.34	df-2
	b) Joint	0	10	16	14	0		.51

***P< 0.05, ***P< 0.001**

Table 7 represents the frequency and percentage distribution of socio demographic variables of patients with Hypertension including age, sex, educational level, and occupational status, area of residence, monthly income and type of family. With regard to age, majority of 60(60%) were found in the age group of 41-50 years, 30(30%) were in the age group of 31-40 years, 10(10%) were in the age group of 20-30 years. With regard to sex, majority of 80 (80%) were males and least of 20 (20%) were females.

With regard to educational level, majority of 25(25%) obtained Secondary level education, 20(20%) in each obtained primary level education, high school education, higher secondary level education, 10(10%) completed graduation and 5(5%) were illiterate. With regard to occupational status, majority of 70(70%) were daily wage workers, 20(20%) were regular monthly income workers and 10(10%) were unemployed. With regard to area of residence majority of 70(70%) belonged to urban background and remaining 30(30%) were from rural area .With regard to monthly income majority of 45(45%) were getting monthly income of Rs.5001-8000, 25(25%) were getting more than Rs 8000 per month, 20(20%) were getting of Rs 2000-5000 and least of 10 (10%) are getting less than Rs. 2000 per month. And finally when it comes to type of family, 60(60%) belongs to nuclear family and 40(40%) belongs to joint family.

The above tables show that the association between socio demographic variables and Systolic Blood pressure among Hypertensive patients. There was association between Age, sex and occupational status with hypertension. Whereas there was no

association found for educational level, residing place, family income and type of family with Hypertension.

Table 8: Data pertaining to association of Socio demographic variables and Diastolic blood pressure among patients with hypertension

n=100

S L. N O	Socio demographic variables	<60m m/Hg	60-80 mm/Hg	81-100 mm/Hg	101-120 mm/Hg	12 0< mm /Hg	X ²	P value
1.	Age						10.68	df=4 0.03 *
	a)20-30years	0	6	2	2	0		
	b)31-40years	0	6	22	2	0		
	c) 41-50 years	0	16	41	3	0		
2.	Gender						6.07	df=2 0.035 *
	a)Male	0	24	53	3	0		
	b)Female	0	4	12	4	0		
3.	Education						5.03	df=10 0.89
	a)Illiterate	0	1	3	1	0		
	b)primary	0	5	14	1	0		
	c)secondary	0	8	16	1	0		
	d) high school	0	6	13	1	0		
	e)Higher secondary	0	6	13	1	0		
f) College	0	2	6	2	0			
4.	Occupation						12.60	df=4 0.013 **
	a)Daily wage	0	24	43	3	0		
	b)Regular monthly income	0	4	12	4	0		
	c) Unemployed	0	0	10	0	0		
5.	Residing place						.903	df=2 .64
	a)Urban	0	21	45	4	0		
	b)Rural	0	7	20	3	0		
6.	Family income per month in rupees.						3.47	df=6 0.75
	a)Below 2000	0	1	8	1	0		
	b)2000-5000	0	6	13	1	0		
	c)5001-8000	0	15	26	4	0		
	d)Above 8000	0	6	18	1	0		

7.	Type of family							
	a) Nuclear	0	18	38	4	0	.302	df=2 0.86
b) Joint	0	10	27	3	0			

***P<0.05, ** P<0.01**

Table 8 represents the frequency and percentage distribution of socio demographic variables of patients with Hypertension including Age, Sex, Educational level, and occupational status, area of residence, monthly income and Type of family. With regard to age, majority of 60(60%) were found in the age group of 41-50 years, 30(30%) were in the age group of 31-40 years, 10(10%) were in the age group of 20-30 years. With regard to sex, majority of 80 (80%) were males and least of 20 (20%) were females.

