EFFECTIVENESS OF CLINICAL PATHWAY FOR PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY UPON THE KNOWLEDGE AND PRACTICE OF NURSES AND PATIENTS' OUTCOME

BY

ANITHA. N

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

APRIL 2012

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Approved by the Dissertation Committee on : _____

Research Guide : _____

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness of Clinical Pathway for Patients undergoing Micro Lumbar Discectomy upon the Knowledge and Practice of Nurses and Patients' Outcome"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. Latha Venkatesan,** M.Sc (N)., M.Phil., Ph.D., Principal, Apollo College of Nursing, **Mrs. Lizy Sonia. A**, M.Sc (N)., Professor cum Vice Principal, Apollo College of Nursing, Chennai. 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 this university or any other university.

II Year M.Sc (N)

ACKNOWLEDGEMENT

I thank **God Almighty** for showering His blessings upon me and guidance in the matters at hand and for clearly showing me the way to conduct my work with a spirit of joy and enthusiasm throughout my study.

I dedicate my heartfelt thanks and gratitude to our esteemed leader **Dr. Latha Venkatesan**, M.Sc (N)., M.Phil., Ph.D, Principal, Apollo College of Nursing for her tremendous help, continuous support, enormous auspice, valuable suggestions and tireless motivation to carry out my study successfully.

I take this opportunity to express my great pleasure and deep sense of gratitude to my guide **Mrs. Lizy Sonia. A,** M.Sc (N), Vice Principal, Apollo College of Nursing, for her kind support, valuable guidance, enlighting ideas and willingness to help at all times for successful completion of this research work.

I owe my special thanks to **Prof. K. Vijayalakshmi**, Research Coordinator, Apollo College of Nursing for her prolonged patience and continuous guidance in completing my study.

My special gratitude to **Dr. P. Rajasekar**, Consultant Orthopedics., Apollo Main Hospital, Chennai for his valuable suggestions and opinions towards the study.

I profoundly thank **Dr. Radha Rajagopalan**, Apollo Main Hospital, for permitting me to conduct my study in their esteemed institution and providing continuous encouragement throughout the study.

With special reference I thank **Dr.M. Balamurugan**, Consultant, Neurosurgeon, Apollo Speciality Hospital, for his worthful suggestions. I profoundly thank **Ms. Punitha Singh,** Nursing Director, Apollo Main Hospital, Chennai for her valuable clinical guidance.

My genuine gratitude to **Mrs. Nesa Sathya Satchi**, M.Sc (N)., Reader and Course coordinator for her consecutive ideas and enormous concern. I also extend my special thanks to all the **Faculties in the Department of Medical Surgical Nursing** for rendering their valuable guidance and ideas in completing my study.

With the special word of reference, I thank all the **experts** for validating my tool and offering worthy suggestions to make it effective. I am thankful to all the **Head of the Departments, Faculties** and my Colleagues who helped me directly or indirectly in carrying out my study.

A note of thanks to the **Librarians** at Apollo College of Nursing for their support and timely help throughout the study. My special gratitude to **Mr. Kannan**, Universal Computers, Vanagaram, for his constructive and creative efforts in typing the dissertation.

I would fail in my duty if I forget to thank my loved ones behind the scene. I am grateful to my parents, **Mr. T. Natarajan and Mrs. K. Vanaja** , sisters **Ms. Ajitha** and **Ms. Anushya** and brother in law **Mr. Narayana Perumal** for their support in all times of ups and downs, their prayers, their blessings and their help rendered to me in completing my study successfully.

SYNOPSIS

A Quasi Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients Undergoing Micro Lumbar Discectomy upon the Knowledge and Practice of Nurses and Patients' Outcome at Apollo Speciality Hospital, Chennai

The Objectives of the Study were,

1. To assess the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.
2. To assess the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
3. To evaluate the effectiveness of clinical pathway by comparing the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.
4. To compare the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
5. To compare the level of patient satisfaction on nursing care in control and experimental group of patients undergoing micro lumbar discectomy.
6. To determine the association between selected demographic variables of nurses and their pre and post test level of knowledge regarding clinical pathway for patients undergoing micro lumbar discectomy.
7. To determine the association between selected demographic variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.

8. To determine the association between selected clinical variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.

The conceptual framework for the study was developed on the basis of Roy's adaptation model, which was modified for the present study. An intensive review of literature and experts guidance laid the foundation to the development of tools such as demographic variable proforma for nurses, clinical variable proforma for patients, and demographic variable proforma for patients, structured knowledge questionnaire for nurses, practice check list, patient satisfaction rating scale and patient outcome check list.

In this study quasi experimental research design was adopted but for the availability of limited number of nurses, one group pre and post test design was adopted for nurses. The present study was conducted at Apollo Speciality Hospital, Chennai among nurses who take care of patients with micro lumbar discectomy surgery. The study sample size for the present study was 30 nurses and 60 patients undergoing micro lumbar discectomy surgery. Among the 60 patients 30 patients were assigned to control group and 30 patients were assigned to experimental group who satisfied the inclusion criteria.

The investigator used the demographic variable proforma for nurses, demographic and clinical variable proforma for patients to obtain the baseline data. Structured questionnaire was used to assess the knowledge of nurses, practice checklist was used to identify whether the patients were receiving the appropriate care, rating

scale to assess the level of patient satisfaction and checklist to assess the patients' outcome. The data collection tools were validated and reliability was established. After the pilot study, the data collection of the main study was conducted for a period of four weeks. The collected data was tabulated and analyzed by using appropriate descriptive and inferential statistics.

The Major Findings of the Study

- Majority of the nurses were in the age group of 21-25 years (83.3%), females (86.6%), having less than 5 years of experience (83.3%), qualified with B.Sc Nursing (83.3%), were working as staff nurses (76.7%) and not attended in service education on clinical pathway (60%).
- Most of the patients in the control and experimental group were males (53.3%, 60%), married (66.6%, 56.6%), graduates (76.6%, 73.3%), non vegetarian (73.3%, 80%), employed (70%, 86.6%), moderate workers (50%,60%), indoor place of work (70%, 66.6%),with monthly income of more than 15000 (90%,86.6%)& resided in urban area (60%, 60%) and a significant percentage of the population were in the age group of above 50 years (33.3%, 36.6%) and had acquired health information regarding micro lumbar discectomy from health workers (40%, 30%) respectively.
- Most of the patients in the control and experimental group were weighing more than 70 kgs (53.3%, 63.3%), had co morbid illness (63.3%, 63.3%), treated for co morbid illness (63.3%, 63.3%), with history of trauma (80%, 63.3%), no family history of spinal stenosis (87%, 70%), with history of surgery (70%,50%), with less than 1year duration of diagnosis (70%, 83.3%), all

experienced back pain (100%, 100%), treated with oral analgesics (60%, 46.6%) and not followed regular exercise pattern (66.6%, 53.3%) respectively.

- Majority of the nurses had inadequate knowledge (83.3%) in pre test, whereas in post test majority of the nurses had adequate knowledge (76.6%) regarding clinical pathway for micro lumbar discectomy.
- Majority of the nurses had partially compliant scores on day 1 (83.3%) and significant of them had non compliant scores on day 2, 3 and 4 (26.7%, 26.7%, and 26.7%) respectively for control group of micro lumbar discectomy patients and after administration of clinical pathway nurses were able to provide 100% compliant care.
- Majority of the patients in the control group had moderately positive outcome (86.6%) and in experimental group majority of the patients had positive outcome (90%).
- In the control group majority of the patients were satisfied (86.6%) and in experimental group majority of the patients were highly satisfied (90%) on nursing care provided.
- The knowledge of nurses in post test (M= 16.97, SD=1.64) was high in comparison with the pre test (M= 8.8, SD=1.85). The difference was found statistically significant at $p<0.001$ level of confidence.
- The mean practice scores for nurses in experimental group of patients were high in comparison with the control group of patients. The difference was found to be statistically significant at $p<0.001$ level of confidence.
- The level of satisfaction on nursing care in experimental group of patients (M=34.7, SD=2.7) was high in comparison with the level of satisfaction in

control group of patients (M= 24.6, SD=3.52). The difference was found statistically significant at $p<0.001$ level of confidence.

- The patients' outcome in experimental group (M=20.5, SD=1.46) were high in comparison with the patients' outcome in control group (M=15.7, SD=2.16). The difference was found statistically significant at $p<0.001$ level of confidence.
- There was no significant association between the selected demographic variables namely age, total years of experience, designation, working area, professional qualification and place of study and pre and post test level knowledge of nurses.
- There was a significant association between nature of work and the patient outcome whereas there was no significant association between the other demographic variables such as age, sex, marital status, educational qualification, dietary intake, occupational status, place of work, income, residential area and patient outcome in control and experimental group of patients.
- There was no significant association between the clinical variables such as weight, presence of co morbid illness, treatment of co morbid illness, history of trauma, spinal stenosis & surgeries, diagnosis of spinal stenosis, experience of back pain, exercise pattern and the outcome in control and experimental group of patients.
- There was no significant association between the demographic variables such as age, sex, marital status, educational qualification, dietary intake, occupational status, place of work, nature of work, income, residential area and satisfaction of nursing care in control and experimental group of patients.

Recommendations

- The similar study could be undertaken on larger scale for more valid generalization.
- This study could be replicated in different settings.
- The study could be conducted to analyze the relationship between the use of clinical pathway and time spent by the nurse.
- Clinical pathways can be established for major disease conditions and other surgeries.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Apollo College of Nursing

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/1093/11 30.03.2011

To

The Medical Superintendent
Apollo specialty hospital,
No:320,Padma Complex,
Anna salai,
Nandanam ,
Chennai -600035

Respected Sir / Madam,

Sub.: To request permission for research study – Reg.

Greetings! As part of the curriculum requirement our 2nd year M. Sc. (N) student Ms.Anitha .N has selected the following title for her research study.

"A quasi experimental study to assess the effectiveness of clinical pathway for patients undergoing micro lumbar discectomy upon the knowledge and practice of nurses and patient outcome at Apollo Hospitals, Chennai".

So I kindly request your goodselves to permit her to use the resource materials for the above-mentioned candidate.

Thanking You,

Dr. LATHA VENKATESAN
PRINCIPAL

Permitted to do the Study

Dr. VIJAYAKUMAR CHOCKKAN,
M.B.B.S., M.Sc., Ph.D.,
Medical Superintendent
Apollo Speciality Hospital
Chennai

IS/ISO 9001:2000

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

APPENDIX II

ETHICAL COMMITTEE CLEARANCE LETTER

Ethics Committee

Apollo HOSPITALS TOUCHING LIVES

22 June, 2011

To,
Ms. N. Anitha
1st Year M.Sc (Nursing)
Dept. of Medical Surgery
Apollo College of Nursing, Chennai
Tamil Nadu, India

Ref: Effectiveness of clinical pathway for patients undergoing micro lumbar discectomy

Sub: Your letter dated 9 June, 2011 for approval of the above referenced project and its related documents

Dear Ms. N. Anitha,

Ethics committee – Apollo Hospitals has received the following document submitted by you related to the conduct of the above – referenced study.

- Project Proposal titled "Effectiveness of clinical pathway for patients undergoing micro lumbar discectomy"
- Study Performa

The above-mentioned documents have been reviewed and approved (through expedited review) by the Chairman, Vice-Chairman and Member Secretary at a specially convened meeting of the Ethics Committee. The study is hereby approved to be conducted by you in the presented form.

The following Ethics Committee members were present at the meeting held on 22 June, 2011

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr.Radha Rajagopalan	Clinician	Vice - Chairman
Dr. Jayanthi Swaminathan	Sr.GM Clinical & Collaborative Research	Member Secretary

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449
E - Mail : ecapollochennai@gmail.com

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you. Since your dissertation does not involve any administration of drug(s) or therapeutic composition(s) to patients and involves only interpretation of collected data, the Ethics Committee has decided to waive the requirement of informed consent.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

Yours sincerely,

Radhakrishnan

Date 22/6/11

Dr. Radha Rajagopalan
Ethics Committee – Vice Chairman
Apollo Hospitals, Chennai

DR. RADHA RAJAGOPALAN
Vice Chairman
Ethics Committee
Apollo Hospitals Enterprise Limited
Chennai-600 006. Tamil Nadu.

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Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449
E - Mail : ecapollochennai@gmail.com

APPENDIX III

LETTER SEEKING PERMISSION FOR CONTENT VALIDITY

From
Ms. N. Anitha,
M.Sc(Nursing) Second Year,
Apollo College of Nursing,
Chennai – 600 095.

To

Forwarded Through:
Dr. Latha Venkatesan,
Principal,
Apollo College of Nursing.

Sub: **Requesting for opinions and suggestions of experts for establishing content validity for research tool**.

Respected Madam,

I am a postgraduate student of the Apollo College of Nursing. I have selected the below mentioned topic for research project to be submitted to The Tamil Nadu Dr. M.G.R Medical University, Chennai as a partial fulfillment of Masters of Nursing Degree.

TITLE OF THE TOPIC:

A quasi experimental study to assess the effectiveness of clinical pathway for patients undergoing micro lumbar discectomy upon the knowledge and practice of nurses and patients'outcome at Apollo Hospitals, Chennai.

With regards may I kindly request you to validate my tool for its appropriateness and relevancy. I am enclosing the Background, Need for the study, Statement of the problem, Objectives of the study, Demographic Variable Proforma, Clinical Variable Proforma, structured questionnaire on knowledge regarding clinical pathway for micro lumbar discectomy, practice checklist on clinical pathway and rating scale on the satisfaction of nursing care. I would be highly obliged and remain thankful for your great help if you could validate and send it as soon as possible.

Thanking you,

Date: **Yours sincerely,**

Place: **(Anitha.N)**

APPENDIX IV

LIST OF EXPERTS

1. **Dr. Latha Venkatesan, M.Sc(N), M.Phil., Ph.D,**
   Principal and Professor in Maternity Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

2. **Prof. Lizy Sonia. A, M.Sc(N),**
   Vice Principal and Professor in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai-600 095

3. **Dr. P. Rajasekar, MNAMS, DNB,**
   Senior Consultant, Orthopedics**,**
   Apollo Hospitals,
   Chennai- 600 006

4. **Prof. K. Vijayalakshmi, M.Sc(N),**
   Professor in Psychiatric Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

5. **Mrs. Jaslina Gnana Rani .J, M.Sc(N),**
   Reader in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

6. **Mrs. Sasi Kala, M.Sc(N),**
   Reader in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai- 600 095

7. **Mrs. Kanchana, M.Sc (N)., M.Sc(Psy),**
   Reader in Medical Surgical Nursing,
   Apollo College of Nursing,
   Chennai-600 095

APPENDIX V

CERTIFICATE FOR CONTENT VALIDITY TO WHOMSOEVER IT MAY CONCERN

This is to certify that tools and content for the research study developed by II year M.Sc. (Nursing) student of Apollo College of Nursing for her dissertation **"A Quasi Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients undergoing micro lumbar discectomy upon the Knowledge and Practice of Nurses and Patients' outcome at Apollo Hospitals, Chennai."** was validated.

Signature of the Expert

APPENDIX VI

RESEARCH PARTICIPANT'S CONSENT FORM IN ENGLISH

Dear Participant,

I am Anitha.N, M.Sc. Nursing student of Apollo College of Nursing, Chennai. As a part of my study, I have selected a Research Project on "A Quasi Experimental study to assess the effectiveness of clinical pathway for patients undergoing micro lumbar discectomy upon the knowledge and practice of nurses and patients outcome at Apollo Hospitals, Chennai."

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your response. The information collected will be kept confidential and anonymity will be maintained.

Signature of the Researcher

I ……, hereby give my consent to participate in the study.

Signature of the Participant

APPENDIX VII

CERTIFICATE FOR ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation "A Quasi Experimental study to assess the effectiveness of clinical pathway for patients undergoing Micro lumbar discectomy upon the knowledge and practice of nurses and patients outcome at Apollo Hospitals, Chennai." by Ms. M.Anitha, II Year M.Sc(N), Apollo College of Nursing was edited for English language appropriateness by

Signature

K. SANKARARAJI, B.Sc, M.A, M.Ed
M.A, P.B [illegible], O S A, C, M T
Teacher in English (HSE)
T.T.D. Sri Venkateswara H.S. School,
Vellore - 632001.

APPENDIX -VIII

PLAGIARISM DETECTOR ORIGINALITY REPORT

Plagiarism Detector - Originality Report

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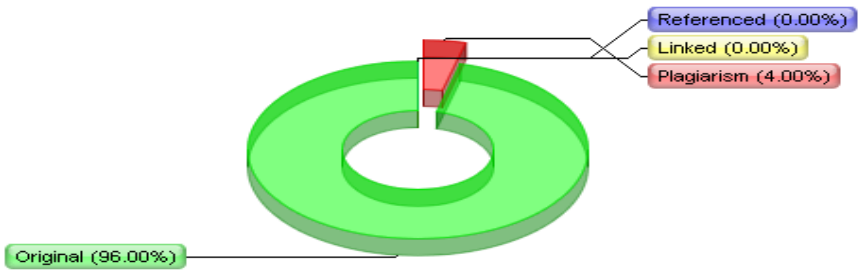

Referenced 0% / Linked 0%

Original - 96% / 4% - Plagiarism

APPENDIX IX

DEMOGRAPHIC VARIABLE PROFORMA OF NURSES

Purpose

This proforma is used to measure the demographic variables of nurses such as age, sex, total years of experience, professional qualification, designation, in service education, working area, place of study.

Instruction

The researchers collect the following information from the participants by asking question in the interview form. Please be frank and free in answering, it will be kept confidential and anonymity will be maintained.

1. **Sample no:** ☐
2. **Age in years**
   - 2.1. 20-25 ☐
   - 2.2. 26-30 ☐
   - 2.3. 31-35 ☐
   - 2.4. >35 ☐
3. **Sex**
   - 3.1. Male ☐
   - 3.2. Female ☐

4. Total years of experience

4.1. <5 years ☐

4.2. 6 -10 years ☐

4.3. 11-15 years ☐

4.4. > 15 years ☐

5. Professional qualification

5.1. GNM ☐

5.2. B.Sc (N) ☐

5.3. P.B.B.Sc (N) ☐

6. Designation

6.1. Staff Nurse ☐

6.2. Novice ☐

7. Have you attended any orientation nursing programme on clinical pathway

7.1. Yes ☐

7.2. No ☐

8. If yes what was the source for attending the orientation training programme

8.1. Professional education ☐

8.2. In-service education ☐

8.3. Mass media ☐

8.4. Others ☐

9. Working area

9.1. general ward ☐

9.2. semi private ☐

9.3. private ☐

10. Place of study

10.1 Private ☐

10.2 Government ☐

10.3 Mission ☐

APPENDIX X

DEMOGRAPHIC VARIABLE PROFORMA OF PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY

Purpose

This proforma is used to measure the demographic variable proforma of patients such as age, sex, marital status, educational qualification, diet pattern, and occupational status, place of work, nature of work, income, and source of health information.

Instruction

The researchers collect the following information from the participants by asking question in the interview form. Please be frank and free in answering, it will be kept confidential and anonymity will be maintained.

1. **Sample No:** ☐

2. **Age in years**
   - 2.1. 20-30 ☐
   - 2.2. 31-40 ☐
   - 2.3. 41-50 ☐
   - 2.4. >50 ☐

3. **Sex**
   - 3.1. Male ☐
   - 3.2. Female ☐

4. Marital status

4.1. Married ☐

4.2. Unmarried /single ☐

4.3. Divorced ☐

4.4. Widow/Widower ☐

5. Educational qualification

5.1. Illiterate ☐

5.2. Primary education ☐

5.3. Secondary education ☐

5.4. Higher secondary education ☐

5.5. Graduate &above ☐

6. Dietary intake/Pattern

6.1. Vegetarian ☐

6.2. Non vegetarian ☐

7. Occupational status

7.1. Employed ☐

7.2. Unemployed ☐

7.3. Home maker ☐

7.4. Retired ☐

8. Place of work

8.1. Indoor ☐

8.2. Outdoor ☐

9. Nature of work

9.1. Sedentary worker ☐

9.2. Moderate worker ☐

9.3. Heavy worker ☐

10. Income per month

10.1. 5000-10000 ☐

10.2. 10001-15000 ☐

10.3. >15000 ☐

11. Source of health information

11.1. Health workers ☐

11.2. Relatives ☐

11.3. Friends ☐

11.4. Family members ☐

12. Residential area

12.1. Rural ☐

12.2. Urban ☐

12.3. Semi urban ☐

12.4. Semi rural ☐

APPENDIX XI

CLINICAL VARIABLE PROFORMA FOR PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY

Purpose

This proforma is used to assess the clinical variables such as past medical and surgical history, and other health related information.

Instructions

The researcher collects the following information from the participants by asking questions in the interview form. Please be frank and free in answering. It will be kept confidential and anonymity will be maintained.

1. **Height : _____cm**

1.1.	150-155	☐
1.2.	156-160	☐
1.3.	161-165	☐
1.4.	>165	☐

2. **Weight: _____kg**

2.1.	40-50	☐
2.2.	51-60	☐
2.3.	61-70	☐
2.4.	>70	☐

3. Presence of co-morbid illness

3.1. Yes ☐

3.2. no ☐

4. Treatment of co-morbid illness

4.1. Yes (if yes specify) ☐

4.2. No ☐

5. Is there any history of trauma/accident?

5.1. Yes (if yes specify) ☐

5.2. No ☐

6. Is there any family history of spinal stenosis?

6.1. Yes (if yes specify) ☐

6.2. No ☐

7. Did you undergo any surgeries in the past?

7.1. Yes (if yes specify) ☐

7.2. No ☐

8. Duration of diagnosis of spinal stenosis?

8.1. <1 year ☐

8.2. 1-5 years ☐

8.3. 5-10 years ☐

8.4. >10 years ☐

9. Do you experience back pain in the early morning?

9.1. Yes (specify the duration) ☐

9.2. No ☐

10. Treatment for back pain

10.1. Topical applications ☐

10.2. Home based remedies ☐

10.3. Oral analgesics ☐

10.4. Parenteral analgesics ☐

10.5. Nil ☐

11. Do you follow a regular exercise pattern?

11.1. Yes ☐

11.2. No ☐

12. Exercise pattern

12.1. Aerobic exercise ☐

12.2. Flexibility exercise ☐

12.3. Strength training ☐

BLUE PRINT ON STRUCTURED KNOWLEDGE QUESTIONNAIRE OF NURSES REGARDING CLINICAL PATHWAY FOR MICRO LUMBAR DISCECTOMY

Item	Item number	Total number of items	Percentage
Clinical pathway	1,2,3	3	15%
Pre op care	4,5,11	3	15%
Post op care	6,7,8,10 ,17,18	6	30%
Complications	9.12,14,16	4	20%
Patient teaching	13,15,19,20	4	20%
	Total	**20**	**100%**

APPENDIX XII

STRUCTURED KNOWLEDGE QUESTIONNAIRE OF NURSES REGARDING CLINICAL PATHWAY FOR MICRO LUMBAR DISCECTOMY

Purpose

This structured questionnaire is used to collect information on knowledge of nurses regarding clinical pathway for Micro lumbar Discectomy

Instructions

The structured knowledge questionnaire consists of multiple choice questions. Please read the questions and the options given below. Place a (✓) mark against the right answer for each question. The information collected will be kept confidential and anonymity will be maintained.

