"A descriptive study to validate the defining characteristics of 'Impaired Physical Mobility' NANDA nursing diagnosis diagnosed among patients who underwent Total Knee Replacement from selected hospital in Mumbai using Fehring's CDV model."

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RESEARCH ABSTRACT

Validation studies are important for advancing evidence based nursing practice. In our study, we validated defining characteristics of NANDA nursing diagnosis of Impaired Physical Mobility in Total knee replacement patients. As per previous ROL, impaired physical mobility is one of the most common nursing diagnoses found in TKR patients mainly on first and second postoperative day, because of delayed identification of defining characteristics and improper nursing interventions. The objectives of this study is to validate defining characteristics of impaired physical mobility in TKR patients and to categorize them into major and minor, by using Clinical Diagnostic Validity (CDV) of Fehring model (1986).

For this purpose, Non experimental descriptive research design was used. A structured observation checklist was developed by the researchers on basis of modified Likert scale. Two expert nurses were selected based on their education and work experience. The mean of their age was 31.5 and mean of their work experience was 8.The pilot study was conducted on 5 TKR patients in FORTIS HOSPITAL which determined that the tool was unambiguous and practicable. The main study was conducted on patients who underwent TKR surgery having first and second postoperative day in LEVEL 4, 5, 6 of FORTIS HOSPITAL. Data was collected by two expert nurses on observational checklist by observing for presence or absence of defining characteristic. Total 20 samples of TKR patients were observed for their mobility on first and second postoperative day. Expert nurses observed TKR patients for defining characteristics of impaired physical mobility when patients were on bed and when they were mobilized from bed to chair and from chair to ward environment (ward passage) and they were rated by using CDV model –inter rater method.

In this study, total male patients were 30% and female patients were 70%.Total 55% of patients were of age 50-59yrs, 30% were in 60 -69 age criteria and 15%were in 70-79years age.35% Patients with co-morbidities like hypertension, diabetes ,seizures, hypothyroidism, etc.10%of patients were having family history of osteoarthritis.70%

patients were undergraduates and 30% were graduates.70%of patients were from middle-class socioeconomic status and 20%were from higher class and 10% were from lower class.

Total 12 defining characteristics along with their weighted reliability ratio are as follows: reluctance in attempt to move(1), difficulty in purposefully moving within the physical environment(1), limited range of motion(1), fear of falling(0.95), report of pain(1), gait changes(0.9), postural instability(0.92), slowed movement(1), decreased muscle endurance strength(1), uncoordinated movement(0.76), fear of dislocation of prosthesis(0), decreased reaction time(0.92). Results indicated 10 major (weighted ratio=0.8 and above) and 1 minor (weighted ratio=0.5 to 0.79) defining characteristic and 1 defining characteristic was irrelevant (weighted ratio below 0.5).Total DCV score was 0.87.Early intervention and identification of impaired physical mobility in TKR patient is crucial. As much evidence based research is not available, further refining in this area is needed.

CONCLUSION: The aim of the present study was to develop and validate the defining characteristics, operationally defined through ROL for the nursing diagnosis, impaired physical mobility in TKR patients on their first and second postoperative day. The defining characteristics should be assessed in patients with TKR using the selected sample of expert nurses and categorize them into major and minor .We found that total 10 defining characteristics such as reluctance in attempt to move, difficulty in purposefully moving within the physical environment, limited range of motion, fear of falling, report of pain, gait changes, postural instability, slowed movement ,decreased muscle endurance strength, decreased reaction time were characterized as major and uncoordinated movement was classified as minor and fear of dislocation of prosthesis became irrelevant. Total DCV score was 0.87.This evidence will help a nurse in timely identification of defining characteristics and to form accurate nursing diagnosis. This evidence based practice will come in handy for newly recruited staffs and student nurses for practicing nursing process. By using this, more and more nurses will have more confidence in the use of official NANDA nursing diagnosis Impaired Physical Mobility.