With regard to educational level, majority of 25(25%) obtained Secondary level education, 20(20%) in each obtained primary level education, high school education, higher secondary level education, 10(10%) completed graduation and 5(5%) were illiterate. With regard to occupational status, majority of 70(70%) were daily wage workers, 20(20%) were regular monthly income workers and 10(10%) were unemployed. With regard to area of residence majority of 70(70%) belonged to urban background and remaining 30(30%) were from rural area .With regard to monthly income majority of 45(45%) were getting monthly income of Rs.5001-8000, 25(25%) were getting more than Rs 8000 per month, 20(20%) were getting of Rs 2000-5000 and least of 10 (10%) are getting less than Rs. 2000 per month. And finally when it comes to type of family, 60(60%) belongs to nuclear family and 40(40%) belongs to joint family.

The above tables show that the association between socio demographic variables and Diastolic Blood pressure among Hypertensive patients. There was association between Age, sex and occupational status with hypertension. Whereas no association was found for educational level, residing place, family income and type of family with Hypertension. Hence the Hypothesis H₂ was partially accepted.

Table 9: Data pertaining to association of Clinical variables and Systolic blood pressure among patients with hypertension n=100

S. NO	CLINICAL VARIABLES	<90 mm /Hg	90-120 mm /Hg	121-140 mm /Hg	141-180 mm /Hg	180 < mm /Hg	X ²	P value
1	DIET Type of food a) vegetarian b) non vegetarian	0 0	15 7	10 26	5 37	0 0	21.9 06	df=2 0.000 1 ***
2	Frequency of meal a) 2 times/day b) 3times/day c) 4times/day d)more than 4 times	0 0 0 0	10 5 4 3	7 20 7 2	3 25 9 5	0 0 0 0	16.1	df=6 0.01 *
3	Common cooking method a) frying b)baking c) stewing d)boiling e) steamig	0 0 0 0 0	5 2 2 8 5	7 2 2 18 7	13 4 4 4 13	0 0 0 0 0	13.9 2	df=8 0.083
1	CO MORBID ILLNESS Cardiovascular diseases a) yes b) no	0 0	5 17	6 30	9 33	0 0	.406	df=2 0.816
2	Kidney disease a) yes b) no	0 0	8 14	9 27	10 32	0 0	1.26	df=2 0.53

3	Diabetes mellitus							
	a) yes	0	10	10	15	0	1.89	df=2 0.388
b) no	0	0	0	0	0			
4	Other problems							
	a) yes	0	5	5	5	0	1.38	df=2 0.501
b) no	0	17	31	37	0			

***P<0.05, ** P<0.01**

Table 9 depicts the frequency and percentage distribution of clinical variables of patients with hypertension. It shows that 70(70 %) of the sample population were non vegetarian while 30 (30%) were vegetarian. With regard to the frequency of meal, a majority of 50(50%) took food 3 times a day, 20(20%) took food 2 times a day, another 20(20%) took food 4 times/day and a least percentage of 10(10%) took more than 4 times a day. The most common method of cooking was boiling 30(30%). Frying and steaming ranges second with 25(25%) each, the least common methods were baking and stewing with 10(10%) each. Regarding co morbid illness, 80(80%) were free of cardiovascular disease while 20(20%) had cardiovascular problems 27(27%) had kidney problems while 73(73 %) are free of kidney problems. In case of diabetes, 35(35 %) were diabetic and 65(65%) were non diabetic.85 (85%) did not have any other problems while 15(15%) did have other problems.

The above tables show that the association between Clinical variables and Systolic Blood pressure among Hypertensive patients. According to this table there was association between Type of food and Frequency of meal with hypertension. Whereas no association was found for Co morbid illness, Common cooking methods with Hypertension.

Table 10: Data pertaining to association of Socio demographic variables and Diastolic blood pressure among patients with hypertension

n=100

S. NO	CLINICAL VARIABLES	<60 mm/Hg	60-80 mm/Hg	81-100 mm/Hg	101-120 mm/Hg	120< mm/Hg	χ^2	P value
1	DIET Type of food a) vegetarian b) non vegetarian	0 0	3 25	22 43	5 2	0 0	11.38	df=2 0.003 **
2	Frequency of meal a) 2 times/day b) 3times/day c) 4times/day d)more than 4 times	0 0 0 0	5 16 5 2	10 34 15 6	5 0 0 2	0 0 0 0	18.32	df=6 0.005 **
3	Common cooking method a) frying b)baking c) stewing d)boiling e) steaming	0 0 0 0 0	5 2 2 14 5	19 2 2 18 7	1 1 1 3 1	0 0 0 0 0	9.79	df=8 0.279