Scoring key

A score of 1 will be given for the right answer.

1. Clinical pathway is

a) Blue print for a plan of care ☐

b) Mandatory treatment plan ☐

c) Standard of care ☐

d) Substitute for physician order ☐

2. Clinical pathways are intended to

a) Reduce variability ☐

b) Increase efficiency ☐

c) Improve patient care ☐

d) All of the above ☐

3. The other name for clinical pathway is

a) Protocol ☐

b) Flow chart of events ☐

c) Process map ☐

d) Integrated pathway ☐

4. The patient will be in nill per oral before surgery for

a) 5 hours ☐

b) 6 hours ☐

c) 7 hours ☐

d) 8 hours ☐

5. Prior to surgery anticoagulants need to be withhold for

1. 5 days ☐
2. 10 days ☐
3. 15 days ☐
4. 20 days ☐

6. Voiding small frequent amount of urine after a lumbar discectomy may indicate

a) Diabetes insipidus ☐

b) Diabetes ketoacidosis ☐

c) Urine retention ☐

d) Urinary tract infection ☐

7. After surgery client should void with in

a) 2 hours ☐

b) 4 hours ☐

c) 6 hours ☐

d) 8 hours ☐

8. The patient will be ambulated from

a) 1st POD ☐

b) 2nd POD ☐

c) 3rd POD ☐

d) 4th POD ☐

9. The signs of nerve root compression is monitored by assessing

a) Pain ☐

b) Leg strength ☐

c) Breathing pattern ☐

d) Urinary retention ☐

10. **Post operatively deep breathing and spirometry exercises can be carried out for every**

a) 2 hours ☐

b) 3 hours ☐

c) 4 hours ☐

d) 5 hours ☐

11. After surgery the client should be instructed not to sit in a same position for more than

a) 15 mts ☐

b) 25 mts ☐

c) 45 mts ☐

d) 5 mts ☐

12. The nurse considers abnormal for a client after 48 hours of lumbar discectomy is

a) More back pain than the 1st post operative day ☐

b) Paresthesia in the dermatomes near the wounds ☐

c) Urinary retention or incontinence ☐

d) Temperature of 99.2*F ☐

13. After surgery client should avoid lifting weight heavier than

a) 4 pounds ☐

b) 6 pounds ☐

c) 8 pounds ☐

d) 10 pounds ☐

14. Early ambulation of discectomy patients

a) Increases the risk of thrombophlebitis ☐

b) Increases respiratory and circulatory function ☐

c) Misalignment of vertebral column ☐

d) Decreases respiratory and circulatory function ☐

15. On the day of surgery log roll should be carried out for every

a) 4 hours ☐

b) 2 hours ☐

c) 8 hours ☐

d) 6 hours ☐

16. The nurse should monitor for hematoma formation is by assessing

a) severe incisional pain ☐

b) Pus formation ☐

c) fever ☐

d) redness ☐

17. The patient can be ambulated with the use of

a) lumbosacral belt ☐

b) walker ☐

c) crutches ☐

d) none ☐

18. Normal diet can be started from

a) First POD ☐

b) Second POD ☐

c) Third POD ☐

d) Fourth POD ☐

19. Signs of infection in incision site includes except

a) Redness ☐

b) Drainage and pus ☐

c) Pain ☐

d) Clamminess of the skin ☐

20. The post operative exercises to be followed after discectomy except

a) Deep breathing exercises ☐

b) Log rolling exercises ☐

c) Leg exercises ☐

d) Coughing exercises ☐

Keys

1. a
2. d
3. d
4. d
5. b
6. c
7. d
8. a
9. b
10. a
11. c
12. c
13. d
14. b
15. b
16. a
17. a
18. a
19. d
20. d

Score interpretation

<50% - inadequate knowledge

51- 75% - moderately adequate knowledge

>75% - adequate knowledge

APPENDIX XIII

CLINICAL PATHWAY FOR PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY

NAME OF THE PATIENT:

AGE:

ADDRESS:

IP NO:

CONSULTANT'S NAME:

DATE OF ADMISSION:

DATE OF SURGERY:

EXPECTED LENGTH OF STAY:

DATE OF DISCHARGE:

MICRO LUMBAR DISCECTOMY CLINICAL PATHWAY

(Approximate length of stay =4 days)

Consultant name : **Patient name :**

Date of admission : **Age /Sex :**

Needs	**Day of admission Day 1**	**Day of surgery Day 2**	**Post –op Day 3**	**Discharge day Day 4**
Consultation	Anaesthetist Surgeon	Anaesthetist Surgeon	As per advice	As per advice
Assessment	Review pre-op data Complete risk assessment History collection and physical examination on chart Check site of symptoms, pain Pre op check list Check patient identity Consent Billing clearance	Post –op assessment, include Neurovascular assessment &operative site assessment	Operative site Ambulation Pain control Nerve root compression(assessing leg strength) Hematoma formation(severe incisional pain) Signs of infection(redness, drainage, fever, pain)	Operative site assessment (any oozing) Loosening of dressing Any bed sore
Investigations	Surgi pack Spine X ray	As ordered	As ordered	As ordered
Medications	As prescribed	As prescribed	As prescribed	As prescribed
Treatments	Skin preparation(groins, thighs and back) Assess for pre op scrub completion	Change dressing as needed Assessment of incision site	Assessment of incision site Home instructions for operated site	Home incision for operated site
Nutrition	Nill per oral for 8 hours before surgery IV fluids as prescribed	Clear liquids as tolerated	Return to regular diet as tolerated	No restrictions

Elimination	Proctoclysis enema	Assess for urinary retention(void with in 8 hrs after surgery) Maintain intake output chart	Maintain intake output chart Assess for urinary retention	Maintain intake output chart
Activity	Bed rest after pre –op sedation	Positioning Walking up and about as soon as possible(support using lumbosacral belt)	Position of comfort Continue to increase ambulation To ambulate with belt	Continue to increase ambulation To ambulate with belt
Position and comfort	Keep head end elevated to 15 degree Provide extra pillows and blankets Comfortable position	Comfortable position	Comfortable position	Comfortable position
Sleep pattern	Calm environment Ensure sound sleep and rest	Assess sleeping habits Calm environment Ensure sound sleep and rest	Assess sleeping habits Calm environment Ensure sound sleep and rest	Calm environment
Hygiene	Oral hygiene Skin preparation Sterilicept bath Providing gown	Maintaining personal hygiene Oral care Sponge bath	Self care	Self care
Psycho social aspects	Reassure the patient Provide psychological support Explain the procedure Get informed consent from the patient	Reassure the patient	Reassure the patient	Reassure the patient

Patient safety	Provide side rails Verifying fall assessment tool Explain the usage of call light	Proper positioning Provide side rails	Proper positioning Provide side rails	Proper positioning Provide side rails
Patient education	Practicing log rolling exercises(every 2 hrs) Pain management Deep breathing exercises and leg exercises Incentive spirometry Post op positioning	Practicing log rolling exercises Expectation of pain control Incentive spirometry and deep breathing exercises and leg exercises(every 2 hrs) Infection control	Discharge instructions, include a. Sitting time not exceed 45 mts b. Lifting weight(not more than 10 pounds) c. Follow up visit	Follow up visit Bathing Exercise Pain control at home
Spiritual needs	Identify and encourage spiritual habits	Identify and encourage spiritual habits	Identify and encourage spiritual habits	Identify and encourage spiritual habits
Discharge planning	Notify of special needs of discharge	Review discharge plans	Activate discharge plan	Preparing for discharge
Desired outcome	Meets baseline criteria for surgical procedure	Absence of complications a. Infection b. Respiratory complications c. Spinal fluid leakage d. Pain control e. Hemodynamic stability	Ambulates without difficulty (increases respiratory and circulatory functions) Comfort maintained Verbalized post op and discharge instructions	Independent with activity Absence of complications Control of pain

APPENDIX XIV

PRACTICE CHECK LIST FOR NURSES CARING FOR PATIENTS

UNDERGOING MICRO LUMBAR DISCECTOMY

Purpose

This checklist is used to assess the practice of nurses on care of patient undergoing micro lumbar discectomy from admission to discharge including pre and post operative nursing care.

Instruction

The checklist is filled by the researcher by observing the practice of nurses by participatory observation method. According to the level of adherence the researcher will put (✓) mark in the compliant, partially compliant and non compliant column. Then scoring will be done.

Compliant (C) **:** It refers to an activity that has been completed by the nurse.

Partially compliant(PC) **:** It indicates that the nurse attempted to perform the activity but not completed.

Non – compliant(NC) **:** It refers to an activity neither attempted nor completed

Scoring key

2- Compliant 1- Partially Compliant 0- Non Compliant

PRACTICE CHECK LIST FOR MICRO LUMBAR DISCECTOMY

DAY 1	C	PC	NC	DAY 2	C	PC	NC
ASSESSMENT 1.1 Review pre-op data 1.2 Complete risk assessment 1.3 History collection and physical examination on chart 1.4 Check site of symptoms, pain 1.5 Pre op check list 1.6 Check patient identity 1.7 Consent 1.8 Billing clearance				**ASSESSMENT** 1.1 Post –op assessment, include Neurovascular assessment & operative site assessment			
INVESTIGATIONS 2.1 As per physicians order				**INVESTIGATIONS** 2.1 As per physicians order			
MEDICATIONS 3.1 As per physicians order 3.2 Monitor patient response to drug therapy 3.3 Explain the importance of drugs 3.4 Follow the six rights in administering				**MEDICATIONS** 3.1 As per physicians order 3.2 Monitor patient response to drug therapy 3.3 Explain the importance of drugs 3.4 Follow the six rights in administering			
TREATMENT 4.1 Skin preparation(groins, thighs and back) 4.2 Assess for pre op scrub completion				**TREATMENT** 4.1 Change dressing as needed 4.2 Assess incision site			
NUTRITION 5.1 Nill per oral for 8 hours before surgery 5.2 IV fluids as prescribed				**NUTRITION** 5.1 Clear liquids as tolerated			

ELIMINATION 6.1 Proctoglysis enema				**ELIMINATION** 6.1 Assess for urinary retention(void with in 8 hrs after surgery) 6.2 Maintain intake output chart			
ACTIVITY 7.1 Bed rest after pre –op sedation				**ACTIVITY** 7.1 Positioning 7.2 Walking up and about as soon as possible(support using lumbosacral belt)			
POSITION AND COMFORT 8.1 Keep patient in 15 degree angle 8.2 Provide extra pillow and blankets 8.3 Comfortable position				**POSITION AND COMFORT** 8.1 Comfortable position			
SLEEP PATTERN 9.1 Provide calm environment 9.2 Ensure sound sleep and rest 9.3 Avoid unnecessary procedures				**SLEEP PATTERN** 9.1 Assess the sleeping habits 9.2 Comfortable environment 9.3 Ensure sound sleep and rest			
HYGIENE 10.1 Oral hygiene 10.2 Skin preparation 10.3 Sterilicept bath 10.4 Providing gown				**HYGIENE** 10.1 Maintaining personal hygiene 10.2 Oral care 10.3 Sponge bath			
PSYCHO SOCIAL ASPECT 11.1 Reassure the patient 11.2 Provide psychological support 11.3 Explain the procedure 11.4 Get informed consent from the patient				**PSYCHO SOCIAL ASPECT** 11.1 Reassure the patient			

SPIRITUAL NEEDS 12.1 Identify and encourage spiritual habits 12.2 Encourage the patient to pray				**SPIRITUAL NEEDS** 12.1 Identify and encourage spiritual habits 12.2 Encourage the patient to pray			
PATIENT SAFETY 13.1 Provide side rails 13.2 Verifying fall assessment tool 13.3 Explain the usage of call light				**PATIENT SAFETY** 13.1 Provide side rails 13.2 Proper positioning			
PATIENT EDUCATION 14.1 Practicing log rolling exercises(every 2 hrs) 14.2 Pain management 14.3 Deep breathing exercises and leg exercises 14.4 Incentive spirometry 14.5Post op positioning				**PATIENT EDUCATION** 14.1 Practicing log rolling exercises 14.2 Expectation of pain control 14.3 Incentive spirometry and deep breathing exercises and leg exercises(every 2 hrs) 14.4 Infection control			
DAY 3	**C**	**PC**	**NC**	**DAY 4**	**C**	**PC**	**NC**
ASSESSMENT 1.1 Operative site 1.2 Ambulation 1.3 Pain control 1.4 Nerve root compression (assess leg strength) 1.5 Hematoma formation (assess for severe incisional pain) 1.6 Infection (assess redness, drainage and pain)				**ASSESSMENT** 1.1 Operative site assessment any oozing loosening of dressing 1.2 Any bed sore			

INVESTIGATIONS 2.1 As per physicians order				**INVESTIGATIONS** 2.1 As per physicians order			
MEDICATIONS 3.1 As per physicians order 3.2 Monitor patient response to drug therapy 3.3 Explain the importance of drugs 3.4 Follow the six rights in administering				**MEDICATIONS** 3.1 As per physicians order 3.2 Monitor patient response to drug therapy 3.3 Explain the importance of drugs 3.4 Follow the six rights in administering			
TREATMENT 4.1 Assess incision site 4.2 Home instructions for operated site				**TREATMENT** 4.1 Home instructions for operated site			
NUTRITION 5.1 Regular diet as tolerated				**NUTRITION** 5.1 No restrictions			
ELIMINATION 6.1 Assess for urinary retention 6.2 Maintain intake output chart				**ELIMINATION** 6.1 Assess for urinary retention 6.2 Maintain intake output chart			
ACTIVITY 7.1 Continue to increase ambulation with belt				**ACTIVITY** 7.1 Continue to increase ambulation with belt			
POSITION AND COMFORT 8.1 Keep patient in 15 degree angle 8.2 Provide extra pillow and blankets 8.3 Comfortable position				**POSITION AND COMFORT** 8.1 Comfortable position			
SLEEP PATTERN 9.1 Provide calm environment 9.2 Ensure sound sleep and rest 9.3 Avoid unnecessary procedures				**SLEEP PATTERN** 9.1 Provide calm environment			

HYGIENE 10.1 Self care				**HYGIENE** 10.1 Self care			
PSYCHO SOCIAL ASPECT 11.1 Reassure the patient				**PSYCHO SOCIAL ASPECT** 11.1 Reassure the patient			
SPIRITUAL NEEDS 12.1 Identify and encourage spiritual habits 12.2 Encourage the patient to pray				**SPIRITUAL NEEDS** 12.1 Identify and encourage spiritual habits 12.2 Encourage the patient to pray			
PATIENT SAFETY 13.1 Provide side rails 13.2 Proper positioning				**PATIENT SAFETY** 13.1 Proper positioning			
PATIENT EDUCATION 14.1 Discharge instructions, include d. Sitting time not exceed 45 mts e. Lifting weight(not more than 20 pounds) 14.2 Follow up visit				**PATIENT EDUCATION** 14.1 Follow up visit 14.2Bathing 14.3Exercise 14.4 Pain control at home			

BLUE PRINT ON

RATING SCALE ON SATISFACTION OF NURSING CARE FOR PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY

S.No	Content	Items	Total Items	Percentage
1.	Environment Comfort Rest Activity Position	1,7,8,9,11	5	25%
2.	Nutrition Elimination	3,4,5,6,17	5	25%
3.	Personal hygiene Safety	2,10,12,13,15	5	25%
4.	Communication Spiritual need Family involvement Health education Discharge plan	14,16,18,19,20	5	25%
	Total	**--**	**20**	**100%**

APPENDIX XV

RATING SCALE ON SATISFACTION OF NURSING CARE FOR PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY

Purpose

The rating scale is designed to assess the level of satisfaction of the patients regarding the nursing care for patients undergoing micro lumbar discectomy.

Instruction

There are items given below. Kindly read the items. Responses extend from highly satisfied to dissatisfy. Describe your satisfaction regarding nursing care. Give your responses freely and frankly. The responses will be kept confidential.

Scoring key:

Highly Satisfied -2

Satisfied -1

Dissatisfied -0

S.No	Items	Highly Satisfied	Satisfied	Dissatisfied
1.	Are you satisfied with the hospital environment & ease in which arrangements were handled for you?			

2.	Are you comfortable with procedural skill of the nurses?			
3.	Are you satisfied with the explanation given before each procedures?			
4.	Are you satisfied with the instruction given about the dietary pattern & nutritional requirements?			
5.	Are you satisfied with the timings of food provided for you?			
6.	Are you prevented from the complications of constipation?			
7.	Are you comfortable with the ambulation provided by the nurses?			
8.	Are you satisfied with the privacy provided by the nurse during you rest and sleep?			

9.	Are you satisfied with the nurses assisting for your daily activities?			
10.	Are you felt satisfied by the explanation given by the nurses before procedures?			
11.	Are you comfortably placed when doing procedure?			
12.	Are you satisfied with the amount of attention paid to your special or personal needs?			
13.	Are you satisfied with the safety measures provide by the nurse?			
14.	Are you satisfied with the hospitality of the nurses?			
15.	Are you satisfied with the responses of nurse to any of the concerns/complaints made during your stay?			

16.	Are you satisfied with degree to which nurses addressed your emotional needs?			
17.	Are you satisfied with the timely administration of medications with explanation of actions, dose, route, frequency and its side-effects?			
18.	Are you comfortable with the family members support?			
19	Are you satisfied with the instruction given by the nurse about the pattern of activity?			
20	Are you comfortable with the services provided for you and discharge plan?			

Score Interpretation

<50% - Dissatisfied

50-75% - Satisfied

>75% - Highly satisfied

APPENDIX XVI

CHECKLIST TO ASSESS THE OUTCOME FOR PATIENTS UNDERGOING MICRO LUMBAR DISCECTOMY

Purpose

This checklist provides information regarding the outcome for patients undergoing micro lumbar discectomy.

Instruction

There are items given below. Kindly read the items and record accordingly.

Score 0 – Major complications

Score1 - Minor complications

Score 2 – No complications

S.NO	Patients outcome	SCORE		
		0	1	2
1	**Nature of wound**	➢ Severe bleeding ➢ Oozing ➢ Infected wound	➢ Moderate bleeding ➢ Moderate oozing ➢ Poor wound healing	➢ No bleeding ➢ No oozing ➢ Normal wound healing
2	**Oxygenation**	➢ Oxygen saturation less than 90%	➢ Oxygen saturation 91%-94%	➢ Oxygen saturation 95%-100%

3	**Nutrition**	➢ Intravenous infusion	➢ Semisolid diet	➢ Normal diet
4	**Elimination**	➢ Needs catheterisation ➢ Needs laxatives	➢ Decreased urine output ➢ Altered bowel pattern	➢ Normal bladder and bowel pattern
5	**Rest**	➢ Insomnia ➢ Restless ➢ Irritability	➢ Altered sleep pattern	➢ Maintains normal sleep pattern
6	**Comfort**	➢ Severe pain ➢ Needs pain medications	➢ Moderate pain ➢ Reduced with comfort measures	➢ No pain
7	**Regulatory functions**	➢ Temperature > 100 F ➢ Pulse rate > 120 beats/ mt ➢ Respiration rate > 40breaths/mt	➢ Temperature : 99-100 F ➢ Pulse rate: 90-120beats/ mt ➢ Respiration: 30-40 breaths/mt	➢ Temperature : 98.4 F- 99 F ➢ Pulse rate: < 90 beats /mt ➢ Respiration :< 30 breaths/mt.