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"Gratitude makes sense of our past, bring peace for today, and create a vision for tomorrow"

-Melody Beattie

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The formation of this manuscript was not a small feat. We were a team of six members with immense bonfire. None of us was as smart as all of us. Regardless of differences, we all worked together in harmony with Esprit de corps. No member of a crew is praised for a rugged individuality of his rowing. Yet, needless to say that individuality counts as a team we worked dynamites.

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Every ceiling when reached becomes a floor, upon which one walks as a matter of course & prescriptive right. We wish to make more & more floors to tread on professionally again & again.

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CHAPTER-1

INTRODUCTION

"Education is a journey without destination"

A profession is a vocation founded upon specialized dedicated training the purpose of which is to supply objective counsel and service to others, for a direct and definite compensation, wholly apart from expectation of other business gain. Professionalization is the process of upgrading a social service-oriented occupation to make it more autonomous, more development oriented as well as accountable.

Nursing profession encompasses autonomous and collaborative care of individual of all ages, families, groups and communities, sick or well and in all settings. It includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people.

Nurses may be differentiated from other professionals by their approach to patient care, training and scope of practice. Nurses practice in wide diversity of practice area with the different scope and level of prescribed authority in each. "In order to establish independent professional status of nursing, distinct knowledge base is required. This knowledge base can be credibly accomplished through scientific theory and research" (Hayes, 1987, p.79). Integral to the development of knowledge base, a language must be established to describe the clinical judgments upon which nursing care is based (Gordon, 1982).

Nurse's standards can be maintained by delivering care based on the best available evidence by ensuring that the use of complementary or alternative therapy is safe and is the best interest of those under care, by keeping skills and knowledge updated skills and maintain clear and accurate records.

National Database of Nursing Quality Indicator (NDNQI) delivers evidence to support importance of investment in nursing strategy. It features nursing sensitive structure, process and outcome measures to monitor between quality indicators and outcomes. Other

than this periodic nursing audits (external and internal), optimum use of nursing process and standardized accreditation plays a major role in maintaining nursing standard.

In providing care, nurses implement the nursing care plan using the nursing process. The nursing process is the method used to assess and diagnose the needs, plan outcomes and interventions, implement interventions and evaluate the outcomes of the care provided. The nursing process uses clinical judgment to strike a balance of epistemology between personal, interpersonal and research evidence in which critical thinking plays a major part to categorize the patients issue and course of action.

The term nursing diagnosis is used to describe the sign and symptoms; defining characteristics that are derived from the nurses assessment of the patient to exclude problems that are treated by physician's interventions. Practice is the center of nursing, and nursing diagnosis has been the primary instrument for refining the content upon which practice is based (Aydelott & Peterson, 1987).

A nursing diagnosis is a part of the nursing process and clinical judgment about individual, family and community experiences/responses to actual or potential health problems/ life processes. NANDA (North American Nursing Diagnosis Association) is universally accepted for formulating nursing diagnosis. It was founded in 1982. The organization grew out of the National Conference Group, a task force established in 1973, the First National Conference on the classification of nursing diagnoses, held in St. Louis, Missouri, USA.NANDA International has approved more than 200 nursing diagnoses for clinical use, testing and refinement.

Nursing diagnoses are developed on data obtained during the nursing assessment and it provides the basis for selection of nursing interventions to achieve outcomes for which the nurse has accountability (approved at the ninth NANDA conference; amended in 2009 and 2013). In order to make a 'problem focused diagnosis' each of them must be supported by the defining characteristics.

Defining characteristics are observable cues/inferences that cluster as manifestations of a problem-focused, health-promotion diagnosis or syndrome. This does not only imply those

things that the nurse can see, but things that are seen, heard (e.g. the patient/family tells us), touched or smelled.