1	CO MORBID ILLNESS Cardiovascular diseases a) yes b) no	0 0	5 23	14 51	1 6	0 0	.319	df=2 0.852
2	Kidney disease a) yes b) no	0 0	8 20	18 47	1 6	0 0	.625	df=2 0.731
3	Diabetes mellitus a) yes b) no	0 0	8 20	25 40	2 5	0 0	.978	df=2 0.613
4	Other problems a) yes b) no	0 0	4 24	10 55	1 6	0 0	.022	df=2 0.989

***P<0.05, ** P<0.01**

Table 10 depicts the frequency and percentage distribution of clinical variables of patients with hypertension. It shows that 70(70 %) of the sample population were non vegetarian while 30 (30%) were vegetarian. With regard to the frequency of meal, a majority of 50(50%) took food 3 times a day, 20(20%) took food 2 times a day, another 20(20%) took food 4 times/day and a least percentage of 10(10%) took more than 4 times a day. The most common method of cooking was boiling 30(30%). Frying and steaming ranges second with 25(25%) each, the least common methods were baking and stewing with 10(10%) each, regarding co morbid illness, 80(80%) were free of cardiovascular disease while 20(20%) had cardiovascular problems 27(27%) had kidney problems while 73(73 %) are free of kidney problems. In case of diabetes, 35(35 %) were diabetic and 65(65%) were non diabetic.85 (85%) did not have any other problems while 15(15%) did have other problems.

The above tables show that the association between Clinical variables and Diastolic Blood pressure among Hypertensive patients. There was association between

Type of food and Frequency of meal with hypertension. Whereas no association was found for Co morbid illness ,Common cooking methods with Hypertension.

Hence the Hypothesis H₂ was partially accepted.

SUMMARY

This chapter dealt with analysis and interpretation of data obtained by the researcher. The analysis of the results showed an association between Body Mass Index and Hypertension and there was a significant association between Hypertension and selected socio demographic variables.

CHAPTER V

DISCUSSION

This chapter deals with the discussion of the data analysed based on the objectives and Hypotheses of the study. The problem stated was” An explorative study to find out the association between Body Mass Index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district”. The discussion was based on the objectives of the study and hypotheses mentioned in the study.

OBJECTIVES OF THE STUDY

The objectives of the study are

- To find out the association between Body Mass Index and Hypertension among Hypertensive patients.
- To find out the association between selected socio demographic, clinical variables and Hypertension among hypertensive patients
- To prepare an Information Booklet on prevention of complications of Hypertension.

Socio demographic variables of Hypertensive patients.

It represents the frequency and percentage distribution of socio demographic variables of patients with Hypertension including age, sex, and educational level, occupational status, area of residence, monthly income and type of family.

With regard to age, majority of 60(60%) were found in the age group of 41-50 years, 30(30%) were in the age group of 31-40 years, 10(10%) were in the age group of 20-30 years. With regard to sex, majority of 80 (80%) were males and least of 20 (20%) were females.

With regard to educational level, majority of 25(25%) obtained secondary level education, 20(20%) in each obtained primary level education, high school education,

higher secondary level education, 10(10%) completed graduation and 5(5%) were illiterate.

With regard to occupational status, majority of 70(70%) were daily wage workers, 20(20%) were regular monthly income workers and 10(10%) were unemployed.

With regard to area of residence majority of 70(70%) belonged to urban background and remaining 30(30%) were from rural area .

With regard to monthly income majority of 45(45%) were getting monthly income of Rs.5001-8000, 25(25%) were getting more than Rs 8000 per month, 20(20%) were getting of Rs 2000-5000 and least of 10 (10%) are getting less than Rs. 2000 per month.

And finally when it comes to type of family, 60(60%) belongs to nuclear family and 40(40%) belongs to joint family.

Clinical variables of Hypertensive patients.