8	**Personal hygiene**	➢ Poor hygiene	➢ Moderate personal hygiene	➢ Good personal hygiene
`9	**Communication**	➢ Not responding	➢ Poor communication	➢ well communicating
10	**Activity**	➢ Not active	➢ Less active	➢ Normal activity
11	**Health teaching**	➢ No response	➢ Less response	➢ Good response
12	**Discharge**	➢ Extended days of stay	➢ Extended hours of stay	➢ Discharged on the expected day

Scoring key

≤50% - negative outcome

51-75% - moderately positive outcome

≥ 76% - positive outcome

APPENDIX XVII
DATA CODE SHEET

Control group	**CG**
Experimental group	**EG**
Age in years	**AG**
20-30 yrs	1
31-40yrs	2
41-50yrs	3
>50 yrs	4
Sex	**SX**
Male	1
Female	2
Marital status	**MS**
Married	1
Single	2
Divorced	3
Widow	4
Educational qualification	**EQ**
Illiterate	1
Primary education	2
Secondary education	3
Higher secondary education	4
Graduate & above	5
Dietary intake	**DI**
Vegetarian	1
Non vegetarian	2
Occupational status	**OS**
Employed	1
Unemployed	2
Homemaker	3
Retired	4
Place of work	**WK**
Indoor	1
Outdoor	2
Nature of work	**NW**
Sedentary worker	1
Moderate worker	2
Heavy worker	3
Income per month	**IN**
5000-10000	1
10001-15000	2
>15000	3
Source of health information	**SI**
Health workers	1
Relatives	2
Friends	3
Family members	4
Residential Area	**RA**
Rural	1
Urban	2
Semi urban	3
Semi rural 4	
Height in cms	**H T**
140- 150	1
151-160	2
161-170	3
> 170	4
Weight in kgs	**WT**
40-50	1
51-60	2
61-70	3
>70	4
Presence of co morbid illness	**CO**
Yes	1
No	2
Treatment of comorbid illness	**TRC**
Yes	1
No	2
History of trauma	**TR**
Yes	1
No	2
Family history of spinal stenosis	**SS**
Yes	1
No	2
Past surgery	**PS**
Yes	1
No	2
Duration of diagnosis	**DD**
< 1 year	1
1-5 years	2
5-10 years	3
>10 years	4
Experience of back pain	**BP**
Yes	1
No	2
Treatment for back pain	**TBP**
Topical applications	1
Home based remedies	2
Oral analgesics	3
Parenteral analgesics	4
Nil	5

Regular exercise pattern	**REP**
Yes	1
No	2
Exercise pattern	**EP**
Aerobic exercise	1
Flexibility exercise	2
Strength training	3
Level of satisfaction	**LOS**
0-20 - dissatisfied	DS
21-30 – satisfied	S
>30 - highly satisfied	H
Patients outcome	**PO**
0-12 – negative outcome	N
13-18 – moderately positive outcome	M
>18 – positive outcome	P
Age in years	**AGE**
20-25	1
26-30	2
>30	3
Years of experience	**YOE**
Below 5 years	1
6-10 years	2
11-15 years	3
Above 15 years	4
Professional qualification	**QUA**
GNM 1	1
B.Sc(N)	2
P.B.B.Sc (N)	3
Designation	**DES**
Staff nurse	1
Novice	2
Any orientation programme	**CA**
Yes	1
No	2
Source for attending the Programme	**SOI**
Professional education	1
In service education	2
Mass media	3
Others	4
Working area	**WA**
General ward	1
Semi private ward	2
Private ward	3
Place of study	**POS**
Private	1
Government	2
Mission	3
Level of knowledge	**LOK**
0-10 –inadequate	I
11-16- moderately adequate	M
>16 –adequate	A
Partially compliant	PC
Non compliant	NC
Compliant	C

APPENDIX XVIII

MASTER CODING SHEET

CG	DEMOGRAPHIC VARIABLES											CLINICAL VARIABLES												LOS		PO	
	AG	SX	MS	EQ	DI	OS	WK	NW	IN	SI	RA	HT	WT	CO	TRC	TR	SS	PS	DD	BP	TBP	REP	EP	S	I	S	I
1	1	1	1	5	2	1	1	2	3	3	3	4	4	2	2	1	2	1	1	1	3	2	4	21	S	13	M
2	2	2	1	5	2	1	1	2	3	1	2	3	4	1	1	2	2	2	1	1	3	2	4	30	S	14	M
3	3	1	1	4	2	1	1	2	3	2	2	4	4	1	1	1	2	1	1	1	2	2	4	24	S	16	M
4	1	2	1	5	2	1	1	3	2	3	3	3	4	1	1	1	1	2	2	1	1	2	4	20	D	18	M
5	4	1	4	3	1	4	1	1	3	1	2	4	3	1	1	1	2	1	4	1	3	2	4	24	S	14	M
6	3	2	1	5	2	1	1	2	3	1	3	2	3	2	2	2	2	2	1	1	2	2	4	30	S	15	M
7	4	1	1	4	2	1	1	2	3	2	2	4	4	2	2	1	2	1	1	1	3	1	1	20	D	13	M
8	1	1	2	4	2	1	1	2	3	3	2	4	2	1	1	1	2	1	1	1	4	1	1	30	S	16	M
9	1	2	2	5	2	1	1	1	3	4	2	3	3	1	1	2	2	2	3	1	3	1	1	30	S	14	M
10	3	2	1	5	2	1	2	3	3	3	2	3	4	1	1	1	2	1	2	1	3	2	4	28	S	19	P
11	2	1	1	5	2	1	1	1	3	1	3	4	4	1	1	2	2	1	1	1	3	1	2	20	D	20	P
12	4	2	1	3	1	4	2	2	3	3	3	2	2	1	1	1	2	1	1	1	1	2	4	22	S	15	M
13	3	1	1	5	1	1	1	2	3	3	2	4	4	1	1	1	2	2	1	1	3	1	2	28	S	13	M
14	3	2	1	4	1	1	1	2	3	2	2	3	4	1	1	1	1	2	1	1	3	1	1	21	S	14	M
15	4	2	1	5	2	1	2	3	3	1	2	3	4	2	2	1	2	2	1	1	3	1	1	24	S	16	M
16	4	2	1	5	2	1	1	2	3	4	2	3	4	1	1	1	2	1	1	1	4	2	4	29	S	18	M
17	1	1	2	5	2	1	1	1	3	1	2	4	4	1	1	1	2	1	2	1	3	2	4	30	S	17	M
18	4	2	1	5	2	1	2	3	3	2	2	2	3	2	2	1	2	1	1	1	2	2	4	21	S	19	P
19	3	1	1	5	2	1	1	1	3	4	2	4	3	1	2	1	2	1	1	1	3	2	4	27	S	13	M
20	4	1	1	5	1	3	1	2	3	1	3	4	3	2	2	1	1	1	4	1	3	2	4	26	S	14	M
21	4	1	4	3	2	4	2	1	3	3	3	4	4	1	1	1	2	1	3	1	3	2	4	20	D	18	M
22	2	1	1	5	2	3	1	2	2	1	3	4	4	1	2	1	1	1	1	1	2	2	4	21	S	16	M
23	3	1	1	4	2	3	2	2	3	1	3	4	3	2	2	2	2	1	3	1	3	2	4	24	S	13	M
24	2	1	1	5	1	1	1	2	3	2	2	4	4	1	1	1	2	2	1	1	3	2	4	25	S	17	M
25	3	2	1	5	2	1	1	3	3	3	4	4	4	2	2	1	1	1	1	1	2	1	1	23	S	14	M
26	4	2	1	5	2	3	1	1	2	4	4	4	3	1	2	1	2	1	1	1	4	2	4	22	S	15	M
27	4	2	4	4	2	4	2	3	3	1	2	4	4	2	2	2	2	2	3	1	2	1	1	27	S	13	M
28	1	1	2	5	1	1	2	1	2	1	2	4	3	1	1	1	2	1	1	1	3	2	4	21	S	17	M
29	1	2	2	5	1	1	1	2	3	2	2	4	3	1	1	1	2	1	1	1	4	2	4	26	S	18	M
30	2	1	1	5	2	3	2	3	3	4	2	4	4	2	2	1	2	1	1	1	3	1	1	24	S	19	P

EG	DEMOGRAPHIC VARIABLES											CLINICAL VARIABLES												LOS		PO	
	AG	SX	MS	EQ	DI	OS	WK	NW	IN	SI	RA	HT	WT	CO	TRC	TR	SS	PS	DD	BP	TBP	REP	EP	S	I	S	I
1	2	2	1	5	2	1	1	2	2	1	2	3	4	2	2	1	1	1	1	1	3	1	1	36	HS	23	P
2	3	1	1	5	2	1	2	2	3	2	3	4	3	2	2	2	2	2	2	1	3	1	1	34	HS	20	P
3	3	1	1	5	1	1	1	3	3	1	2	4	4	1	1	1	2	2	4	1	2	1	2	38	HS	22	P
4	1	1	2	4	2	1	1	2	3	3	2	4	3	1	1	2	2	2	1	1	1	2	4	37	HS	21	P
5	1	1	2	4	2	1	1	1	3	4	3	4	4	1	1	2	2	2	1	1	3	2	4	30	S	19	P
6	4	2	1	5	2	1	1	1	3	2	4	3	3	2	2	2	2	1	1	1	4	2	4	31	HS	22	P
7	3	1	4	5	2	1	1	2	3	4	2	3	3	2	2	1	1	1	2	1	3	1	1	34	HS	23	P
8	4	1	1	5	2	1	2	1	3	3	2	4	4	1	1	2	2	2	1	1	3	2	4	34	HS	20	P
9	4	1	4	3	2	1	1	3	3	1	2	4	2	2	2	2	2	1	1	1	3	2	4	36	HS	19	P
10	4	2	4	5	1	4	1	2	2	3	2	2	4	2	2	1	1	1	1	1	3	2	4	37	HS	22	P
11	4	2	1	5	2	4	1	2	3	2	2	2	4	1	1	2	2	1	2	1	2	1	4	38	HS	21	P
12	1	1	2	5	2	1	1	2	3	2	3	3	3	2	2	2	2	2	1	1	3	2	1	32	HS	20	P
13	2	1	1	5	2	1	1	2	3	1	2	3	4	1	1	1	2	1	1	1	3	1	1	38	HS	20	P
14	3	1	1	5	2	1	2	2	3	4	2	4	3	2	2	2	1	2	1	1	3	1	1	36	HS	20	P
15	3	1	1	5	2	1	1	2	3	1	3	4	4	2	2	2	2	2	1	1	1	1	4	32	HS	22	P
16	3	2	2	4	1	1	1	3	3	4	2	4	4	1	1	1	2	2	1	1	3	2	4	38	HS	18	MP
17	1	1	2	4	2	1	1	2	3	3	3	4	4	2	2	2	1	1	3	1	3	2	4	30	S	22	P
18	3	2	1	5	2	1	1	2	2	2	4	4	3	2	2	1	2	1	1	1	3	2	4	34	HS	19	P
19	4	1	4	5	2	1	1	2	3	1	2	3	4	1	1	2	2	2	1	1	2	2	4	36	HS	23	P
20	4	2	4	4	2	1	2	2	3	4	4	3	4	2	2	2	2	1	1	1	1	2	4	39	HS	22	P
21	3	2	1	5	2	1	2	2	2	2	3	3	4	1	1	2	2	1	1	1	3	2	3	34	HS	21	P
22	3	2	1	5	2	1	1	1	3	3	3	4	4	2	2	2	2	1	1	1	3	1	3	30	S	20	P
23	4	2	1	3	1	1	1	2	3	1	2	3	4	2	2	2	2	2	1	1	3	1	2	32	HS	18	MP
24	4	1	1	5	2	1	2	3	3	4	2	3	4	1	1	1	1	1	1	1	3	1	4	34	HS	20	P
25	1	1	1	5	2	1	2	2	3	2	3	4	3	2	2	2	2	2	1	1	3	2	4	37	HS	18	MP
26	1	1	1	5	1	1	1	2	3	1	4	4	4	2	2	2	2	2	1	1	3	2	1	32	HS	20	P
27	2	1	1	5	2	1	1	3	3	3	2	4	3	1	1	1	1	1	1	1	4	1	4	34	HS	21	P
28	3	2	3	5	2	1	2	3	3	1	2	4	4	2	2	2	1	2	1	1	3	2	4	37	HS	19	P
29	4	2	3	5	2	4	2	3	3	3	2	4	3	2	2	1	1	1	1	1	4	1	1	33	HS	20	P
30	4	1	4	4	1	4	2	3	3	2	2	4	4	2	2	1	2	2	1	1	2	1	1	38	HS	20	P

S.NO	DEMOGRAHIC VARIABLE OF NURSES									LOK			
										PRE TEST		POST TEST	
	AGE	SEX	YOE	QUA	DES	CA	SOI	WA	POS	SCORE	INT	SCORE	INT
1	1	2	1	2	4	2	-	1	1	7	I	18	A
2	1	1	1	2	4	2	-	1	1	10	I	17	A
3	1	2	1	2	3	2	-	1	1	9	I	19	A
4	1	2	1	2	3	2	-	1	1	8	I	19	A
5	1	2	1	2	3	2	-	1	3	9	I	16	A
6	2	1	2	1	2	2	-	2	3	11	M	15	M
7	1	2	1	2	3	2	-	1	1	9	I	19	A
8	1	2	1	2	3	2	-	2	1	9	I	18	A
9	1	2	1	2	3	2	-	3	1	5	I	14	M
10	1	2	1	2	3	1	2	3	1	9	I	17	A
11	1	1	1	2	3	1	2	1	1	12	M	19	A
12	1	2	1	2	4	2	-	3	1	12	M	15	M
13	1	2	1	2	3	2	-	2	1	10	I	17	A
14	1	2	1	2	3	1	2	2	1	8	I	16	A
15	1	2	1	2	3	2	-	1	1	6	I	14	M
16	1	2	1	2	4	2	-	2	1	7	I	15	M
17	1	2	1	2	3	2	-	2	3	10	I	18	A
18	1	2	1	2	3	1	2	3	1	9	I	17	A
19	1	2	1	2	4	2	-	1	1	11	M	17	A
20	1	2	1	2	3	1	2	2	1	6	I	14	M
21	2	2	2	1	2	2	-	2	3	7	I	19	A
22	1	2	1	2	3	2	-	1	1	12	M	15	M
23	1	1	1	1	3	2	-	3	1	6	I	18	A
24	2	2	2	2	2	2	-	1	1	10	I	16	A
25	1	2	1	2	4	2	-	3	3	8	I	19	A
26	2	2	2	1	2	2	-	1	1	9	I	18	A
27	1	2	1	2	3	2	-	2	3	7	I	17	A
28	1	2	1	2	3	1	2	1	1	10	I	16	A
29	3	2	2	1	2	1	2	2	1	9	I	18	A
30	1	2	1	2	4	1	2	1	1	10	I	19	A

S.NO	PRACTICE SCORES															
	CONTROL GROUP								EXPERIMENTAL GROUP							
	DAY 1		DAY2		DAY 3		DAY 4		DAY 1		DAY 2		DAY 3		DAY 4	
	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I
1	63	PC	42	PC	46	PC	34	PC	70	C	50	C	48	C	40	C
2	64	PC	43	PC	45	PC	33	PC	85	C	48	C	46	PC	44	C
3	63	PC	42	PC	47	C	32	PC	80	C	49	C	56	C	43	C
4	67	C	45	C	48	C	31	PC	79	C	43	PC	57	C	41	C
5	63	PC	43	PC	45	PC	35	C	78	C	54	C	56	C	42	C
6	60	PC	46	C	46	PC	34	PC	70	C	56	C	58	C	39	C
7	64	PC	41	PC	43	PC	32	PC	78	C	54	C	58	C	38	C
8	60	PC	43	PC	43	PC	33	PC	76	C	53	C	59	C	36	C
9	69	C	42	PC	42	PC	31	PC	76	C	52	C	54	C	37	C
10	68	C	41	PC	44	PC	34	PC	78	C	51	C	53	C	34	PC
11	64	PC	45	C	45	PC	35	C	79	C	50	C	52	C	38	C
12	66	C	46	C	48	C	31	PC	80	C	46	C	51	C	37	C
13	68	C	44	C	41	PC	30	PC	64	PC	47	C	50	C	39	C
14	64	PC	43	PC	42	PC	32	PC	68	C	46	C	46	PC	40	C
15	65	PC	42	PC	46	PC	33	PC	76	C	49	C	48	C	43	C
16	62	PC	43	PC	45	PC	33	PC	70	C	48	C	47	C	42	C
17	60	PC	41	PC	44	PC	34	PC	78	C	51	C	49	C	41	C
18	63	PC	43	PC	43	PC	32	PC	76	C	52	C	55	C	40	C
19	64	PC	40	PC	42	PC	31	PC	75	C	53	C	50	C	43	C
20	62	PC	46	C	41	PC	35	C	74	C	55	C	54	C	38	C
21	63	PC	45	C	43	PC	36	C	77	C	50	C	51	C	37	C
22	62	PC	43	PC	44	PC	33	PC	76	C	50	C	52	C	39	C
23	68	C	42	PC	42	PC	34	PC	76	C	48	C	55	C	34	PC
24	65	PC	43	PC	45	PC	32	PC	75	C	49	C	56	C	38	C
25	64	PC	42	PC	46	PC	31	PC	74	C	43	PC	54	C	42	C
26	60	PC	43	PC	47	C	30	PC	76	C	49	C	57	C	44	C
27	61	PC	44	C	44	PC	30	PC	78	C	50	C	49	C	45	C
28	60	PC	42	PC	48	C	33	PC	78	C	54	C	49	C	40	C
29	64	PC	42	PC	43	PC	32	PC	66	C	49	C	58	C	41	C
30	63	PC	41	PC	48	C	33	PC	64	PC	54	C	54	C	38	C

CHAPTER I

INTRODUCTION

Background of the Study

"Health, the greatest of all we count as blessings"

– Ariphron

Health is created and lived by people with in the settings of their everyday life: where they learn, work, play and love. Achieving better health is an important part of a human being's life. It is the ability of an individual or a social group to modify them in the face of changing conditions of life to function better in the present and to prepare for the future. Health care is considered as an important determinant in promoting the general health and well being of the people around the world and it is the right of every individual.

Back ache is very common in 90% of people with as many as 8 out of 10 adults experiencing low back pain in their life time (Garg et al. 2003). Back pain can be acute, appearing quickly after an accident or injury and lasting for a short period or chronic. Chronic, severe back pain interferes with almost every activity and this pain causes more loss of work than other ailments compiled.

Globally back pain is the fifth most common reason for hospitalization and 85% of population will experience low back pain at some time in their life. In India approximately 50% of all working people experiences back pain symptoms for at least some of the time in a year. Back pain is less common in India, when compared to western countries (Robert, 2008).

Disc prolapse is a common problem encountered in clinical practice. It is seen 1 in 10,000 in general population and 10% of patients may require surgical intervention (Scanlon, 2007). Micro lumbar discectomy has become the “gold standard” for treating lumbar disc prolapse when surgery is indicated. Micro lumbar discectomy is a spinal surgical procedure used to remove the herniated disc from the spinal cord. It is performed when the surgeon makes an incision to look at the herniated disc and then remove it for relief from back pain. Today many surgeons use a microscopic surgical approach with a small, minimally invasive, poke hole incision to remove the disc herniation, allowing for a more rapid recovery.

Nursing services is one of the most important components of hospital services. Nurses form a very important group, which is the largest single technical group of personnel engaged in hospital care next to doctors and consume almost one third of hospital cost. A hospital may be soundly organized, beautifully situated and well equipped, but if the nursing care is not of high quality, the hospital will fail in its responsibility of providing care.

Nursing is not simply a collection of specific skills, and the nurse is not simply a person trained to perform specific tasks whereas nursing is a profession. The practice of professional nursing and nursing knowledge has been developed over time through development of nursing theories and research. In order to provide a high quality of care, it is necessary that nurses should develop standards of care and appropriate evaluation tools so that professional aspects of assurance and attention will be given to the individual needs and responses to clients. There are various models and standards which are developed throughout the world with the aim of enhancing the quality and

promoting uniformity in care. Two categories of standards of care are external and internal standards. Clinical pathway is one kind of internal standard, which can be developed according to institutional policies.

The increase of treatment quality offered by the health care organizations is one of the main challenges of the modern health informatics. The struggle between the cost and quality of health care has led providers to look for new and innovative ways of delivering cost effective care in an efficient manner. In 1985, the New England Medical Center in Boston, introduced the "Critical Pathway" which is the first system that attempted to incorporate expected outcomes within specified time frames.

Clinical pathways are structured multidisciplinary care plans with detail essential steps in the care of patients with a specific clinical problem. They have been developed to facilitate the management and delivery of quality clinical care in a time constrained environment. Predominantly clinical pathways are management tools and clinical audit tool that are based on clinical information developed in other guidelines or parameters. Today, clinical pathways are usually interdisciplinary in focus, merging the medical and nursing plans of care with those of other disciplines such as physical therapy, nutrition or mental health. They provide opportunities for collaborative practice and team approaches that can maximize the expertise of multiple disciplines.

Clinical pathways are standardized plan for the integral care of specific purposes. Clinical pathways are increasingly being used by hospitals to improve efficiency in the care of certain patient populations: however, little prospective data are available to support their use. Many studies examined whether using a clinical pathway

for patients undergoing various surgeries and procedures are effective or not. Micro lumbar discectomy is a suitable process with which to initiate systematization of clinical pathways. Clinical pathway improves patient's care, cost containment, improve co-ordination of care, and enable resources to be used more efficiently, complete care within a prescribed time. It serves as an integrated documentation tool to stabilize the intra operative process of patient care and effectively manage clinical and financial outcomes.

The aims of micro lumbar discectomy are to reduce pain and to restore a close to normal spine function which requires an interdisciplinary team approach. Clinical pathway provides the interdisciplinary team with a tangible plan that ensures qualitative and efficient patient care. Thus the researcher decided to conduct the study on effectiveness of clinical pathway upon the knowledge and practice of nurses' and patient outcome.

Need for the Study

The changes in medical technology have necessitated hospitals to introduce clinical pathways to cut costs and reduce the variation in care. The four major reasons for developing clinical pathways are to improve patient care, maximize the efficient use of resources, ensure continuity of patient care and support clinical effectiveness, clinical audit and risk management.

Pain in the lower back is a chronic condition that has been treated in various ways from the beginnings of human medical practice. Between 10% and 15% of workers compensation claims are related to chronic pain in the lower back. It is

estimated that the direct and indirect costs of back pain to the American economy range between $75 and$ 80 billion per year (Wong, 2008).

According to the Centers for Disease Control, 14% of all new visits to primary care doctors are related to problems in the lower back. The CDC estimates that 2.4 million adults in the population are chronically disabled by back pain, with another 2.4 million temporarily disabled. About 70% of people will experience pain in the lower back at some point in their life time; on a yearly basis, one person in every five will have some kind of back pain (Richards, 2009).

An article from Hospital Case Management published that critical pathway has reduced the cost and length of stay for the disc surgery patients. Once the pathway was launched, the infection rate for disc surgery dropped from 8.5% in 2001 to 0 in 2003, and the average length of stay decreased from 3 days to 2 days for this high volume procedure. Potential yearly cost savings of the program were projected at $ 180000, based upon $900 average daily (Miller, 2004).

Health care providers are becoming increasingly involved with the development of clinical pathways as they take on more of the responsibilities of quality management and resource use. Although clinical pathways that are developed at the national, regional, or specialty organization level provide a framework for reference, locally developed pathways tailor care to patients who are served within an agency or community. As multidisciplinary teams develop pathways for patients with back and spine disorders, they create tangible definitions of quality. Variance tracking systems

used in conjunction with pathways provide feedback on patient progress and outcomes. These guidelines have significant potential for the future (Ibarra et al. 2010).

In short, the implementation of clinical pathway effectively improves the quality of care. Through continuous improvement in practice, clinical pathways will be more scientific and rationale and more fully reflect the ultimate goal of quality management to improve patient satisfaction to gain better social and economic benefits.

With technological advances and the ever growing challenges of health care trends, the nurses have a responsibility to provide quality and cost effective care to the patients. The clinical pathway findings serve as a guide to evidence based practice and hence the nurses should be informed about the findings to enhance professionalism and to give care effectively. Hence the investigator felt the need for the study.

Statement of the Problem

A Quasi- Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients undergoing Micro Lumbar Discectomy upon the Knowledge and Practice of Nurses and Patient's Outcome at Apollo Speciality Hospital, Chennai.

Objectives of the Study

1. To assess the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.
2. To assess the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.

3. To evaluate the effectiveness of clinical pathway by comparing the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.
4. To compare the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
5. To compare the level of patient satisfaction on nursing care in control and experimental group of patients undergoing micro lumbar discectomy.
6. To determine the association between selected demographic variables of nurses and their pre and post test level of knowledge regarding clinical pathway for patients undergoing micro lumbar discectomy.
7. To determine the association between selected demographic variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.
8. To determine the association between selected clinical variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.

Operational Definitions

Clinical Pathway

In this study it is a structured multidisciplinary plan of care designed to support the implementation of nursing care guidelines and protocols. They provide detailed guidelines for each stage of a patient from admission to discharge with specific disease conditions over a given time period and includes the patients' progress and outcomes details.