Nurses who use the official North American Nursing Diagnosis Association (NANDA) list of nursing diagnosis often find the diagnostic labels and their defining characteristics are not relevant and are not what they actually identify in clinical practice. Many of them were included with little empirical evidence. It is evidenced with study of validation of nursing diagnosis of anxiety by expert Brazilian nurses and clinicians using NANDA international defining characteristics in 2008 with semi structured questionnaire and sample of 120 nurses ,based on the framework of the diagnostic content validation model. The results showed that among the 71 characteristic of anxiety, 8 were identified as critical defining characteristics of anxiety (score>or =0.8) by the expert nurses.

Nursing diagnoses consists of Common related factor (those aetiologies associated with diagnosis for an actual problem), defining characteristic (assessment data that supports the nursing diagnosis), common risk factors (those situations or conditions that contribute to the patience potential to develop a problem or diagnoses), common expected outcome, Ongoing assessment (both independent and collaborative) and defining g characteristics .

Gathering evidence that nurses actually do identify common defining characteristics is the process of validation. Gordon and Sweeney have stated that the process of validation "involves determining if the pre-identified defining characteristics occur as a cluster in a sufficient number of cases." Although there is a need for empirical validation of nursing diagnosis, few practical approaches on how to proceed have been developed. Several models for validation of nursing diagnosis have been proposed and applied. The models of Richard Fehring are the most utilised, primarily the diagnostic content validation model (DCV) and the clinical diagnostic validity model (CDV) and differential diagnostic validation model (DDV).

Impaired physical mobility a nursing diagnosis approved by the North American Nursing Diagnosis Association, defined as the state in which an individual has a limitation in independent, purposeful physical movement of the body or of one or more extremities.

Alteration in mobility may be a temporary or more permanent problem. Most disease and rehabilitative states involves some degree of immobility (e.g. as seen in stroke, leg fracture, trauma, morbid obesity, and multiple sclerosis and even in osteoarthritis).

Osteoarthritis also known as degenerative arthritis is a group of mechanical abnormalities involving degradation of joints including articular cartilage and subchondral bone. Osteoarthritis is precipitating nursing diagnosis for more than 90% of the increasing number of total hip or knee joint replacement operations. It is more common in women, with female to male ratio varying between 5:1 to 4:1.

64% of people suffering from osteoarthritis complain of restricted activity due to knee pain. Although it is managed by lifestyles modification, analgesics, NSAIDS, majority of them get back to their optimum level of functioning by undergoing total knee replacement.

Total Knee replacement (TKR) is an effective procedure for the treatment of end stage osteoarthritis of the knee and the rate of this procedure continues to increase year on year.

Patients typically undergo several weeks of physical therapy and occupational therapy to restore motion, strength, and function. Treatment includes encouraging patients to move early after the surgery often range of motion (to the limits of the prosthesis) is recovered over the first two weeks (the earlier the better).

For knee replacement without complications, continuous passive motion (CPM) will not improve recovery. Additionally, CPM is expensive, inconvenient, and brings risk of complication while distracting patients from useful treatment.

With 718,000 hospitalizations, total knee replacement accounted for 4.6% of all United States operating room procedures in 2011. The number of total knee replacement procedures performed in U.S. hospitals increased 93% .By 2030, the demand for primary total knee arthroplasty is projected to increase to 3.4 million surgeries performed annually in the U.S.

In India 60,000 surgeries performed yearly.

In the care of orthopaedic patients i.e. Total Knee replacement the establishment of accurate Nursing Diagnosis can contribute to improvement in the patients' quality of life. Nursing goals are to maintain functional ability, prevent additional impairment of physical activity and ensure safe environment.

NEED OF THE STUDY

"The logic of validation allows us to moves between two limits of dogmatism and sceptism"- Anonymous.

The lack of research based literature and of research model for validating nursing diagnosis results in some in research efforts.

Research must however move forward if there has to be progress in nursing and medical diagnostic models and use of nursing diagnosis to improve communication among nurses.

