

**EFFECTIVENESS OF CLINICAL PATHWAY FOR PATIENTS UNDERGOING
OPEN REDUCTION AND INTERNAL FIXATION UPON
THE KNOWLEDGE AND PRACTICE OF
NURSES AND PATIENTS OUTCOME**

**BY
NITHA.T.S**

**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 : _____

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Chennai - 10.

**A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R MEDICAL
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MASTER OF SCIENCE IN NURSING**

APRIL 2012

DECLARATION

I hereby declare that the present dissertation entitled **“Effectiveness of clinical pathway for patients undergoing open reduction and internal fixation 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, **Ms. Jaslina Gnanarani. J., M.Sc (N).**, Reader, 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

My sincere and heartfelt gratitude to Lord Almighty for his support, guidance, wisdom, courage and blessings on me throughout my endeavour and for sustaining me in hours of need.

I proudly and honestly express my sincere gratitude to **Dr. Latha Venkatesan, M.Sc (N), M. Phil., Ph.D., Principal**, Apollo College of Nursing for her caring spirit, excellent guidance, support and valuable suggestions during the course of my work.

I take this opportunity to express my deep sense of gratitude to **Prof.Lizy Sonia.A., M.Sc (N), Vice Principal**, Apollo College of Nursing, for her caring spirit and excellent guidance during the course of my work.

I express my greatest pleasure and sincere gratitude to my guide **Mrs. Jaslina Gnanarani. J, M.Sc (N), Reader, Medical Surgical Nursing**, Apollo College of Nursing for her constant encouragement, splendid and inspiring guidance throughout my work.

My genuine gratitude to **Mrs. Nesa Sathya Lawrence M.Sc (N)**, Reader and Course coordinator for her consecutive ideas and enormous concern.

I owe my profound guidance to **Dr. Balaji Sreenivasan, MBBS., M.S (Orthopaedic surgeon)**, Apollo Main Hospital, for his valuable suggestion and guidance.

I profoundly thank **Mrs. Punitha Singh, Nursing Director** and **Mrs. Lidiya Annie .J, Nurse Educator**, Apollo Main Hospital, Chennai for granting permission to conduct the study.

I honestly express my gratitude to **Prof.K. Vijayalakshmi, Msc (N), Ph.D., Research Coordinator**, Apollo College of Nursing for her support and valuable suggestions. I am grateful to all the Experts for validating the tool.

I extend my earnest gratitude to **Mr .G.K.Venkataraman, Biostatistician** for his constructive guidance in statistical analysis.

My sincere thanks to **Mrs .Usha Latha, Ortho ward In charge**, Apollo Main Hospital and all the nursing staff of Apollo First Med Hospital Chennai, for extending their cooperation and support during the data collection.

I honestly express my sincere gratitude to all the patients in this study and I am greatly indebted to them for their patience, cooperation and acceptance to participate in the study.

I am indebted to my parents, Mrs. **J. Sadanambika** and my brother **Mr.Nithil.T** for their prayers, encouragement and cooperation at all stages of my work and for encouraging me to go higher in the ladder of this profession.

I am immensely grateful to my husband, **Mr. Ignasious.A** for his constant encouragement and valuable tips.

Last but not the least, I extend my warm thanks to all who helped me in shaping this study, directly or indirectly.

SYNOPSIS

A Quasi Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients Undergoing Open Reduction and Internal Fixation upon the Knowledge and Practice of Nurses and Patient Outcome at Apollo Hospitals, 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 Open Reduction and Internal Fixation.
2. To assess the Patient outcome in Control and Experimental group of Patients undergoing Open Reduction and Internal Fixation.
3. To evaluate the effectiveness of Clinical Pathway by comparing Pre and Post test level of Knowledge and Practice of Nurses regarding Clinical Pathway for Patients undergoing Open Reduction and Internal Fixation.
4. To compare the Patient outcome in Control and Experimental group of Patients undergoing Open Reduction and Internal Fixation.
5. To compare the level of Patient Satisfaction in Control and Experimental group of Patients undergoing Open Reduction and Internal Fixation.
6. To determine the association between selected demographic variables of Nurses and their Pre and Post test level of knowledge and Practice Regarding Clinical Pathway for Patients undergoing Open Reduction and Internal Fixation.

7. To determine the association between the selected Demographic Variables of Control and Experimental groups of Patients and their Outcome after implementation of Clinical pathway for Open Reduction and Internal Fixation.
8. To determine the association between the selected Clinical variables of Control and Experimental groups of Patients and their Outcome after implementation of Open Reduction and Internal Fixation.

The conceptual framework for the study was developed on the basis of **Kings Goal Attainment Theory**. Null hypothesis was formulated. In this study Quasi experimental research design was adopted, but for the availability of limited no.of nurses, one group pretest and post test design was adopted for nurses. The present study was conducted at Apollo Main Hospital, Chennai among nurses who take care of open reduction and internal fixation surgeries. The study sample size for the present study was 30 nurses who were selected by purposive sampling technique and 60 patients with open reduction and internal fixation who were selected by purposive sampling technique.

An extensive review of literature and guidance by experts laid the foundation to the development of demographic variable Performa for nurses, demographic variable proforma for patients, clinical variable proforma for patients, structured knowledge questionnaire for nurses, practice check list for nurse, patient satisfaction rating scale and outcome checklist for patient. The data collection tools were validated and reliability was established. After the pilot study, the data for the main study was collected.

The Major Findings of the Study were

- Major findings of the study were majority of the nurses were in the age group of 21-25 years(83.3%), females (86.6%), having < 5 years of experience (83.3%), qualified with B.Sc Nursing (83.3%) and working as staff nurses (76.7%). A significant percentage of the population were working in the general ward (46.6%). Most of the nurses had not attended in-service education on clinical pathway (60%).
- Most of the patients in control and experimental group undergoing open reduction and internal fixation were, graduates (60%,60%), employed (96.67%,96.6%), moderate workers (93.33%, 80.%), non vegetarian (100%, 90%), indoor Place of work .(83.33%, 70%) with monthly income of Rs>1500 (63.33%, 73.33%).Majority of the patients were males (76.67%, 73.33%) and married (90%, 73%)
- Majority of the patients in the control and experimental had the BMI between 19-24 (93.33%, 96.7%), had no co morbid illness (90%, 96.67%), no history of trauma (86.67, 70.67%), no family history of osteoporosis (100%, 100%) no past surgeries (100%, 70%) and following regular exercise (50%, 66.7%) respectively.
- Majority of the nurses have inadequate knowledge (83.3%), whereas in post test majority of the nurses have adequate knowledge (76.6%) regarding clinical pathway for open reduction and internal fixation.
- Most of the nurses had partially compliant scores on pre op (83.3%) and most of them have non compliant scores on day 0, 1 and 2 (26.7%, 26.7%, 26.7%)

respectively for control group of open reduction and internal fixation. 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 mean and standard deviation of post test knowledge scores was higher (Mean= 16.97, SD=3.17) than the pre test scores (Mean= 8.8, SD=1.85). The difference was found statistically significant at $p < 0.001$.
- The mean and standard deviation of post test knowledge was higher than the pre test on various dimensions of clinical pathway. The difference was found to be statistically significant at $p < 0.001$.
- 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 and since the 't' value is higher than the table value, clinical pathway was effective in improving the practice scores.
- The mean and standard deviation of patient satisfaction on nursing care in experimental group of patients (Mean=34.7, SD=2.7) was high in comparison with mean and standard deviation of patient satisfaction of control group of

patients (Mean=24.6, SD=3.52). The difference was found statistically significant at 99.9% level of confidence.

- The mean and standard deviation of satisfaction on various dimensions of nursing care in experimental group of patients is high in comparison with mean and standard deviation satisfaction in control group of patients. The difference was found statistically significant at $p < 0.001$.
- The mean and standard deviation of patient outcome in control group of patients is lower (Mean= 15.7, SD=2.16) when compared to the mean and standard deviation of patient outcome in experimental group of patients (Mean=20.5, SD=1.46). The difference was found statistically significant at 99.9% level of confidence.
- There was significant association between the designation and pretest and post test knowledge of nurses Whereas no significant association between selected demographic variables of nurses such as age, total years of experience, 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 selected demographic variables and patient outcome in control and experimental group of patients.
- There was no significant association between the clinical variables and the outcome in control and experimental group of patients.
- There was no significant association between selected demographic variables and satisfaction of nursing care in control and experimental group of patients

Recommendations

- The same study can be conducted on larger sample size to generalize the findings.
- A comparative study can be conducted in different settings with similar facilities
- A study could be conducted to analyze the relationship between the use of clinical and management of time by the nurse.
- A study can be done to evaluate clinical pathway for fracture patients with external fixation.

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APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT STUDY



Apollo College of Nursing

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

159

CO/0107/11

15.03.11

Dr.Radha Rajagopalan
Director of Medical Education
Apollo Main hospital,
No:21,Greams Lane,
Anna Salai, Greams Road
Chennai- 600006

Respected Sir / Madam,

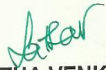
Sub.: To request permission for research study – Reg.

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

**“A quasi experimental study to assess the effectiveness of clinical pathway for
patients undergoing open reduction and internal fixation upon the knowledge
and practice of nurses and patient outcome at Apollo Hospitals, Chennai”**

So I kindly request your goodselves to permit her to conduct study in your esteemed
institution.

Thanking You,


Dr. LATHA VENKATESAN
PRINCIPAL

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

LETTER GRANTING 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/01280/11

09.06.11

To

Ms. Punitha Singh
Asst. Nursing Director
Apollo Main Hospitals
Greaves Road
Chennai – 600 006.


**Director-Nursing
Apollo Hospitals
Chennai-600 006.**


Dear Ms. Punitha ,

As part of the curriculum requirement our 2nd year M.Sc.(N) student
Mrs. Nitha T.S. has selected the following title for her research study.

“A Quasi Experimental Study to Assess the Effectiveness of Clinical pathway for patients undergoing Open Reduction and Internal Fixation upon the knowledge and practice of Nurses and Patients Outcome at Apollo Main Hospital, Chennai.”

Kindly do the needful,

Thanking You,


Dr. LATHA VENKATESAN
PRINCIPAL

IS/ISO 9001:2000



Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
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APPENDIX III
ETHICAL COMMITTEE LETTER

Ethics Committee



22 June, 2011

To
Ms. Nitha.T.S
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 open reduction and internal fixation.

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

Dear Ms. Nitha.T.S,

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 open reduction and internal fixation."
- 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



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,

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



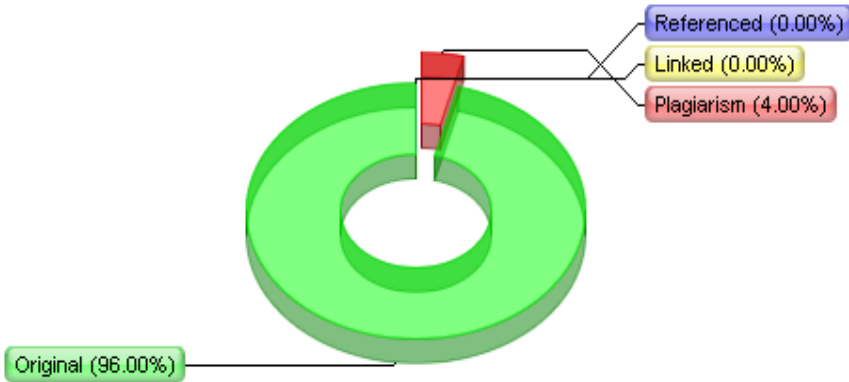
Date 22/6/11

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

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai - 600 006
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APPENDIX IV

PLAGIARISM ORIGINALITY REPORT

	Plagiarism Detector - Originality Report	
Plagiarism Detector Project: [http://plagiarism-detector.com] Application core version: 557		
	<p style="color: red; margin: 0;">This report is generated by the unregistered Plagiarism Detector Demo version!</p> <ul style="list-style-type: none"> 600 initial words analysis only partial plagiarism detection some important results are excluded no external file processing <p style="color: blue; margin: 0;">Register the software - get the complete functionality!</p>	
Originality report details:		
Generation Time and Date:	1/22/2012 18:12:37 PM	
Document Name:	NITHA FULL THESIS.doc	
Document Location:	C:\Documents and Settings\Administrator\Desktop\ NITHA FULL THESIS.doc	
Document Words Count:	14903	
Plagiarism Detection Chart:		
		
<="">		
Referenced 0% / Linked 0%		
Original - 96% / 4% - Plagiarism		

APPENDIX V

LETTER REQUESTING OPINIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH TOOL

From

MS. Nitha.T.S
M.Sc., (Nursing) Second Year,
Apollo College of Nursing,
Chennai - 600095.

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 patient under going open reduction and internal fixation 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 for Nurses, Demographic Variable Proforma for patients, Clinical Variable Proforma, Structured Knowledge Questionnaire for Nurses, Practice Check list, Patient Satisfaction Rating Scale and Outcome Checklist for your reference. 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,

**Yours sincerely,
(Nitha.T.S)**

APPENDIX VI

CERTIFICATE FOR CONTENT VALIDITY TO WHOM EVER 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 patient undergoing open reduction and internal fixation upon the knowledge and practice scores of nurses and patients outcome at Apollo Hospitals, Chennai**” was validated for content validity.

Signature of the Expert

APPENDIX VII

LIST OF EXPERTS FOR CONTENT VALIDITY OF THE TOOL

1. Dr. Latha Venkatesan, M.Sc., M.Phil., Ph.D.,
Principal,
Apollo College of Nursing,
Chennai – 95.

2. Dr. Dr. Balaji Sreenivasan,
M.B.B.S., M.S,
Orthopaedic Surgeon
Apollo Main Hospital,
Chennai – 10.

3. Prof. Mrs. Lizy Sonia, M.Sc (N).,
Vice Principal,
Apollo College of Nursing,
Chennai – 95.

4. Ms. Jaslina Gnanarani. J. M.Sc (N).,
Reader,
Apollo College of Nursing,
Chennai - 600095.

5. Ms. Kanchana, M.Sc (N).,
Professor
Apollo College of Nursing,
Chennai – 95.

6. Ms. Sashikala, M.Sc (N).,
Professor
Apollo college of Nursing,
Chennai – 95.

APPENDIX VIII

RESEARCH PARTICIPANT’S CONSENT FORM IN ENGLISH

Dear Participant,

I am MS. NITHA.T.S 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 patient undergoing open reduction and internal fixation upon the knowledge and practice scores 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

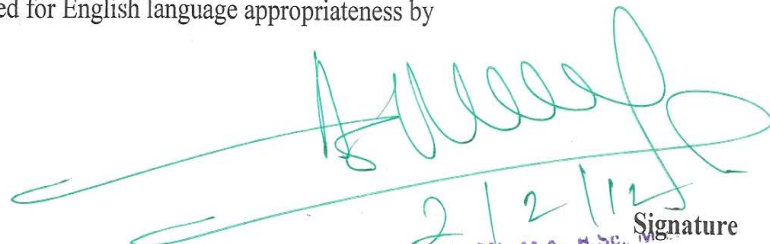
I, hereby give my consent to participate in the study.

Signature of the Participant

APPENDIX IX

**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 Open Reduction and Internal Fixation Upon the Knowledge and Practice of Nurses and Patients Outcome at Apollo Hospital, Chennai.” by Ms. Nitha.T .S , II year M. Sc (N) , Apollo College of Nursing was edited for English language appropriateness by


21/2/12
Signature
SUUNDARAJAN, M.A., B.Sc.
P. G. Assistant in ENGLISH
N. Krishnasamy Mudaliar Hr. Sec. Sch.
Sainthapuram. VELLORE - 632 00

APPENDIX X

DEMOGRAPHIC VARIABLE PROFORMA FOR PATIENTS UNDERGOING OPEN REDUCTION AND INTERNAL FIXATION

Purpose

This proforma is used by the researcher to collect information on demographic variables of patients such as age, sex, marital status, Educational qualification, and occupational status, place of work, dietary pattern and income.

Instruction

The investigator will collect data by interviewing the patient and also by reviewing hospital records for relevant details.

1. Age of the Client

- | | |
|-----------------|--------------------------|
| 1.1 20 – 30 yrs | <input type="checkbox"/> |
| 1.2 31 – 40 yrs | <input type="checkbox"/> |
| 1.3 41 – 50 yrs | <input type="checkbox"/> |
| 1.4 > 51 yrs | <input type="checkbox"/> |

2. Sex

- | | |
|------------|--------------------------|
| 2.1 Male | <input type="checkbox"/> |
| 2.2 Female | <input type="checkbox"/> |

3. Marital status

- | | |
|---------------|--------------------------|
| 3.1 Married | <input type="checkbox"/> |
| 3.2 Unmarried | <input type="checkbox"/> |
| 3.3 Widowed | <input type="checkbox"/> |

4. Educational qualification

- 4.1 Non literate
- 4.2 Primary education
- 4.3 Secondary education
- 4.4 Higher secondary education
- 4.5 Graduate & above

5. Occupational status

- 5.1 Employed
- 5.2 Unemployed
- 5.3 Homemaker
- 5.4 Retired

6. Nature of work

- 6.1 Sedentary worker
- 6.2 Moderate worker
- 6.3 Severe worker

7. Place of work

- 7.1 Indoor
- 7.2 Outdoor

8. Dietary intake/pattern

- 8.1 Vegetarian
- 8.2 Non-vegetarian

9. Income per month

9.1 5000-10,000

9.2 10,001-15,000

9.3 >15,000

APPENDIX XI

DEMOGRAPHIC VARIABLE PROFORMA OF NURSES CARING FOR PATIENTS UNDERGOING OPEN REDUCTION AND INTERNAL FIXATION

Purpose

This proforma is used to measure the demographic variables such as age, sex, total years of experience, professional qualification, designation, 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 XII

CLINICAL VARIABLE PROFORMA FOR PATIENTS UNDERGOING OPEN REDUCTION AND INTERNAL FIXATION

Purpose

This proforma is used to assess the clinical variables such as height, weight, body mass index, presence of co- morbid illness, history of trauma, past history of surgeries, family history of osteoporosis.

Instruction

The investigator will collect data by interviewing the patient and also by reviewing hospital records for relevant details.