It depicts the frequency and percentage distribution of clinical variables of patients with hypertension. It shows that 70(70 %) of the sample population were non vegetarian, while 30 (30%) were vegetarian. With regard to the frequency of meal, a majority of 50(50%) took food 3 times a day, 20(20%) took food 2 times a day, another 20(20%) took food 4 times/day and a least percentage of 10(10%) took more than 4 times a day. The most common method of cooking was boiling 30(30%). Frying and steaming ranges second with 25(25%) each, the least common methods were baking and stewing with 10(10%) each. With regard to co morbid illness, 80(80%) were free of cardiovascular disease, while 20(20%) had cardiovascular problems, 27(27%) had kidney problems while, 73(73 %) are free of kidney problems. In case of diabetes, 35(35 %) were diabetic and 65(65%) were non diabetic.85 (85%) did not have any other problems, while 15(15%) did have other problems.

Biophysiological variables of Hypertensive patients

It represents the frequency and percentage distribution of Biophysiological variables of patients with hypertension. With regard to height, maximum of 70(70%) belonged to the group between 160 and 180 cm height, 24(24%) belonged to the category of 140- 159 cm height and 6(6%) had more than 180cms height. Regarding weight, 82(82%) belonged to 50-70 kg weight, 14(14%) had 71- 90kg weight. 4(4%) had more than 90 kg weight. None of them belongs to the category of below 50 kg height. Regarding abdominal girth, majority 50(50%) had 100-120cms of abdominal girth, 26(26%) had more than 120cms, 20(20%) were between 80-99cms, 4 (4%) had less than 80cms. Regarding Systolic blood pressure, 42(42%) have their Blood pressure between 141-180 mm/Hg, 36 (36%) had 121-140 mm/Hg and 22(22%) had 90-120. Regarding Diastolic blood pressure, majority of 65(65%) had Blood pressure between 81-100 mm/Hg, 22(22%) had 60-80mm/Hg and a mere 7(7%) had 101-120mm/Hg.

Objectives 1: To find out the association between Body Mass Index and Hypertension among hypertensive patients

The results revealed that there was a significant association between Body Mass Index and Hypertension. The association was statistically proven using chi square. The p value is less than .05. Hence it is statistically significant.

Objectives -2: To find out the association between selected socio demographic variables, Clinical variables and Hypertension among hypertensive patients.

On analyzing data, we can deduce that there was association between Age, sex, occupational status and marital status with hypertension. Whereas, no association was there for educational level, residing place, family income and type of family with Hypertension. Regarding Clinical variables, there was association between Type of food, Frequency of meal with hypertension. Whereas no association was found for Co morbid illness, Common cooking methods with Hypertension.

Objectives-3: To prepare an information booklet on prevention of early and late complications of hypertension.

The investigator provided an information booklet which contains the information regarding Hypertension; they are definition of Hypertension, cause, clinical manifestations, and diagnostic evaluation, Treatment and prevention of early and late complications.

SUMMARY

This chapter deals with the objectives of the study, major findings of the demographic variables of Hypertensive patient, description of association between Body Mass Index and hypertension among Hypertensive patients.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, findings, conclusion drawn, nursing implications of the study for different areas like Nursing practice, Nursing education, nursing administration and Nursing research and recommendations for future research in the field.

SUMMARY

The summary includes the, objectives of the study, description of procedure used, major findings and conclusion and recommendations for further research study.

“An explorative study to find out the association between Body Mass Index and hypertension in a view to prepare information booklet on prevention of complications among hypertensive patients in Annammal hospital at Kanyakumari district”.

OBJECTIVES OF THE STUDY

The objectives of the study are

- To find out the association between Body Mass Index and Hypertension among Hypertensive patients.
- To find out the association between selected socio demographic, clinical variables and Hypertension among hypertensive patients
- To prepare an Information Booklet on prevention of complications of Hypertension.

HYPOTHESES

H₁ : There will be a significant association between Body Mass Index and Hypertension.