The problem with nursing diagnosis is that there are few defining characteristics that nurses agree on as commonly identifiable and as suitable for labelling.

The nursing process has been the main methodological instrument for a professional practice systematic performance. Nursing diagnosis is understood as a stage of the process responsible for providing means for proposing exclusively nursing interventions regarding the detected health problems. In addition to being a work tool for those professionals, they provide the use of appropriate language, facilitating the communication with patients [1].

The 2008 NANDA edition, used in this study, comprises the taxonomic structure II, with 13 domains, 47 classes and 187 nursing diagnoses.

Among those domains, Activity/Rest has five classes. One of them is denominated Activity/Exercise and comprises eleven approved nursing diagnoses. That is defined as moving body parts (mobility), performing work or actions frequently (but not always) against resistance.

Among diagnoses in that class, impaired physical mobility is included, understood as physical movement limitation, whether independent or intentional, of one or more extremities.

Generally, impaired mobility is seen under a functional perspective by the individual's inability to move freely. Such inability can vary among individuals under similar conditions, and in the same individual, throughout different stages.

The presence of Impaired Physical Mobility diagnosis implies in changes in the gait speed, which can generate an increased risk of falls, in addition to higher dependency regarding daily activities, restraining individuals from returning to their working activities, causing difficulties in moving around their own home and to other locations.

It is very important to assess impaired physical mobility as prima facie as it can result in longer hospital stay, impaired, skin integrity, DVT, pulmonary embolism, respiratory infections etc.

This problem can be mainly identified or observed in patients who have undergone TKR.

One of the conditions that generally interfere in patients' mobility is total knee replacement. It is believed that the establishing of the nursing diagnosis of 'Impaired physical mobility' in orthopaedic patients may favour nursing implementation for the management of the impaired physical mobility in TKR patients and guide measures for its prevention. This study also proposes to highlight this diagnosis, validating the meaning of each defining characteristic.

Thus, the objective of this study is to validate the defining characteristics of the NANDA nursing diagnosis Impaired physical mobility and categorize them into major and minor in TKR patient.

STATEMENT OF PROBLEM

"A descriptive study to validate the defining characteristics of 'Impaired Physical Mobility NANDA nursing diagnosis 'diagnosed among patients who underwent total knee replacement in the selected hospital in Mumbai using Fehring's CDV model."

OBJECTIVES

1. To develop and validate the observational tool with the defining characteristics operationally defined through review of literature, for the nursing diagnosis impaired physical mobility in TKR patients.
2. To assess the defining characteristics of the nursing diagnosis 'impaired physical mobility' in selected sample of TKR patients.
3. To categorize which defining characteristics the nurses consider major and minor in the nursing diagnosis 'impaired physical mobility' in patients with TKR.

OPERATIONAL DEFINITION

Descriptive study: Descriptive research studies are to observe, describe, and document aspects of a situation as it naturally occurs, and sometimes to serve as a starting point for hypothesis generation or theory development.

In our study, the expert nurses are observing, describing and documenting of defining characteristics of nursing diagnosis impaired physical mobility in TKR patients.

Validation: - Validity refers to whether a study is able to scientifically answer the questions it is intended to answer. Validity is the extent to which a concept, conclusion or measurement is well founded and corresponds accurately to the real world. Content validity of defining characteristics and operational definitions should be examined before clinical observations done for patients having impaired physical mobility as a nursing diagnosis. Those characteristics and definitions are examined for comprehensiveness, appropriateness and clarity.

In our study, it refers to validation of defining characteristics of impaired physical mobility nursing diagnosis diagnosed among TKR patients on their first and second postoperative day, by using CDV model and classifying them into major and minor depending on their frequency of occurrence.

NANDA: NANDA INTERNATIONAL (formerly the North American Nursing Diagnosis Association) is a professional organization of nurse's standardized nursing terminology that was officially founded in 1982 and develops researches, disseminates and refines the nomenclature, criteria and taxonomy of nursing diagnosis.