1. Body mass index

- | | |
|------------------------------|--------------------------|
| 1.1 19-24.9kg/m ² | <input type="checkbox"/> |
| 1.2 25-29.9kg/m ² | <input type="checkbox"/> |
| 1.3 30-34.9kg/m ² | <input type="checkbox"/> |
| 1.4 35-39.9kg/m ² | <input type="checkbox"/> |
| 1.5 40kg/m ² | <input type="checkbox"/> |

2. Presence of Co-morbid illness

- | | |
|---------|--------------------------|
| 2.1 Yes | <input type="checkbox"/> |
| 2.2 No | <input type="checkbox"/> |

3. Treatment of Co-morbid illness?

- | | |
|------------------|--------------------------|
| 3.1 Yes(specify) | <input type="checkbox"/> |
| 3.2 No | <input type="checkbox"/> |

4. Is there any history of trauma/accident?

4.1 Yes (specify)

4.2 No

5. Is there any family history of osteoporosis?

5.1 Yes(specify)

5.2 No

6. Did you undergo any surgeries in the past?

6.1 Yes (specify)

6.2 No

7. Do you follow a regular exercise pattern?

7.1 Yes

7.2 No

APPENDIX XIII

CLINICAL PATHWAY FOR OPEN REDUCTION AND INTERNAL FIXATION

PREOP DAY	DAY0	DAY1	DAY2
Consultation 1.1Orthopedic surgeon 1.2Anesthetist 1.3Casualty medical officer	Consultation 1.1Operation team	Consultation 1.2Orthopedic surgeon 1.3Physiotherapist 1.4Dietitian	Consultation 1.1Orthopedic surgeon 1.2Physiotherapist 1.3Dietitian
Assessment 2.1History and physical examination 2.2Get consent from the client 2.3Verifying pre op check list 2.4Assess the vital signs 2.5Pain assessment 2.6Assessment of circulation of limb, plaster and splint positions	Assessment 2.1Review of history and physical examination 2.2Asses the vital signs 2.3Assessment of circulation of limb, plaster and splint position, limb elevation	Assessment 2.1 Assess the vital signs 2.2I/o chart 2.3 Assess the wound drains 2.4Assess the wound dressing 2.5Pain assessment 2.6Assess circulation of limb /limb elevation	Assessment 2.1Asses the vital signs 2.2Pain management 2.3Assess the wound dressing 2.4Plaster care
Investigation 3.1Surgi pack-2 3.2 Renal pack -2 3.3ECHO 3.4ECG 3.5Others	Investigation 3.1.1As needed	Investigation 3.1Hb , PCV , RP -11, 3.2X-ray of operated site	Investigation 3.1As per the advice
Medication 4.1Pre op medication as per the orders 4.2Antibiotic prophylaxis 4.3With held anticoagulants 4.3TT 4.4Analgesics (if required)	Medication 4.1As per the anesthesia protocol for Blocks for pain management (SOS) 4.2DVT Prophylaxis 6-8 hrs after lower limb surgeries 4.3IV fluids	Medication 4.1Analgesics 4.2 Anti emetics(if needed) 4.3DVT Prophylaxis 4.4Other medication(DM/HT)	, Medication 4.1Analgesics 4.2Multivitamins 4.3DVT prophylaxis 4.4Other medications(DM/HTN)

	4.4Analgesics 4.5Antibiotics 4.6Antiemetics 4.7Other medication(DM/HT)		
Treatment / instructions 5.1 IV as per the pre op order 5.2 Antibiotics- Pre op in open fractures 5.3 Pre op instructions 5.4 Blood Reservation	Treatment / instructions 5.1 I/O Chart documentation 5.2 Blood transfusion as needed	Treatment / instructions 5.1 Wound care 5.2 I/O Chart	Treatment / instructions 5.1 Wound care
Fluid management 6.1Administer iv fluids as per the order	Fluid management 6.1 IV Fluids	Fluid management 6.1 I/V fluids if Required	Fluid management
Nutrition 7.1NBM as per the order	Nutrition 7.1NBM After 6 hrs liquid diet	Nutrition 7.1Soft solid or normal diet	Nutrition 7.1Normal diet
Elimination 8.1Catheterization if required 8.1Enema	Elimination 8.1Maintain intake out put chart 8.1Check the bowl movements	Elimination 8.1Remove catheter if the patient is ambulant 8.2 check the elimination pattern Remove the catheter if the urine out put is normal 8.3Assess the bowl movement	Elimination 8.1 Bowl and bladder elimination should be monitored
Position and comfort 9.1Positioning every 2 hrly 9.2Provide additional pillows	Position and comfort 9.1Provide comfortable position according to the surgical site 9.2Wrinkle free bed 9.3Limb elevation Special bed if required	Position and comfort 9.1Provide comfortable position according to the surgical site 9.2Wrinkle free bed 9.3Adequate pillows and blankets 9.4Change position2 hrly	Position and comfort 9.1Provide comfortable position according to the surgical site 9.2Wrinkle free bed 9.3Adequate pillows and

	9.4 Adequate pillows and blankets 9.5 Change position 2 hrly	9.5 Limb elevation special bed if required	blankets 9.4 Change position 2 hrly 9.5 Limb elevation
Activity and exercise 10.1 Pre op mobility 10.2 Physio- chest 10.3 TED stocking 10.4 SED 10.5 Observe clients gait 10.6 Observe client performing tasks such as feeding, dressing, etc	Activity and exercise 10.1 Bed rest 10.2 Back care	Activity and exercise 10.1 Physio therapy – Mobilator with or without support 10.2 Back care	Activity and exercise 10.1 Mobilized with or without support
Sleep & rest 11.1 Adjust environment ; have client control noise, temperature, light in the bed room	Sleep & Rest 11.1 Adjust environment ; have client control noise, temperature, light in the bed room	Sleep 11.1 Adjust environment ; have client control noise, temperature, light in the bed room	Sleep 11.1 Adjust environment ; have client control noise, temperature, light in the bed room
Hygiene 12.1 Provide oral hygiene 12.2 Provide bathing 12.3 Skin preparation	Hygiene 12.1 Provide oral hygiene 12.1 Provide Grooming	Hygiene 12.1 Provide oral hygiene 12.1 Provide bathing, 12.1 Provide Grooming	Hygiene 12.1 Provide oral hygiene 12.1 Provide bathing, 12.1 Provide Grooming
Patient safety 13.1 Verifying fall assessment tool 13.2 Provide side rails	Patient safety 13.1 Verifying fall assessment tool 13.1 Provide side rails	Patient safety 13.1 Verifying fall assessment tool 13.1 Provide side rails	Patient safety 13.1 Verifying fall assessment tool 13.1 Provide side rails
communication 14.1 Provide reassurance 14.1 Provide information regarding pre op preparation	Communication 14.1 Provide reassurance 14.2 Encourage to ask doubts 14.3 Communicating with family members	Communication 14.1 Provide reassurance 14.2 Encourage to ask doubts	Communication 14.1 Provide reassurance 14.2 Encourage to ask doubts

Spiritual needs 15.1 Promote an environment that respects human rights, values, customs, and spiritual beliefs	Spiritual needs 15.1 Promote an environment that respects human rights, values, customs, and spiritual beliefs	Spiritual needs 15.1 Promote an environment that respects human rights, values, customs, and spiritual beliefs	Spiritual needs 15.1 Promote an environment that respects human rights, values, customs, and spiritual beliefs
Patient Education 16.1 Pre operative counseling 16.2 Pre operative explanation by surgeon, anesthetist, nursing care team, 16.3 Risk factors explained	Patient Education 16.1 Review about patient progress to family 16.2 Plaster care	Patient Education 16.1 Reinforce patient and family 16.2 Mobilization 16.3 Pain management plan 16.4 Plaster care	Patient Education 16.1 Follow up instructions reviewed 16.2 Wound care instructions reviewed 16.3 Plaster cares
Discharge planning	Discharge planning 17.1 Fill up the discharge form	Discharge planning 17.1 Preparing for discharge, fair summary ready	Discharge planning 17.1 Discharge

APPENDIX XIV

PRACTICE CHECKLIST FOR NURSES CARING FOR PATIENTS UNDERGOING OPEN REDUCTION AND INTERNAL FIXATION

Purpose

This checklist is used to assess the practice of nurses on clinical pathway for Open reduction and Internal fixation Patients on 14 aspects of nursing care such as assessment, investigation, medication, nutrition, elimination, position and comfort, activity, sleep pattern, hygiene, psychological aspect, spiritual needs, patient education and safety.

Instruction

The researcher completes this checklist by direct observation of nursing care and from nurse's documentation in patient records.

Name of the patient:

Age:

Address:

IP No:

Consultant:

Date of admission:

Expected length of stay:

Date of discharge:

Score Key

1. Compliant(C) : It refers to an activity that has been completed by the nurse, then the researcher mention as compliant (score-2).
2. Partially Compliant(PC) : It indicates that the nurse attempted to perform the activity but not completed, then the researcher mention as partially compliant (score-1).
3. Non-Compliant(NC) : It refers to an activity neither attempted nor completed, then the researcher mention as non-compliant (score-0)

PREOP DAY(C, PC, NC)	DAY0(C, PC, NC)	DAY1(C, PC, NC)	DAY2(C, PC, NC)
Consultation 1.1Orthopedic surgeon 1.2Anesthetist 1.3Casualty medical officer	Consultation 1.1Operation team	Consultation 1.2Orthopedic surgeon 1.3Physiotherapist 1.4Dietitian	Consultation 1.1Orthopedic surgeon 1.2Physiotherapist 1.3Dietitian
Assessment 2.1History and physical examination 2.2Get consent from the client 2.3Verifying pre op check list 2.4Assess the vital signs 2.5Pain assessment 2.6Assessment of circulation of limb, plaster and splint positions	Assessment 2.1Review of history and physical examination 2.2Asses the vital signs 2.3Assessment of circulation of limb, plaster and splint position, limb elevation	Assessment 2.1 Assess the vital signs 2.2I/o chart 2.3 Assess the wound drains 2.4Assess the wound dressing 2.5Pain assessment 2.6Assess circulation of limb /limb elevation	Assessment 2.1Asses the vital signs 2.2Pain management 2.3Assess the wound dressing 2.4Plaster care
Investigation 3.1Surgi pack-2 3.2 Renal pack -2 3.3ECHO 3.4ECG 3.5Others	Investigation 3.1.1As needed	Investigation 3.1Hb , PCV , RP -11, 3.2X-ray of operated site	Investigation 3.1As per the advice

Medication 4.1 Pre op medication as per the orders 4.2 Antibiotic prophylaxis 4.3 With held anticoagulants 4.3 TT 4.4 Analgesics (if required)	Medication 4.1 As per the anesthesia protocol for Blocks for pain management (SOS) 4.2 DVT Prophylaxis 6-8 hrs after lower limb surgeries 4.3 IV fluids 4.3 Analgesics 4.4 Antibiotics 4.5 Antiemetics 4.6 Other medication(DM/HT)	Medication 4.1 Analgesics 4.2 Anti emetics(if needed) 4.3 DVT Prophylaxis 4.4 Other medication(DM/HT)	, Medication 4.1 Analgesics 4.2 Multivitamins 4.3 DVT prophylaxis 4.4 Other medications(DM/HTN)
Treatment / instructions 5.1 IV as per the pre op order 5.2 Antibiotics- Pre op in open fractures 5.3 Pre op instructions 5.4 Blood Reservation	Treatment / instructions 5.1 I/O Chart documentation 5.2 Blood transfusion as needed	Treatment / instructions 5.1 Wound care 5.2 I/O Chart	Treatment / instructions 5.1 Wound care
Fluid management 6.1 Administer iv fluids as per the order	Fluid management 6.1 IV Fluids	Fluid management 6.1 I/V fluids if Required	Fluid management
Nutrition 7.1 NBM as per the order	Nutrition 7.1 NBM After 6 hrs liquid diet	Nutrition 7.1 Soft solid or normal diet	Nutrition 7.1 Normal diet
Elimination 8.1 Catheterization if required 8.1 Enema	Elimination 8.1 Maintain intake out put chart 8.1 Check the bowl movements	Elimination 8.1 Remove catheter if the patient is ambulant 8.2 check the elimination pattern 8.3 Assess the bowl movement	Elimination 8.1 Bowl and bladder elimination should be monitored

Position and comfort 9.1Positioning every 2 hrly 9.2Provide additional pillows	Position and comfort 9.1Provide comfortable position according to the surgical site 9.2Wrinkle free bed 9.3Limb elevation Special bed if required 9.4Adequate pillows and blankets 9.5Change position2 hrly	Position and comfort 9.1Provide comfortable position according to the surgical site 9.2Wrinkle free bed 9.3Adequate pillows and blankets 9.4Change position2 hrly 9.5Limb elevation special bed if required	Position and comfort 9.1Provide comfortable position according to the surgical site 9.2Wrinkle free bed 9.3Adequate pillows and blankets 9.4Change position2 hrly 9.5Limb elevation
Activity and exercise 10.1Pre op mobility 10.2Physio- chest 10.3TED stocking 10.4SED 10.5Observe clients gait 10.6Observe client performing tasks such as feeding, dressing , etc	Activity and exercise 10.1 Bed rest 10.2Back care	Activity and exercise 10.1Physio therapy – Mobilator with or without support 10.2Back care	Activity and exercise 10.1 Mobilized with or without support
Sleep & rest 11.1Adjust environment ; have client control noise, temperature, light in the bed room	Sleep&Rest 11.1Adjust environment ; have client control noise, temperature, light in the bed room	Sleep 11.1Adjust environment ; have client control noise, temperature, light in the bed room	Sleep 11.1Adjust environment ; have client control noise, temperature, light in the bed room
Hygiene 12.1Provide oral hygiene 12.2Provide bathing 12.3Skin preparation	Hygiene 12.1Provide oral hygiene 12.1Provide Grooming	Hygiene 12.1Provide oral hygiene 12.1Provide bathing, 12.1Provide Grooming	Hygiene 12.1Provide oral hygiene 12.1 Provide bathing, 12.1Provide Grooming
Patient safety 13.1Verifying fall assessment tool	Patient safety	Patient safety 13.1Verifying fall assessment tool	Patient safety 13.1Verifying fall assessment

13.2Provide side rails	13.1Verifying fall assessment tool 13.1Provide side rails	13.1Provide side rails	tool 13.1Provide side rails
Communication 14.1Provide reassurance 14.1Provide information regarding pre op preparation	Communication 14.1Provide reassurance 14.2Encourage to ask doubts 14.3Communicating with family members	Communication 14.1Provide reassurance 14.2 Encourage to ask doubts	Communication 14.1Provide reassurance 14.2Encourage to ask doubts
Spiritual needs 15.1Promote an environment that respects human rights, values, customs, and spiritual beliefs	Spiritual needs 15.1Promote an environment that respects human rights, values, customs, and spiritual beliefs	Spiritual needs 15.1Promote an environment that respects human rights, values, customs, and spiritual beliefs	Spiritual needs 15.1Promote an environment that respects human rights, values, customs, and spiritual beliefs
Patient Education 16.1Pre operative counseling 16.2Pre operative explanation by surgeon, anesthetist ,nursing care tteam, 16.3Risk factors explained	Patient Education 16.1Review about patient progress to family 16.2Plaster care	Patient Education 16.1Reinforce patient and family 16.2Mobilization 16.3Pain management plan 16.4 Plaster care	Patient Education 16.1Follow up instructions reviewed 16.2Wound care instructions reviewed 16.3Plaster cares
Dischage planning	Discharge planning 18.1Fill up the discharge form	Discharge planning 18.1Preparing for discharge, fair summary ready	Discharge planning 18.1Discharge

APPENDIX XV

BLUE PRINT FOR STRUCTURED QUESTIONNAIRE FOR NURSES

REGARDING PATIENTS UNDERGOING OPEN REDUCTION AND

INTERNAL FIXATION

ITEM	ITEM NO	NO OF QUESTIONS	PERCENTAGE
Clinical pathway	1,2,3,4,5,6	6	20%
Assessment	7,8,9,10,11,12	6	20%
Diet	13,14,15,16	4	13%
Safety	17,18,19	3	10%
Activity & Exercises	20,21,22,23,24,25,26,27,28,29	4	13%
Position	30,31,32,33	4	13%
Patient education	34,35,36	3	10%
Total		30	100%

**STRUCTURED QUESTIONNAIRE FOR NURSES REGARDING PATIENTS
UNDERGOING OPEN REDUCTION AND INTERNAL FIXATION**

Purpose

This structured Questionnaire is used to collect information on knowledge regarding clinical pathway for open reduction and internal fixation.

Instructions

The structured questionnaire consists of 30 multiple choice questions. Each question has four options. Please read the questions carefully and place a tick mark (✓) for the correct answer in the box provided. The information collected will be kept confidential and anonymity will be maintained.