Micro lumbar discectomy

In this study it refers to a surgical procedure used to treat lumbar herniated disc that requires hospitalization of the patient for at least four days.

Clinical pathway for micro lumbar discectomy

In this study it refers to the guidelines for nursing care of patients undergoing micro lumbar discectomy for 4 days from admission to discharge including 1 day of pre operative care and 3 days of post operative care that is formulated by the researcher based on the fourteen basic needs of Henderson's nursing theory. The aspects included are assessment, investigation, medication, treatment, nutrition, elimination, activity, position & comfort, sleep pattern, hygiene, psycho social needs, spiritual needs, patient safety and education. Nursing interventions are listed under each aspects and based on this the nurses will be giving care to the patient undergoing micro lumbar discectomy.

Effectiveness

In this study effectiveness refers to the difference between the pre and post testlevel of knowledge and practice scores of nurses regarding clinical pathway for micro lumbar discectomy patients. The effectiveness is also measured by comparing the outcome of control and experimental group of micro lumbar discectomy patients in terms of their length of stay, prevention of complication and patient satisfaction on nursing care.

Nurses

In this study it refers to a person who is a registered nurse qualified with General Nursing and Midwifery (GNM) or B.Sc., Nursing degree working in surgical or post operative ward and provides care to the patient undergoing micro lumbar discectomy.

Patients

In this study it refers to a male or female, who is undergoing micro lumbar discectomy surgery.

Knowledge

In this study it refers to the level of understanding and awareness of nurses regarding clinical pathway for micro lumbar discectomy patients and is measured in terms of structured questionnaires as developed by the researcher.

Practice

In this study it refers to nursing care provided by the nurses while caring for patients undergoing micro lumbar discectomy and is measured in terms of compliance with clinical pathway for micro lumbar discectomy.

Outcome

In this study it refers to length of stay in the hospital, prevention of complications and the satisfaction of patients regarding nursing care as measured in terms of outcome checklist.

Assumptions

The study assumes that:

- Any surgical intervention requires hospitalisation and nursing care.
- Nursing care requires models and standards.
- Standards ensure quality of care.
- Clinical pathways provide explicit and well defined standards of care.
- Standardized protocols and guidelines improve uniformity of care

Null Hypotheses

The null hypotheses stated were:

Ho_1 There will be no significant difference between pre and post test level of knowledge and practice scores of control and experimental group of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.

Ho_2 There will be no significant difference in the patient outcome between the control and experimental group after implementation of clinical pathway for patients undergoing micro lumbar discectomy.

Ho_3 There will be no significant association between the selected demographic variables of control and experimental group of nurses and the pre and post test level of knowledge and practice regarding clinical pathway for patients undergoing micro lumbar discectomy.

Ho_4 There will be no significant association between the selected demographic variables of control and experimental group of patients and their outcome regarding clinical pathway for patients undergoing micro lumbar discectomy.

Ho_5 There will be no significant association between selected clinical variables of control and experimental group of patients and their outcome regarding clinical pathway for patients undergoing micro lumbar discectomy.

Delimitations

The study was limited to the nurses who were

- Working at Apollo hospitals, Chennai.
- Willing to participate in the study.
- Able to understand English

The study was limited to the patients who were

- Undergoing micro lumbar discectomy at Apollo Hospitals, Chennai.
- Willing to participate
- Able to understand English
- Four weeks.

Conceptual Framework for the Study

The conceptual framework deals with the interrelated concepts that are assessable together in some rational scheme by virtue of their relevance to a common theme (Polit and Beck, 2010).

The present study aims at describing the effectiveness of clinical pathway upon the knowledge and practice of nurses regarding clinical pathway for micro lumbar discectomy. The conceptual framework was derived from Callista Roy's adaptation model. Roy in her model focuses on the goal of nursing which is to facilitate adaptation

of the individual for various stimuli from the environment. The Roy's adaptation model is adopted to explain the role of nurse in every aspects of nursing care. A person in an adaptive system and the need for adaptation is triggered by the various stimuli. The system's output is a response which may be adaptive or ineffective depending upon the intensity of the stimuli and the individual adaptation level.

The goal of nursing is to promote adaptation of the client using nursing interventions, so that the stimuli fall within the patient's adaptive range. The Roy's adaptation model provides a framework for this study. The model gives the direction for planning, research design, data collection and interpretation of findings. The core of Roy's adaptation model is the belief that a person's adaptive response is a function on the incoming stimulus and the adaptive level. The adaptive level is made up of the pooled effect of three classes of stimuli.

Roy further conceptualizes the person as having four modes of adaptation. They are physiological needs, self concept, role function and interdependence. The conceptual frame work explains the application of Roy's adaptation in the care of micro lumbar discectomy patients.

Focal stimuli

It is the stimulus which most immediately confronts the persons and the one to which the person must make an adaptive response. In this study the focal stimulus is the micro lumbar discectomy patients.

Contextual stimuli

It includes all the other stimuli that contribute to the behavior caused or precipitated by the focal stimuli. In this study the contextual stimuli are the medication, hospitalization and treatment.

Residual stimuli

These are the factors that are relevant but cannot be validated as acceptance of the disease condition, body disturbance and regulator. Regulator is a sub system coping mechanisms which responds through the process of perception and information processing, learning, judgement and emotions. For this present study, clinical pathway is the regulator and cognator which acts as a coping mechanism for receptors.

Adaptive (Effectors)

Modes are the ways of coping manifest or cognator's activity (i.e) physiological, self concept, role function and interdependence. Adaptive responses are those that promote the integrity of the person's goal of survival growth and reproduction.

Regulators

It is a major coping process involving the neuro chemical and endocrine system.

Cognators

They are the major coping process involving four cognitive- emotive channels, perceptual and information processing, learning judgement and emotions.

Adaptive responses

Which promotes the integrity in terms of the goals of human systems.

Physiological functions

It is associated with the physical and chemical process involved in the function and the activities of living organisms.

Self concept

It focuses specially on the psychological, social and spiritual aspects. It is the composite of beliefs and feeling about oneself at a given time and is formed from internal perception and perceptions from other reactions.

Role function

Set of expectations about how a person occupying one position behaves towards a person occupying another position. Focuses on the roles like primary, secondary and tertiary roles.

Interdependence role

It focuses on close relationship of people, individuals and collectively and their purposes, structure and development.

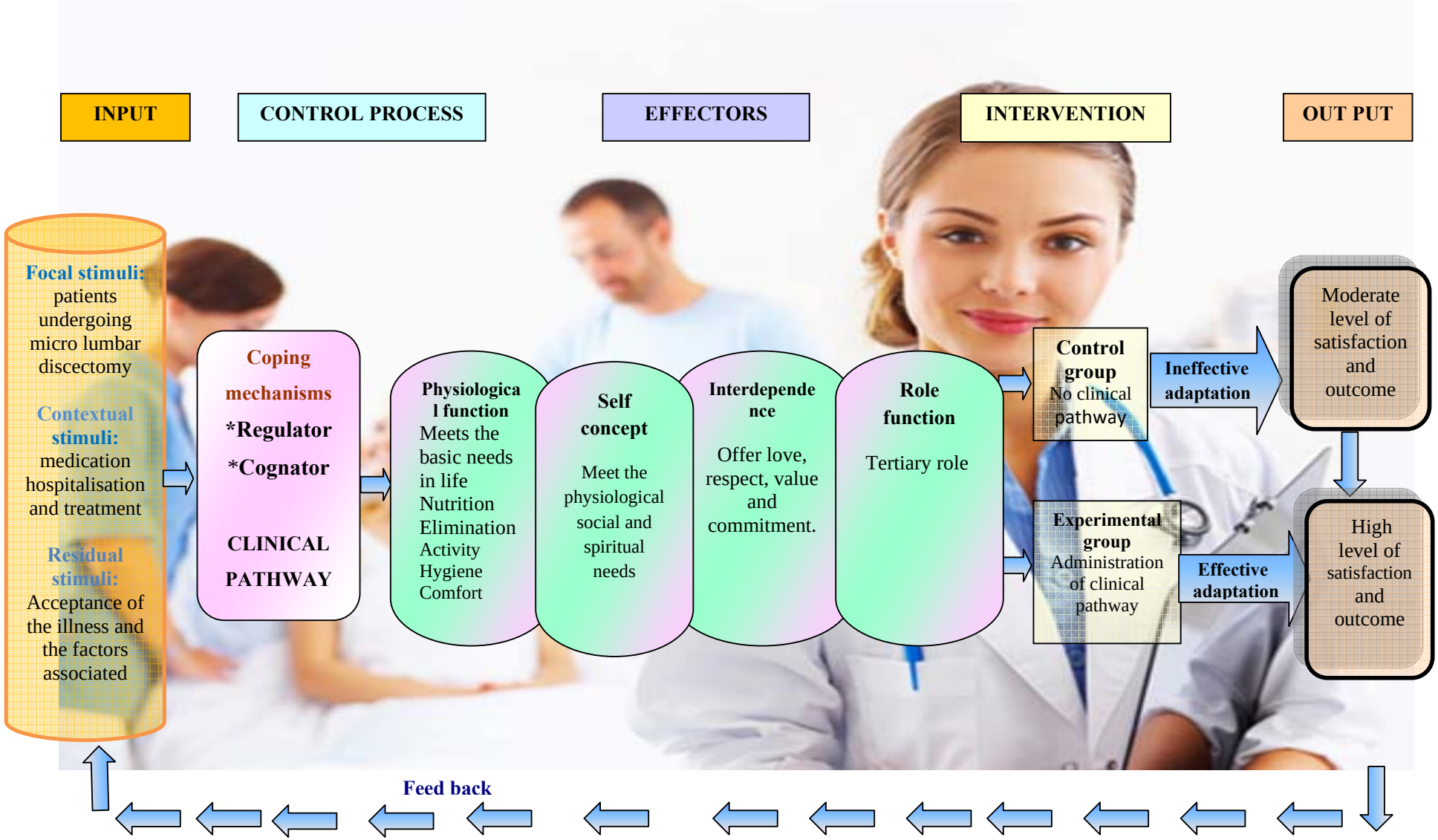

Fig. 1 Conceptual Framework Based on Roy's Adaptation Model

Projected Outcome

The expected outcome will be increase in knowledge and practice of nurses regarding clinical pathway for patients with micro lumbar discectomy and increase in patients' level of satisfaction on nursing care and prevention of complications.

Summary

This chapter has dealt with the background of the study, need of the study, statement of the problem, objectives, operational definition, hypothesis, assumption, delimitation and conceptual framework.

Organization of the Report

Further aspects of the study are presented in the following five chapters.

CHAPTER – II : Review of literature

CHAPTER – III : Research methodology includes research approach, research design, setting, population, sample and sampling techniques, tool description, content validity and reliability of tools, pilot study, data collection procedure and plan for data analysis.

CHAPTER – IV : Analysis and interpretation of data

CHAPTER – V : Discussion

CHAPTER – VI : Summary, conclusion, implications and recommendations.

CHAPTER II

REVIEW OF LITERATURE

A review of literature involves the systematic identification, location, scrutiny and summary and written material that contain information on the research problem. (Polit and Beck 2010).

In this chapter an attempt has been made to bring out the available literature which helps in projecting the widened perspectives of this study. This chapter deals with a review of published and unpublished research studies and from related material for the present study. The review helped the investigator to develop an insight in to the problem area. This helped the investigator in building the foundations of the study. The review of literature for the study is presented under the following heading:

- **Literature related to Micro Lumbar Discectomy**
- **Literature related to Clinical Pathways**
- **Literature related to Clinical Pathways For Micro Lumbar Discectomy**

Literature related to Micro Lumbar Discectomy

Moro et al. (2011) conducted a prospective clinical study to evaluate the efficacy of the micro endoscopic discectomy for lumbar disk herniation and to report long-term outcome and complications with a 5-year follow-up of 120 patients in California.The results were evaluated with the Visual Analog Scale (VAS) pain score, Oswestry Disability Index score, patient satisfaction questionnaire, and modified Macnab criteria. The mean decrease in the Oswestry Disability Index score was 52.8 ± 21.6; the mean

decrease in leg VAS score was 6.1 ± 2.3; and the mean decrease in lumbar VAS score was 1.9 ± 3.3. The study concluded that micro endoscopic discectomy not only reduces the incision, tissue damage, and postoperative period of incapacity but also offers long-term results comparable to those of conventional techniques.

In the year 2008, Shamim conducted a retrospective analysis of all adult patients admitted from January 2003 to January 2008 for symptomatic lumbosacral disc herniation requiring microdiscectomy, at the Aga Khan University Hospital, Karachi. Datas were collected through medical records on a standardized form. Basic information about the patient population, disease process, modes of nonsurgical treatment, and details on surgery and postoperative course were recorded and analyzed using SPSS. Five hundred and one patients were studied and the authors observed significant differences in demographics, especially in terms of age, gender distribution, and mean BMI of patient population and failed disc surgery has been observed to occur in up to 12% of patients.

A randomized, double-blind placebo controlled trial in multimodal analgesia for postoperative pain was conducted by Kitti et al. (2007) to examine whether combination of corticosteroid and bupivacaine administered in patients undergoing posterior lumbosacral spine surgery reduces postoperative morphine consumption, improves functional disability and general health status. A total of 103 patients who were scheduled to undergo elective posterior lumbar discectomy were selected in a University Hospital, Newzealand. Morphine consumption and pain scores were recorded at 1, 2, 3, 6, 12, 24, and 48 hours after surgery. The study concluded that administration of methylprednisolone-bupivacaine provided a favorable effect immediately after posterior

lumbosacral spine surgery for discectomy, decompression, and/or spinal fusion without complication.

Prasad et al. (2005) conducted a prospective case series study at Varanasi, India to examine the sociodemographic characters of diagnosed case of lumbar disc prolapse in patients reporting to the Tertiary Care Hospital. The 180 MRI proved new patients of lumbar disc prolapse who attended Neurosurgery outpatient department from July 2003 to June 2005 were selected and the researcher found that lumbar disc prolapse was more among people living or working in areas of poor infrastructures and also people from rural area, moderate and heavy workers and vehicle drivers on bad roads.

In Canada, a prospective study was conducted by Singhal. (2003) to examine the feasibility of performing lumbar microdiscectomy on an outpatient protocol and to examine the potential savings associated with such a protocol.122 patients were examined during the study period. There was a total reduction in hospitalization of 1.2 nights per elective procedure, when compared with the hospitalization times prior to outpatient lumbar microdiscectomy. The study concluded that outpatient lumbar micro discectomy appreciate the need for the health care system to save money and retained high patient satisfaction rates.

A prospective study was conducted among 100 consecutive patients to evaluate the safety and efficacy of micro lumbar discectomy at an Orthopedic Hospital in Japan. Components such as mean hospital stay, postoperative narcotic requirements, dietary tolerance, and activity level were assessed. The researcher analyzed the hospital costs of these 100 cases which demonstrated a modest cost advantage over standard micro

lumbar discectomy. This study concluded that micro lumbar discectomy is a safe and effective procedure that can be performed with minimal riskin terms of significant reduction in post operative pain, discomfort, medication and length of stay, and an early return to normal activity, which is of economical benefit to the patient, the employer, the community and the health care system (Garfin and Martin, 2002).

Literature related to Clinical Pathways

The changes in medical technology have necessitated hospitals to introduce clinical pathways to cut costs and reduce the variation in care. Health care providers are becoming increasingly involved with the development of clinical pathways as they take on more of the responsibilities of quality management and resource use. Although clinical pathways that are developed at the national, regional, or specialty organization level provide a framework for reference, locally developed pathways tailor care to patients who are served within an agency or community. These guidelines have significant potential for the future (Ibarra et al.2010).

In New Zealand, a retrospective and comparative study was conducted among 120 total knee replacement patients by Pennington et al. (2008) over a 5 year period after implementation of clinical pathway in 2006. There was a significant reduction in duration of hospital stay with 62.8% of patients staying less than 8 post operative days and reduction in the number of patients with thrombo embolic complications or readmission rate. The study concluded that implementation of clinical pathway, effectively improves the quality of care. Through continuous improvement in practice,

clinical pathways will improve patient satisfaction to gain better social and economic benefits.

The effectiveness of emergency clinical pathway for STEMI patients was evaluated by Luca et al. (2006) in which they selected ambulance transported patients with cardiovascular symptoms in a area of the Lazio Region. A prospective observational cohort study was adopted for this study. About 287 patients were enrolled in the study and a pre-hospital ECG was performed in 66% of them. One hundred and fifty-two patients were referred to hospital and only 34 had discharged diagnosis of acute myocardial infarction, of which 23 were STEMI. Study suggests that adherence to emergency clinical pathway improved the appropriateness of STEMI patientsreferral and treatment in Critical Care Unit in the Lazio Region.

Pheilang. (2006) conducted a quasi experimental study onthe effects of implementation of clinical pathways on costs and quality of care among 40 patients undergoing urological surgery in California. The outcomes in terms of length of hospital stay and admission charges of patients after implementation of clinical pathway were compared with those of patients treated before clinical pathways were implemented. Seven clinically relevant quality indicators were used to assess the quality of care before and after clinical pathway implementation. This implementation of multiple clinical pathways resulted in reduction of length of stay, admission charges and rate of surgical complications and by improving the quality of care.

A Retrospective comparative study was conducted on clinical pathway for total knee replacement in Queen Elizabeth Hospital, Adelaide by Pearson et al. (2005).119

patients who were managed on a clinical pathway from July 2002 to January 2003 were compared with a retrospective group of 58 patients who underwent the same procedure from July 2000 to January 2001 prior to the pathway's implementation. There was a significant reduction in the median length of stay in clinical pathway patients at $p<0.001$ level. The study revealed that development and implementation of a clinical pathwayresulted in a significant improvement in streamlining of admission, discharge and transfer processes without adversely affecting patient outcomes.

In the year 2002, Soria and Aledo conducted a retrospective study among 160 patients to evaluate the effectiveness of clinical pathway for laparoscopic cholecystectomy in Scotland. Evaluation criteria included were compliance, indicators of the effectiveness of clinical care, economic impact and indicators of satisfaction based on a survey. The results were compared with those in a series of patients who underwent surgery in the year before the introduction of the clinical pathway. The results showed that length of hospital stay has been significantly reduced without increasing morbidity and patient satisfaction has been improved.The study concluded that laparoscopic cholecystectomy is a suitable process with which to initiate systematization of clinical pathways.

Estrada and Unterborn. (2000) conducted a retrospective cohort study to compare the assessment of a clinical pathway for community-acquired pneumonia with and without adjusting for patient characteristics and disease. 275 patients were assigned for receiving usual care and 97 patients in the pathway group were selected. In the unadjusted analysis, total hospital charges were lower among pathway patients and in the adjusted analysis, the difference in total charges was smaller. In the unadjusted

analysis, length of stay was lower among pathway patients and in the adjusted analysis; the difference in length of stay was smaller. The study findings revealed that clinical pathways may reduce costs and improve quality of care in patients with community-acquired pneumonia.

Literature related to Clinical Pathways for Micro Lumbar Discectomy

A qualitative case study was conducted in Kaiser Permanente Medical center, U.S.A. on development of a clinical pathway for micro lumbar discectomy. A 6 month research project was developed to study outcomes of patients undergoing discectomy who were discharged after 4 to 6 hours of postoperative care in the post anesthetic care unit. 27 patients were enrolled in this study. Guidelines were established to define the candidates for enrolment in the same day discectomy program and the study findings paved way for establishment of patient clinical pathway for micro lumbar discectomy surgery (Scanlon, 2007).

Ishikawo et al. (2004) conducted a retrospective comparative study to evaluate the efficacy of a critical pathway for posterior lumbar discectomy. The changes in hospitalization days before and after introduction of the critical pathway were examined. 80 patients who were managed on a clinical pathway were compared with a retrospective group of 48 patients who underwent the same procedure prior to the pathway's implementation.There was a significant reduction in the median length of stay in clinical pathway patients at $p<0.001$ level. The study revealed that development and implementation of a clinical pathwayresulted in a significant improvement

instreamlining of admission, discharge and transfer processes without adversely affecting patient outcomes.

An article from Hospital Case Management published that critical pathway has reduced the cost and length of stay for the disc surgery patients. A clinical pathway was designed at Mercy Fairfield Hospital to reduce nosocomial infections in 40 disc surgery patients. Once the pathway was launched, the infection rate for disc surgery dropped from 8.5% in 2002 to 0 in 2004, and the average length of stay decreased from 3 days to 2 days for this high volume procedure (Miller, 2004).

In University of Pittsburgh, a prospective study was conducted to find out the effectiveness of clinical pathway for pain control in 32 lumbar discectomy patients. The researchers found that critical paths cut costs by $1000 per case and reduced length of stay from 4.92 days to just under 2 days for patients with lumbar discectomy by taking an aggressive approach to pain management. The investigators prepared patients for early discharge by giving them an easy to read patient pathway that details the process of care. The study findings revealed that lumbar discectomy pathway emphasizes post operative ambulation over bed rest, and reduces the number of individual blood tests required prior to surgery (Garg et al. 2003).

Keller et al. (2002) conducted a retrospective and comparative study in Yamaguchi University, Japan on effectiveness of clinical path for lumbar disc herniation. A total of 43 patients were selected for the study. After implementation of clinical pathway there was a significant reduction in duration of hospital stay with 62.8% of patients staying less than 2 post operative days and reduction in the number of

patients with thrombo embolic complications or readmission rate. The study demonstrated clinically and economically relevant benefits for the utilization of clinical pathways with a reduction in use of all resource types, without any negative impact on the rate of complications or re-hospitalization.

The effectiveness of development of a critical pathway for the patients following lumbar discectomy was viewed by (Kim and Roh, 2002). The purpose of the study was to develop a critical pathway for the patients following lumbar discectomy. For this study, a preliminary critical path was developed through a literature review and analysis of the medical records and seven critical pathways being used in Korea and in the U.S.A. In order to identify the health care services provided for the patients, who had discectomy and to draw up the conceptual framework, 30 medical records were analyzed at the spine Center in Yonsei University Medical Center, Korea.On the basis of the research a final critical pathway was developed. It is anticipated that critical pathway can be used in clinical situations to provide care for the patients following lumbar discectomy in the most effective and efficient manner.

Summary

This chapter has dealt with the review of literature related to the problem stated .The literatures presented here were extracted from 17 primary and 4 secondary sources. It has helped the researcher to understand the prevalence and impact of the problem under study. It has also enabled the investigator to design the study, develop the tool, and plan the data collection procedure and to analyze the data.