Our study refers to the classification in the Taxonomy II North American Nursing Diagnosis Association.

EXPERT NURSES: Expert nurses are the one who is highly competent in their field of practice and has thorough knowledge and skills in assessing the defining characteristic of NANDA nursing diagnosis.

More recently Fehring's (1994) defined experts as "having a minimum of a master degree in nursing with a defined area of clinical expertise'' (p.59). Although he believed that a master degree was a minimum criterion, so criteria have been described so that a nurse may be considered an expert on nursing diagnosis. Each criterion described a score, and to be considered an expert, the person needs to obtain a minimum five points (criterion/points: Master degree in nursing:4; Master degree in nursing with dissertation content directed to nursing diagnosis study:1; publication of article in nursing diagnosis in reference journals:2;Article published on nursing on nursing diagnoses with relevant content to the area:2; PhD in the field of nursing diagnosis:2; Clinical experience, at least one year in the study area of diagnosis:1; and Certificate (specialization)of relevant clinical practice in the field of the diagnostic studies :2.

The higher the score, the greater the strength of the assessment evidence.

In our study, two expert nurses has thorough knowledge and skills in assessing the defining characteristic of NANDA diagnosis of Impaired physical mobility in post TKR patient on the first and second postoperative day. They have completed their diploma in nursing (G.N.M.) and are registered with Maharashtra Nursing Council and are pursuing their 2nd year studies of Post Basic B.Sc. Nursing. One of the expert nurse has 4 years' experience in orthopedic and 3 years' experience in midwifery and other expert nurse has 3 years' experience in C.V.T.S.

Defining characteristics: Observable cues/ inferences that cluster as manifestations of a problem-focused, health-promotion diagnosis or syndrome. This does not only imply those things that the nurse can see, but things that are seen, heard (e.g. the patient/family tells us), touched or smelled. It is the character peculiar quality of a person or thing, typical or distinctive.

In our study defining characteristics are the selected manifestation experienced by TKR patients due to impaired physical mobility. A list of total 12 defining characteristic selected from NANDA and other nursing care plans, as reluctance in attempt to move, difficulty in purposefully moving within the physical environment, limited range of motion, fear of falling, report of pain, gait changes, postural instability, slowed movement, decreased muscle endurance strength, uncoordinated movement, fear of dislocation of prosthesis, decreased reaction time, were taken.

Impaired physical mobility:- A nursing diagnosis approved by the North American Nursing Diagnosis Association, defined as the state in which the individual has a limitation in independent, purposeful physical movement of the body or of one or more extremities.

In our research impaired physical mobility is the restriction of movement experienced by the patients on the first and second day of TKR surgery.

TKR: Total Knee Replacement is a surgical procedure to replace the weight bearing surfaces of the knee joint to relieve pain and disability

In our research TKR patients upto 2nd postoperative day are the participants.

ASSUMPTION

- Patients who have underwent total knee replacement surgery experiences manifestations of impaired physical mobility.
- The defining characteristics of "Impaired Physical Mobility" stated in TKR patients is not the same through review of literature as that found in NANDA through nomenclature.
- The clinical nurses are considered as experts based on Fehring's CDV model, for the validation of NANDA nursing diagnoses "Impaired Physical Mobility" in TKR patients.

DELIMITATIONS:

- This study is deals with validation of One NANDA Nursing diagnosis.
- This study is only using one Fehring's Model Approach i.e. Clinical Diagnostic Validity model.

LIMITATIONS

- This study does not fulfill the criteria of expert nurses.
- Sample size is small.

HYPOTHESIS

Defining characteristics of impaired physical mobility given by NANDA nursing diagnosis are valid.

SCOPE OF THE STUDY

1) This study helps to validate one NANDA nursing diagnosis.

2) This study helps us to categorize defining characteristics into major and minor.