1. What is clinical pathway?

- 1.1 Blue print of patient admission to discharge
- 1.2 Guidelines on several topics in a well defined context
- 1.3 Tool to manage the quality in health care
- 1.4 Efficient patient care based on evidence based practice

2. Why clinical pathways are used?

- 2.1 Reduces length of stay, improve quality of care.
- 2.2 Improve patient satisfaction, reduces cost of care
- 2.3 Reduces complications, improves coordination of care
- 2.4 All of the above

3. Who is having more responsible for formulating clinical pathway

- 3.1 Multidisciplinary team members
- 3.2 Individual
- 3.3 Nurses
- 3.4 Researcher

4. Which of following not termed as clinical pathway

- 4.1 Integrated care pathway
- 4.2 Care maps
- 4.3 Pathway of care
- 4.4 Care protocol

5. What are all the components in the clinical pathway?

- 5.1 care, outcome, intervention
- 5.2 Outcome, intervention
- 5.3 Activities, intervention, outcome
- 5.4 Activities, intervention, variance, outcome

6. If an additional order not on the pathway is derived, where such an order must be written?

- 6.1 On the standard order sheet
- 6.2 On the pathway
- 6.3 On the progress notes
- 6.4 On the nurses notes

7. What is the expansion of term ORIF?

- 7.1 Open reduction and internal fixation
- 7.2 Closed reduction and internal fixation
- 7.3 Internal fixation surgery
- 7.4 All of the above

8. What is simple fracture?

- 8.1 Partial break down of bone
- 8.2 Complete break down of bone
- 8.3 Skin over the fracture area intact
- 8.4 All of the above

9. What are the clinical manifestation of fracture ?

- 9.1 Pain or tenderness
- 9.2 Crepitation
- 9.3 Erythema, edema, ecchymosis
- 9.4 All the above

10 Which one is the Complication after the orif surgery?

- 10.1 Hemorrhage
- 10.2 Dyspnea
- 10.3 Hypertension
- 10.4 Pain

11. What is green stick fracture?

- 11.1 Complete Break down of bone
- 11.2) One side of the bone is break down and other is bent
- 11.3) Bone fragments
- 11.4) A partial Break in the bone

12. What are the Signs of infection in incision site?

- 12.1 Pain & swelling
- 12.2 Drainage from incision
- 12.3 Redness
- 12.4 All the above

13 How long the patient will be in nil per oral during the pre operative period?

- 13.1 8 hr
- 13.2 9 hr
- 13.3 10 hr
- 13.4 11 hr

14. What type of diet is recommended for the patient after nil per oral

- 14.1 Clear fluid diet
- 14.2 full fluid diet
- 14.3 Semi solid diet
- 14.4 Solid diet

15. Which among the following is the primary responsibility of the nurse before initiation of the diet?

- 15.1 Intake and output chart
- 15.2. Diet pattern
- 15.3 Weight of the patient
- 15.4 Bowel sounds

16. What type of diet is recommended during the 2 pop day?

- 16.1 Normal diet
- 16.2 Solid diet
- 16.3 Clear fluid diet
- 16.4 Soft solid diet
-

17. Which day the anticoagulant with held prior to the surgery?

- 17.1 1 day
- 17.2 2day
- 17.3 5 day
- 17.4 10 days

18. When the catheter should be removed after surgery?

- 18.1 First post operative day
- 18.2 Second post operative day
- 18.3 Third post operative day
- 18.4 Fourth post operative day

19. How frequently the position should be changed during the initial post operative period?

- 19.1 Once in 2 hrs
- 19.2 Once in 4 hrs
- 19.3 Once in 6 hrs
- 19.4 Once in 8 hrs

20. Which post operative day a nurse will ambulating the client

- 20.1 Pop day 1
- 20.2 Pop day 2
- 20.3 Pop day 3
- 20.4 Pop day 4

21. How long the client should be kept in flatenned position after spinal anaesthesia?

- 21.1 12 hrs
- 21.2 6 hrs
- 21.3 36 hrs
- 21.4 48 hrs

22. Which pop day the physiotherapy is given

- 22.1 Pop day1
- 22.2 Pop day2
- 22.3 Pop day3
- 22.4 All the above

23. What is the purpose of applying cold compress to the surgical site?

- 23.1 Reduce swelling
- 23.2 Reduce bleeding
- 23.3 Reduce pain
- 23.4 All of the above

24. Which among the following is an early signs of wound infection?

- 24.1 Fever and oozing
- 24.2 Itching
- 24.3 Paleness
- 24.4 Cyanosis

25. When the suture removal is done?

- 25.1 5 days after surgery
- 25.2 10 days after surgery
- 25.3 12 days after surgery
- 25.4 15 days after surgery

26. Which are the complications of fracture?

- 26.1 Hypertension
- 26.2 Compartment syndrome
- 26.3 Carpel tunnel syndrome
- 26.4 Pulmonary embolism

27. If the patient complains of continuous pain

27.1 Check whether dressing is tight

27.2 Check whether patient is anxious

27.3 Administer analgesics

27.4 Inform to doctor

28. What is the purpose of giving Deep breathing exercise ?

28.1 To prevent pulmonary embolism

28.2 To prevent Pneumonia

28.3 To prevent Lung abscess

28.4 To prevent Pleural effusion

29. What is open reduction and internal fixation?

29.1 Application of traction

29.2 Application of screws, plates, pins and nails

29.3 Application of external devices

29.4 Application of casts

30. The normal range of prothrombine time?

30.1 5-9

30.2 10-14

30.3 15-20

30.4 21-60

Scoring Key and Interpretation

Score	Percentage	Interpretation
≤ 15	≤ 50	Inadequate knowledge
16-22	51-75	Moderately adequate knowledge
≥ 23	≥ 76	Adequate knowledge

Answer Key for Knowledge Questionnaire

Question no.	Key	Question no	Key
1	1.2	16	16.1
2	2.4	17	17.1
3	3.1	18	18.1
4	4.2	19	19.1
5	5.4	20	20.2
6	6.1	21	21.2
7	7.1	22	22.1
8	8.1	23	23.1
9	9.4	24	24.1
10	10.1	25	25.1
11	11.2	26	26.2
12	12.4	27	27.1
13	13.1	28	28.1
14	14.1	29	29.2
15	15.4	30	30.2

APPENDIX XVI
BLUE PRINT ON
RATING SCALE ON SATISFACTION OF NURSING CARE FOR PATIENT
UNDERGOING OPEN REDUCTION INTERNAL FIXATION

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

**RATING SCALE ON THE PATIENT SATISFACTION OF NURSING CARE
FOR PATIENT UNDERGOING OPEN REDUCTION AND INTERNAL
FIXATION**

Purpose

This rating scale is designed to assess the level of patient satisfaction on nursing care. This is assessed by the researcher after the implementation of the clinical pathway.

Instruction

Given below is a parental satisfaction scale for which 4 alternative responses are provided. You are requested to put a tick mark (√) against the statement which you consider correct. The responses will be kept confidential.

S.no	Item	Highly satisfied	Satisfied	Dissatisfied	Highly 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 procedure?				
4.	Are you satisfied with the instruction given about the dietary pattern and nutritional requirements?				

5.	Are you satisfied with the timings of food provided for you?				
6.	Are you prevented from the complications?				
7.	Are you comfortable with the ambulation provided by the nurses?				
8.	Are you satisfied with the privacy provided by the nurses 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 procedures?				
12.	Are you satisfied with the safety measures provided by the nurses?				
13.	Are you satisfied with the amount of attention paid to your special or personal needs?				
14.	Are you satisfied with the responses of nurses to any of the concerns / complaints made during your stay?				

15.	Are you satisfied with the hospitality of the nurses?				
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 action, dose, route, frequency and side effects?				
18.	Were you comfortable with the family members support?				
19.	Are you satisfied with the instructions given by the nurse about the pattern of activity?				
20.	Are you comfortable with the services provided for you and discharge plan?				

Scoring Key and Interpretation

Scores	Percentage	Interpretation
<20	<25	Highly dissatisfied
20-40	25-50	Dissatisfied
41-60	51-75	Satisfied
>60	>75	Highly satisfied

APPENDIX XVII

PATIENT OUTCOME CHECKLIST FOR PATIENTS UNDERGOING OPEN REDUCTION AND INTERNAL FIXATION

Purpose

This checklist provides information regarding patients outcome after implementation of clinical pathway.

Instruction

The researcher collects the following information regarding the patients outcome by direct observation and from the patient records.

S.No	Patient outcome	Score		
		Major complication 0	Minor complication 1	No complication 2
1.	Nature of wound	Severe Bleeding Oozing Infected wound	Moderate bleeding Moderate Oozing	No bleeding No oozing Wound healed well
2.	Nutrition	Intravenous infusion	Wound healing is poor Semi solid diet with iv infusion	Normal diet
3.	Elimination	Emptied with catheter Out put is <30ml Constipation	Void Scanty of urine 30-35 ml Altered bowel pattern	Normal bladder pattern No complication

4.	Rest	Restless sleep Sleep disturbance Irritability	Reduced rest and sleep	Adequate rest and sleep
5	Comfort	Presence with pain Needs pain medication	Pain reduced with comfort measures	No pain
6.	Regulation function	Vital signs Temperature->100 Pulse >80 Respiration>30	Vital signs Temperature-99-100% Pulse-73-80 R- 23-30	T- 98.6 P-72/mt R-20/mt
7.	Personal Hygiene	Poor hygiene	Moderate personal hygiene	Good personal hygiene
8	Activities	No activities and exercise is carried out	Lethargic activities	Good activities Well exercises
9.	Diversional activities	Presence with psychological disturbances	Poorly performing activities	No need of diversional activities
10.	Health teaching	Not performing activities	Poorly performing exercises	Performing activities and exercises

11.	Discharge	Not performing exercises Extended days of stay	Extended hrs of stay	Discharge before expected days of discharge
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Scoring Key and Interpretation

Score	Percentage	Interpretation
<11	≤50%	Negative outcome
11-16	51- 75%	Moderately positive outcome
>16	≥76%	positive outcome

APPENDIX XVIII

DATA CODE SHEET

AGE – Age in years

1. 20-25
2. 26-30
3. 31- 35
4. >35

YER- year of experience

- 4.1 <5
- 4.2 6-10
- 4.3 11-15
- 4.4 >15yrs

PROF QUA – Professional qualification

1. GNM
2. Post Basic Bsc
3. B.Sc (N)

DESIGN –Designation

- 6.1 Staff nurse
- 6.2 Novice

WRK- working area

- 9.1 General ward
- 9.2 Semi private
- 9.3 Private

PLS-Place of study

- 10.1 Private
- 10.2 Government
- 10.3 Mission

SX- Sex

1. Male
2. Female

MR –Marital status

1. Married
2. Unmarried

ED-educational qualification

1. Non literate
2. Primary education
3. Secondary education
4. Higher secondary education
5. Graduate and above

OC- occupational status

1. Employed
2. Unemployed
3. Home maker
4. Retired

PCOMB-Presence of co- morbid illness

- 1.yes
- 2.no

TOC-Treatment of co- morbid illness

- 1.Yes
2. No

HO-History of osteoporosis

- 1.Yes
2. No

PSRG-Past surgical history

- 1.Yes
- 2.No

REX-Regular Exercise

- 1.Yes
2. No

APPENDIX XIX
MASTER CODE SHEET

Sample no	DEMOGRAPHIC VARIABLE PROFORMA OF NURSES								PreTest		Post Test	
	AGE	SX	YER EXP	PROF Q	DESIGN	P RVS INF	WRK	PLS	Score	Level	Score	Level
1	1	2	1	2	1	2	1	1	11	I	24	A
2	1	2	1	2	1	2	1	1	13	I	21	A
3	1	2	1	2	1	2	1	1	16	M	22	A
4	2	2	1	2	1	2	1	1	10	I	19	M
5	1	2	1	2	1	2	1	2	8	I	18	M
6	1	2	1	2	1	2	1	1	12	I	20	M
7	1	2	1	1	1	2	2	1	17	M	25	A
8	1	2	1	2	1	2	1	1	19	M	27	A
9	1	2	1	2	1	2	1	1	18	M	28	A
10	2	2	1	2	1	2	1	1	18	M	26	A
11	1	2	2	1	1	2	1	1	18	M	27	A
12	1	2	1	2	1	2	1	2	18	M	27	A
13	2	2	1	2	1	2	1	1	12	I	27	A
14	1	2	2	2	1	2	1	2	13	I	25	A
15	1	2	1	2	1	2	1	1	11	I	26	A
16	1	1	1	2	1	2	1	2	13	I	25	A
17	1	1	1	3	1	2	1	1	11	I	20	M
18	2	2	1	2	1	2	1	1	13	I	27	A
19	1	2	1	1	1	2	1	2	16	M	26	A
20	1	2	1	2	1	2	1	2	19	M	27	A
21	2	2	1	1	1	2	1	2	17	M	28	A
22	1	2	1	2	1	2	1	1	15	M	23	M
23	2	2	1	2	1	2	1	2	14	M	22	M
24	1	2	1	2	1	2	1	2	19	M	24	A
25	1	2	1	2	1	2	1	2	18	M	25	A
26	4	2	1	2	1	2	1	1	11	I	23	A
27	1	2	1	2	1	2	1	1	12	I	25	A
28	4	2	2	2	1	2	1	1	13	I	26	A
29	1	2	1	2	1	2	1	1	18	M	26	A
30	1	2	1	2	1	2	1	1	17	M	23	A

MASTER CODE SHEET - CONTROL GROUP

SI no	patient variable proforma							Clinical variable proforma							satisfaction)			Outcome			PrOP	Day0	Day1	Day2
	AG	SX	MR	ED	OCU	DITRY	INCM	BMI	PCOMB	TOC	HT	HOST	P.SRG	REXJ	Sc	Per	Lev	Sc	Per	Lev	Score	Score	Score	score
1	2	1	1	1	1	2	1	1	2	1	4	1	2	5	61	76.25	H	24	83.3	P	75	57	31	22
2	3	2	2	1	2	2	1	1	3	2	4	1	3	2	56	70	S	24	83.3	P	80	54	42	42
3	2	2	2	1	1	2	1	1	2	1	2	1	2	5	68	85	H	24	83.3	P	82	61	35	35
4	2	1	2	1	2	2	1	1	2	1	1	1	2	5	68	85	H	24	83.3	P	85	52	45	26
5	2	1	2	3	1	2	1	1	1	1	2	2	2	5	72	90	H	21	50	N	76	60	46	24
6	2	1	2	2	1	2	1	1	2	1	4	1	2	5	56	70	S	21	50	N	78	56	45	44
7	2	2	1	2	1	2	1	1	2	1	1	1	1	5	78	97.5	H	24	83.3	P	79	55	47	46
8	2	1	2	1	1	2	1	1	1	1	4	1	2	5	56	70	S	24	83.3	P	87	54	44	40
9	2	2	2	1	1	2	1	1	3	1	1	1	2	2	75	93.75	M	24	83.3	P	82	58	42	48
10	3	2	2	1	2	2	1	1	1	1	2	3	5	75	93.75	H	21	50	N	86	64	40	40	
11	3	2	1	2	2	1	1	1	1	1	1	1	3	5	76	95	H	24	83.3	P	84	62	38	39
12	2	2	2	1	2	2	1	1	2	1	4	1	2	5	56	70	S	21	50	N	78	60	39	40
13	2	1	1	1	2	2	1	1	2	1	4	1	3	5	68	85	H	24	83.3	P	76	66	38	35
14	2	2	2	1	2	2	1	2	2	1	2	1	2	5	57	71.25	S	24	83.3	P	75	68	40	43
15	3	1	2	2	2	1	1	2	1	1	4	1	3	5	72	90	H	24	83.3	P	74	65	43	45
16	2	2	2	1	2	1	1	1	1	1	2	1	2	5	68	85	H	21	50	N	80	64	35	42
17	2	2	1	1	2	1	1	1	3	1	4	1	2	5	69	86.25	H	21	50	N	82	54	38	41
18	3	1	2	2	2	2	1	2	2	1	1	1	2	5	56	70	S	24	83.3	P	86	52	34	45
19	3	1	1	1	2	2	1	2	1	1	4	1	3	5	62	77.5	H	24	83.3	P	76	62	33	33
20	2	1	2	1	2	2	1	1	2	1	2	1	2	5	61	76.25	H	21	50	N	82	66	45	39
21	3	2	1	2	2	2	1	1	3	2	4	1	3	2	61	76.25	H	24	83.3	P	80	67	46	46
22	2	1	2	1	2	2	1	1	2	1	4	1	2	5	56	70	S	21	50	N	74	59	39	48
23	3	2	2	1	2	2	1	2	1	1	4	1	3	5	77	96.25	H	24	83.3	P	75	60	42	49
24	2	1	2	2	2	22	1	2	2	1	3	1	2	5	63	78.75	H	21	50	N	78	65	49	32
25	2	2	2	1	1	2	1	1	1	1	2	1	2	5	72	90.24	H	24	83.3	P	80	62	46	46
26	2	2	2	1	2	1	1	1	1	1	2	1	2	5	59	73.75	S	24	83.3	P	82	70	42	32
27	2	1	2	1	1	2	1	1	2	1	4	1	2	5	60	75	S	24	83.3	P	85	72	39	48
28	2	1	2	1	2	2	1	1	1	1	1	1	2	5	64	80	H	24	83.3	P	78	68	32	45
29	2	1	2	1	12	2	1	1	1	1	2	1	2	5	62	77.5	H	21	50	N	79	66	45	45
30	2	1	2	1		2	1	1	2	1	2	1	2	5	60	75	S	24	83.3	P	72	67	48	45

MASTER CODE SHEET- EXPERIMENTAL GROUP

Sl no	patient variable proforma					Clinical variable proforma						satisfaction			Outcome			PrOP	Day0	Day1	Day2
	AG	SX	MR	ED	OC	PCOMB	TOC	HT	HOST	P.SRG	REXJ	Sc	Per	Lev	Sc	Per	Lev	Score	Score	Score	Score
1	2	1	1	1	1	2	1	4	1	2	5	61	76.3	H	28	100	P	103	85	58	49
2	3	2	2	1	1	3	2	4	1	3	2	77	96.3	H	28	100	P	102	84	55	50
3	2	2	2	1	1	2	1	2	1	2	5	68	85	H	24	83.3	P	104	83	56	49
4	2	1	2	1	1	2	1	1	1	2	5	68	85	H	28	100	P	100	86	54	48
5	2	1	2	3	1	1	1	2	2	2	5	72	90	H	28	100	P	101	80	57	47
6	2	1	2	2	1	2	1	4	1	2	5	80	100	H	28	100	P	105	86	59	49
7	2	2	1	2	1	2	1	1	1	1	5	78	97.5	H	28	100	P	103	82	56	50
8	2	1	2	1	1	1	1	4	1	2	5	56	70	S	28	100	P	100	78	57	50
9	2	2	2	1	1	3	1	1	1	2	2	62	77.5	H	28	100	P	102	86	59	50
10	3	2	2	1	1	1	1	1	2	3	5	75	93.8	H	24	83.3	P	103	86	58	49
11	3	2	1	2	1	1	1	1	1	3	5	76	95	H	28	100	P	95	85	56	50
12	2	2	2	1	1	2	1	4	1	2	5	80	100	H	28	100	P	99	83	57	49
13	2	1	1	1	1	2	1	4	1	3	5	68	85	H	24	83.3	P	100	81	54	47
14	2	2	2	1	1	2	1	2	1	2	5	64	80	H	28	100	P	106	86	55	48
15	3	1	2	2	1	1	1	4	1	3	5	72	90	H	28	100	P	103	79	57	48
16	2	2	2	1	1	1	1	2	1	2	5	68	85	H	28	100	P	105	86	58	50
17	2	2	1	1	1	3	1	4	1	2	5	69	86.3	H	28	100	P	102	84	57	49
18	3	1	2	2	1	2	1	1	1	2	5	80	100	H	28	100	P	104	82	56	48
19	3	1	1	1	1	1	1	4	1	3	5	61	76.3	H	24	83.3	P	98	79	54	48
20	2	1	2	1	1	2	1	2	1	2	5	68	85	H	28	100	P	103	82	53	47
21	3	2	1	2	1	3	2	4	1	3	2	61	76.3	H	28	100	P	100	81	60	49
22	2	1	2	1	1	2	1	4	1	2	5	80	100	H	28	100	P	105	86	54	49
23	3	2	2	1	1	1	1	4	1	3	5	77	96.3	H	28	100	P	103	85	57	49
24	2	1	2	2	1	2	1	3	1	2	5	60	75	S	28	83.3	P	104	83	60	48
25	2	2	2	1	1	1	1	2	1	2	5	72	90	H	28	100	P	106	86	53	48
26	2	2	2	1	1	1	1	2	1	2	5	80	100	H	28	100	P	102	84	56	49
27	2	1	2	1	1	2	1	4	1	2	5	60	75	S	28	83.3	P	103	82	60	50
28	2	1	2	1	1	1	1	1	1	2	5	64	80	H	28	100	P	104	84	57	50
29	2	1	2	1	1	1	1	2	1	2	5	64	80	H	28	100	P	100	80	58	48
30	2	1	2	1	1	2	1	2	1	2	5	60	75	S	28	100	P	102	84	60	48

CHAPTER I

INTRODUCTION

Background of the Study

"Be strong and of good courage; be not afraid nor dismayed for the Lord is with you wherever you go."