H₂ : There will be significant association between selected socio demographic, clinical variables and Hypertension among hypertensive patients

The **conceptual framework** used in the present study is adopted from General System Theory introduced by Ludwig Von Bertalanffy (1968). According to this theory, a system is a group of elements that interact with one another in order to achieve the goal.

The investigator organised the **Review of literature** under the following headings:

- I. Empirical studies related to incidence and prevalence Hypertension
- II. Empirical studies related to risk factors Hypertension
- III. Empirical studies related to factors influencing Hypertension

The study was conducted among patients with hypertension in Annammal hospital-Kuzhithurai, for assessing the association between Body Mass Index and Hypertension. The sample size for the study was 100 and the sampling technique used by the investigator was non probability convenient sampling method.

Data collection period was one month and the tools used for data collection were socio demographic variable proforma, clinical variable proforma and biophysiological variable proforma. To ensure the content validity the prepared data collection tool along with the problem statement, objectives, operational definitions, hypotheses, sampling technique and the criteria checklist designed for validation were submitted to ten experts including eight medical and surgical nursing personnel, one physician and one statistician.

Pilot study was conducted in Annammal Hospital, Kuzhithurai. Initial permission was sought from the institution and formal permission was sought from the hospital for conducting the study in selected setting. The pilot study was conducted in the month of October for a period of one week. Consent was obtained from the participants. 10 outpatient adults were selected. The data was collected using the prepared tool and it was analysed statistically. Data collection was conducted during the month of November with duration one month data collection was for one month. Sample was collected from Annammal hospital. Non probability convenient sampling technique used to draw 100 samples from the study population.

Collected data was analysed and interpreted as per the objectives of the study by using the descriptive statistics (frequency and percentage) and also by using inferential statistics (chi-square) methods after careful editing, coding and tabulated.

FINDINGS

Major findings of the study were presented under the following headings:

1) Findings related to demographic variables of Hypertensive patients

It represents the frequency and percentage distribution of socio demographic variables of patients with Hypertension including age, sex, and educational level, occupational status, area of residence, monthly income and type of family.

With regard to age, majority of 60(60%) were found in the age group of 41-50 years, 30(30%) were in the age group of 31-40 years, 10(10%) were in the age group of 20-30 years. With regard to sex, majority of 80 (80%) were males and least of 20 (20%) were females.

With regard to educational level, majority of 25(25%) obtained secondary level education, 20(20%) in each obtained primary level education, high school education, higher secondary level education, 10(10%) completed graduation and 5(5%) were illiterate.

With regard to occupational status, majority of 70(70%) were daily wage workers, 20(20%) were regular monthly income workers and 10(10%) were unemployed.

With regard to area of residence majority of 70(70%) belonged to urban background and remaining 30(30%) were from rural area .

With regard to monthly income majority of 45(45%) were getting monthly income of Rs.5001-8000, 25(25%) were getting more than Rs 8000 per month, 20(20%) were getting of Rs 2000-5000 and least of 10 (10%) are getting less than Rs. 2000 per month.

And finally when it comes to type of family, 60(60%) belongs to nuclear family and 40(40%) belongs to joint family.

2) Findings related to frequency and percentage distribution of clinical factors among patients with hypertension.

It depicts the frequency and percentage distribution of clinical variables of patients with hypertension. It shows that 70(70 %) of the sample population were non vegetarian, while 30 (30%) were vegetarian. With regard to the frequency of meal, a majority of 50(50%) took food 3 times a day, 20(20%) took food 2 times a day, another 20(20%) took food 4 times/day and a least percentage of 10(10%) took more than 4 times a day. The most common method of cooking was boiling 30(30%). Frying and steaming ranges second with 25(25%) each, the least common methods were baking and stewing with 10(10%) each. With regard to co morbid illness, 80(80%) were free of cardiovascular disease, while 20(20%) had cardiovascular problems, 27(27%) had kidney problems while, 73(73 %) are free of kidney problems. In case of diabetes, 35(35 %) were diabetic and 65(65%) were non diabetic.85 (85%) did not have any other problems, while 15(15%) did have other problems.

3) Findings related to frequency and percentage distribution of Biophysiological among patients with Hypertension.