3) This study evidence will help a nurse in timely identification of defining characteristics and to form accurate nursing diagnosis

4) This study will help the nurse to know which defining characteristics to be identified before the diagnosis can be made.

5) This validation studies are important for advancing evidence based practice.

ETHICAL PRINCIPLES:

1. The research title was validated by the ethical committee of Fortis institute of nursing.
2. Before observation the patient was given an informed consent, which reveals willingness to participate.
3. Confidentiality about patient's details was maintained.
4. Complete privacy was given to the patient when observation was carried out.
5. The patient was assured that no harm will be done to him /her when the study is being conducted.
6. The patient was given an option of dropping out of the study at any point of the time.

CONCEPTUAL FRAMEWORK

A framework is a brief explanation of theory or those portions of a theory which are to be tested in quantitative study. Theoretical and conceptual framework is commonly used in quantitative research studies, which help to organize the study and provide a context for the interpretation of the study results. The terms theoretical and conceptual frameworks are used interchangeably, but actually they are different. Charter (1975) has stated that the conceptual framework formalizes the thinking process, so that others may read and know the frame of reference, basic to the research problem.

This study is validation of defining characteristics of impaired physical mobility of TKR patients on first and second postoperative day based on "FEHRING CONTENT VALIDATION MODEL" so the step of that model reflected by this conceptual framework.

In This Study:

OBSERVATIONAL CHECKLIST OF DEFINING CHRACTERISTIC:

First in our study, we need to develop an observational checklist of defining characteristic of impaired physical mobility in TKR patients. We referred defining characteristics of impaired physical mobility given by NANDA and also through ROL. The list of defining characteristic of impaired physical mobility in TKR patients on their first and second postoperative day. Each defining characteristic was operationally defined as to see in them in postoperative TKR patients.

Then the observational checklist was validated by 11 MSC teachers in Fortis Institute of Nursing. Changes were made in checklist as per feedback from teachers. In the scheduled week data was collected by observing the TKR patients by using the interrater reliability method the defining characteristics were classified as minor and major criteria.

As the model opted was content validity model –Clinical diagnostic validation model (CDV) by Inter-rater method. This model is based on obtaining evidence for the existence of a given diagnosis from the actual clinical setting. The original CDV model used a clinical

observation approach, with two expert nurses doing the observations and the ratings. The approach chosen will depend on the nature of the diagnosis being tested.

The steps of the CDV model using the observational approach are as follows:

1. Two clinical experts assess a given number of patients (e.g., 20) with the pre-established diagnosis that is being tested.
2. Both clinicians observe for the presence or absence of each defining characteristic of the diagnosis being validated. Each defining characteristic needs to be operationally defined before the actual assessment
3. Calculate the weighted interrater reliability ratios for each defining characteristic by the following formula

$$R = \frac{A}{A+D} * \frac{\frac{f1}{N} + \frac{f2}{N}}{2}$$

Where A = number of agreements; D = number of disagreements; F1 = Frequency of characteristics observed by the first rater; F2 = frequency of characteristics observed by the second rater; N = number of subjects observed; and R = weighted inter-rater reliability ratio.

The diagnosis and defining characteristics that are being validated should come from the official NANDA list, and a pre -diagnosis should be made by a professional nurse other than the researcher.

The formula used in this model to obtain weighted ratios is the standard formula for Interrater reliability; it is modified to take into account the relative frequency of a given defining characteristic. The defining characteristics are weighted according to the frequency of observation by each rater. This is done to prevent a defining characteristic that is infrequently observed but has interrater agreement from becoming highly rated defining characteristics for this model are the same as those in the DCV model.

In our research expert nurses were chosen on the basis of their clinical experience and knowledge about nursing process.

Data was collected and analyzed with the help of an evaluation instrument; it consisted of list of defining characteristic of NANDA nursing diagnosis Impaired Physical Mobility. Expert nurses assess the defining characteristic on observational checklist.