Joshua 1:9

The unique structure of the musculoskeletal system allows human beings to complete complex movements in their interaction with the environment. The dexterity of the upper extremities enables an individual to perform complicated technical tasks, while stronger lower extremities allow mobility for varied activities. Resilient bone and cartilage absorb energy from any impact, minimizing the risk of injury to other body structures. However this characteristic ability of the bones particularly vulnerable to injury from external forces. These external forces cause the fracture of the bone. Fracture is a break in bone or cartilage. Although usually the result of trauma, a fracture can be caused by an acquired disease of bone such as osteoporosis.

As life expectancy rises around the world, along with the number of elderly people in every geographic region the incidence rate of fractures is estimated to reach 6.3 million in 2050 assuming a constant age specific rate of fracture in men and women. Incidence (annually) of fractures is 1.5 million osteoporosis related fractures and the incidence rate of fractures approximately 1 in 181 or 0.55% or 1.5 million people in USA. Death due to fractures is 4.3 per 100000 with 1, 302 cases in Canada 1997.

Most of the fracture patients undergo open reduction and internal fixation for fracture reduction. Open reduction and internal fixation is the most frequently done surgical procedure in fracture patient. Although the concept of internal fixation dates back to the mid 1800s, Lister introduced open reduction and internal fixation of patella fractures in the 1860s. Use of plates, screws, wires was first documented in the 1880s and 1890s. During the 1950s Danis and Muller began to define the principles and technique of internal fixation.

The continued and rapid growth of utilization of open reduction and internal fixation reflects a trend that will require additional resources in the future. 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.

The nursing management of the open reduction and internal fixation patient includes frequent neurological assessment of the affected extremities. Any limitations of movement or activities related to turning, positioning, and extremity support should be monitored closely. Pain and discomfort can be minimized through proper alignment and positioning. Dressing or casts should be assessed for overt sign of bleeding or drainage. The nurse must plan to care to prevent the complication associated with immobility.

The nursing process is a variation of scientific reasoning that allows nurses to organize systemic nursing practice. The nursing process is the foundation of clinical decision making and includes all significant action taken by nurses in providing care to clients. The level of care are demonstrated through the nursing assessment, diagnosis, outcome, planning and implementation. The nursing process is used to identify,

diagnose, and treat human response to health and illness (American Nurses association). The nursing process applies to the care of all client system including individuals, families, groups, or communities. The new concept which has emerged in the care of patients with fracture is the, “Clinical Pathway for Open Reduction and Internal Fixation”.

“Clinical pathways” is a multidisciplinary practice for specialized groups of patient with a particular diagnosis that aid the coordination and delivery of high quality care. They are both, a tool and a concept, which embed guidelines, protocols and locally agreed, evidence –based, patient centered, best practice, into every day use for individual patient"

The clinical pathway concept appeared for the first time at the New England medical center (Boston, USA) in 1985 inspired by Karen Zander and Kathaleen Bower. The term critical pathway meant that the plan defined the critical key events expected to happen each day of the patients hospitalization .Clinical pathways appeared as a result of the adaptation of the documents used in industrial quality management, the standard operating procedures (SOPs), whose goals are to improve efficiency in the use of resources and finish work in a set time. Clinical pathways, also known as care pathways, critical pathways, integrated care pathways or care maps – based, patient centered, best practice, in every day use for individual patient." In 1985 the new England medical centre in Boston introduced the critical pathway which was the first system that attempted to incorporate expected outcomes within specified time frames.

Suzzane et al. (1998) conducted a study for clinical pathway for Hamilton health services cooperation appears to have favourable impact on patient outcome, length of stay, hospital cost and professional practice. In under resources setting an obstacle to the use of clinical pathway is lack of skilful person in the field of industry

Case management is an innovative way to simultaneously modify the health care delivery, uphold the standards of care and reduce the health care costs. A clinical pathway provides the interdisciplinary team with a tangible plan that ensures qualitative and efficient patient care.

Need for the Study

Clinical pathways are proposed as a means of providing high quality care in a timely and cost-effective manner. These pathways consist of treatment protocols that aim to streamline and standardize management with multidisciplinary input from medical, nursing, paramedical and administrative staff.

Ben Rosenberg (1997) conducted a study to assess the effectiveness of clinical pathway for open reduction and internal fixation of fracture femur. The study results shows that the clinical pathway shorter total hospital stay (6.6 versus 8.0, $p=0.03$)

Lynn (1998) conducted a prospective randomized controlled study of clinical pathway of open reduction and internal fixation of tibia fracture at St.Vincent hospital, Melbourne. The study results shows that clinical pathway patients had a shorter length of stay ($p = 0.011$), earlier ambulation ($p= 0.001$). A lower readmission Rate ($p=0.06$)

The incidence rate of fracture (annually) for approximately for 1.5 million fractures occurs, all over the world. The Fracture can be caused by traumatic or pathological mechanism 20% Fracture patient prefer open reduction and internal fixation. The clinical pathway for open reduction and internal fixation reduces the complication and length of stay and improves patient care and complete care with in a prescribed time.

Implants in orthopaedic surgery causes infection, complications and increased length of stay in hospital. So the goal of reducing the length of a patients hospital stay after orthopaedic surgery has recently gained much interest from surgeons and hospital administrators. The clinical pathways on open reduction and internal fixation will reduce the complications and length of stay in hospitals without compromising patient outcomes.

Mark Catherin (2001) conducted a retrospective and comparative study was performed on patients undergoing open reduction and internal fixation in femur fracture over a 5 year period. There was a significant reduction in duration of hospital stay with 62.8% of patients staying less than 8 post operative days. There was a reduction in the number of patients with complications ($p < 0.05$) and no increase in overall complications or readmission rate.

Clinical pathways are also introduced to reduce cost and control variance in care. It was studied in a hospital where 120 patients underwent open reduction and internal fixation surgery before the development of a peri operative clinical pathway, and 63 patients underwent open reduction and internal fixation surgery after pathway

implementation. Mean hospital costs for open reduction and internal fixation surgery was decreased after implementation of the clinical pathway.

Rony dueo (2000) conducted a study to evaluate the effect of clinical pathway for open reduction and internal fixation patients in terms of length of stay, hospital costs and quality of care. Clinical pathway group included 53 patients before clinical pathway implementation and 69 patients after implementation of the clinical pathway. It reduced the length of stay by 24%. Hospital costs were reduced by 16%. The implementation of the clinical pathway also reduced the number of unnecessary medical procedures.

Clinical pathway is a step wise sequencing of care which improves the continuity of care disciplines. The clinical pathway on open reduction and internal fixation will reduce the complication and length of stay in hospitals without compromising patient outcomes. Hence the investigator took this study, However evidence evaluating the effectiveness of clinical pathway for patients undergoing open reduction and internal fixation in Indian scenario is lacking. So the clinical pathway will be highly beneficial to our Indian patients undergoing open reduction and internal fixation.

Statement of the Problem

A Quasi Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients undergoing Open Reduction and Internal Fixation upon the Knowledge and Practice of Nurses and Patients Outcome at Apollo Main 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 open reduction and internal fixation.
2. To assess the Patient outcome in Control and Experimental group of Patients undergoing Open reduction and internal fixation.
3. To evaluate the effectiveness of Clinical Pathway by comparing Pre and Post test level of Knowledge and Practice of Nurses regarding Clinical Pathway for Patients undergoing open reduction and internal fixation.
4. To compare the Patient outcome in Control and Experimental group of Patients undergoing open reduction and internal fixation.
5. To compare the level of Patient Satisfaction in Control and Experimental group of Patients undergoing open reduction and internal fixation.
6. To determine the association between selected demographic variables of Nurses and their Pre and Post test level of knowledge and Practice Regarding Clinical Pathway for Patients undergoing Open reduction and internal fixation.
7. To determine the association between the selected demographic variables of Control and Experimental groups of Patients and their outcome after implementation of Clinical pathway for Open reduction and internal fixation.
8. To determine the association between the selected Clinical variables of Control and Experimental groups of Patients and their outcome after implementation of Clinical pathway for Open reduction and internal fixation.

Operational Definition

Clinical Pathway

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

Open Reduction and Internal Fixation

In this study, Open reduction and internal fixation is a method of surgical repairing of a fracture bone that requires hospitalization of the patient for at least 5 days.

Clinical Pathway for Open Reduction and Internal Fixation

In this study, it refers to the guidelines for nursing care of patients undergoing open reduction and internal fixation for 4 days from admission to discharge that is formulated by the researcher based on the 14 basic needs of Henderson. The aspects included are assessment, nutrition, elimination, position, sleep and rest, comfort, activity, hygiene, psychosocial, spiritual, safety, communication, education and discharge planning for patient undergoing open reduction and internal fixation. Nursing interventions are listed under each aspects and based on this the nurses will be giving care to the patient undergoing open reduction and internal fixation.

Effectiveness

In this study, it refers to the difference between the pre and post test knowledge and practice of nurses regarding clinical pathway for patients undergoing open reduction and internal fixation patients.

The effectiveness also is measured by comparing the outcome of control and experimental groups of patient in terms of their length of stay, prevention of Complications and satisfaction.

Outcome

In this study, it refers to the length of hospital stay , prevention of complications and patient satisfaction regarding nursing care for patient undergoing open reduction and internal fixation. It is measured using checklist.

Knowledge

In this study it refers to the level of understanding and awareness of nurses regarding clinical pathway for open reduction and internal fixation patients and is measured in terms of structured questionnaire developed by the researcher.

Practice

In this study ,it refers to the nursing care provided by the nurses while caring for patients undergoing open reduction and internal fixation which is measured in terms of compliance with clinical pathway for open reduction and internal fixation.

Nurse

In this study, it refers to a person who is a registered nurse qualified with GNM, B.Sc Nursing or PB BSc Nursing provides nursing care for patient undergoing open reduction and internal fixation.

Assumptions

The study assumes that

- Nurses require guiding tool for implementation of clinical pathway.
- Standardized protocols and guidelines improve uniformity of care.
- Clinical pathway provides explicit and well defined standards of care.
- Appropriate documentation prevents adverse outcomes.

Null Hypotheses

- Ho₁** There will be no significant difference between pre and post test level of knowledge and practice of nurses regarding patients undergoing Open reduction and internal fixation.
- Ho₂** There will be no significant difference in the patient outcome between the control and experimental group after implementation of clinical pathway for patients undergoing Open reduction and internal fixation.
- Ho₃** There will be no significant association between the selected demographic variables of nurses and the pre and post test level of knowledge regarding clinical pathway for patients undergoing Open reduction and internal fixation.
- Ho₄** There will be no significant association between the selected demographic variables of control and experimental group of patients and their outcome after

the implementation of clinical pathway for patients undergoing Open reduction and internal fixation.

Ho₅ There will be no significant association between selected clinical variables of control and experimental group of patients and their outcome after the implementation of clinical pathway for patients undergoing Open reduction and internal fixation.

Delimitations

The study was de limited to

- Patients who have undergoing open reduction and internal fixation in Apollo hospital.
- Four weeks of data collection.
- Nurses willing to participate in the study.

Projected Outcome

The study will help to improve the knowledge and practice of nurses regarding clinical pathway for patients undergoing open reduction and internal fixation as well as the patient outcome in terms of length of stay, prevention of complications and patient satisfaction.

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)

Conceptual framework of present study is based on “**King’s Goal Attainment Theory**”, as Nurses care for as patients with open reduction and internal fixation interact and communication with them. This interaction after acquire knowledge on clinical pathway for open reduction and internal fixation influence patients to have better outcome and higher satisfaction, which was modified for the present study . According to Imogene King; Nursing is defined as the process of action, reaction, interaction, whereby nurses and clients share the information about their perception. Through perception and communication they identify the problems for which they set goals and take necessary action.

King’s goal attainment theory is based on the concept of personal, interpersonal and social systems including perception, judgement, action, reaction, interaction, transaction and feedback.

Perception

A person imports energy from the environment and transforms, processes and stores it. The study assumes that there is an interpersonal relationship between the nurse investigator and participants. The nurse investigator perceives that there is a need for the development of Clinical pathway on open reduction and internal fixation patients based on low scores in rating scale on satisfaction on nursing care. It imposes a demand for clinical pathway on open reduction and internal fixation.

Judgement

Analyze the areas of action to be carried out. In this study the nurse investigator judges that clinical pathway based on basic needs may improve the patient satisfaction, reduce the length of stay, reduce the complications and reduce the health care cost. Thus the researcher takes decision to develop and implement the clinical pathway.

Action

Individuals export the perceived energy, as demonstrated by observable behaviours by taking up physical activity. Nurse investigator takes action of actual development of clinical pathway. The patients in the control group were moderately satisfied and patients in the experimental group were highly satisfied with the nursing care and no complications developed.

Reaction

Reaction means developing action and acting on perceived choices for goal attainment. Experimental group patients were highly satisfied and the control group patients were moderately satisfied with the implementation of clinical pathway. The nurse investigator makes the arrangement for disseminating the information regarding clinical pathway for nurses and in turn the patient were benefited.

Interaction

Refers to verbal and non verbal behaviour between an individual and the environment or among two or more individuals. It involves goal directed perception and communication.

Action leads to interaction where the nurse investigator executes her clinical pathway on open reduction and internal fixation and thereby the patient is benefitted.

Transaction

Imogene King says that the transaction is when two individuals mutually identify goals and the means to achieve them. They reach an agreement about how to attain these goals and then set about to realise them.

In this study subjects from the experimental group were highly satisfied about nursing care and developed no complications. Moderate levels of satisfaction are expressed in the control group.

Feedback

Outcome may either be satisfactory or unsatisfactory. Satisfactory shows the effectiveness of clinical pathway and for unsatisfactory the activity is planned again. In this study investigator appraise the level of satisfaction on nursing care through rating scale, if clinical pathway is satisfactory it can be disseminated and implemented to the control group too. If unsatisfactory the activity is planned again or other best method is adopted.

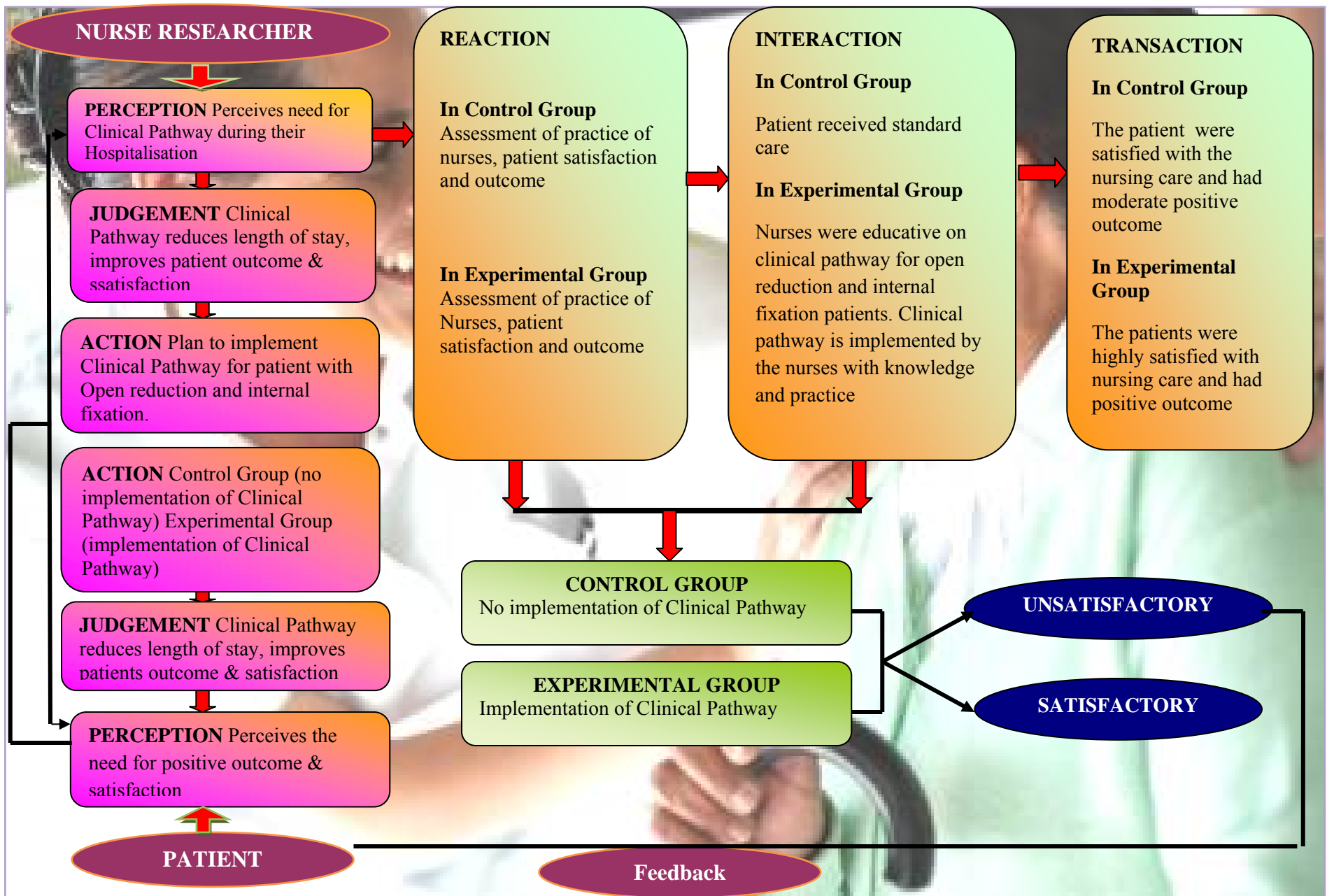


Fig.1. Conceptual Framework based on King's Goal Attainment Theory

Summary

This chapter deals 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.