CHAPTER III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way the data are gathered in order to answer the questions to analyze the research problem. It enables the researcher to project a blue print for the research undertaken. The research methodology involves a systematic procedure by which the researcher had a start from the initial identification of the problem to its final conclusion.

This chapter deals with a brief description of different steps undertaken by the researcher for the study. It involves research approach, research design, setting, population, sample and sampling technique, sampling criteria, selection and development of the instruments, validity and reliability of the instruments, pilot study, data collection procedure and plan for data analysis. The present study is conducted to assess the effectiveness of clinical pathway upon patients undergoing micro lumbar discectomy

Research Approach

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study which is undertaken.

According to Polit and Beck. (2008), an experimental research is an extremely applied form of research and involves finding out how well a programme, product, practice or policy is working. Its goal is to assess or evaluate the success of the program.

An experimental research is generally applied where the primary objective is to determine the extent to which a given treatment meets the desired results.

To accomplish the objective of this study, an experimental research was considered most appropriate, since the researcher wanted to assess the effectiveness of clinical pathway upon the patients undergoing micro lumbar discectomy.

Research Design

According to Polit and Beck (2008), a research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity.

A Quasi-experimental research design was adopted for this study. Since there were a limited number of nurses, one group pre and post design was adopted for nurses. It fulfills the criteria such as manipulation and control but no randomization.

The research design of nurses is represented diagrammatically as follows:

01 X 02

01 --- Pre test to assess the knowledge and practice of nurses regarding clinical pathway for micro lumbar discectomy patients.

X --- Teaching on clinical pathway for micro lumbar discectomy.

02 --- Post test to assess the gained knowledge and practice of nurses regarding clinical pathway for micro lumbar discectomy patients.

The research design of patients is represented diagrammatically as follows:

– O1

X O1

X -- Clinical pathway implementation

O1 -- Assessment of patients' outcome and satisfaction of nursing care.

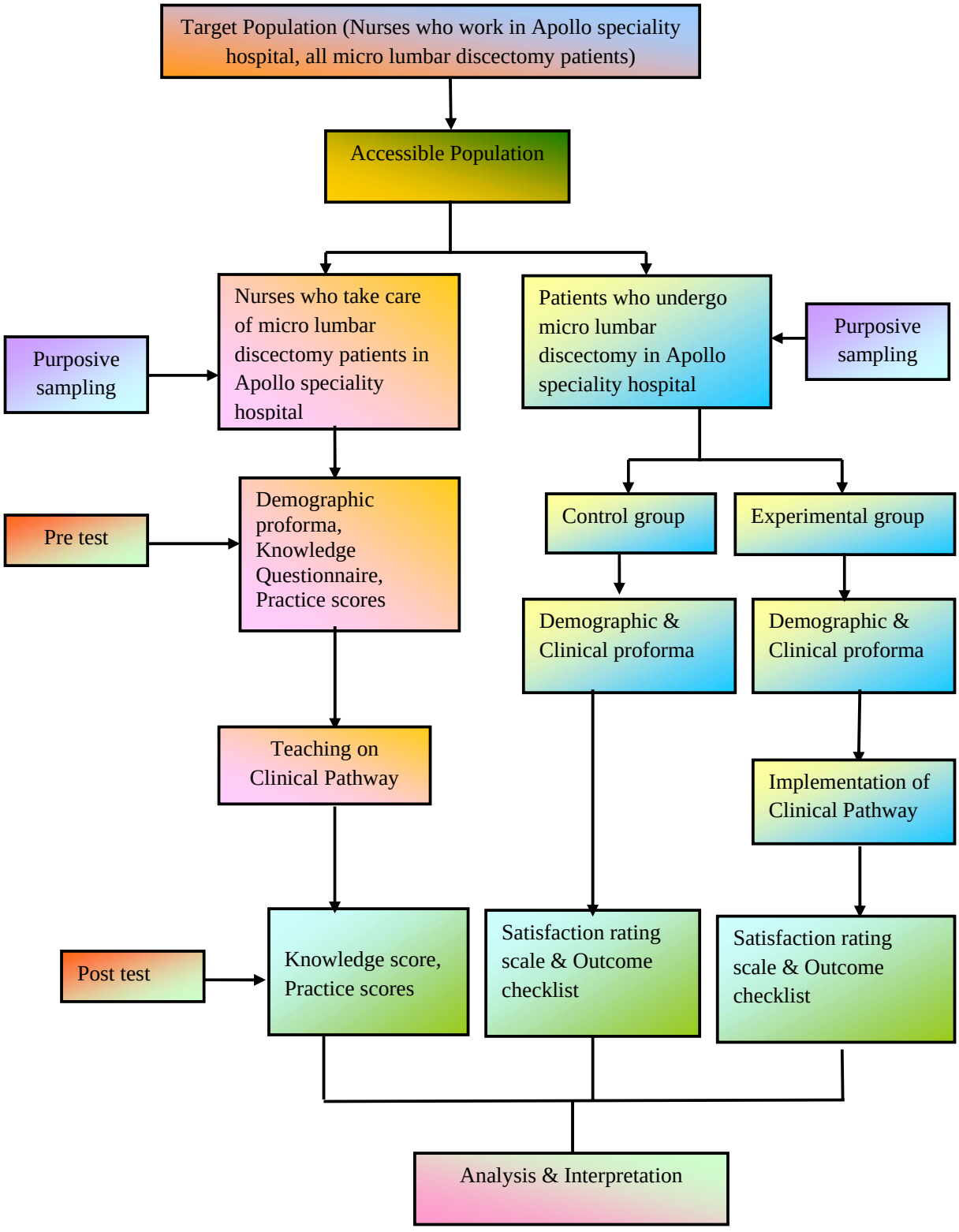

Fig.2 Schematic Representation of the Research Design.

Variables

Independent variable

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit and Beck, 2008). In this study, the independent variable was clinical pathway designed for patients undergoing micro lumbar discectomy from admission till discharge.

Dependent variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit and Beck, 2008). In this study the knowledge and practice of nurses and patients' outcome after clinical pathway were considered as dependent variables.

Attribute variable

Variables that describe the study sample characteristics are termed as attribute variables (Polit and Beck, 2008). In this study the attribute variables were demographic variable proforma of nurses and patients and clinical variable proforma of patients undergoing micro lumbar discectomy.

Research Setting

The physical location and condition in which a data collection takes place in a study.(Polit and Beck, 2008).

The present study was conducted at Apollo Speciality Hospital, Chennai. The hospital is accredited with National Accreditation Board for Hospitals and Health care providers and it specializes in cutting edge medicine and surgical procedures. It has the nation's best health care professional workers with a coordinated multi disciplinary approach, supported by the latest technology. This hospital is having inpatient and outpatient department with X-ray facilities, ECG, MRI & CT scans, ultra sonogram and laboratories services.The study was conducted in surgical and post operative ward.

Population

Population is the entire set of individuals or objects having some common characteristics (Polit and Beck, 2008).

The **target population** is the group of population that the researcher aims to study and to whom the study finding will be generalized. In this study target population comprises of all nurses working in Apollo Speciality Hospital and micro lumbar discectomy patients.

The **accessible population** is the list of population that the researcher finds in the study area. The accessible population of nurses in this study was nurses who were working in the surgical and post operative wards taking care of micro lumbar discectomy patients. The accessible population of patients was patients undergoing micro lumbar discectomy in Apollo Speciality Hospital, Chennai.

Sample

The sample is the subset of population, selected to participate in a study. (Polit and Beck, 2008). Sample size of this study were 30 nurses and 60 micro lumbar discectomy patients in Apollo Speciality Hospital, out of which 30 were assigned to experimental group and 30 were assigned to control group who satisfied the inclusion criteria.

Sampling Technique

Sampling is the process of selecting a portion of the population to represent the entire population (Polit and Beck, 2008). Purposive sampling technique was used in this study. Participants who were willing to participate in the study and fulfilled the selection criteria were chosen.

Sampling Criteria

Inclusion criteria

The study included

- Patients who underwent micro lumbar discectomy.
- Nurses and patients who were willing to participate in the study.
- Nurses who took care of patients with micro lumbar discectomy.
- Patients who could speak and understand English.

Exclusion criteria

The study excluded

- Patients who were critically ill.
- Patients who were not willing to participate in the study.

- Nurses who were not available during data collection period.
- Nurses who were not willing to participate.

Selection and Development of Study Instruments

The study aimed to evaluate the effectiveness of clinical pathway for micro lumbar discectomy patients. The data collection instruments were developed through an extensive review of literature in consultation with the opinion of experts and with the opinion of faculty members. The instruments used in this study are demographic variable proforma, clinical variable proforma, knowledge assessment questionnaire, clinical pathway checklist, patient outcome checklist and satisfaction scale.

Demographic variable proforma of nurses

Demographic variable proforma of nurses consists of age, sex, total years of experience, professional qualification, designation, working area, place of study.

Demographic variable proforma of patients undergoing micro lumbar discectomy

This proforma is used to measure the demographic variables of patients such as age, sex, marital status, educational qualification, diet, occupation, and place of work, nature of work, income and source of health information.

Clinical variable proforma of patients undergoing micro lumbar discectomy

The clinical variable proforma includes height, weight, presence of co morbid illness, treatment, history of trauma/accident, family history, past surgeries, history of

back pain and exercise pattern. The researcher collected the data by interviewing the participants and by seeing the records of the patients.

Clinical pathway for patients undergoing micro lumbar discectomy

The researcher developed the clinical pathway for patients undergoing micro lumbar discectomy by extensive review of literature, participatory observation of nursing care from admission to discharge and getting suggestion from health care team members including Orthopedic surgeon, nursing officers, staff nurses, physiotherapist & dietician. Henderson's 14 basic needs was the basis for the pathway. After formulating, the pathway was validated by the experts.

Henderson identified 14 basic needs of the patient, which comprise the components of nursing care. These include the following needs.

1. Breathe normally
2. Eat &drink adequately
3. Eliminate body wastes
4. Move and maintain position
5. Sleep and rest.
6. Suitable clothing
7. Maintain body temperature
8. Keep body clean &well groomed
9. Avoid dangers in environment
10. Communication
11. Worship according to one's faith

12. Work Accomplishment

13. Recreation

14. Learn discover or satisfy curiosity

The clinical pathway for micro lumbar discectomy contains eligibility criteria and activities were tabulated on 14 aspects for four days. The aspects included were assessment, investigation, medication, treatment, nutrition, elimination, activity, position & comfort, sleep pattern, hygiene, psycho social needs, spiritual needs, patient safety and education. The prescribed length of stay was four days including 1 day of pre operative care and 3 days of post operative care. The clinical pathway form was attached with the patient's file and the nurse caring for the patient should act according to it and document it. If any variances are observed, it should be noted in the pathway.

Structured knowledge questionnaire for nurses regarding Clinical Pathway for Micro Lumbar Discectomy

The structured questionnaire was framed very carefully, considering the language, clarity, organization, and sequence of items. The questions framed and the choices are given below. It includes 20 multiple choice questions on knowledge regarding clinical pathway, pre and post operative care, complications and health education. The nurses are free to answer the questions which have one right answer. Every right answer was assigned a score of '1' and wrong answers a score of '0'. The total score of structured questionnaire was 20. The knowledge scores were classified into 3 levels,

Score	Percentage	Interpretation
0 – 10	≤50%	Inadequate
11 – 15	51 – 75%	Moderately adequate
16 – 20	>75%	Adequate

Practice Checklist for Nurses Caring of Patients undergoing Micro Lumbar Discectomy

The nursing care for micro lumbar discectomy patients was observed by using compliance checklist. It consists of list of nursing activities to be done from admission to discharge. The scoring was given according to the compliance to each nursing activity. [0- no compliant, 1-partially compliant, 2-compliant].

Scoring key:

Day 1

Score	Percentage	Interpretation
0 – 43	≤50%	Non compliant
44 – 65	51 – 75%	Partially compliant
66 – 86	>75%	Compliant

Day 2

Score	Percentage	Interpretation
0 – 29	≤50%	Non compliant
30-44	51 – 75%	Partially compliant
45-58	>75%	Compliant

Day 3

Score	Percentage	Interpretation
0 – 31	≤50%	Non compliant
32 – 47	51 – 75%	Partially compliant
48 – 62	>75%	Compliant

Day 4

Score	Percentage	Interpretation
0 – 23	≤50%	Non compliant
24-35	51 – 75%	Partially compliant
36-46	>75%	Compliant

Checklist to Assess the Outcome of Patients undergoing Micro Lumbar Discectomy

It is a checklist collected by researcher as observing on patients outcome including regulatory functions, oxygenation, and nutrition, elimination, rest, comfort, personal hygiene, communication, activity, diversional needs, health teaching and discharge plan with ranging from no to major complications.

Score	Percentage	Interpretation
0 – 12	≤50%	Negative Outcome
13-18	51 – 75%	Moderately Positive Outcome
19-24	>75%	Positive outcome

Rating Scale on Patient Satisfaction of Nursing Care of Patients undergoing Micro Lumbar Discectomy

It includes environment, comfort, nursing care, nutrition, elimination needs, activity, rest, position, personal hygiene, safety, spiritual need, communication, family health education, discharge plan given scores with ranging from dissatisfied to highly satisfied.

Score	**Percentage**	**Interpretation**
0 – 20	≤50%	Dissatisfied
21-30	51 – 75%	Satisfied
31-40	>75%	Highly satisfied

Psychometric Properties of the Instruments

Validity

Content validity is the degree to which an instrument measures what it is supposed to measure. Content validity is the sampling adequacy of the content being measured. (Polit and Beck, 2008).

The content validity of the tool was obtained by getting opinion from experts in the field of Medicine and Nursing. The validation has suggested some specific modification in the objective, clinical variables, practice checklist and outcome criteria. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

Reliability

Reliability is the degree of consistency with which an instrument measures the attribute it intended to measure (Polit & Beck, 2008). The reliability of the tools was determined by using split half method and inter rater technique. Karl Pearson's 'r' was computed for finding out the reliability.

Structured knowledge questionnaire	–	Split half method (r = 0.82)
Practice check list for nurses	–	Inter rater technique (r = 0.76)
Rating scale for patient satisfaction	–	Split half method (r = 0.84)
Checklist for patients outcome	–	Split half method (r = 0.86)

Pilot Study

According to Polit and Beck. (2009), a pilot study is a miniature or some part of the actual study, in which the instruments are administered to the subjects drawn from the population. It is a small scale version or trial run, done in preparation for the major study. The purpose is to find out the feasibility and practicability of the study design.

Pilot study was conducted in Apollo Main Hospital, Chennai for a period of one week with a set of small sample of 10 patients who underwent micro lumbar discectomy. Pilot study revealed that it was feasible and practicable. So the investigator proceeded for the main study.

Protection of Human Rights

- The study was conducted after obtaining clearance from Ethical committee, Apollo hospitals, Chennai and permission from the Research and Medical guide.
- Consent was obtained from all the participants before the data collection.
- Confidentiality was maintained throughout the study

Data Collection Procedure

Data collection is the precise, systematic gathering of information relevant to the research purpose. The researcher presented the proposal to the ethical committee of Apollo Hospitals and got ethical clearance to proceed the study. The investigator collected the data from Apollo Speciality Hospital after obtaining proper administrative permission from concerned authorities. The observation time schedule was from 7a.m-12 noon and 12.30 p.m-5.30 p.m and the data collection period was from June 17th to July 17th 2011.

A group of 30 nurses were selected from surgical and post operative ward by purposive sampling method and obtained verbal consent for the study. The nurses were gathered in the nurses' station during the shift changing time between 2-3 p.m and collected the baseline data by using demographic variable proforma. Their pretest knowledge was assessed by using structured knowledge questionnaire on clinical pathway for micro lumbar discectomy.

The control group of 30 patients undergoing micro lumbar discectomy was selected from the same wards by purposive sampling method. On the day of their

admission baseline data was collected by using demographic and clinical variable proforma, after obtaining consent from them. Nursing care received by these patients was assessed by using practice check list through participatory observation method. Outcome of these patients was monitored by using outcome checklist. At the time of their discharge rating scale on satisfaction of nursing care was distributed and their level of satisfaction on nursing care was assessed.

The same group of nurses were then educated for one hour over a period of one week about the clinical pathway for micro lumbar discectomy by using pathway tool and the doubts of nurses were cleared. The nurses were instructed to use the clinical pathway from the time of admission of micro lumbar discectomy patients. After a period of one week the investigator assessed the post test knowledge level of same group of nurses.

Patients admitted for micro lumbar discectomy were selected by purposive sampling. Baseline data was collected by using demographic and clinical variable proforma. Nursing care of these patients was assessed by using practice check list upon the nurses by participatory observation method. Outcome of these patients was monitored by using outcome checklist. At the time of their discharge rating scale on satisfaction of nursing care was distributed and their level of satisfaction on nursing care was assessed. The researcher was able to collect data for 30 micro lumbar discectomy patients in the experimental group.

Problems Faced during Data Collection

The problems faced during the data collection were,

- Lack of time for nurses to participate in the study.
- Few patients were not interested to provide information.
- Follow up is difficult.

Plan for data analysis

Data analysis is the systematic organization, synthesis of research data, and testing of null hypothesis by using obtained data (Polit & Beck, 2008).

Analysis and interpretation of the data were carried out by using descriptive and inferential statistics. Descriptive statistics like frequency distribution, percentage, mean standard deviation and inferential statistics like t-test and chi square test were used to analyze the data.

Summary

This chapter dealt with the selection of research approach, research design, setting, population, sample, sampling technique, sampling criteria, selection and development of study instruments, validity, reliability of the study, pilot study, data collection procedure, problem faced during data collection and plan for data analysis.

CHAPTER IV

ANALYSIS AND INTERPRETATION

This chapter includes both descriptive and inferential statistics. Statistics is a field of study concerned with techniques or methods of collection of data, classification, summarizing, interpretation, drawing inferences, testing of hypothesis, making recommendations (Mahajan, 2010).

The data was collected from 60 micro lumbar discectomy patients and 30 nurses working in Apollo speciality hospital, Chennai to determine the effectiveness of clinical pathway on micro lumbar discectomy.

The data were analyzed according to the objectives and hypotheses of the study. Analysis of study was compiled after all the data was transferred to the master coding sheet. The investigator used descriptive and inferential statistics for analysis. The data were analyzed, tabulated and interpreted using descriptive and inferential statistics.

Organization of Findings

The findings of the study were organized and presented under the following headings

- Frequency and Percentage Distribution of Demographic Variables of Nurses.
- Frequency and Percentage Distribution of Demographic Variables in Control and Experimental Group of Micro Lumbar Discectomy Patients.
- Frequency and Percentage Distribution of Clinical Variables in Control and Experimental Group of Micro Lumbar Discectomy Patients.

- Frequency and Percentage Distribution of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway forMicro Lumbar Discectomy.
- Frequency and Percentage Distribution of Practice of Nurses for Control and Experimental Group of Patients Regarding Clinical Pathway for Micro Lumbar Discectomy.
- Frequency and Percentage Distribution of Outcome in Control and Experimental Group of Micro Lumbar Discectomy Patients.
- Frequency and Percentage Distribution of Patient Satisfaction on Nursing Care in Control and Experimental Group of Micro Lumbar Discectomy Patients
- Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for Micro Lumbar Discectomy.
- Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses on Various Dimensions of Clinical Pathway for Micro Lumbar Discectomy.
- Comparison of Mean and Standard Deviation of Practice of Nurses for Control and Experimental Group of Micro Lumbar Discectomy Patients.
- Comparison of Mean and Standard Deviation of Patient Satisfaction on Nursing Care in Control and Experimental Group of Micro Lumbar Discectomy Patients.
- Comparison of Mean and Standard Deviation of Patient Satisfaction on Various Dimensions of Nursing Care in Control and Experimental Group of Micro Lumbar Discectomy Patients.
- Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of Micro Lumbar Discectomy Patients.

- Association between Selected Demographic Variables and Pre and Post Test Knowledge of Nurses on Clinical Pathway for Micro Lumbar Discectomy.
- Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Micro Lumbar Discectomy Patients.
- Association between Selected Clinical Variables and Outcome in Control and Experimental Group of Micro Lumbar Discectomy Patients.
- Association between Selected Demographic Variables and Satisfaction on nursing care in Control and Experimental Group of Micro Lumbar Discectomy Patients.

Table.1

Frequency and Percentage Distribution of Demographic Variables of Nurses

[n=30]

Demographic variables	n	p
Age in years		
21-25	25	83.3%
26-30	4	13.3%
31-35	1	3.3%
Sex		
Male	4	13.3%
Female	26	86.6%
Total years of experience		
> 5 years	25	83.3%
6-10 years	5	16.6%
11-15 years	-	-
Educational qualification		
GNM	5	16.6%
B.Sc (N)	25	83.3%
Designation		
Staff nurse	23	76.7%
Novice	7	23.3%

The data in the Table.1 shows that majority of the nurses were in the age group of 21-25 years (83.3%), females (86.6%), having less than 5 years of experience (83.3%), qualified with B.Sc Nursing (83.3%) and working as staff nurses (76.7%).

Fig .3 depicts that a significant percentage of the population were working in the general ward (46.6%).

Fig.4 reveals that most of the nurses had not attended in-service education on clinical pathway (60%).