It represents the frequency and percentage distribution of Biophysiological variables of patients with hypertension. With regard to height, maximum of 70(70%) belonged to the group between 160 and180 cm height, 24(24%) belonged to the category of 140- 159 cm height and 6(6%) had more than 180cms height. Regarding weight, 82(82%) belonged to 50-70 kg weight, 14(14%) had 71- 90kg weight. 4(4%) had more than 90 kg weight. None of them belongs to the category of below 50 kg height. Regarding abdominal girth, majority 50(50%) had 100-120cms of abdominal girth, 26(26%) had more than 120cms, 20(20%) were between 80-99cms, 4 (4%) had less than 80cms. Regarding Systolic blood pressure, 42(42%) have their Blood pressure between 141-180 mm/Hg.36 (36%) had 121-140 mm/Hg and 22(22%) had 90-120. Regarding Diastolic blood pressure, majority of 65(65%) had Blood pressure between 81-100 mm/Hg, 22(22%) had 60-80mm/Hg and a mere 7(7%) had 101-120mm/Hg.

4) Finding related to association between socio demographic variables, Clinical variables and Hypertension.

On analyzing data, we can deduce that there was an association between age, sex, occupational status and marital status with hypertension. Whereas, there was no association found for educational level, residing place, family income and type of family with hypertension. In case of Clinical Variables there was association between Type of food, Frequency of meal with hypertension. Whereas no association was found for Co morbid illness, Common cooking methods with Hypertension

5) Finding related to frequency and percentage distribution of Body Mass index among patients with Hypertension

On analyzing data, we can deduce that 42% of the sample were overweight ,52% were of normal weight and 6 % were underweight.

6) Findings related to association of Body Mass Index and Blood pressure among Hypertensive patients

There was significant association between Systolic blood pressure and Body Mass Index. There was significant association between Diastolic blood pressure and Body Mass Index.

CONCLUSION

The following conclusions were drawn from the findings of the study. The main conclusion of the present study is that there is significant association between Body Mass Index and Hypertension. Socio demographic variables have an association with hypertension. Selected patients became familiar about Hypertension and satisfied after giving Information booklet.

IMPLICATIONS OF THE STUDY

Based on the findings the researcher recommended the implications on Nursing practice, Nursing administration, Nursing education and Nursing research.

NURSING PRACTICE

- Nurses can provide education during their posting in the clinical area to provide information about Hypertension
- Nurses play an important role in primary health care by early detection and prevention of Hypertension.
- Nursing is a practicing profession, so the investigator generally integrates the findings of the present study in to practice.
- Nurses can provide knowledge to the patients through information booklet.

NURSING EDUCATION

- As the change begins with education, INC and universities should increase the theory and also practical hours in outpatient department.
- The student nurses from the School & College of Nursing should be encouraged to attend specialized seminars regarding the early detection and prevention of complications about Hypertension
- Nurse educator should come forward to involve their students in clinical work which will bring awareness to the people regarding Hypertension with the help of information booklet.
- In the clinical area the nurse educator can conduct health promotion programmes about Hypertension.

NURSING ADMINISTRATION

- Nurse administrator should take responsibility in managing their personnel to meet the needs of patients with Hypertension.
- Nurse administrators should assume leadership role in training and providing health education programmes to patients.
- Nurse administrators should utilize available resources which are technologically sound in educating the patient through mass education programmes in the clinical setup.

- Nurse administrators can prepare written policies and protocols regarding immediate care of patients with Hypertension

NURSING RESEARCH

- There is a need for extensive and intensive research in this area so that strategies for education nurses and patients on the knowledge of Hypertension can be developed.
- This study will serve a valuable reference material for future investigators.
- Developing research would help nurse to deal efficiently and effectively thus reducing morbidity and mortality rates due to Hypertension.

RECOMMENDATIONS

- The sample study can be done on a larger population.
- A study can be conducted on quality of life among patients with Hypertension
- Study can be conducted to assess the various factors which cause Hypertension
- Study can be conducted to find the precipitating factors among patients with Hypertension.