In chapter II: Review of literature

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

In chapter IV: Analysis and interpretation of data

In chapter V: Discussion

In chapter VI: Summary, Conclusion, Limitations, Implications and Recommendations

CHAPTER II

REVIEW OF LITERATURE

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

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 into the problem area. This helped the investigator in building the foundations of the study.

The review of literature in this chapter has been presented under the following heading

- **Literature related to Open Reduction and Internal Fixation**
- **Literature related to Clinical Pathways for various conditions and treatment modalities**
- **Literature related to Clinical Pathways for Open Reduction and Internal Fixation**

Literature Related To Open Reduction and Internal Fixation

The retrospective study was conducted by Yug in 2009 to describe the miniplate internal fixation and autogenous iliac bone graft in surgical treatment of old metatarsal fractures. The study was conducted in 7 patients with old metatarsal fractures were treated surgically, including 5 multi-metatarsal fractures and 2 single metatarsal fractures. There were 5 males and 2 females aged from 25 to 43 years (mean, 33 years).

The study results shows that all incisions healed by first intention. The 7 patients were followed up 8-18 months (mean, 13.5 months). The clinical fracture healing time was 6 to 12 weeks postoperatively (mean, 8.4 weeks). No pain of planta pedis occurred while standing and walking. The American Orthopaedic Foot and Ankle Society (AOFAS) mesopedes and propodium score were 75-96 (mean, 86.4).

Engesaeter et al. (2007) Randomised and Quasi-randomised controlled trials comparing internal fixation with arthroplasty for intracapsular hip fractures in adults. seventeen trials involving 2694 participants were included length of surgery, operative blood loss, need for blood transfusion and risk of deep wound infection were significantly less for internal fixation compared with arthroplasty. Arthroplasty had a significantly lower re-operation rate in comparison with fixation. No definite differences for hospital stay, mortality, or regain of same residential state were found. limited information from some studies suggested pain was less and function was better for a cemented arthroplasty in comparison to fixation.

In 2005, Zhou conducted a study on effectiveness of open reduction and internal fixation in treatment of posterior malleolus fracture. Study conducted in 46 patients with posterior malleolus fractures were treated with open reduction and internal fixation and follow up. The study results show that two patients developed superficial infection. Forty-six patients were followed up 37 months on average (range, 18-63 months). All fractures healed after 3 to 6 months (mean, 4.3 months). One patient developed lateral sural cutaneous nerve injury, and 9 patients had mild weight-bearing pain or discomfort. The results of American Orthopaedic Foot and Ankle Society (AOFAS) ankle and hind foot score were excellent in 17 cases, good in 21 cases, and fair in 8 cases with an

excellent and good rate of 83%. The mean visual analogue scale (VAS) score was 1.9 (range, 0-5).

In the year of 2002 conducted, a prospective study on treatment of occult Lisfranc injury with open reduction and internal fixation was done by Chie et al. The study was conducted in 47 patients with occult Lisfranc injuries underwent open reduction and internal fixation. The study results show that one case had infection and wound was repaired with flap at 2 weeks after operation; the other wounds healed primarily. Thirty-two patients were followed up 28.3 months on average (range, 12-75 months). The mean time of fracture healing was 12.3 weeks (range, 9-15 weeks). Osteoarthritis at midfoot was found in 15 cases at last follow-up and arthrodesis was not needed. The results were excellent in 9 cases, good in 16 cases, fair in 4 case, and poor in 3 cases according to American Orthopaedic Foot and Ankle Society (AOFAS) midfoot score system; the excellent and good rate was 78.1%. No re-dislocation occurred during the follow-up.

A Randomised and quasi-randomised trials comparing different implants for the internal fixation of intracapsular hip fractures in adults by Elaine et al. (2001). There are now 30 studies involving 6334 participants (6339 fractures) included in this review. There was considerable variation in the quality of trial methodology and generally inadequate reporting of methods and trial findings. The main outcome measures reported were fracture healing complications, re-operations and mortality. The reporting of functional outcomes was particularly poor. Few trials tested the same comparison. Most of the results for the 25 separate comparisons, frequently tested within one trial only, showed no statistically significant differences between the two implants under

test. It was noted that the more rare findings of favourable results were often for implants developed within the same institutions as the trial. There was a consistent finding of less avascular necrosis with the sliding hip screw in comparison with five different types of cancellous screws but there was no significant difference found for re-operations. Additionally, the sliding hip screw was found to take longer to insert and to have an increased operative blood loss compared with multiple screws or pins

Literature Related to Clinical Pathway for Various Conditions

Walter et al. (2007) conducted a Retrospective study on clinical pathway for total knee replacement in a community hospital. Before instituting the pathway, the average length of stay was 4.41 days for patients having total hip replacement and 3.92 days for patients having total knee replacement. The average length of stay for patients having total hip replacement decreased to 3.24 days and to 2.98 days for patients having total knee replacement. Press Ganey Survey results showed high patient satisfaction rates before and after pathway initiation. Pathway implementation did not lead to increased complication rates or readmissions. Despite higher expected increases in the overall healthcare cost during the time of implementation (3 years), direct cost increases were limited to 3.48%.

According to Rotter et al. (2006) analyse the existing evidence base for clinical pathways via a rigorous systematic review. Systematic reviews and meta-analyses provide a high level of evidence for the effectiveness of interventions. This method is especially useful when research results are known to be inconsistent. Instead of conducting another primary evaluation. This states the effectiveness of clinical pathways

in hospitals, based on professional practice, patient outcomes, length of stay and hospital costs. A pathway reflects the activities of a multidisciplinary team and can incorporate established guidelines and evidence-based medicine

Pearson et al. conducted a retrospective comparative study in Queen Elizabeth Hospital, Adelaide in 2004 on the clinical pathway for total knee replacement. The study results shows that there was a significant reduction in the median length of stay in group 2 patients ($P < 0.0001$). In addition there was a 66% increase in the proportion of patients in group 2 who were admitted on the day of surgery ($P < 0.0001$) and a 19.6% increase in the number of patients discharged within 8 postoperative days ($P < 0.01$). The development and implementation of a clinical pathway resulted in a significant reduction in length of stay and improved streamlining of admission, discharge and transfer processes without adversely affecting patient outcomes.

Carlos Estrada (2000) 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. Compared with patients receiving usual care ($n=275$), patients in the pathway group ($n=97$) were more likely to be treated by family physicians than specialists and had lower pneumonia severity scores. In the unadjusted analysis, total hospital charges were lower among pathway patients (\$2456; 95% CI, \$175 to \$4737; $P = 0.04$); in the adjusted analysis, the difference in total charges was smaller (average reduction \$1807; CI, \$4164 lower to \$549 higher; $P = 0.13$). In the unadjusted analysis, length of stay was lower among pathway patients (1.8 days lower; CI, 3.9 lower to 0.4 higher; $P = 0.12$); in the adjusted analysis, the difference in length of stay was smaller (0.9 days lower; CI, 3.2 lower to 1.3 higher; $P = 0.4$). Thus, Clinical

pathways may reduce costs and improve quality of care in community-acquired pneumonia.

Literature Related to Clinical Pathway for Open Reduction and Internal Fixation

Walter et al. (2007) conducted a Retrospective study on clinical pathway for open reduction internal fixation (radius) in a community hospital. Before instituting the pathway, the average length of stay was 4.41 days for patients having open reduction and internal fixation. The average length of stay for patients having open reduction and internal fixation decreased to 2.24 days. Press Ganey Survey results showed high patient satisfaction rates before and after pathway initiation. Pathway implementation did not lead to increased complication rates or readmissions. Despite higher expected increases in the overall healthcare cost during the time of implementation (3 years), direct cost increases were limited to 3.48%.

Kalaine et al. in (2005) conducted a study to see the effectiveness of clinical pathway for open reduction and internal fixation on patient outcomes in US hospital. The study results shows that patients in hospitals with pathways were 32% less likely to have a postoperative complication compared to patients in hospitals without pathways (OR 0.68, 95%CI 0.50-0.92). Patients managed on a clinical pathway had an average length of stay 0.5 days (95% CI 0.3-0.6) shorter than patients not managed on a pathway.

Pearson et al. (2004) conducted a retrospective comparative study on clinical pathway for open reduction and internal fixation in Queen Elizabeth Hospital, Adelaide. Using a retrospective comparative study design, 119 patients who were managed on a

clinical pathway from July 2002 to January 2003(group 2) were compared with a retrospective group of 58 patients who underwent the same procedure from July 2000 to January 2001 (group 1) prior to the pathway's implementation. The study results show that there was a significant reduction in the median length of stay in group 2 patients ($P < 0.0001$). In addition there was a 66% increase in the proportion of patients in group 2 who were admitted on the day of surgery ($P < 0.0001$) and a 19.6% increase in the number of patients discharged within 8 postoperative days ($P < 0.01$). The development and implementation of a clinical pathway resulted in a significant reduction in length of stay and improved streamlining of admission, discharge and transfer processes without adversely affecting patient outcomes.

In 1998 Santa Maria conducted a prospective controlled study on clinical pathway for fractured neck of femur in St Vincent hospital, Melbourne, Victoria. A total sample of 111 patients (80 women and 31 men, mean age 81 years) admitted via the emergency department with a primary diagnosis of fractured neck of femur. The findings indicated that the patients managed according to the clinical pathway had a shorter total stay (6.6 versus 8.0 days, $p= 0.03$). There were no significant difference in complication and readmission rates between pathway and control patients (complication rates, 24% versus 36%, $p= 0.40$, readmission rates, 4% versus 11% $p= 0.28$). So the results show that clinical pathway of patients with fractured neck of femur reduces length of stay without increasing complication.

Summary

This chapter has dealt with review of literature related to the problem stated. The literatures presented here were extracted from 15 primary and 5 secondary sources. It has helped the researcher to understand the impact of the problem under study. It has also enabled the investigator to design the study, develop the tool, plan the data collection procedure and to analyze the data.

CHAPTER III

RESEARCH METHODOLOGY

The methodology of research study is defined as the way data are gathered in order to answer the research questions. (Polit and Beck, 2008)

The research methodology involves a systematic procedure by which the researcher starts from the initial identification of the problem to its final conclusion. It enables the researcher to project a blueprint of the research undertaken. The aim of the present study was to assess the effectiveness of clinical pathway for Open reduction and internal fixation.

This chapter deals with a brief discussion of different steps undertaken by the researcher for the study. It involves research approach, research design, setting, population, sample and sampling technique, development and description of tool, validity, reliability, pilot study, data collection procedure and plan for data analysis.

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), experimental research is an extremely applied form of research and it involves finding out how well a program, practice or policy are working. Its goals are to assess or evaluate the success of the programme. In

this study, the investigator wanted to assess the knowledge of nurses and effectiveness of clinical pathway by using experimental research design.

Research Design

A research design incorporates the most important methodology design that a researcher works in conducting a research study. (Polit and Beck, 2008).

Quasi-experimental research design was adopted for conducting the study. Since there were limited number of nurses available, one group pre and post test design was adopted for the nurses. Here, the investigator administered pre test for the selected nurses and manipulated the independent variables ie, administration of clinical pathway for the same group of nurses and the post test was conducted.

The research design is represented diagrammatically as follows:

Nurses

01X 02

01 --- Pre test to assess the knowledge and practice of nurses regarding clinical pathway patients undergoing open reduction and internal fixation.

X --- Teaching on clinical pathway for open reduction and internal fixation patients.

02 --- Post test to assess the gained knowledge and practice of nurses regarding clinical pathway for patients undergoing open reduction and internal fixation.

Patients

- 01

X

- 01

01 –Assessment of patient outcome and patient satisfaction

X- Implementation of Clinical pathway for patient undergoing open reduction and internal fixation.

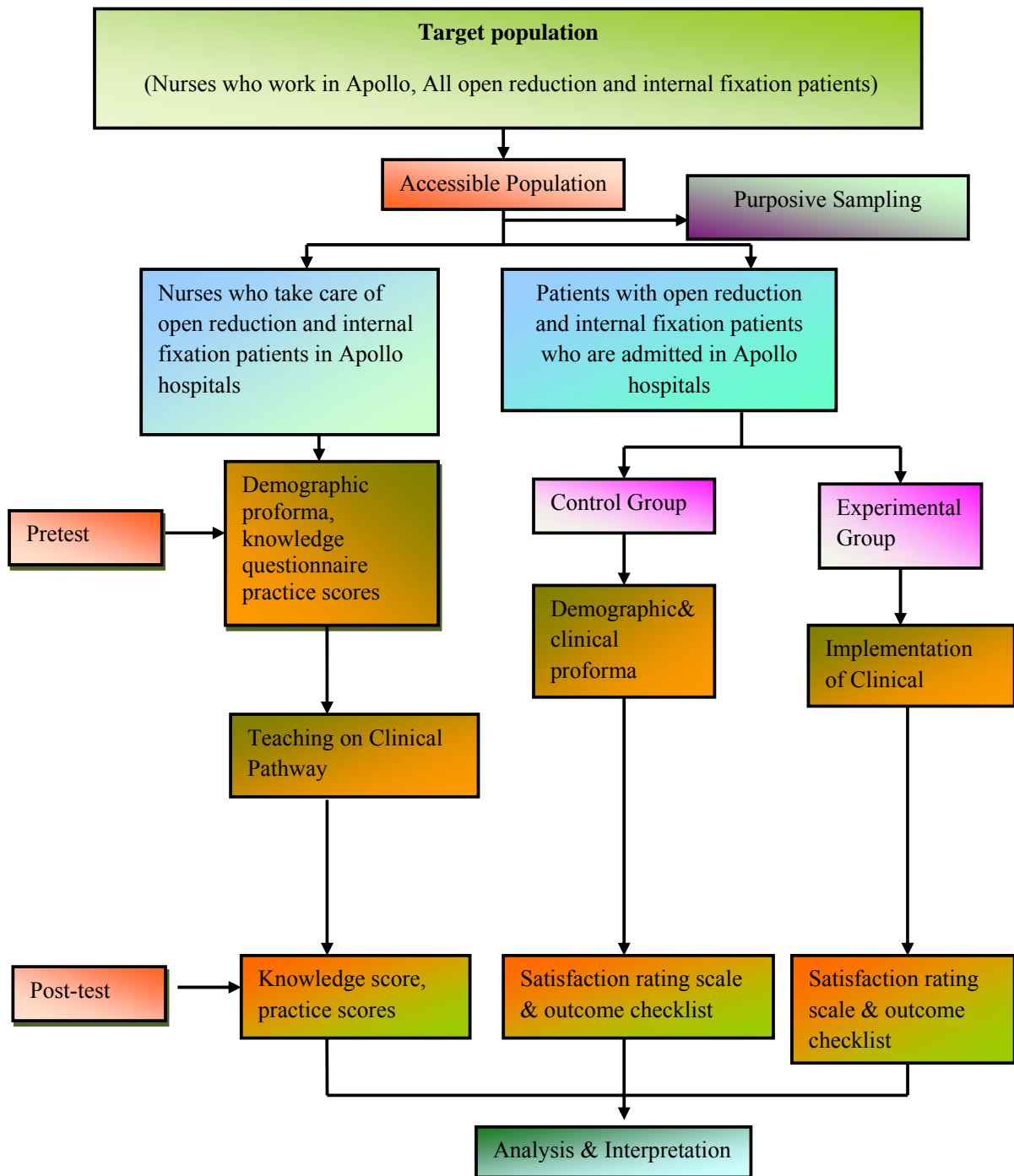


Fig. 2. Schematic Representation of the Research Design

Variables

Independent Variable

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit and Beck, 2008). The independent variable for this study was the clinical pathway for open reduction and internal fixation.

Dependent Variable

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit and Beck, 2008). The dependent variable for this study was knowledge and practice of nurses and patient outcome.

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 for nurses, clinical variable proforma and demographic variable proforma for patients undergoing open reduction and internal fixation.

Research Setting

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

The study was conducted at Apollo Main Hospital, Chennai. It is a Joint Commission International accredited hospital and is a 1000 bedded multi specialty tertiary care centre having over 50 medical and surgical departments with specific areas of specialty like Cardiology, Nephrology, Urology, Orthopedics, Gynecology, Paediatrics, and Cardio-Thoracic. It also has a well equipped orthopaedic operation theatres, minor operation theatres and orthowards.

Population

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

Target population

The target population is the aggregate of cases in which a researcher is interested and would like to generalize the study results (Polit and Beck,2008). In this study, the target population comprises of nurses working in ortho ward and patients with Open reduction and internal fixation.

Accessible population

The accessible population is the aggregate of cases that conforms to designated criteria and that are accessible as subjects for a study (Polit and Beck,). In this study, the accessible population were the all nurses caring for Patients with Open reduction and internal fixation, admitted in Apollo Main Hospital, Chennai during the data collection period.

Sample

According to Polit and Beck (2004), a sample consists of a subset of a population selected to participate in a study. Sample size for the present study was 30 nurses and 60 patients with Open reduction and internal fixation, 30 in experimental group and 30 in control group who satisfied the inclusion criteria.