Fig. 3 Percentage Distribution of Working Area of Nurses

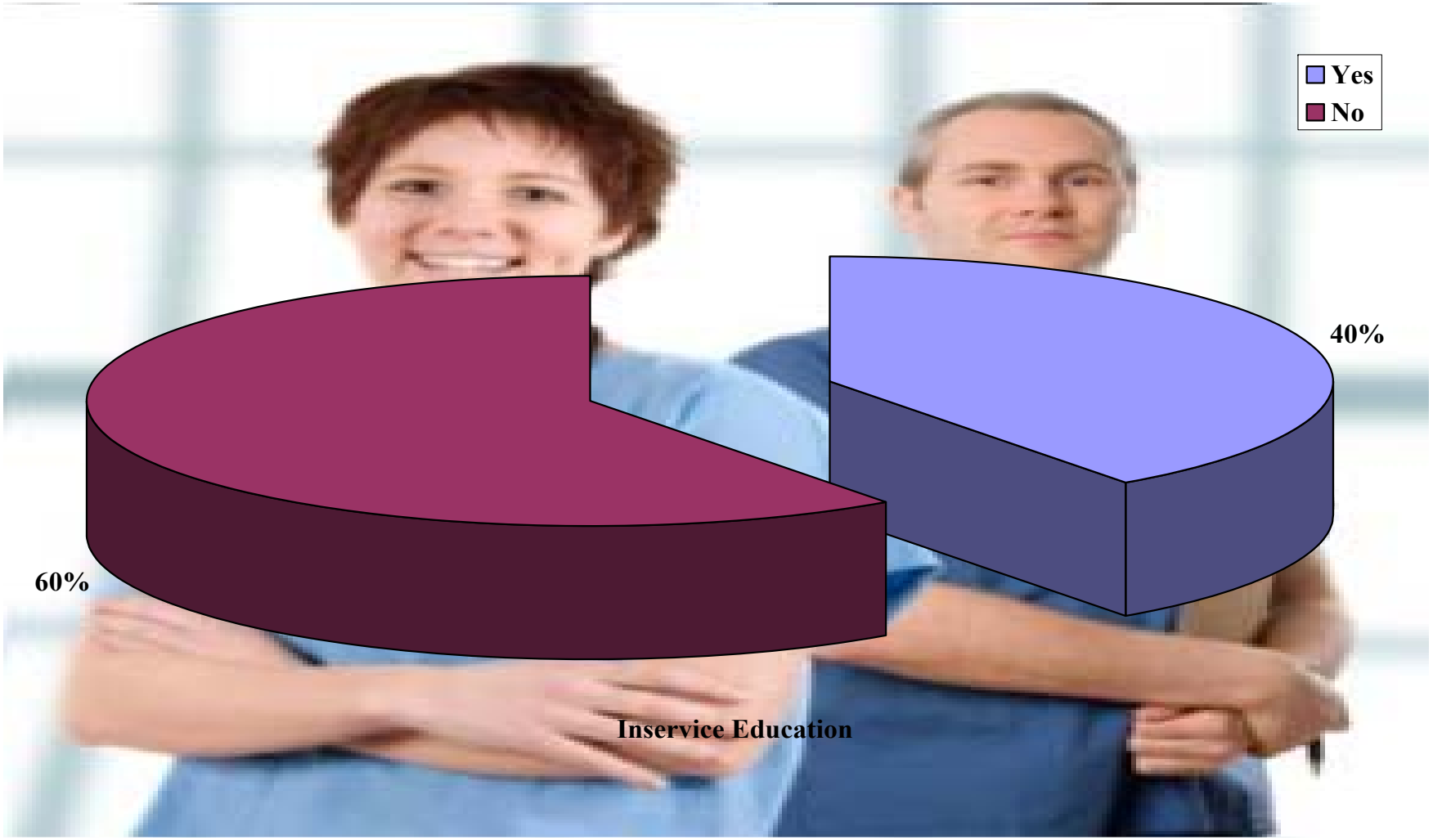

Fig. 4 Percentage Distribution of In-service Education Attended by Nurses

Table.2

Frequency and Percentage Distribution of Demographic Variables in Control and Experimental Group of Micro Lumbar Discectomy Patients

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	n	p	n	p
Sex				
Male	16	53.3%	18	60%
Female	14	46.7%	12	40%
Marital status				
Married	20	66.6%	17	56.6%
Unmarried	6	20%	5	16.6%
Divorced	4	13.3%	2	6.6%
Widow/widower	-	-	6	20%
Educational qualification				
Illiterate	-	-	-	-
Primary education	-	-	-	-
Secondary education	3	10%	2	6.6%
Higher secondary	4	33.3%	6	20%
Graduate & above	23	76.6%	22	73.3%
Dietary intake				
Vegetarian	8	26.6%	6	20%
Non vegetarian	22	73.3%	24	80%
Occupational status				
Employed	21	70%	26	86.6%
Unemployed	-	-	-	-
Homemaker	5	16.6%	-	-
Retired	4	13.3%	4	13.3%
Place of work				
Indoor	21	70%	20	66.6%
Outdoor	9	30%	10	33.3%

Income per month				
5000-10000	-	-	-	-
10001-15000	3	10%	4	13.3%
>15000	27	90%	26	86.6%
Source of health information				
Health workers	12	40%	9	30%
Relatives	5	16.6%	8	26.6%
Friends	8	26.6%	7	23.3%
Family members	5	16.6%	6	20%
Residential area				
Rural	-	-	-	-
Urban	18	60%	18	60%
Semi urban	9	30%	8	26.6%
Semi rural	3	40%	4	13.3%

It can be noted from the Table.2 that most of the patients in the control and experimental group were males (53.3%, 60%), married (66.6%, 56.6%), graduates (76.6%, 73.3%), non vegetarian (73.3%, 80%), employed (70%, 86.6%), indoor place of work (70%, 66.6%) ,with monthly income of more than 15000 (90%, 86.6%), acquired health information about micro lumbar discectomy from health workers (40%, 30%) and resided in urban area (60%, 60%) respectively.

Fig.5 depicts that significant percentage of the patients in control and experimental group were in the age group of above 50 years (33.3%, 36.6%) respectively.

Fig.6 reveals that most of the patients in control and experimental group were moderate workers (50%, 60%) respectively.

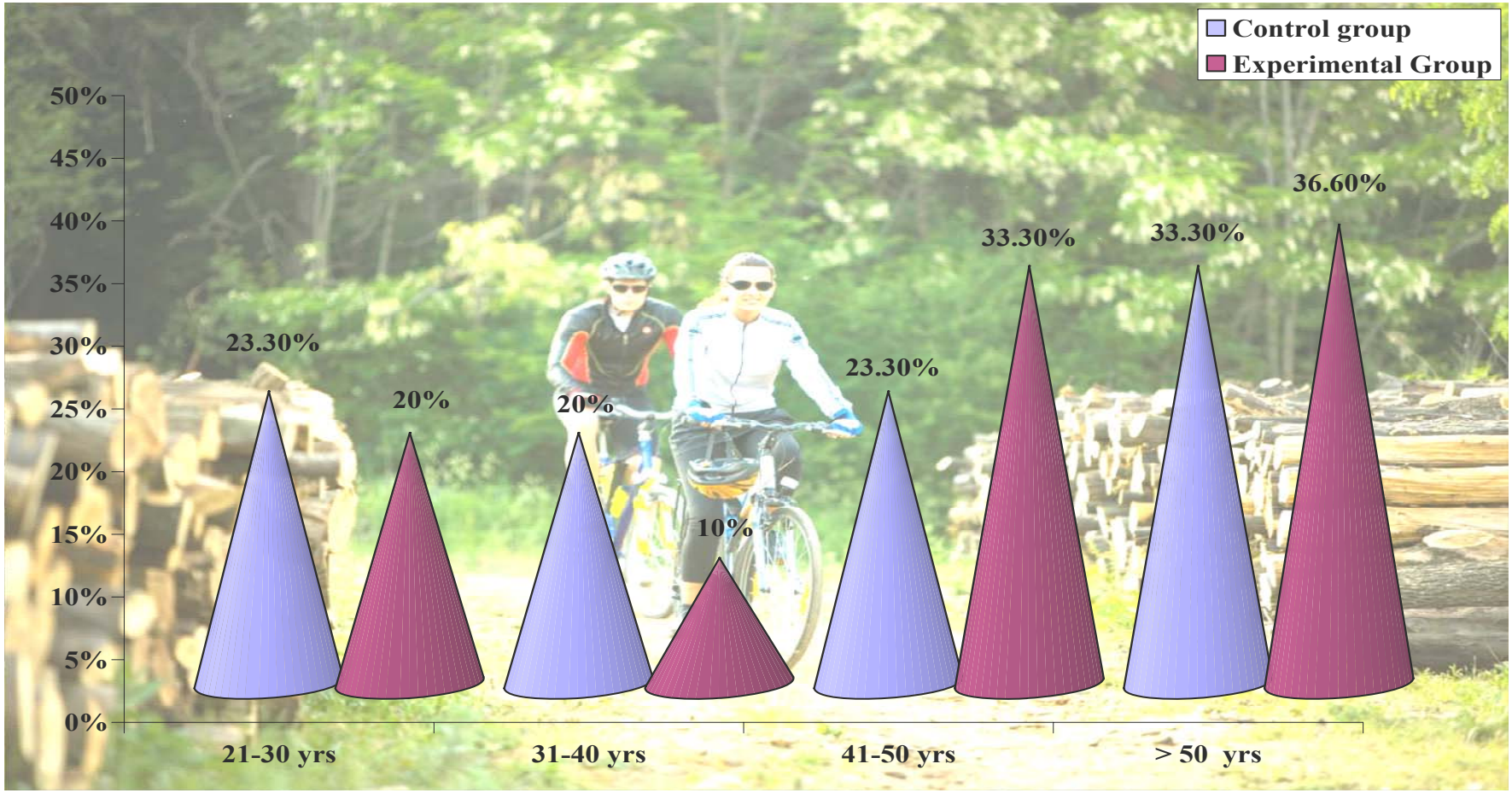

Fig. 5 Percentage Distribution of Age for Control and Experimental group of Micro Lumbar Discectomy Patients

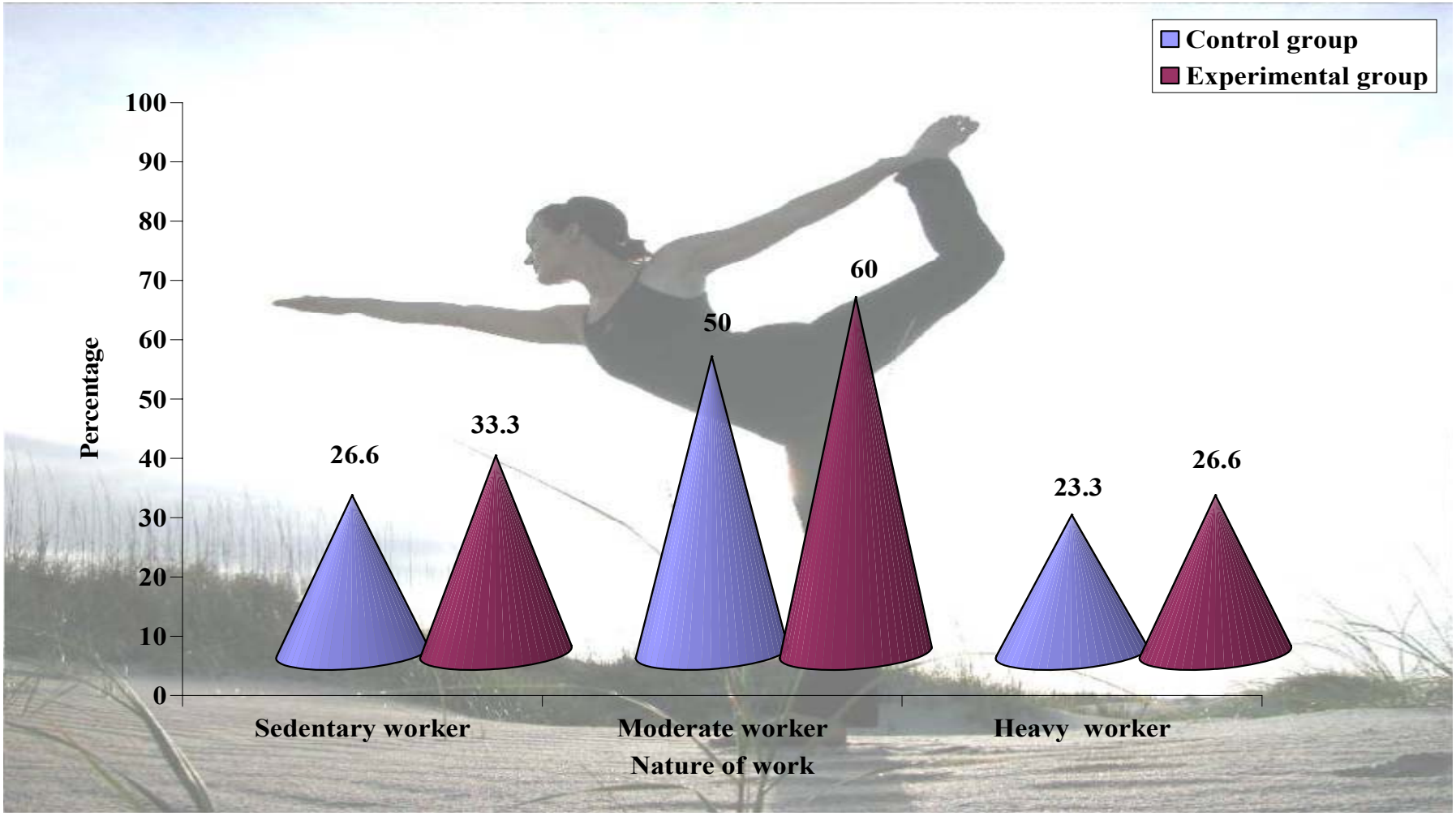

Fig. 6 Percentage Distribution of Nature of Work for Control and Experimental group of Micro Lumbar Discectomy Patients

Table.3

Frequency and Percentage Distribution of Clinical Variables in Control and Experimental Group of Micro Lumbar Discectomy Patients

Demographic variables	Control group (n=30)		Experimental group (n=30)	
	n	p	n	p
Height in cm				
151-155	-	-	-	-
156-160	3	10%	2	6.6%
161-165	7	23.3%	10	33.3%
>165	20	66.6%	18	60%
Weight in kgs				
41-50	-	-	-	-
51-60	4	13.3%	1	3.3%
61-70	10	33.3%	10	33.3%
> 70	16	53.3%	19	63.3%
Treatment of comorbid illness				
Yes	19	63.3%	19	63.3%
No	11	36.6%	11	36.6%
Any history of trauma				
Yes	24	80%	19	63.3%
No	6	20%	11	36.6%
Family history of spinal stenosis				
Yes	4	13.3%	9	30%
No	26	86.6%	21	70%
History of surgeries				
Yes	21	70%	15	50%
No	9	30%	15	50%
Duration of diagnosis of spinal stenosis				
<1 year	21	70%	25	83.3%
1-5 years	3	10%	3	10%
6-10 years	4	13.3%	1	3.3%
>10 years	2	6.6%	1	3.3%

History of back pain				
Yes	30	100%	30	100%
No	-	-	-	-
Treatment for backpain				
Drug therapy	2	6.6%	2	6.6%
Home based remedies	6	20%	6	20%
Oral analgesics	18	60%	14	46.6%
Parenteral analgesics	4	13.3%	8	26.6%
None	-	-	-	-
Regular exercise				
Yes	10	33.3%	14	46.6%
No	20	66.6%	16	53.3%

It can be identified from the Table.3 that most of the patients in the control and experimental group were weighing more than 70 kgs (53.3%,63.3%),treated for co morbid illness(63.3%,63.3%),with history of trauma (80%, 63.3%), no family history of spinal stenosis (87%,70%), with history of surgery(70%,50%), with less than 1year duration of diagnosis (70%.83.3%), all experienced back pain (100%,100%) , who treated with oral analgesics (60%,46.6%) and not followed regular exercise pattern (66.6%,53.3%) respectively.

Fig .7 predicts that most of the population in the control group and experimental group had co morbid illness (63.3%, 63.3%).

Fig.8 shows that in pretest majority of the nurses had inadequate knowledge (83.3%) and in post test majority of the nurses had adequate knowledge (76.6%) regarding clinical pathway for micro lumbar discectomy.

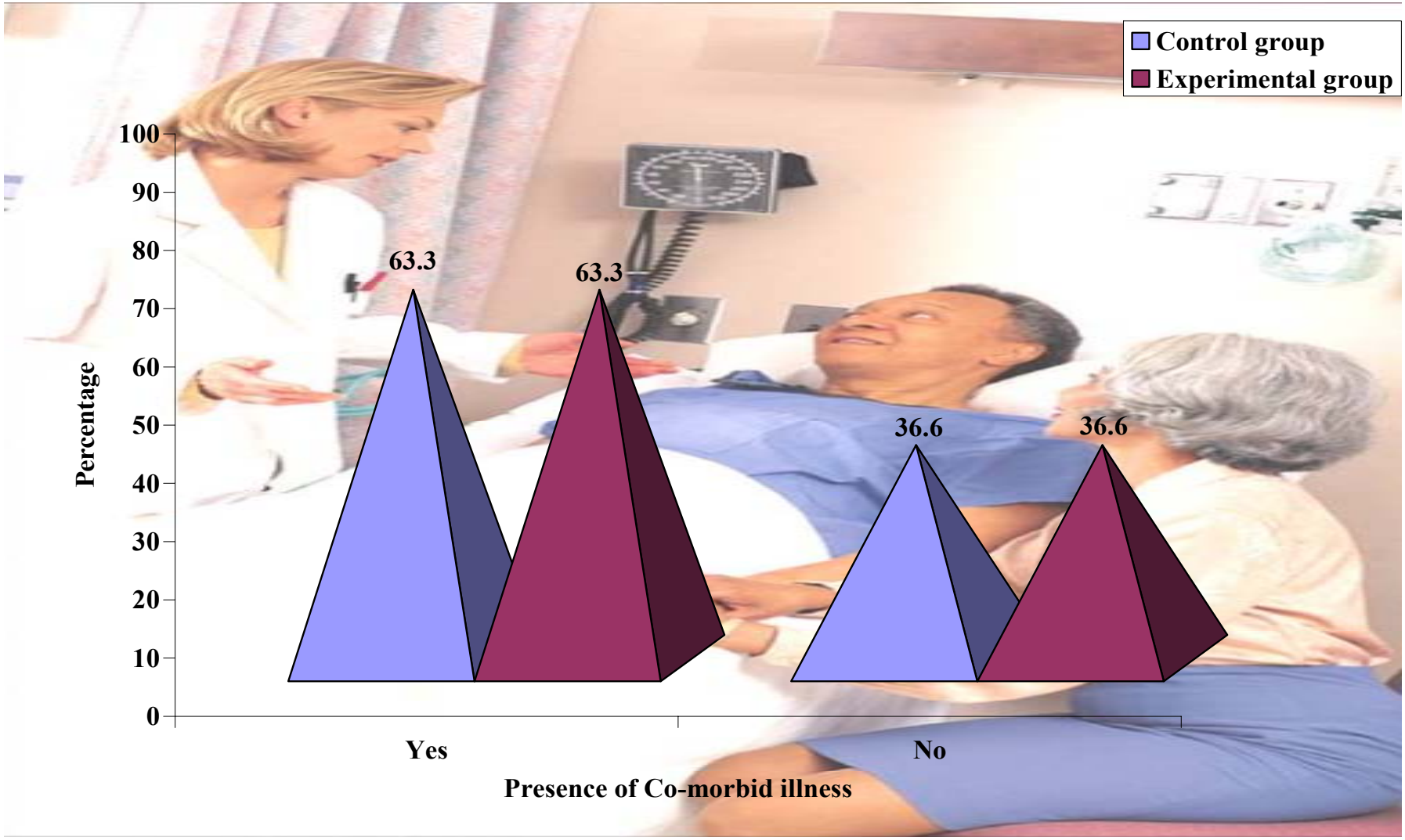

Fig. 7 Percentage Distribution of Presence of Co-morbid Illness for Control and Experimental group of Micro Lumbar Discectomy Patients

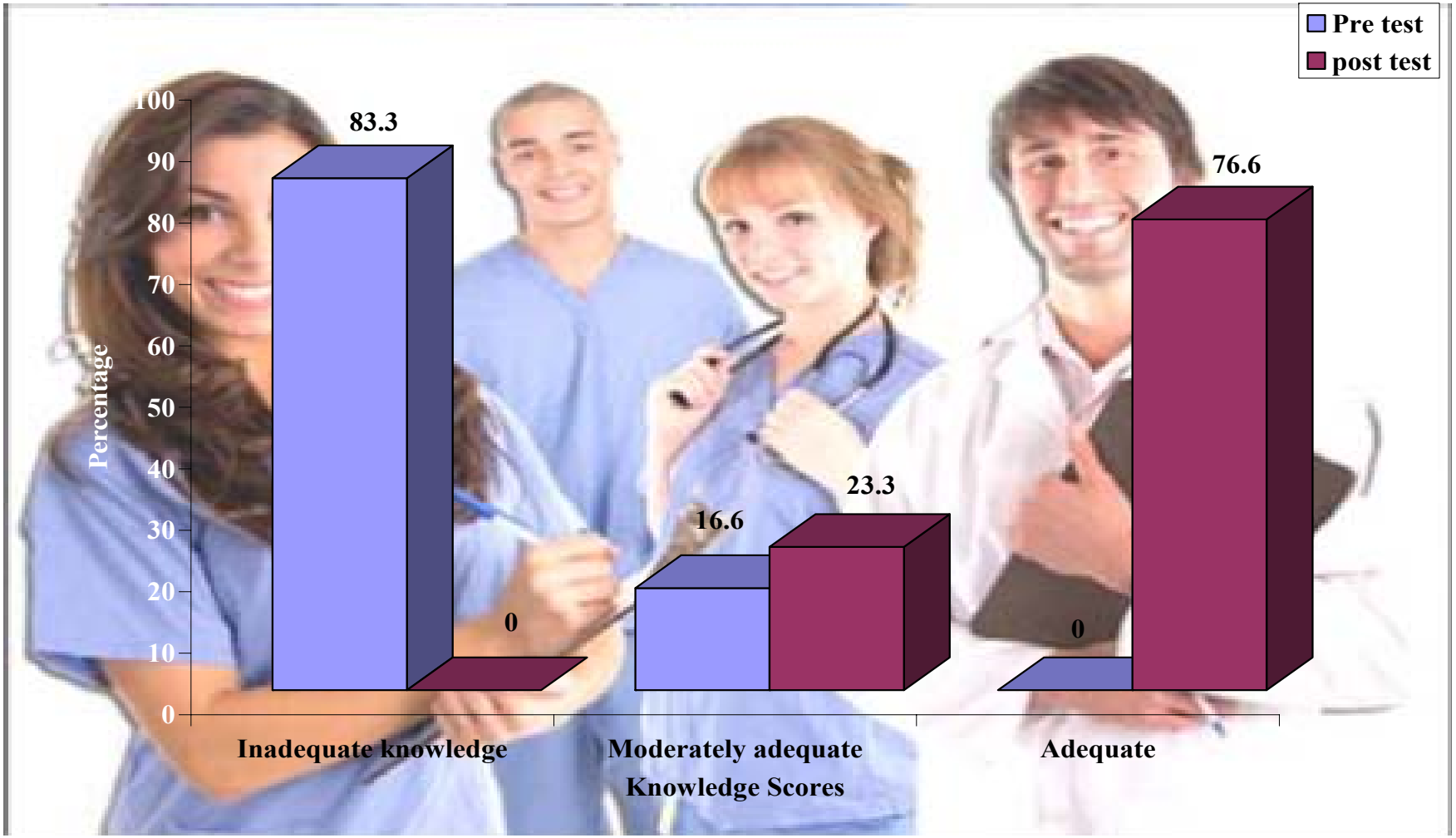

Fig.8.Percentage Distribution of Pre and Post test Knowledge Scores of Nurses on Clinical Pathway for Microlumbar Discectomy

Table.4

Frequency and Percentage Distribution of Practice of Nurses for Control and Experimental Group of Patients Regarding Clinical Pathway for Micro Lumbar Discectomy

Practice scores	Day 1		Day 2		Day 3		Day 4	
	n	p	n	p	n	p	n	p
Control group (n=30)								
Compliant	-	-	-	-	-	-	-	-
Partially compliant	25	83.3%	8	26.7%	8	26.7%	8	26.7%
Non compliant	5	16.7%	22	73.3%	22	73.3%	22	73.3%
Experimental group (n=30)								
Compliant	30	100%	30	100%	30	100%	30	100%
Partially compliant	-	-	-	-	-	-	-	-
Non compliant	-	-	-	-	-	-	-	-

It was observed from the Table.4 that most of the nurses had partially compliant scores on day 1 (83.3%) and non compliant scores on day 2,3 and 4 (26.7%,26.7%,26.7%) respectively for control group of micro lumbar discectomy patients and after administration of clinical pathway nurses were able to provide 100% compliant care for experimental group of patients.