Sampling technique

It was stated by Polit and Beck (2004) that sampling refers to the process of selecting a portion of the population to represent the entire population. The nurses and the patients with open reduction and internal fixation for the present study were selected by purposive sampling technique.

Sampling criteria

Inclusion criteria

The study includes

Patients

- Patients with open reduction and internal fixation
- Patients who are willing to participate in the study
- Patient who speak and understand English and Tamil.

Nurses

- Nurses who are willing to participate in the study.

Exclusion criteria

The study excludes

Patients

- Patients with poly trauma and critically ill
- Patients who are not willing to participate in this study

Nurses

- Nurses who are not willing to participate in this study.
- Nurses who are not available during data collection period.

Selection and Development of the Study Instruments

The study aimed at evaluating the effectiveness of clinical pathway for patients undergoing open reduction and internal fixation, Data collection instruments were developed through an extensive review of literature, consultation with experts and opinion from faculty members. The instruments used were demographic variable proforma for nurses, demographic proforma for patients, clinical variable proforma for patients, knowledge structured questionnaire for nurses, practice checklist, patients outcome checklist and satisfaction rating scale.

Demographic Variable Proforma for Patient undergoing Open Reduction and Internal Fixation.

Demographic variable proforma for open reduction and internal fixation patients such as age in years, sex, marital status, education, occupation, type of work, Place of work, dietary intake, Income per month.

Demographic Variable Proforma for Nurse caring for Patients undergoing Open Reduction and Internal Fixation.

Demographic variable proforma for nurses includes age in years, sex, year of experience, educational qualification, Designation, place of work, Inservice education attended.

Clinical Variable Proforma for Patients undergoing Open Reduction and Internal Fixation.

Clinical variable proforma consisted demographic variable of patients such as age in years., body mass index, Presence of co-morbid illness, treatment co-morbid illness, family history of oestoporosis, history of trauma / accident ,history of past surgeries, exercise pattern.

Clinical Pathway for Patients undergoing Open Reduction and Internal Fixation

The researcher developed the clinical pathway for open reduction and internal fixation by extensive review of literature, participatory observation of nursing care of open reduction and internal fixation patients from admission to discharge and suggestion from the health care team members after formulating the pathway was validated by experts. Hendersons fourteen basic needs was the basis for the pathway . The pathway specifying timeline consultation and nursing interventions to meet 14 needs of patients such as nutritional, elimination, position, comfort, activity, sleep & rest, hygiene, psychological communication, spiritual and safety, education and discharge

planning needs of the open reduction and internal fixation patients and activities tabulated on fourteen aspects for four days.

Structured Knowledge Questionnaire for Nurses regarding Patients undergoing Open Reduction and Internal Fixation

The structured knowledge questionnaire was formed very carefully considering language and sequence of item. The question was formulated and options were given below the each question. It consisted of 30 multiple choice Question and 4 options which include one right answer and every correct was assigned a score of 1 and wrong answer of score or 0. The total score of structured questionnaire was 30. The total score of structured questionnaire was 30. The knowledge scores are classified into 3 levels.

Scores	Percentage	Interpretation
<15	≤50	Inadequate
15 - 22	51 - 75	Moderately adequate
≥23	>75	Adequate

Practice Checklist for Nurses Caring for Patients Undergoing Open Reduction and Internal Fixation

It includes performance of nursing interventions such as consultation, assessment, investigation, medications, nutrition, elimination, position and comfort, activity, sleep, hygiene, safety, spiritual needs and patient education and scores ranging from non compliant to compliant.

Scores	Interpretation
<60%	Non compliant

61-80% Partially compliant

81-100% Compliant

Rating scale on Satisfaction of Nursing Care for Patient Undergoing Open Reduction and Internal Fixation.

It includes satisfaction expressed by nurses regarding environment, comfort, nursing care, nutrition, elimination needs, activity, rest, position, personal hygiene, safety, spiritual need, communication, family health education, discharge plan with level of satisfaction ranging from highly satisfied to highly dissatisfied.

Scores	Percentage	Interpretation
<20	<25	Highly dissatisfied
20-40	25-50	Dissatisfied
41-60	51-75	Satisfied
>60	>75	Highly satisfied

Patient Outcome Check List for Patient Undergoing Open Reduction and Internal Fixation

It is a checklist recorded by researcher by observing on patients outcome for presence of complication regarding regulatory functions, nature of wound, nutrition, elimination, rest, comfort, personal hygiene, activity, diversional needs, health teaching and discharge plan with ranging from No complication to major complications.

Scores	Percentage	Interpretation
< 14	≤50%	Negative Outcome

14-21	51-75	Moderately Positive Outcome
>21	≥ 76	Positive Outcome

Psychometric Properties

Validity

The content validity refers to the adequacy of the sampling of the domain being studied. 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 modifications in the objective, Hypothesis, clinical variable proforma, practice checklist and outcome checklist. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

Reliability

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	Test Retest Method (r=0.84)
Practice Checklist for Nurses	Inter Rater Technique (r=0.88)
Rating Scale for Patient Satisfaction	Split half Method (r=0.94)
Patient Outcome Checklist	Split half Method (r=0.94)

Pilot study

Polit and Beck (2007) Pilot study is a miniature version of actual study. A pilot study was conducted among 10 open reduction and internal fixation patients admitted in Apollo first med hospital, Chennai. The purpose was to find out the feasibility and

practicability of the design. The structured knowledge questionnaire and clinical pathway were administered and found to be feasible on the whole clinical pathway.

Protection of Human Rights

The researcher obtained permission to conduct the study from Principal and Head of Department of medical surgical nursing department of Apollo College of Nursing. The researcher then, presented the proposal to the ethical committee of Apollo Hospitals and got ethical clearance to conduct the study. In the clinical area, approval for the study was obtained from the Medical and Nursing Directors of Apollo Main Hospitals, Chennai. Informed consent was obtained from the patients before collecting the data. Confidentiality of the participants was ensured 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 with the study. The investigator collected the data from Apollo Main Hospital after obtaining proper administrative permission from concerned authorities. The study participants were selected using purposive sampling. The observation time schedule was from 7am -12noon and 12.30pm to 5.30 pm respectively from Monday to Saturday. The data collection period was from June 17th to July 17th 2011.

The investigator selected 30 nurses from Ortho ward using purposive sampling and obtained verbal consent. During the shift changing time (2-3pm) the nurses were gathered in the Nurses station and the investigator collected the baseline demographic

data and assessed the pretest knowledge level using structured knowledge questionnaire. Then the investigator obtained consent from the control group of patients undergoing open reduction and internal fixation and collected their demographic data and clinical variables of patients. The practice of the nurses for 4 days was then observed by participant observation method and compliance on care of control group of patients with open reduction and internal fixation were assessed by practice checklist. The outcome of 30 patients and patient satisfaction on nursing care at the time of discharge in control group of patients were assessed. The same group of nurses were then educated about the clinical pathway for open reduction and internal fixation with power point presentation and the doubts of nurses were cleared.

After two weeks the investigator assessed the post test knowledge level of nurses. The nurses were then instructed to use the clinical pathway from the time of admission of the experimental group of patients with open reduction and internal fixation. The pathway was kept on the patient file and used by the nurses. After verbal consent, the investigator obtained baseline demographic and clinical variables of the experimental group of patients with open reduction and internal fixation during admission. The investigator observed the practice of nurses for 4 days using practice check list. The outcome of 30 experimental groups of patients were assessed using the clinical outcome checklist and Rating scale of patient satisfaction on nursing care were also assessed at the time of discharge.

Problem Faced during the Process of Data Collection

- Lack of time for nurses to fill the questionnaire.
- Some nurses were not interested to fill the questionnaire.

Plan for Data Analysis

Data analysis is the systematic organization, synthesis of research data, and testing of null hypothesis by using obtained data (Polit and Beck, 2007).

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

Summary

This chapter dealt with the selection of research approach, research design, setting, population, sample and sample 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 2004).

The data was collected from 60 Open reduction and internal fixation patients and 30 nurses working in Apollo hospitals, Chennai to determine the effectiveness of clinical pathway on open reduction and internal fixation

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 patients undergoing reduction and internal fixation
- Frequency and Percentage Distribution of Clinical Variables in Control and Experimental Group of open reduction and internal fixation.

- Frequency and Percentage Distribution of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for Open reduction and internal fixation.
- Frequency and Percentage Distribution of Practice of Nurses for Control and Experimental Group of Patients Regarding Clinical Pathway for Open reduction and internal fixation.
- Frequency and Percentage Distribution of Outcome in Control and Experimental Group of Open reduction and internal fixation Patients.
- Frequency and Percentage Distribution of Patient Satisfaction on Nursing Care in Control and Experimental Group of Open reduction and internal fixation Patients
- Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for Open reduction and internal fixation.
- Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses on Various Dimensions of Clinical Pathway for Open reduction and internal fixation.
- Comparison of Mean and Standard Deviation of Practice of Nurses for Control and Experimental Group of Open reduction and internal fixation Patients.
- Comparison of Mean and Standard Deviation of Patient Satisfaction on Nursing Care in Control and Experimental Group of Open reduction and internal fixation patients.
- Comparison of Mean and Standard Deviation of Patient Satisfaction on Various Dimensions of Nursing Care in Control and Experimental Group of Open reduction and internal fixation Patients.

- Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of Open reduction and internal fixation patients.
- Association between Selected Demographic Variables and Pre and Post Test Knowledge of Nurses on Clinical Pathway for Open reduction and internal fixation patients.
- Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Open reduction and Internal fixation Patients.
- Association between Selected Clinical Variables and Outcome in Control And Experimental Group of Open reduction and internal fixation Patients.
- Association between Selected Demographic Variables and Satisfaction on nursing care in Control and Experimental Group of Open reduction and internal fixation 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 yrs	25	83.3%
6-10 yrs	5	16.6%
11-15 yrs	-	-
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 above table shows that majority of the nurses were in the age group of 21-25 years (83.3%), females (86.6%), having <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%).

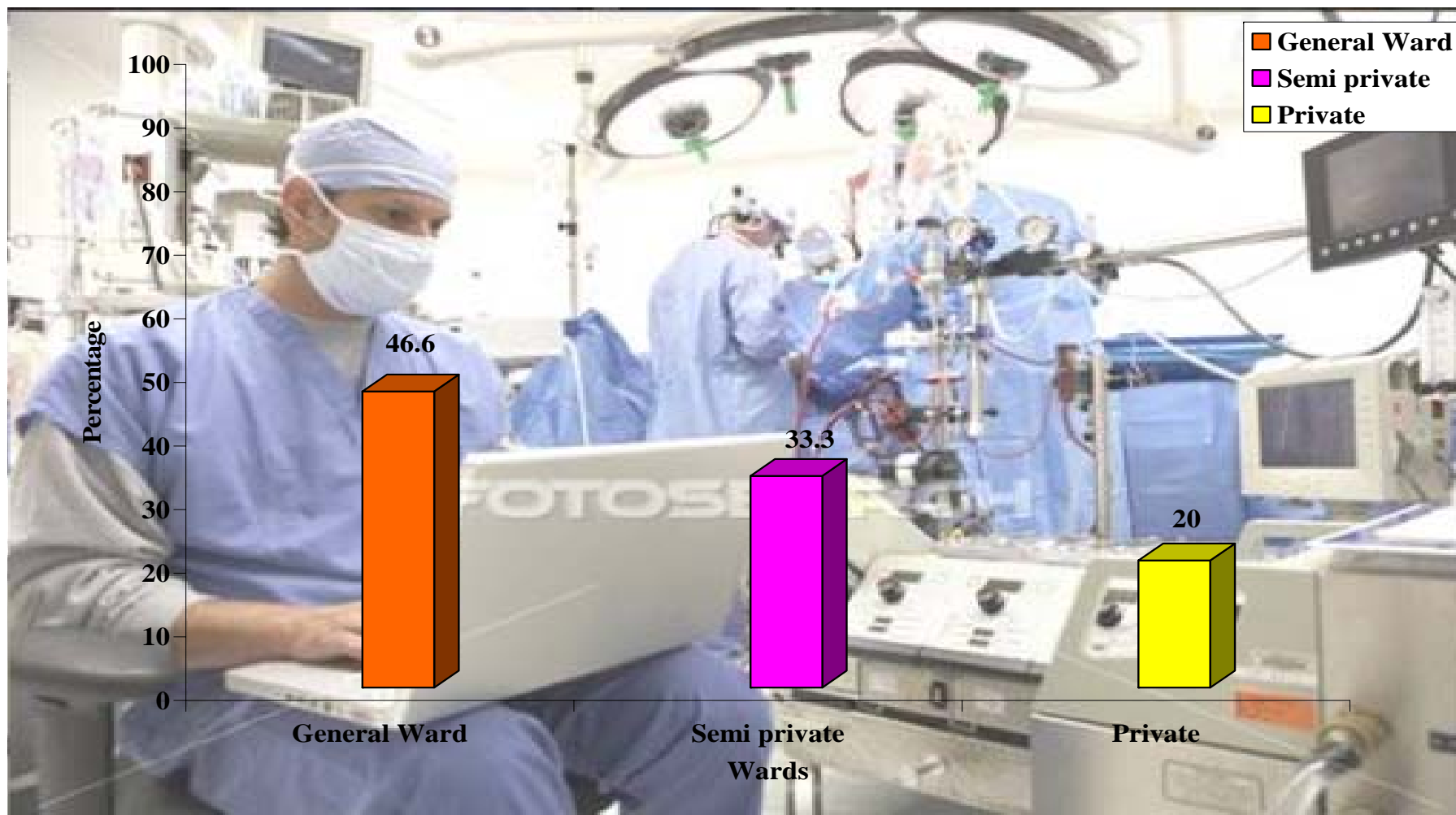


Fig. 3. Percentage Distribution of Working Area of Nurses.



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 Patients undergoing Open Reduction and Internal Fixation.

Demographic Variables	Experimental(n=30)		Control(n= 30)	
	n	p	n	p
Age in years				
20 - 30	8	26.67	18	60.00
31 - 40	15	50.00	8	26.67
41 - 50	5	16.67	2	6.67
>50	2	6.67	2	6.67
Educational Qualification				
Non literate	0	0.00	0	0.00
Primary education	3	10.00	1	3.33
Secondary education	4	13.33	3	10.00
Higher secondary education	5	16.67	8	26.67
Graduate & above	18	60.00	18	60.00
Occupational status				
Employed	29	96.67	29	96.67
Unemployed	0	0.00	1	3.33
Homemaker	0	0.00	0	0.00
Retired	1	3.33	0	0.00
Nature of work				
Sedentary worker	2	6.67	3	10.00
Moderate worker	28	93.33	24	80.00
Severe worker	0	0.00	3	10.00
Place of work				
Indoor	25	83.33	21	70.00
Outdoor	5	16.67	9	30.00
Dietary intake/pattern				
Vegetarian	0	0.00	3	10.00
Non-vegetarian	30	100.00	27	90.00
Income per month				
5000 – 10000	0	0.00	1	3.33
10001 – 15000	11	36.67	7	23.33
>15000	19	63.33	22	73.33

The data presented in table 2 reveals that most of the patients in control and experimental group undergoing open reduction and internal fixation were, graduates (60%,60%), employed (96.67%, 96.67%), moderates workers (93.33%, 80.%), non vegetarian (100%, 90%), place of work (83.33%, 70%) with monthly income of >1500 (63.33%, 73.33%).

Fig.5 shows that the Majority of the patients in control and experimental groups were Males (76.67%, 73.33%)

Fig .6 shows that the majority of the patients in the control group and experimental group were married (90%, 73%)

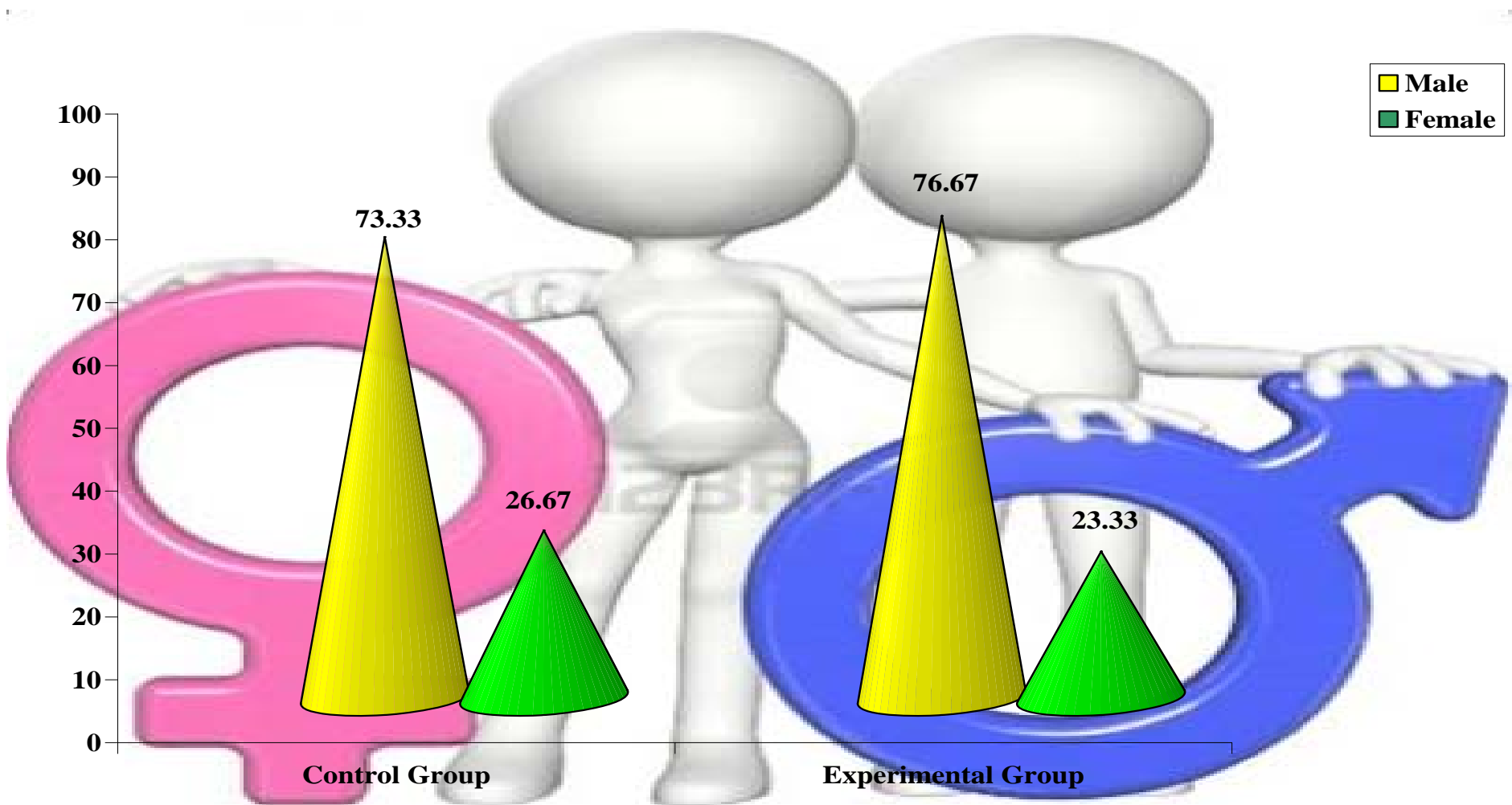


Fig. 5 Percentage Distribution of Gender in Control and Experimental Group



Fig. 6 Percentage distribution of Marital Status in Control and Experimental group

Table .3

Frequency and Percentage Distribution of Clinical Variables in Control and Experimental group of Patients Undergoing Open Reduction and Internal Fixation.

Clinical Variables	Experimental group(n=30)		Control(n=30)	
	n	p	n	p
Body Mass Index				
19 - 24.9 kg/m ²	28	93.33	29	96.67
25 - 29.9 kg/m ²	2	6.67	1	3.33
30 - 34.9 kg/m ²	0	0.00	0	0.00
35 - 39.9 kg/m ²	0	0.00	0	0.00
>40 kg/m ²	0	0.00	0	0.00
Presence of co-morbid illness				
Yes	3	10.00	1	3.33
No	27	90.00	29	96.67
History of trauma/accident				
Yes	4	13.33	7	23.33
No	26	86.67	23	76.67
Family history of osteoporosis				
Yes	0	0.00	0	0.00
No	30	100.00	30	100.00
Undergone Surgeries				
Yes	0	00.00	9	30.00
No	30	100.00	21	70.00
Regular exercise pattern				
Yes	15	50.00	20	66.67
No	15	50.00	10	33.33

The data presented in table .3 depicts that Majority of the patients in the control and experimental had the BMI between 19-24 (93.33%, 96.7%), patients had no co morbid illness (90%, 96.67%), no history of trauma (86.67, 70.67%), no family history of osteoporosis (100%, 100%) no past surgeries (100%, 70%) and following regular exercise (50%, 66.7%) respectively.

Fig.7 Shows that in Pretest majority of the nurses have inadequate knowledge (83.3%) and whereas in post test majority of the nurses have adequate knowledge (76.6%) regarding clinical pathway for Open reduction and internal fixation.

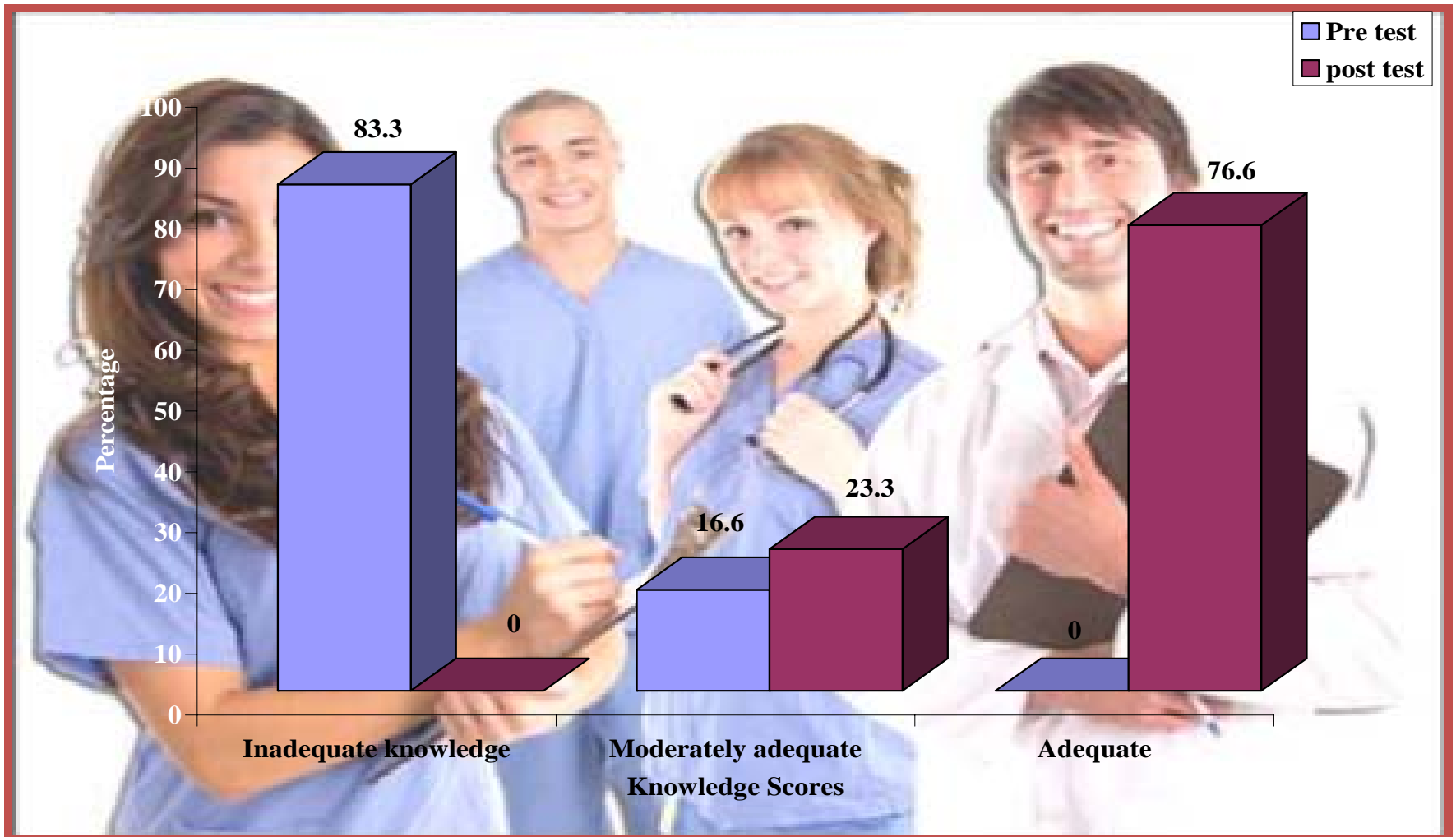


Fig.7. Percentag distribution of pre and post test knowledge scores of nurses on clinical pathway for ORIF

Table .4

Frequency and Percentage Distribution of Practice of Nurses for Control and Experimental Group of Patients Regarding Clinical Pathway for Open reduction and internal fixation.

Practice scores	Preop		Day 0		Day 1		Day 2	
	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 after administration of clinical pathway nurses were able to provide 100% compliant care.

Table .5

Frequency and Percentage Distribution of Outcome in Control and Experimental Group of patients undergoing Open Reduction and Internal Fixation .

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%) whereas in experimental group had positive outcome (90%).

Table .6

Frequency and Percentage Distribution of Patient Satisfaction on Nursing Care in Control and Experimental Group of Patients undergoing Open Reduction and Internal Fixation.

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 Open Reduction and Internal Fixation Patients.

(N=30)

Knowledge scores	Mean	SD	t
Pre test	8.8	1.85	19***
Post test	16.97	3.17	

*** $p < 0.001$

It can be inferred from table 7 that the mean and standard deviation of post test knowledge scores was higher (Mean=16.97, S.D=.3.17) than the pre test scores (Mean8.8,S.D=1.85). The difference was found statistically significant at $p < 0.001$. Hence the null hypothesis H_{01} was rejected.

Table .8

Comparison of Mean and Standard Deviation of Pre and Post test Knowledge of Nurses in various dimensions regarding Clinical Pathway for Open Reduction and Internal Fixation.

Components	Pre test		Post test		t
	Mean	SD	Mean	SD	
Clinical Pathway	1.3	0.78	4.3	0.64	17.6***
Assessment and diet	2.6	0.92	3.4	1.15	5.52***
Exercise	2.4	0.73	3.8	0.81	4.72***
Position	2.1	1.09	3.7	1.05	0.16
Elimination ,and Safety	3.3	1.34	4.3	0.84	4.74***
Patient education	2.9	1.09	4.3	0.62	4.7***

*** p< 0.001

It could be inferred from table 8 that the mean and standard deviation of post test knowledge was higher than the pre test on various dimensions of clinical pathway. The difference was found to be statistically significant at p< 0.001.

Table .9

Comparison of Mean and Standard Deviation of Practice of Nurses in Control and Experimental Group of Patients Undergoing Open Reduction and Internal Fixation

Practice Scores	Control group(n=30)		Experimental group(n=30)		t
	Mean	SD	Mean	SD	
Pre op	52.1	7.12	82.2	1.6	22.5***
Day0	32.7	4.57	53.9	1.87	26.32***
Day1	33.4	4.64	58.3	1.37	27.6***
Day 2	25.4	3.64	43	1.37	24.7***
Mean	35.9	2.7	59.3	0.8	46.07***

***** p< 0.001**

It can be noted from the table 9 that the mean and standard deviation of the practice scores for control group of patients were less (pre op 1: Mean=52.1,S.D=7.12; Day 0: Mean 32.7,S.D=4.57; Day 1 Mean=33.4S.D= 4.64; Day 2:Mean=: 25.4 ,S.D= 3.64) when compared to mean and standard deviation of the practice scores for experimental group of patients (Pre op : Mean= 82.2,S.D=1.6 ;Day 0 : Mean= 53.9,S.D= 1.87 ; Day 1 : Mean= 58.3,S.D= 1.37; Day2 Mean= 43,S.D=1.37).

The overall mean and standard deviation of practice of nurses for control group were less (Mean=35.9 ,S.D=2.7) when compared to the mean and standard deviation for experimental group (Mean=59.3,S.D=0.8). The difference was found statistically significant at p<0.001. Hence the null hypothesis Ho₁ was rejected.

Table .10

Comparison of Mean and Standard Deviation of Patient Satisfaction on Nursing Care in Control and Experimental Group of Open Reduction and Internal Fixation Patients.

Patient satisfaction	Mean	SD	t
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 mean and standard deviation of patient satisfaction on nursing care in experimental group of patients (Mean=34,S.D=72.7) was high in comparison with mean and standard deviation of patient satisfaction of control group of patients (Mean24.6 S.D=3.52). The difference was found statistically significant at 99.9% level of confidence. Hence the null hypothesis H_{o2} 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 patients undergoing Open Reduction and Internal Fixation .

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

*****p<0.001**

The results in the above table 11 shows that the mean and standard deviation of satisfaction on various dimensions of nursing care in experimental group of patients is high in comparison with mean and standard deviation satisfaction in control group of patients. The difference was found statistically significant at $p<0.001$.

Table .12

Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of Patients undergoing Open Reduction and Internal Fixation.

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

***p< 0.001

It can be incurred from Table 12 that the mean and standard deviation of patient outcome in control group of patients is lower (Mean= 15.7, SD=2.16) when compared to the mean and standard deviation of patient outcome in experimental group of patients (Mean=20.5, SD=1.46). The difference was found statistically significant at 99.9% level of confidence. Hence the null hypothesis Ho₂ was rejected.

Table .13

Association between Selected Demographic Variables and Pre and Post Test Knowledge of Nurses on Clinical Pathway for Patient undergoing Open Reduction and Internal Fixation.

Demographic variables	Pre test			Post test		
	Inadequate n	Moderately adequate n	χ^2 (df=1)	Moderately adequate n	Adequate n	χ^2 (df=1)
Age in years						
21-25	21	4	0.4	6	19	0.3
26-30	4	1		1	4	
Sex						
Male	2	2	2.3	1	3	2.4
Female	23	3		6	20	
Total years of experience						
<5 yrs	21	4	0.92	6	19	0.5
6-10 yrs	4	1		1	4	
Educational qualification						
GNM	4	1	0.34	1	4	0.32
B.SC (N)	21	4		6	19	
Designation						
Staff nurse	22	1	9.46*	5	18	0.4
Novice	3	4		2	5	
Inservice education						
Yes	7	1	0.64	2	6	1.1
No	18	4		5	17	
Working area						
General ward	12	2	1.74	2	12	1.6
Private	13	3		5	11	

* p< 0.05

Table 13 revealed that there was a significant association between designation and Pretest knowledge of nurses on clinical pathway for open reduction and internal fixation patients. Hence the null hypothesis Ho₃ was rejected.

Table .14

Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Patients undergoing Open Reduction and Internal Fixation .

Demographic variables	Control group			Experimental group		
	Moderately positive	positive	χ^2 (df=1)	Moderately positive	Positive	χ^2 (df=1)
	n	n		n	n	
Age						
20-30 years	11	2	3.32	1	8	0.4
>30 years	15	2		2	19	
Sex						
Male	14	2	0.32	2	16	0.5
Female	12	2		1	11	
Marital status						
Married	22	1	1.4	1	22	1.5
Unmarried	4	3		2	5	
Educational qualification						
Secondary & higher education	7	1	1.8	3	5	2.1
Graduate & above	19	3		-	22	
Dietary intake						
Vegetarian	7	1	0.93	1	5	0.67
Non vegetarian	19	3		2	22	
Occupational status						
Employed	19	2	0.64	2	24	3.1
Unemployed	7	2		1	3	
Nature of work						
Moderate r& Sedentary worker	20	1	3.94*	1	19	4.28*
Heavy worker	6	3		2	8	
Place of work						
Indoor	2	1	0.4	2	2	0.5
Outdoor	24	3		1	25	
Income per month#						
≤15,000	10	2	1.2	1	8	0.93
>15000	16	2		2	19	

* **p< 0.05**

It was identified from table 14 that there was significant association between nature of work and the patient outcome in control and experimental group of patients.

Hence the null hypothesis Ho₄ was rejected

Table .15

Association between Selected Clinical Variables and Outcome in Control and Experimental Group of Patients undergoing Open Reduction and Internal Fixation .

Clinical Variables	Control group			χ^2 (df=1)	Experimental group		
	Moderately Positive	Positive	n		Moderately Positive	Positive	n
	n	n			n	n	
BMI							
19-24.9kg/m ²	12	2	1.03	1	10	0.54	
25-29.9Kg/m ²	14	2		2	17		
Presence of Comorbid illness							
Yes	17	2	0.4	1	10	2.54	
No	9	2		2	17		
Treatment of Comorbid illness							
Yes	17	2	0.87	1	10	0.44	
No	9	2		2	17		
History of Trauma							
Yes	21	3	1.87	2	9	0.56	
No	5	1		1	18		
Family History of Osteoporosis							
Yes	2	2	3.7	1	8	3.6	
No	24	2		2	19		
History of Surgeries							
Yes	17	4	0.87	1	14	2.1	
No	9	-		2	13		
Regular Exercise							
Yes	8	2	1.2	1	14	1.1	
No	18	2		2	13		

P<0.05

Table 15 denotes that there was no significant association between the Clinical variables and the Outcome in Control and Experimental group of Patients. Hence the null hypothesis Ho₄ was retained with regard to BMI, Presence of Co morbid illness, treatment of Co Morbid illness, History of trauma, Family History of Osteoporosis, History of Surgery and Regular Exercises.

Table .16

Association Between Selected Demographic Variables and Satisfaction on Nursing Care in Control and Experimental Group of Patients undergoing Open Reduction and Internal Fixation.

Demographic variables	Control group			Experimental group		
	Dissatisfied n	Satisfied n	χ^2 (df=1)	Satisfied n	Highly satisfied n	χ^2 (df=1)
Age						
20-30 yrs	2	11	1.6	2	7	1.92
>30 yrs	2	15		1	20	
Sex						
Male	3	13	1.3	2	16	0.5
Female	1	13		1	11	
Marital status						
Married	3	22	0.5	1	22	0.6
Unmarried	1	4		2	5	
Educational qualification						
Secondary & higher -education	2	6 20	2.1	3	5	2.1
Graduate & above	2			-	22	
Dietary intake						
Vegetarian	1	7	0.6	1	5	1.2
Non vegetarian	3	19		2	22	
Occupational status						
Employed	3	22	1.2	2	24	0.43
Unemployed	1	4		1	3	
Nature of work						
Sedentary worker	3	18	0.6	2	18	0.76
Moderate worker	1	8		1	9	
Place of work						
indoor	1	2	1.34	1	3	1.2
Outdoor	3	24		2	24	
Dietary Intake/pattern						
vegetarian	3	17	0.56	1	15	0.7
Non vegetarian	1	9		2	12	
Income per month						
≤15000	1	2	0.92	1	3	2.3
≥15000	3	24		2	24	

P<0.001

Table 16 denotes that there was no significant association between selected demographic variables and satisfaction of nursing care in control and experimental group of patients. Hence the null hypothesis H_{04} was retained with regard to age, sex, marital status, educational qualification, occupation, nature of work, place of work, income per month.

CHAPTER V

DISCUSSION

A Quasi- Experimental Study to Assess the Effectiveness of Clinical Pathway for Patients Undergoing Open Reduction and Internal Fixation Upon the Knowledge and Practice of Nurses and Patient's Outcome at Apollo Hospitals, 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 open reduction and internal fixation.
2. To assess the Patient outcome in Control and Experimental group of Patients undergoing open reduction and internal fixation.
3. To evaluate the effectiveness of Clinical Pathway by comparing Pre and Post test level of Knowledge and Practice of Nurses regarding Clinical Pathway for Patients undergoing open reduction and internal fixation.
4. To compare the Patient outcome in Control and Experimental group of Patients undergoing open reduction and internal fixation.
5. To compare the level of Patient Satisfaction in Control and Experimental group of Patients undergoing open reduction and internal fixation.
6. To determine the association between selected demographic variables of Nurses and their Pre and Post test level of knowledge and Practice Regarding Clinical Pathway for Patients undergoing Open reduction and internal fixation.