Table.5

Frequency and Percentage Distribution of Outcome in Control and Experimental Group of Micro Lumbar Discectomy Patients

Patients outcome	Control group (n=30)		Experimental group (n=30)	
	n	p	n	p
Positive outcome	4	13.3%	27	90%
Moderately positive outcome	26	86.6%	3	10%
Negative outcome	-	-	-	-

It was identified from the Table.5 that majority of the patients in the control group had moderately positive outcome (86.6%) and in experimental group majority of the patients had positive outcome (90%).

Table.6

Frequency and Percentage Distribution of Patient Satisfaction on Nursing Care in Control and Experimental Group of Micro Lumbar Discectomy Patients

Patient satisfaction	Control group (n=30)		Experimental group (n=30)	
	n	p	n	p
Highly satisfied	-	-	27	90%
Satisfied	26	86.6%	3	10%
Dissatisfied	4	13.3%	-	-

It was observed from the Table.6 that in control group majority of the patients were satisfied (86.6%) and in experimental group majority of the patients were highly satisfied (90%) on nursing care.

Table.7

Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for Micro Lumbar Discectomy

(n=30)

Level of knowledge	**Mean**	**SD**	**"t" value**
Pre test	8.8	1.85	19***
Post test	16.97	1.64	

*** p< 0.001

It can be inferred from the Table.8 that the knowledge scores of nurses in post test (M= 16.97, SD=1.64) was high in comparison with the pre test (M= 8.8, SD=1.85). The difference was found statistically significant at p<0.001 level of confidence. Hence the null hypothesis Ho_1 was rejected.

Table.8

Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses on Various Dimensions of Clinical Pathway for Micro Lumbar Discectomy

Knowledge dimensions	Pre test		Post test		"t" value
	Mean	SD	Mean	SD	
Clinical pathway	1.7	0.6	2.9	0.2	8.57*
Pre operative care	1.3	0.97	2.5	0.6	6.5*
Post operative care	2.7	1.1	5	0.8	8.46*
Complications	1.6	0.9	3.4	0.7	10*
Patient teaching	1.4	0.8	3	0.7	9.44*

*p< 0.05

It can be depicted from the Table.8 that the knowledge of nurses in post testwas high in comparison with the pre test knowledge in all dimensions regarding clinical pathway for micro lumbar discectomy. The difference was found statistically significant at $p < 0.05$ level of confidence.

Table.9

Comparison of Mean and Standard Deviation of Practice of Nurses for Control and Experimental Group of Micro Lumbar Discectomy Patients

Practice scores	Control group (n=30)		Experimental group (n=30)		
	Mean	SD	Mean	SD	"t" value
Day 1	52.1	7.12	82.2	1.6	22.5***
Day 2	32.7	4.57	53.9	1.87	26.32***
Day 3	33.4	4.64	58.3	1.37	27.6***
Day 4	25.4	3.64	43	1.37	24.7***
Mean	35.9	2.7	59.3	0.8	46.07***

***p< 0.001

Table.9 depicts that the mean practice scores for four days in experimental group was high in comparison with the practice scores in control group. The difference was found to be statistically significant at p<0.001 level of confidence indicates clinical pathway was effective in improving the practice of nurses.

Table.10

Comparison of Mean and Standard Deviation of Patient Satisfaction on Nursing Care in Control and Experimental Group of Micro Lumbar Discectomy Patients

Patient category	Mean	SD	"t" value
Control group (n=30)	24.6	3.52	15.53***
Experimental group (n=30)	34.7	2.7	

*** p< 0.001

The results in the Table.10 shows that the level of satisfaction on nursing care in experimental group of patients (M=34.7, SD=2.7) were high in comparison with the level of satisfaction in control group of patients (M= 24.6, SD=3.52). The difference was found statistically significant at p<0.001 level of confidence. Hence the null hypothesis Ho_2 was rejected.

Table.11

Comparison of Mean and Standard Deviation of Patient Satisfaction on Various Dimensions of Nursing Care in Control and Experimental Group of Micro Lumbar Discectomy Patients

Aspects of patient satisfaction	Control group (n=30)		Experimental group (n=30)		"t" value
	Mean	SD	Mean	SD	
Environment Comfort Rest Activity Position	6	1.3	8.6	1	13***
Nutrition Elimination	6.1	1	8.6	0.8	12.5***
Personal Hygiene Safety	6.4	1.3	8.7	0.8	8***
Communication Spiritual need Family involvement Health education Discharge plan	6	1.4	8.8	0.8	9.3***

***p<0.001**

The result in the Table.11 shows that the patient satisfaction on various dimensions of nursing care in experimental group of patients was high in comparison with the level of satisfaction in control group of patients. The difference was found statistically significant at $p<0.001$ level of confidence.

Table.12

Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of Micro Lumbar Discectomy Patients

Patient category	Mean	SD	"t" value
Control group (n=30)	15.7	2.16	10***
Experimental group (n=30)	20.5	1.46	

***p< 0.001

It can be inferred from the Table.12 that the patients' outcome in experimental group (M=20.5, SD=1.46) were high in comparison with the patients' outcome in control group (M= 15.7, SD=2.16). The difference was found statistically significant at p<0.001 level of confidence. Hence the null hypothesis Ho_2 was rejected.

Table.13

Association between Selected Demographic Variables of Nurses and their Pre and Post Test Knowledge regarding Clinical Pathway for Micro Lumbar Discectomy

(n=30)

Demographic variables	Pre test			Post test		
	Inadequate	Moderately adequate	χ^2	Moderately adequate	Adequate	χ^2
	n	n		n	n	
Age in years						
21-25	21	4	0.4	5	19	0.3
26-30	3	1	(df=2)	1	4	(df=2)
31-35	1	-		1	-	
Sex						
Male	2	2	2.3	1	3	2.4
Female	23	3	(df=1)	6	20	(df=1)
Total years of experience						
Below 5 years	21	4	0.92	6	19	0.5
6-10 years	4	1	(df=1)	1	4	(df=1)
Educational qualification						
GNM	4	1	0.34	1	4	0.32
B.Sc (N)	21	4	(df=1)	6	19	(df=1)
Designation						
Staff nurse	22	1	3.46	5	18	0.4
Novice	3	4	(df=1)	2	5	(df=1)
Inservice education						
Yes	7	1	0.64	2	6	1.1
No	18	4	(df=1)	5	17	(df=1)
Working area						
General ward	12	2	1.74	2	12	1.6
Private	13	3	(df=1)	5	11	(df=1)

* $p < 0.05$

It could be inferred from the Table.13 that there was no significant association between the demographic variables and pre and post test level of knowledge of nurses. Hence the null hypothesis Ho_3 was retained.

Table.14

Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Micro Lumbar Discectomy Patients

Demographic variables	Control group (n=30)			Experimental group (n=30)		
	Moderately positive n	positive n	χ^2	Moderately positive n	Positive n	χ^2
Age in years						
21-30	6	1		-	6	
31-40	5	1	3.32	1	2	0.4
41-50	7	-	(df=3)	2	8	(df=3)
>50	8	2		-	11	
Sex						
Male	14	2	0.32	2	16	0.5
Female	12	2	(df=1)	1	11	(df=1)
Marital status						
Married	20	1		1	16	
Unmarried	2	3	1.4	2	3	1.5
Divorced	-	-	(df=2)	-	2	(df=3)
Widow	4	-		-	6	
Educational qualification						
Secondary & higher education	7	1	1.8	3	5	2.1
Graduate & above	19	3	(df=1)	-	22	(df=1)
Dietary intake						
Vegetarian	7	1	0.93	1	5	0.67
Non vegetarian	19	3	(df=1)	2	22	(df=1)
Occupational status						
Employed	19	2	0.64	2	24	3.1
Unemployed	7	2	(df=1)	1	3	(df=1)

Place of work						
Indoor	20	1	1.24	1	19	1.4
Outdoor	6	3	(df=1)	2	8	(df=1)
Income per month						
<15000	2	1	0.4	2	2	0.5
>15000	24	3	(df=1)	1	25	(df=1)
Source of health information						
Health workers	9	2		1	8	
Relatives	5	1	1.2	-	8	0.93
Friends	8	-	(df=3)	1	6	(df=3)
Family members	4	1		1	5	
Residential area						
Rural	24	3	0.8	2	24	0.67
Urban	2	1	(df=1)	1	3	(df=1)
Nature of work						
Sedentary	7	1		2	2	
Moderate	12	3	6.28*	1	17	4.64*
Heavy	7	-	(df=2)	-	8	(df=2)

* $p < 0.05$

It was identified from Table.14 that there was a significant association between nature of work and the patient outcome and there was no significant association between other demographic variables and patient outcome in control and experimental group of patients. Hence the null hypothesis Ho_4 was rejected with nature of work and retained with other demographic variables.

Table.15

Association between Selected Clinical Variables and Outcome in Control and Experimental Group of Micro Lumbar Discectomy Patients

Clinical variables	Control group (n=30)			Experimental group (n=30)		
	Moderately positive	positive	χ^2	Moderately positive	Positive	χ^2
	n	n		n	n	
Weight in kgs						
51-60	4	-		-	1	
61-70	8	2	1.03	1	9	0.54
> 70	14	2	(df=1)	2	17	(df=1)
Presence of comorbid illness						
Yes	17	2	0.4	1	10	2.54
No	9	2	(df=1)	2	17	(df=1)
Treatment of comorbid illness	17	2	0.87	1	10	0.44
Yes	9	2	(df=1)	2	17	(df=1)
No						
History of trauma						
Yes	21	3	1.87	2	9	0.56
No	5	1	(df=1)	1	18	(df=1)
Family History of spinal stenosis						
Yes	2	2	3.7	1	8	3.6
No	24	2	(df=1)	2	19	(df=1)
History of surgeries						
Yes	17	4	0.87	1	14	2.1
No	9	-	(df=1)	2	13	(df=1)
Duration of diagnosis of spinal stenosis						
<5 years	21	3	0.8	2	22	0.7
>5 years	5	1	(df=1)	1	5	(df=1)
Treatment for back pain						
Drug therapy	7	1	0.9	1	7	0.56
Home remedies	19	3	(df=1)	2	20	(df=1)
Regular exercise						
Yes	8	2	1.2	1	14	1.1
No	18	2	(df=1)	2	13	(df=1)

*p<0.05

It was observed from Table.15 that there was no significant association between the clinical variables and the outcome in control and experimental group of patients. Hence the null hypothesis Ho_4 was retained.

Table.16

Association between Selected Demographic Variables and Satisfaction on nursing care in Control and Experimental Group of Micro Lumbar Discectomy Patients

Demographic variables	Control group (n=30)			Experimental group (n=30)		
	Dissatisfied n	Satisfied n	χ^2	Satisfied n	Highly satisfied n	χ^2
Age in years						
21-30	-	7		1	5	
31-40	1	5	1.6	1	2	1.92
41-50	2	5	(df=3)	-	10	(df=3)
>50	1	9		1	10	
Sex						
Male	3	13	1.3	2	16	0.5
Female	1	13	(df=1)	1	11	(df=1)
Marital status						
Married	3	22	0.5	1	22	0.6
Unmarried	1	4	(df=1)	2	5	(df=1)
Educational qualification						
Secondary &higher education	2	6	2.1	3	5	2.1
Graduate & above	2	20	(df=1)	-	22	(df=1)
Dietary intake						
Vegetarian	1	7	0.6	1	5	1.2
Non vegetarian	3	19	(df=1)	2	22	(df=1)
Occupational status						
Employed	3	22	1.2	2	24	0.43
Unemployed	1	4	(df=1)	1	3	(df=1)
Place of work						
Indoor	3	18	0.6	2	18	0.76
Outdoor	1	8	(df=1)	1	9	(df=1)
Monthly income						
<15000	1	2	1.34	1	3	1.2
>15000	3	24	(df=1)	2	24	(df=1)
Source of health information						
Health workers	3	17	0.56	1	15	0.7
Family members	1	9	(df=1)	2	12	(df=1)
Residential area						
Rural	1	2	0.92	1	3	2.3
Urban	3	24	(df=1)	2	24	(df=1)
Nature of work						
Sedentary	1	7		-	4	
Moderate	1	14	1.5	2	16	2.01
Heavy	2	5	(df=2)	1	7	(df=2)

*$p<0.05$

It could be inferred from Table.16 denotes that there was no significant association between the demographic variables and satisfaction of nursing care in control and experimental group of micro lumbar discectomy patients. Hence the null hypothesis Ho_4 was retained.

Summary

This chapter has dealt with analysis and interpretation of the data obtained by the researcher. The analysis showed that the post test knowledge of nurses regarding clinical pathway for micro lumbar discectomy was improved. The patient satisfaction, patient outcome and practice of nurses were high in experimental group after the implementation of clinical pathway.

CHAPTER V

DISCUSSION

A Quasi- Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients undergoing Micro Lumbar Discectomy upon the Knowledge and Practice of Nurses and Patients' Outcome at Apollo Speciality Hospital, Chennai.

Objectives of the Study

1. To assess the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients' undergoing micro lumbar discectomy.
2. To assess the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
3. To evaluate the effectiveness of clinical pathway by comparing the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.
4. To compare the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
5. To compare the level of patient satisfaction on nursing care in control and experimental group of patients undergoing micro lumbar discectomy.
6. To determine the association between selected demographic variables of nurses and their pre and post test level of knowledge regarding clinical pathway for patients undergoing micro lumbar discectomy.

7. To determine the association between selected demographic variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.
8. To determine the association between selected clinical variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.

The Discussion is Presented as Follows

- Frequency and percentage distribution of demographic variables of nurses.
- Frequency and percentage distribution of demographic variables in control and experimental group of micro lumbar discectomy patients.
- Frequency and percentage distribution of clinical variables in control and experimental group of micro lumbar discectomy patients.
- Comparison of mean and standard deviation of pre and post test knowledge of nurses regarding clinical pathway for micro lumbar discectomy.
- Comparison of mean and standard deviation of practice of nurses for control and experimental group of micro lumbar discectomy patients.
- Comparison of mean and standard deviation of patient satisfaction on nursing care in control and experimental group of micro lumbar discectomy patients.
- Comparison of mean and standard deviation of patient satisfaction on various dimensions of nursing care in control and experimental group of micro lumbar discectomy patients.
- Comparison of mean and standard deviation of patient outcome in control and experimental group of micro lumbar discectomy patients.

- Association between the selected demographic variables and pre and post test level of knowledge of nurses regarding clinical pathway for micro lumbar discectomy.
- Association between the selected demographic variables and outcome in control and experimental group of micro lumbar discectomy patients.
- Association between the selected clinical variables and the outcome in control and experimental group of micro lumbar discectomy patients
- Association between the selected demographic variables and level of satisfaction on nursing care in control and experimental group of micro lumbar discectomy patients.

Frequency and percentage distribution of demographic variables of nurses.

Majority of the nurses were in the age group of 21-25 years (83.3%), females (86.6%), having less than 5 years of experience (83.3%), qualified with B.Sc Nursing (83.3%), were working as staff nurses (76.7%) and not attended in service education on clinical pathway (60%).

It was noted from the above data that graduate nurses with comprehensive knowledge were working in the hospital to provide standardised care for the patient. Also the migration of senior nurses was more which indicates junior nurses were mostly working in the hospital.

The data also insisted upon the need of continuing nursing education as most of the nurses had not attended in service education on clinical pathway. Nursing is a scientifically rigorous discipline, which requires the updated information on a regular

basis to ensure best possible care provided to patients. The technological advancements have made the job of a nurse to evolve continuously. Therefore, it is the responsibility of every nurse to remain updated with the ongoing changes as they will affect the patient care.

Frequency and percentage distribution of demographic variables in control and experimental group of micro lumbar discectomy patients.

Most of the patients in the control and experimental group were males (53.3%, 60%), married (66.6%, 56.6%), graduates (76.6%, 73.3%), non vegetarian (73.3%, 80%), employed (70%, 86.6%),moderate workers (50%, 60%), indoor place of work (70%, 66.6%),with monthly income of more than 15000 (90%, 86.6%) & resided in urban area (60%, 60%) and a significant percentage of the population were in the age group of above 50 years (33.3%, 36.6%) and had acquired health information from health workers (40%, 30%) respectively.

The data showed that the incidence of back pain was high in the age group of more than 50 years of age. The researcher assumed that in this age, as a part of normal aging process, most of the people have a degenerated disc at one or more levels in their lumbar spine. As a result of this herniated disc most people will develop back pain. Relief from this type of back pain is possible through discectomy. So these were the reasons for the researcher to select most of the older adults undergoing micro lumbar discectomy in Apollo Hospitals.

The findings of the present study were consistent with the study findings of Burkus et al. (2002) conducted a study and inferred that back pain is most commonly

seen over the age of 50, in that 30% of people have a degenerated disc at one or more levels in their lumbar spine and by age 60 that figure is over 90%.

The number of males was high when compared with females. The researcher assumed that because of higher participation in the labor force and in occupations with heavy lifting procedures, males were most commonly affected. The findings were similar to the study conducted by Zanoli et al. (2005) on back pain and its related problems in which approximately two thirds of the study groups were men (66.2%) and just over one third were women (33.8%).

Most of the patients were moderate workers .It could be inferred from the study findings that careful examination of the work environment and personal work habits can help to identify possible back pain aggravators which then can be addressed resulting in better and more comfortable work environment.

Frequency and percentage distribution of clinical variables in control and experimental group of micro lumbar discectomy patients.

Most of the patients in the control and experimental group were weighing more than 70kgs (53.3%, 63.3%),had co morbid illness (63.3%, 63.3%), treated for co morbid illness (63.3%, 63.3%),with history of trauma (80%, 63.3%), no family history of spinal stenosis (87%, 70%), with history of surgery (70%, 50%), with less than 1year duration of diagnosis (70%, 83.3%), all experienced back pain (100%,100%), treated with oral analgesics (60%, 46.6%) and not followed regular exercise pattern (66.6%, 53.3%) respectively.

Human body functions are like a locomotive system and movement of the person continues throughout life. Obesity is a contributing factor to back pain. Being overweight or obese can significantly contribute to symptoms associated with degenerative disc disease, spinal disease or spondylolisthesis. The spine is designed to carry the body's weight and distribute the loads encountered during rest and activity. When excess weight is carried, the spine is forced to assimilate the burden, which may lead to structural compromise and damage like injury and sciatica.

The investigator assumed that chronic back pain and weight gain go hand in hand, gaining weight puts more stress on the tendons, muscles, joints, bones and ligaments of the back and losing weight has shown to slow the progression of spinal degeneration, so the importance of weight reduction has to be assisted and they should be taught and encouraged to do exercise regularly to prevent the development of back pain.

A study conducted by Robert. (2008) on exercise pattern and back pain found that people who use weight training to ease their lower back pain are better off than those who choose other forms of exercise such as jogging. The study, showed a 60 per cent improvement in pain and function levels for people with chronic backache who took part in a 16-week exercise program of resistance training using dumbbells, barbells and other load-bearing exercise equipment. In contrast, people who chose aerobic training such as jogging, walking on a treadmill or using an elliptical machine to ease their back pain only experienced a 12 per cent improvement.

It can be predicted from the study that better pain management results from resistance training. So it is the prime and foremost responsibility of a nurse to insist and

educate the importance of exercise and to demonstrate simple exercises which benefit the clients a lot and gives them good health.

Comparison of mean and standard deviation of pre and post test knowledge of nurses regarding clinical pathway for micro lumbar discectomy.

In pre test regarding clinical pathway for micro lumbar discectomy, majority of the nurses had inadequate knowledge (83.3%) and had moderately adequate knowledge (16.6%). In post test, majority of the nurses had adequate knowledge (76.6%) and significant percentage of nurses had moderately adequate knowledge (23.3%).

The knowledge scores of nurses in post test (Mean= 16.97, SD=1.64) was high in comparison with the pre test (M= 8.8, SD=1.85). The difference was found statistically significant at $p<0.001$ level of confidence.

From the data it was identified that most of the nurses had less knowledge on clinical pathway. Nurses are the cornerstone of the nation's health care industry, they not only offer care and comfort, but also serve as role models for good health care. With health care knowledge growing steadily, nurses can stay ahead of the curve through continuing education. Continuing education classes and programs enable nurses to provide the best possible care to patients, and help them to address these demands.

Comparison of mean and standard deviation of practice of nurses for control and experimental group of micro lumbar discectomy patients.

Most of the nurses had partially compliant scores on day 1 (83.3%) and non compliant scores on day 2, 3 and 4 (26.7%, 26.7%, and 26.7%) respectively for control

group of micro lumbar discectomy patients and after administration of clinical pathway nurses were able to provide 100% compliant care for experimental group of patients.

The mean practice scores for nurses in experimental group of patients were high in comparison with the control group of patients. The difference was found to be statistically significant at $p<0.001$ level of confidence. From the data it was observed that clinical pathway was effective in improving the practice scores of nurses.

Comparison of mean and standard deviation of patient satisfaction on nursing care in control and experimental group of micro lumbar discectomy patients.

The level of patient satisfaction on nursing care in experimental group of patients (Mean=34.7, SD=2.7) was high in comparison with the level of patient satisfaction on control group of patients (Mean= 24.6, SD=3.52). The difference was found statistically significant at $p<0.01$ level of confidence.

This denotes that patient's satisfaction is improved by implementing the clinical pathway and hence it can be incorporated in nursing practice. The nurses' plays a vital role in making the patient satisfied with the nursing care during their hospitalization.

Similar findings were obtained on the study conducted by Zahrawi. (2004) on examining the long term follow up and satisfaction level of patients who underwent micro lumbar discectomy as an outpatient procedure. Among the 103 patients 88% showed better results and reported as excellent and satisfied with the procedure. Thus clinical pathway improves patient's care, cost containment, improve co-ordination of care, and enable resources to be used more efficiently, complete care within a prescribed

time. The results concluded that the treatment groups were highly satisfied than the control group of patients.