7. To determine the association between the selected demographic variables of Control and Experimental groups of Patients and their outcome after implementation of Clinical pathway for Open reduction and internal fixation.
8. To determine the association between the selected Clinical variables of Control and Experimental groups of Patients and their outcome after implementation of Clinical pathway for Open reduction and internal fixation.

The Discussion is Presented as Follows

The data's are organized and presented under the following heading

- Frequency and Percentage Distribution of Demographic Variables of Nurses
- Frequency and Percentage Distribution of Demographic Variables in Control and Experimental Group of patients Undergoing Open reduction and internal fixation.
- Frequency and Percentage Distribution of Clinical Variables in Control and Experimental Group of Patients undergoing Open reduction and internal fixation.
- Frequency and Percentage Distribution of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for open reduction and Internal fixation
- Frequency and Percentage Distribution of Practice of Nurses for Control and Experimental Group of Patients Regarding Clinical Pathway for Open reduction and internal fixation.
- Frequency and Percentage Distribution of Outcome in Control and Experimental Group of Open reduction and internal fixation Patients.

- Frequency and Percentage Distribution of Patient Satisfaction on Nursing Care in Control and Experimental Group of Open reduction and internal fixation
- Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for Open reduction and internal fixation.
- Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses on Various Dimensions of Clinical Pathway for open reduction and Internal fixation.
- Comparison of Mean and Standard Deviation of Practice of Nurses for Control and Experimental Group of Open reduction and internal fixation.
- Comparison of Mean and Standard Deviation of Patient Satisfaction on Nursing Care in Control and Experimental Group of Open reduction and internal fixation Patients.
- Comparison of Mean and Standard Deviation of Patient Satisfaction on Various Dimensions of Nursing Care in Control and Experimental Group of Open reduction and internal fixation Patients.
- Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of open reduction and internal fixation Patients.
- Association between Selected Demographic Variables and Pre and Post Test Knowledge of Nurses on Clinical Pathway for Open reduction and internal fixation patients.
- Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Open reduction and internal fixation Patients.
- Association between Selected Clinical Variables and Outcome in Control And Experimental Group of Open reduction and internal fixation patients .

- Association between Selected Demographic Variables and Satisfaction on nursing care in Control and Experimental Group of Open reduction and internal fixation Patients.

Demographic Variables of Nurses

The significant findings regarding the demographic variables of nurses showed that majority of the nurses were qualified with B.Sc Nursing (83.3%). This showed that graduate nurses with comprehensive knowledge were working in the hospital to provide standardized care for the patient.

Most of the nurses were in the age group of 21-25 years (83.3%). This indicates that because of turnover of nurses young nurses were working in the hospital. The data depicted that majority of the nurses were females (86.6%), having <5 years of experience (83.3%), were working as staff nurses (76.7%) and not attended in service education on clinical pathway (60%).

Demographic Variables of Patients undergoing open reduction and internal fixation

It was found that most of the patients in the control group and experimental group were less than 30 yrs of age (60%, 50%). The researcher assumed that in this age group they were youngsters and more vulnerable for accidents and also most of them were male patients (73.33%, 76.67%), indoor workers (70%, 83.33%).

The researcher interprets that the male gender is associated with a dramatically increased risk of fracture because of their life style.

Most of the patients in the control experimental group were moderate workers and had family income > 15000(63.33%, 73.33%) respectively.

Clinical Variables of Patients undergoing Open Reduction and Internal Fixation.

The significant findings among the clinical variables showed that the majority of patients in Control group and experimental group had a BMI of 21-24.9Kg/m² (90%, 96.67%).

Patients had no co morbid illness (90%, 96.67%), history of trauma (86.67%, 70.67%), no family history of oestoporosis (100%, 100%), and no past history of surgeries (100%, 70%) and following regular exercises (50%, 66.7%). The health of the clients were no co-morbid illness, oestoporosis, this may be due to the fact that the majority were young and hospitalized only due to fractures.

The nurses can educate the clients regarding factors contributing to the development of complication after the surgery. The benefits of regular exercises and the benefits of calcium for bone healing can be taught to the patient.

Frequency and Percentage Distribution of Pre and Post Test Knowledge of Nurses Regarding Clinical Pathway for Open Reduction and Internal Fixation.

Majority of the nurses have inadequate knowledge (83.3%), whereas in post test majority of the nurses have adequate knowledge (76.6%) regarding clinical pathway for open reduction and internal fixation. The researcher concluded that this difference might be due to their educational qualification, year of experience. After the clinical pathway

was taught to the nurses, majority of them had adequate knowledge in the post test. This can be attributed to the effectiveness of the teaching on clinical pathway for open reduction and internal fixation, Thus helping to improve their knowledge.

Frequency and Percentage Distribution of Outcome in Control and Experimental Group of Open Reduction and Internal Fixation Patients.

The most of the patients in the control group had moderately positive outcome(86.6%)and all most all the patients in the experimental group had positive outcome(90%). The researcher thus concluded that the clinical pathway for open reduction and internal fixation is indeed a useful innovative tool that health professionals can follow to bring about the best possible patient outcome in terms of length of stay, prevention of complication and patient satisfaction.

Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge Scores of Nurses Regarding Clinical Pathway for Open Reduction and Internal Fixation Patients.

The mean and standard deviation of post test knowledge scores was also higher (mean=16.97,S.D=3.17)when compared to the pre test scores(mean=8.8,S.D=1.85). This result could attributed to the increase in knowledge regarding clinical pathway for open reduction and internal fixation, which was statistically significant at $p < 0.001$ level. Thus the null hypothesis H_{01} was rejected.

Comparison of Mean and Standard Deviation of Practice of Nurses in the Control and Experimental Group Patients undergoing Open Reduction and Internal Fixation.

The overall mean and standard deviation of practice scores in control group were lower (Mean=35.9, S.D= 2.7) when compared to the mean and standard deviation of experimental group (Mean59. S.D=30.8). The difference was found statistically significant at 99.9 % level of confidence. Hence the null hypotheses H_{01} was rejected. These findings revealed that the clinical pathway for open reduction and internal fixation was precise, organised and consolidated, thus helping the nurses to view information at a glance. The researcher thus concluded that this would help nurses to spent more time in nursing care thereby improving the overall quality of nursing care.

Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses on Various Dimensions of Clinical Pathway for Open Reduction and Internal Fixation.

The mean and standard deviation of post test knowledge was higher than the pre test on various dimensions of clinical pathway. The difference was found to be statistically significant at $p < 0.001$.

Comparison of Mean and Standard Deviation of Patient Satisfaction on Nursing Care in Control and Experimental Group of Open Reduction and Internal Fixation Patients.

Being satisfied with the treatment carries immense significance in an interventional study. The mean and standard deviation of patient satisfaction on nursing care in experimental group of patients (mean=34.7 S.D=2.7) was high in comparison with mean and standard deviation of patient satisfaction of control group of patients (mean=24.6 S.D=3.52). The difference was found statistically significant at 99.9% 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 highly satisfied during their hospitalization. The Nurses plays a vital role in making the patient highly satisfied during their hospitalization.

Obtained by Smith R.J, et al. (2005) where they found that there is significant relationship between patient satisfaction and the clinical pathway of open reduction surgeries used in the ortho units. This view was also concluded by Wolff (2002) in a study which revealed that, after introducing the clinical pathways for open reduction and internal fixation surgeries among 120 fracture patients, there is significant improvements in the quality of patient care. 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 Open Reduction and Internal Fixation Patients.

The mean and standard deviation of satisfaction on various dimensions of nursing care in experimental group of patients is high in comparison with mean and

standard deviation satisfaction in control group of patients .The difference was found statistically significant at $p < 0.001$. Thus the researcher concluded that clinical pathways helps to eliminate variations of care thereby improving the patient satisfaction on nursing care for patients with open reduction and internal fixation.

Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of Open Reduction and Internal Fixation Patients.

The mean and standard deviation of patient outcome in control group of patients is lower (mean=15.7, S.D=2.16) when compared to the mean and standard deviation of patient outcome in experimental group of patients (Mean20.5, S.D=1.46). The difference was found statistically significant at 99.9% 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 John 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 Pre and Post Test Knowledge of Nurses on Clinical Pathway for Open Reduction and Internal Fixation Patients.

There was a significant association between designation and pretest knowledge of nurses on clinical pathway for open reduction and internal fixation patients. Hence the null hypothesis H_{03} was rejected. Thus the researcher concluded that staff nurses

gain knowledge by taking care of patients in clinical area. But the Novice nurses with the same theoretical background need to improve the practical knowledge by hands on practice.

Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Open Reduction and Internal Fixation Patients.

There was a significant association between nature of work and the patient outcome whereas there was no significant association between selected demographic variables and patient outcome in control and experimental group of patients.

A study conducted by Wood et al (2006) on work environment and patient outcome after fractures of extremities suggests that the heavy workers had more incidence of negative outcomes due to the severity of the injury, so the adequate rest is indicated after the fracture surgeries, to enhance bone healing.

It can be predicted from the study that careful examination of the work environment and personal work habits can help to identify possible difficulties after orthopaedic surgeries.

Association between Selected Clinical Variables and Outcome in Control Group and Experimental Group of Open Reduction and Internal Fixation.

There was no significant association between the clinical variables and the outcome in control and experimental group of patients. Hence, it may be concluded that

BMI, Presence of co-morbid illness, history of accidents, past history of surgeries, regular exercise pattern do not negatively impact outcome.

Association between Selected Demographic Variables and satisfaction of nursing care in Control Group and Experimental Group of Open Reduction and Internal Fixation Patients.

There was no significant association between selected demographic variables and satisfaction of nursing care in control and experimental group of patients. This reflects on the usefulness of clinical pathway in promoting satisfaction regardless of the characteristics of patients.

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.

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 Open reduction and internal fixation upon the knowledge and practice of nurses and patient's outcome at Apollo Hospitals, 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 open reduction and internal fixation.
2. To assess the Patient outcome in Control and Experimental group of Patients undergoing open reduction and internal fixation.
3. To evaluate the effectiveness of Clinical Pathway by comparing Pre and Post test level of Knowledge and Practice of Nurses regarding Clinical Pathway for Patients undergoing open reduction and internal fixation.
4. To compare the Patient outcome in Control and Experimental group of Patients undergoing open reduction and internal fixation.

5. To compare the level of Patient Satisfaction in Control and Experimental group of Patients undergoing open reduction and internal fixation.
6. To determine the association between selected demographic variables of Nurses and their Pre and Post test level of knowledge and Practice Regarding Clinical Pathway for Patients undergoing open reduction and internal fixation.
7. To determine the association between the selected demographic variables of Control and Experimental groups of Patients and their outcome after implementation of Clinical pathway for open reduction and internal fixation.
8. To determine the association between the selected Clinical variables of Control and Experimental groups of Patients and their outcome after implementation of Open reduction and internal fixation.

Null hypotheses

- Ho₁** There will be no significant difference between pre and post test level of knowledge and practice of nurses regarding patients undergoing Open reduction and internal fixation.
- Ho₂** There will be no significant difference in the patient outcome between the control and experimental group after implementation of clinical pathway for patients undergoing Open reduction and internal fixation.
- Ho₃** There will be no significant association between the selected demographic variables of nurses and the pre and post test level of knowledge regarding clinical pathway for patients undergoing Open reduction and internal fixation.
- Ho₄** There will be no significant association between the selected demographic variables of control and experimental group of patients and their outcome after

the implementation of clinical pathway for patients undergoing Open reduction and internal fixation.

H₀₅ There will be no significant association between selected clinical variables of control and experimental group of patients and their outcome after the implementation of clinical pathway for patients undergoing Open reduction and internal fixation.

The conceptual framework for the study was developed on the basis of King's goal attainment theory, as nurses care for patients with open reduction and internal fixation, interact and communicate with patients and influence them to have better outcome and higher satisfaction, 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, demographic variable proforma for patients, clinical variable proforma, structured knowledge questionnaire for nurses, practice check list, patient satisfaction rating scale and patient outcome check list.

Quasi-experimental research design was adopted for conducting the study. The present study was conducted at Apollo Main Hospital, Chennai among nurses who take care of patients with open reduction and internal fixation. The study sample size for the present study was 30 nurses and 60 patients with open reduction and internal fixation, 30 in experimental group and 30 in control group who satisfied the inclusion criteria.

The investigator used the demographic variables of nurses, demographic variable proforma for patients, clinical variable proforma, 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 main 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 <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%).

Demographic Variables of Patients undergoing Open Reduction and Internal Fixation.

Most of the patients in control and experimental group undergoing open reduction and internal fixation were, graduates (60%), employed (96.67%), moderates workers (93.33%, 80.%), non vegetarian (100%, 90%), place of work (83.33%, 70%) with monthly income of >1500 (63.33%, 73.33%). The Majority of the patients in control and experimental groups were Males (76.67%, 73.33%) they were married (90%, 73%)

Clinical Variables of Patients undergoing Open Reduction and Internal Fixation

Majority of the patients in the control and experimental had the BMI between 19-24 (93.33%, 96.7%), patients had no co morbid illness (90%, 96.67%), no history of trauma (86.67, 70.67%), no family history of osteoporosis (100%, 100%) no past surgeries (100%, 70%) and following regular exercise (50%, 66.7%) respectively.

Frequency and Percentage Distribution of Pre and Post test Knowledge of Nurses Regarding Clinical Pathway for Open Reduction and Internal Fixation.

Majority of the nurses have inadequate knowledge (83.3%), whereas in post test majority of the nurses have adequate knowledge (76.6%) regarding clinical pathway for open reduction and internal fixation.

Frequency and Percentage Distribution of Practice of Nurses for Control and Experimental Group of Patients Regarding Clinical Pathway for Open reduction and internal fixation.

Most of the nurses had partially compliance scores on pre op (83.3%) and most of them have non compliance scores on day 0, 1 and 2 (26.7%, 26.7%, 26.7%) respectively for control group of Open reduction and internal fixation 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 Open Reduction and Internal Fixation 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 Open Reduction and Internal Fixation 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 Open Reduction and Internal Fixation Patients.

The mean and standard deviation of post test knowledge scores was higher (Mean= 16.97, SD=3.67) than the pre test scores (Mean= 8.8, SD=1.85). The difference was found statistically significant at $p < 0.001$.

Comparison of Mean and Standard Deviation of Pre and Post Test Knowledge of Nurses on Various Dimensions of Clinical Pathway for Open reduction and internal fixation patients.

The mean and standard deviation of post test knowledge was higher than the pre test on various dimensions of clinical pathway. The difference was found to be statistically significant at $p < 0.001$.

Comparison of Mean and Standard Deviation of Practice of Nurses for Control and Experimental Group of Open Reduction and Internal Fixation 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 and since the 't' value is higher than the table value, 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 Open Reduction and Internal Fixation Patients.

The mean and standard deviation of patient satisfaction on nursing care in experimental group of patients (Mean=34.7, SD=2.7) was high in comparison with mean and standard deviation of patient satisfaction of control group of patients (Mean=24.6, SD=3.52). The difference was found statistically significant at 99.9% level of confidence.

Comparison of Mean and Standard Deviation of Patient Satisfaction on Various Dimensions of Nursing Care in Control and Experimental Group of Open Reduction and Internal Fixation Patients.

The mean and standard deviation of satisfaction on various dimensions of nursing care in experimental group of patients is high in comparison with mean and standard deviation satisfaction in control group of patients. The difference was found statistically significant at $p < 0.001$.

Comparison of Mean and Standard Deviation of Patient Outcome in Control and Experimental Group of Open Reduction and Internal Fixation Patients.

The mean and standard deviation of patient outcome in control group of patients is lower (Mean=15.7, S.D=2.16) when compared to the mean and standard deviation of patient outcome in experimental group of patients (Mean=20.5, SD=1.46). The difference was found statistically significant at 99.9% level of confidence.

Association between Selected Demographic Variables and Pre and Post Test Knowledge of Nurses on Clinical Pathway for Open Reduction and Internal Fixation Patients.

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.

Association between Selected Demographic Variables and Outcome in Control Group and Experimental Group of Open Reduction and Internal Fixation Patients.

There was a significant association between nature of work and the patient outcome whereas there was no significant association between selected demographic variables and patient outcome in control and experimental group of patients.

Association between Selected Clinical Variables and Outcome in Control Group and Experimental Group of Open Reduction and Internal Fixation Patients.

There was no significant association between the clinical variables and the outcome in control and experimental group of patients.

Association between Selected Demographic Variables and satisfaction of nursing care in Control Group and Experimental Group of Open Reduction and Internal Fixation Patients.

There was no significant association between selected demographic variables and satisfaction of nursing care in control and experimental group of patients.

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 open reduction and internal fixation patients as well as the patient clinical 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. By assessing the effectiveness of clinical pathway for open reduction and internal fixation, we get a clear picture regarding different steps to be taken in all fields to improve the standards of nursing profession.

Nursing Practice

Nurses have a major role in assessing and providing necessary care to decrease the complication after the open reduction and internal fixation. Practising 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 Education

With emerging health care trends, nursing education must focus on clinical pathways that will help to enhance nursing care. The education to the students and the nurses in the clinical area could be in the form of continuing nursing education programs on clinical pathway for open reduction and internal fixation. The research findings serves as a guide to evidence based practice and hence the student should be informed about the research findings.

Nursing Administration

With the ever growing challenges of health care needs, the administrators have a responsibility to provide nurses with substantive continuing education opportunities. Nurse administrators should conduct periodical review meetings to evaluate the quality of clinical pathway.

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 Medical and Surgical Nursing, this will further encourage studies on the effectiveness of clinical pathway upon the knowledge and practice of nurses and patient outcome. Dissemination of the findings of evidence based practice through conferences, seminars, publications in national and international nursing journals and World Wide Web will benefit a wider community.

Recommendations

- The same study can be conducted on larger sample size to generalize the findings.
- A comparative study can be conducted in different settings with similar facilities
- A study could be conducted to analyze the relationship between the use of clinical and management of time by the nurse.
- A study can be done to evaluate clinical pathway for fracture patients with external fixation.

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