Comparison of mean and standard deviation of patient satisfaction on various dimensions of nursing care in control and experimental group of micro lumbar discectomy patients.

The level of satisfaction on various dimensions of nursing care in experimental group of patients was high in comparison with the satisfaction in control group of patients. The difference was found statistically significant at $p<0.001$ level of confidence.

Patient satisfaction is a significant indicator of the quality of care. Consequently, quality work includes investigations that map out patient satisfaction with nursing care. To improve the quality of nursing care, the nurse needs to know what factors influence patient satisfaction. Johansson. (2002) conducted a study to describe the influences on patient satisfaction with regard to nursing care in the context of health care. In the description of nursing care, he used Henderson's nursing care model.

The results describe eight domains that have an influence on patient satisfaction with nursing care: the socio-demographic background of the patients, patients' expectations regarding nursing care, the physical environment, communication and information, participation and involvement, interpersonal relations between nurse and patient, nurses' medical-technical competence, and the influence of the health care organization on both patients and nurses. The study concluded that an important

implication for future research is to continue to elucidate the factors that influence satisfaction with nursing care, as seen from the patient's perspective.

Comparison of mean and standard deviation of patient outcome in control and experimental group of micro lumbar discectomy patients.

The patients' outcome in control group was less (Mean= 15.7, SD=2.16) when compared to the patient outcome in experimental group (Mean=20.5, SD=1.46). The difference was found statistically significant at $p<0.01$ level of confidence.

The interpretation from the findings was that patients who received the intervention of clinical pathway had positive outcome. This view was highlighted by German et al. in his study (2008) which revealed that patients in hospitals with pathways were 32% less likely to have a postoperative complication compared to patients in hospitals without pathways and patients managed on a clinical pathway had an average length of stay shorter than patients not managed on a pathway.

Association between selected demographic variables and the pre and post test knowledge of nurses regarding clinical pathway for micro lumbar discectomy

The data revealed that there was no significant association between the selected demographic variables namely age, total years of experience, designation, working area, professional qualification, in service education and place of study and pre and post test level knowledge of nurses.

It can be identified that nurses knowledge regarding clinical pathway was limited irrespective of their professional qualification, designation or years of

experience. Therefore the nurses need to be taught about the importance of clinical pathways in health care settings. Institutions should provide opportunities for ongoing nursing education to advance and maintain specialized knowledge in this relatively newer concept.

The study findings were supported by a similar study conducted by Jason. (2006) on nursing responsibilities involved in providing nursing care to severely obese weight loss surgery patients and to develop evidence-based guidelines for safe patient care. The study recommended that patient safety is best served when nurses are specifically trained to deal with the physical, medical, and psychosocial needs of severely obese patients and when they play an integral role in the multidisciplinary healthcare team. This role should start with a patient's first contact with the system and continue through discharge and follow-up.

Association between selected demographic variables and outcome in control group and experimental group of micro lumbar discectomy patients

The data showed that there was a significant association between nature of work and the patient outcome whereas there was no significant association between the other demographic variables and patient outcome in control and experimental group of patients.

A study conducted by Wood et al. (2006) on work environment and back pain suggests that work environment is the most common place were lower back muscles strains occur and poor posture is recognized as a factor in lower back pain and modern

life presents with many pressures placing us in increasing pressure on the neck, back and shoulder areas resulting in pain.

It can be predicted from the study that careful examination of the work environment and personal work habits can help to identify possible back pain aggravators which then can be addressed resulting in better and more comfortable work environment. This can have other benefits including a better outlook on life, work and social activities free from pain and the stresses associated with persistent back pain. The nurse plays a very important role in assessing the back pain aggravators and suggests ways for the patients to get a comfortable work environment.

Association between selected clinical variables and outcome in control group and experimental group of micro lumbar discectomy patients

There was no significant association between the clinical variables such as weight, presence of co morbid illness, treatment of co morbid illness, history of trauma, spinal stenosis & surgeries, diagnosis of spinal stenosis, experience of back pain, exercise pattern and the outcome in control and experimental group of patients.

Mark. (2010) found that regular exercise program can improve postoperative functional mobility and reduces thrombo embolic complications or readmission of the patients.

Obesity is an important risk factor for back pain and the obese patients may be at higher risk of postoperative complications. This was highlighted by a research study conducted by Blackwood. (2008), which revealed that the length of stay of non

obesepatients were when compared with obese patients. Nurses' knowledge of severe obesity, understanding of surgical procedures, assessment skills, and early recognition and reporting of complications are an integral part of successful patient recovery.

Association between selected demographic variables and satisfaction of nursing care in control group and experimental group of micro lumbar discectomy patients

There was no significant association between the demographic variables such as age, sex, marital status, educational qualification, dietary intake, occupational status, place of work, nature of work, income, residential area and satisfaction of nursing care in control and experimental group of patients.

Nurses play a very important role in satisfying the patients during their period of hospitalization. The nursing responsibilities involved in caring for patients and to provide evidence-based guidelines for the safest possible best practice care that promotes patients' physical and emotional well-being.

The implementation of clinical pathway, effectively improves the quality of nursing care. Through continuous improvement in practice, clinical pathways will be more scientific and rationale and more fully reflect the ultimate goal of quality management ,to improve patient satisfaction to gain better social and economic benefits.

Summary

This chapter dealt with the discussion of findings in the present study which includes demographic variables of nurses, patient variables, clinical variables of patients, level of knowledge of nurses, patient outcome and patient satisfaction, and effectiveness of clinical pathway on patient satisfaction and clinical outcome for patients undergoing micro lumbar discectomy.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

This is the most creative and demanding part of the study. This chapter gives a brief account of the present study including the conclusion drawn from the finding, recommendations, limitations of the study, suggestions for the study and nursing implications.

Summary

The present study was indented to analyze the effectiveness of clinical pathway for patients undergoing micro lumbar discectomy upon the knowledge and practice of nurses and patient's outcome at Apollo speciality hospital, Chennai.

Objectives of the Study

1. To assess the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients' undergoing micro lumbar discectomy.
2. To assess the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
3. To evaluate the effectiveness of clinical pathway by comparing the pre and post test level of knowledge and practice of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.
4. To compare the patients' outcome in control and experimental group of patients undergoing micro lumbar discectomy.
5. To compare the level of patient satisfaction on nursing care in control and experimental group of patients undergoing micro lumbar discectomy.

6. To determine the association between selected demographic variables of nurses and their pre and post test level of knowledge regarding clinical pathway for patients undergoing micro lumbar discectomy.
7. To determine the association between selected demographic variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.
8. To determine the association between selected clinical variables of control and experimental group of patients undergoing micro lumbar discectomy and their outcome.

Null Hypotheses

Ho_1 There will be no significant difference between pre and post test level of knowledge and practice scores of control and experimental group of nurses regarding clinical pathway for patients undergoing micro lumbar discectomy.

Ho_2 There will be no significant difference in the patients' outcome between the control and experimental group after implementation of clinical pathway for patients undergoing micro lumbar discectomy.

Ho_3 There will be no significant association between the selected demographic variables of control and experimental group of nurses and the pre and post test level of knowledge and practice regarding clinical pathway for patients undergoing micro lumbar discectomy.

Ho_4 There will be no significant association between the selected demographic variables of control and experimental group of patients' and their outcome regarding clinical pathway for patients undergoing micro lumbar discectomy.

Ho_5 There will be no significant association between the selected clinical variables of control and experimental group of patients' and their outcome regarding clinical pathway for patients undergoing micro lumbar discectomy.

The conceptual framework for the study was developed on the basis of Roy's adaptation model, which was modified for the present study. An intensive review of literature and experts guidance laid the foundation to the development of tools such as demographic variable proforma for nurses, clinical variable proforma for patients, and demographic variable proforma for patients, structured knowledge questionnaire for nurses, practice check list, patient satisfaction rating scale and patient outcome check list.

In this study quasi experimental research design was adopted but for availability of limited number of nurses, one group pre and post test design was adopted for nurses. The present study was conducted at Apollo speciality hospital, Chennai among nurses who took care of patients with micro lumbar discectomy surgery. The study sample size for the present study was 30 nurses and 60 patients with micro lumbar discectomy surgery, 30 in experimental group and 30 in control group who satisfied the inclusion criteria.

The investigator used the demographic variable proforma for nurses, demographic and clinical variable proforma for patients to obtain the baseline data. Structured questionnaire was used to assess the knowledge of nurses, practice checklist to identify whether the patients were receiving the appropriate care, rating scale to assess the level of patient satisfaction and checklist to assess the patient outcome. The data collection tools were validated and reliability was established. After the pilot study,

the data collection of the main study was conducted for 4 weeks. The collected data was tabulated and analyzed by using appropriate descriptive and inferential statistics.

The Major Findings of the Study

Demographic variables of nurses

Majority of the nurses were in the age group of 21-25 years (83.3%), females (86.6%), having less than 5 years of experience (83.3%), qualified with B.Sc Nursing (83.3%), were working as staff nurses (76.7%) and not attended inservice education on clinical pathway(60%).

Demographic variables of patients undergoing micro lumbar discectomy

Most of the patients in the control and experimental group were in the age group of above 50 years (33.3%, 36.6%), males (53.3%, 60%), married (66.6%, 56.6%), graduates (76.6%, 73.3%), non vegetarian (73.3%, 80%), employed (70%, 86.6%),moderate workers (50%, 60%), indoor place of work (70%., 66.6%), with monthly income of >15000 (90%, 86.6%), had source of health information from health workers (40%, 30%) and resided in urban area(60%, 60%) respectively.

Clinical variables of patients undergoing micro lumbar discectomy

Most of the patients in the control and experimental group had a weight of >70 kgs (53.3%, 63.3%),had co morbid illness (63.3%, 36.6%), treated for co morbid illness(63.3%, 63.3%),with history of trauma (80%, 63.3%), no family history of spinal stenosis (87%, 70%), with history of surgery(70%, 50%), with <1year duration

ofdiagnosis (70%, 83.3%), had experience of back pain (100%, 100%) ,treated with oral analgesics (60%, 46.6%) and not followed regular exercise pattern (66.6%, 53.3%) respectively.

Frequency and percentage distribution of pre and post test knowledge of nurses regarding clinical pathway for micro lumbar discectomy.

Majority of the nurses had inadequate knowledge (83.3%), whereas in post test majority of the nurses had adequate knowledge (76.6%) regarding clinical pathway for micro lumbar discectomy.

Frequency and percentage distribution of practice of nurses for control and experimental group of patients regarding clinical pathway for micro lumbar discectomy

Most of the nurses had partially compliant scores on day 1(83.3%) and most of them had non compliant scores on day 2, 3 and 4 (26.7%, 26.7%, and 26.7%) respectively for control group of micro lumbar discectomy patients and after administration of clinical pathway nurses were able to provide 100% compliant care.

Frequency and percentage distribution of outcome in control and experimental group of micro lumbar discectomy patients

Majority of the patients in the control group had moderately positive outcome (86.6%) and in experimental group majority of the patients had positive outcome (90%).

Frequency and percentage distribution of patient satisfaction on nursing care in control and experimental group of micro lumbar discectomy patients

In the control group majority of the patients were satisfied (86.6%) and in experimental group majority of the patients were highly satisfied (90%) on nursing care. provided.

Comparison of mean and standard deviation of pre and post test knowledge of nurses regarding clinical pathway for micro lumbar discectomy patients

The knowledge scores of nurses in post test (M= 16.97, SD=1.64) was high in comparison with the pre test (M= 8.8, SD=1.85). The difference was found statistically significant at $p<0.001$ level of confidence. The structured teaching programme regarding clinical pathway for micro lumbar discectomy was effective in improving the knowledge of nurses. Hence the null hypothesis Ho_1 was rejected.

Comparison of mean and standard deviation of pre and post test knowledge of nurses on various dimensions of clinical pathway for micro lumbar discectomy

The knowledge of nurses in post test was high in comparison with the pre test knowledge in all dimensions regarding clinical pathway for micro lumbar discectomy. The difference was found statistically significant at $p < 0.05$ level of confidence.

Comparison of mean and standard deviation of practice of nurses for control and experimental group of micro lumbar discectomy patients

The mean practice scores for four days in experimental group was high in comparison with the practice scores in control group. The difference was found to be

statistically significant at $p<0.001$ level of confidence which indicates clinical pathway was effective in improving the practice scores.

Comparison of mean and standard deviation of patient satisfaction on nursing care in control and experimental group of micro lumbar discectomy patients

The level of satisfaction on nursing care in experimental group of patients (M=34.7, SD=2.7) were high in comparison with the level of satisfaction in control group of patients (M= 24.6, SD=3.52). The difference was found statistically significant at $p<0.001$ level of confidence. Hence the null hypothesis Ho_2 was rejected.

Comparison of mean and standard deviation of patient satisfaction on various dimensions of nursing care in control and experimental group of micro lumbar discectomy patients

The level of satisfaction on various dimensions of nursing care in experimental group of patients was high in comparison with the level of satisfaction in control group of patients. The difference was found statistically significant at $p<0.001$ level of confidence.

Comparison of mean and standard deviation of patient outcome in control and experimental group of micro lumbar discectomy patients

The patients' outcome in experimental group (M=20.5, SD=1.46) were high in comparison with the patients' outcome in control group (M= 15.7, SD=2.16). The difference was found statistically significant at $p<0.001$ level of confidence. Hence the null hypothesis Ho_2 was rejected.

Association between selected demographic variables and pre and post test knowledge of nurses on clinical pathway for micro lumbar discectomy

There was no significant association between selected demographic variables namely age, total years of experience, designation, working area, professional qualification and place of study and pre and post test level knowledge of nurses. Hence the null hypothesis Ho_3 was retained.

Association between selected demographic variables and outcome in control group and experimental group of micro lumbar discectomy patients

There was a significant association between nature of work and the patient outcome in the control and experimental group and there was no significant association between other demographic variables such as age, sex, educational qualification, dietary intake, place of work, occupational status, residential area and patients' outcome and patient outcome in control and experimental group of patients. Hence the null hypothesis Ho_4 was rejected with nature of work and retained with other variables in control and experimental group.

Association between selected clinical variables and outcome in control group and experimental group of micro lumbar discectomy patients

There was no significant association between the selected clinical variables namely weight, history of co-morbid illness, treatment of co morbid illness, history of trauma, history of spinal stenosis, history of surgeries, exercise pattern and patients' outcome in control and experimental group. Hence the null hypothesis Ho_5 was retained.

Association between selected demographic variables and satisfaction of nursing care in control group and experimental group of micro lumbar discectomy patients

There was no significant association between the selected demographic variables namely age, sex, educational qualification, dietary intake, place of work, nature of work occupational status, residential area and level of satisfaction in control group and experimental group of patients. Hence the null hypothesis Ho_4 was retained.

Conclusion

Clinical pathways are proposed as a means of providing high quality care in a timely and cost effective manner. The findings of the study indicated that it will improve the knowledge and practice of nurses regarding clinical pathway for micro lumbar discectomy surgery as well as patients outcome in terms of length of stay, prevention of complications and patient satisfaction.

Implications

The findings of the study has implications in the different branches of nursing profession i.e. nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

Nurses have a major role in assessing and providing necessary care for patients undergoing micro lumbar discectomy .All the clinical nurses should attend short term

courses and update their knowledge with practice of clinical pathway which would thereby help in providing quality and efficient care to the patients.

Nursing theory

The conceptual and theoretical models exclusively for micro lumbar discectomy patients are yet to be developed by nursing theorists. The clinical framework of the present study is based on Roy's adaptation model. The framework was chosen as it illustrates the stimuli that influence the micro lumbar discectomy patients and the effect of clinical pathway on patient satisfaction and outcome. This model provide framework to identify needs of the patient in an organized manner and it can be used to educate and guide the nurses in caring micro lumbar discectomy patients.

Nursing education

The emerging health care trends of nursing education must focus on clinical pathways that will help to enhance nursing care. Our nursing students should be made aware of the clinical pathway, as it greatly influences the patients' outcome. Nurse educators should take initiatives to publish articles in journals related to clinical pathway for micro lumbar discectomy and its advantages.

Nursing administration

The nurse administrators have a responsibility to provide nurses with substantive continuing education opportunities. This will enable the nurses to update their knowledge, acquire special and demonstrate high quality care.

Nursing administrators should take the initiative in organizing educational programs on clinical pathway for the nursing personnel in the hospital to gain adequate knowledge. Nurse administrators should also conduct periodical review meetings to evaluate the quality of clinical pathway.

Nursing administrator should collaborate with governing bodies in formulating policies and protocols to emphasize nursing care with the use of clinical pathway and plan for man, power, money, material, methods and time to conduct successful and useful education programs.

Nursing research

There is a need for extensive and intensive research in this area. It opens a big avenue for research on comparison of clinical pathway and other modalities of care and its quality, advantages, disadvantages and cost effectiveness. As evidence based practice is the recent trend in nursing care, this will further encourage studies on the effectiveness of clinical pathway upon the knowledge and practice of nurses and patients outcome. Dissemination of the findings of the research through conferences, seminars, publications in national and international nursing journals will benefit a wider community.

Recommendations

- The similar study could be undertaken on larger scale for more valid generalization.
- This study could be replicated in different settings.
- The study could be conducted to analyze the relationship between the use of clinical pathway and time spent by the nurse.
- Clinical pathways can be established for major disease conditions and other surgeries.

REFERENCES

Ann, B.M., Susan, W.S., &Pellino, K. (2002). **Orthopedic Nursing**. (3rd ed.). Philadelphia: Saunders, 157-162.

Blackwood, F. (2008). Obesity and Lower Backpain. **Journal of Bone and Joint Surgery,** (4), 756-768.

Black, J.M. & Jacobs, E.M (2004). **Medical and Surgical Nursing**, Clinical Management for continuity of care. (5th ed.). Philadelphia : Lippincott Williams and Wilkins. 1043-1050.

Burkus, R. et al. (2002). Nature of Back pain. **Journal of Orthopedics,** 15(4), 40-44.

Estrada, D. & Unterborn, G. (2000). Clinical Pathway for community acquired pneumonia. **American Journal of Nursing,** 7(2), 45-54.

Garg, S. et al. (2003). Effectiveness of Clinical path for pain control. **Europeon Spine Journal,** (15), 31-35.

Garfin, P. &Martin, S. (2002). Safety and Efficacy of Micro lumbar discectomy. **Europeon Spine Journal,** (15), 21-28.

German, R. et al. (2008). Outcome of micro lumbar discectomy. **The Spine Journal,** 11(2), 30-34.

Ibarra, Y. et al. (2010). Clinical Pathways as a Qualitative tool. **Quality of Life Research,** (14), 798-800.

Ishikawo, S. et al. (2004). Critical pathway for Posterior Lumbar Discectomy. **The Spine Journal,** (2), 26-28.

Jason, K. (2006). Nursing care of Surgical Patients. **Annals of Surgery,** (2), 21-24.

Johansson, L. (2002). Patient satisfaction with Nursing care in the context of health care. **Journal of manipulative and physiological therapeutics**, (2), 576-584.

Keller, G. et al. (2002). Effectiveness of critical path for lumbar disc herniation. **Journal of Orthopedic Surgery,** 6(2), 43-46.

Kim, S. & Roh, P. (2002).Critical pathway for Lumbar Discectomy. **The Spine Journal,** 7(2), 96-98.

Kitti, J. et al. (2007). Randomized double bind placebo controlled trial in multimodal analgesia for post operative pain. **World Neuro Surgery**, 132(6), 609-616.

Lewis, S.M., Heitkempfer, M.M., &Dirksen,S.R.(2004). **Medical Surgical Nursing**. Assessment and Management of Clinical Problems. (6th ed.).Missouri : Mosby, 1380-1386.

Luca, A. et al. (2006). Implementation of an emergency clinical pathway for ST-elevation Myocardial Infarction. **Journal of Emergency Medicine,** (2), 118-125.

Mark, S. (2010). Post operative Functional mobility after micro lumbar discectomy. **Annals of Surgery,** (2), 20-24.

Moro, C. et al. (2011). Efficacy of micro lumbar discectomy for lumbar disc herniation. **British Journal of Neurosurgery,** (1), 46-50.

Mahajan, B.K. (2010). **Methods in Biostatistics**. (7th ed.).St.Louis: Jaypee Brothers Medical Publishers, 330-335.

Miller, L. (2004). Clinical pathway for micro lumbar Discectomy. **Hospital Case Mangement,** (1), 9-11.

Pearson,W. et al. (2005). Clinical Pathway for Total Knee Replacement. **Journal of Manipulative and Physiological Therapeutics,** 12(2), 576-584.

Pennington, M et al. (2006). A retrospective and comparative study on clinical pathways in total knee arthroplasty. **Journal of Orthopedic Surgery**, (11), 166 – 173.

Pheilang, T. (2006). Clinical Pathway for Urological Surgery. **Annals of Surgery,** 5(2), 11-14.

Prasad, R. et al. (2005). Socio demographic characteristics of lumbar disc prolapse. **The Internet Journal of Neurosurgery,** 11(3), 56-60.

Polit, D.F. & Beck, C.T. (2008). **Nursing Research, Generating and Assessing Evidence for Nursing Practice.** (8th ed.). Newdelhi: Lippincott Williams and Wilkins, 506-25.

Robert,H. (2008). Chronic backpain and weight gain. **Journal of Pain**, 12(3), 468-471.

Richards, P. (2009). Chronic lower back pain. **Centers for Disease Control,** (3), 5-8.

Scanlon, (2007). Clinical pathway for micro lumbar discectomy. **Journal of Orthopedic Surgery**, (11), 108 – 113.

Shamim, P. (2008). Micro discectomy for symptomatic lumbar disc herniation. **World Neuro Surgery,** (6), 611-616.

Singhal, G. (2003). Effectiveness of outpatient micro lumbar discectomy. **World Neuro Surgery,** (6), 540-543.

Soria, V. & Aledo, H. (2005). Evaluation of clinical pathway for laparoscopic cholecystectomy. **Annals of Surgery**,77(2), 86-90. Retrieved on Oct 10, 2011 from http.eprints.qut.edu.

Wong, S. (2008). Lower Backpain. **Journal of Pain**, (2), 21-24.

Wood,M. et al. (2006). Work environment and backpain. **British Journal of Neuro surgery**, (1), 46-50.

Zahrawi,V.(2004). Patient satisfaction after micro lumbar discectomy. **World Neuro Surgery,** 14(4), 44-46.

Zanoli, M. et al. (2005). Nature of Back Pain. **Journal of Pain,** 12(3), 376-380.