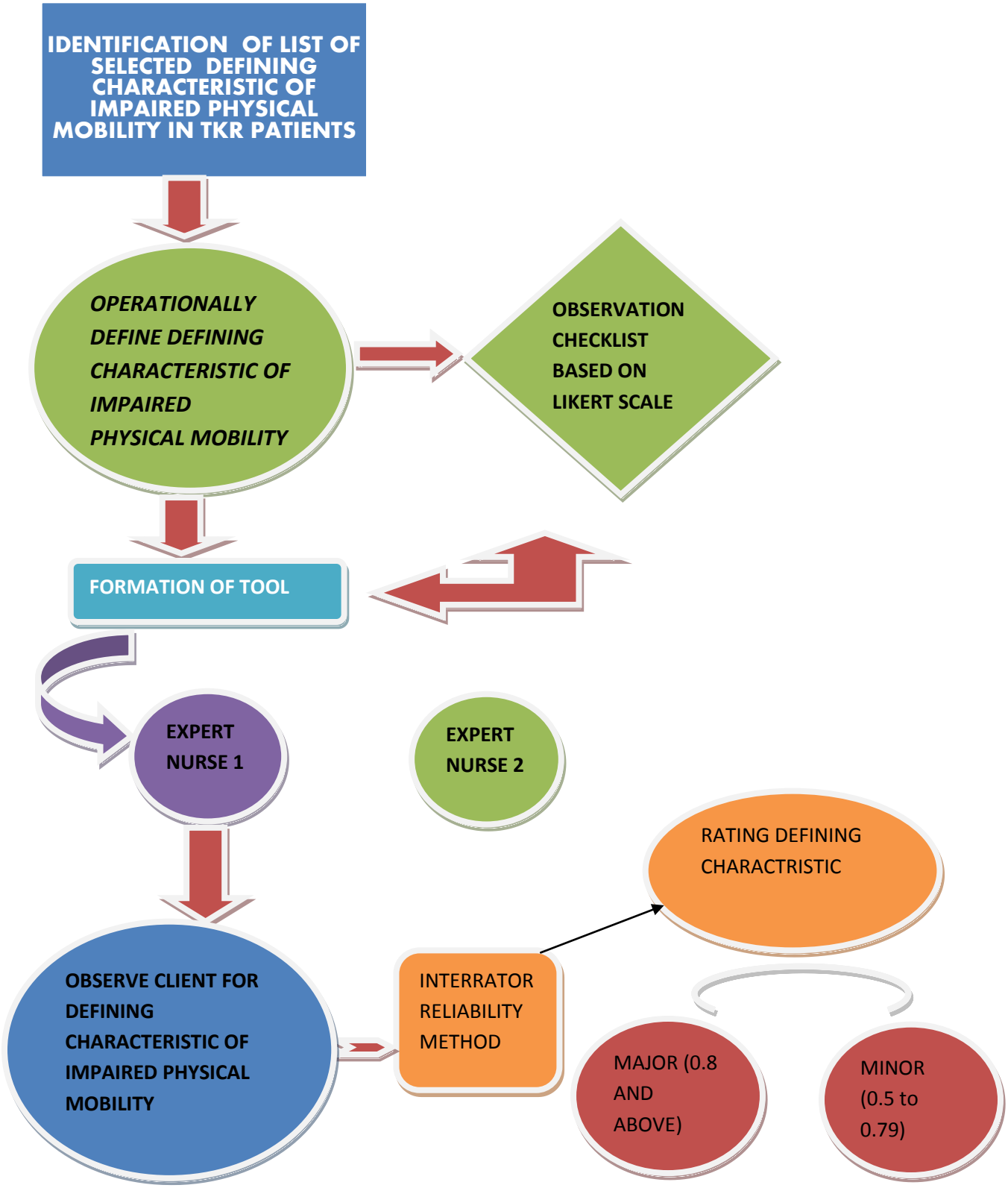
Initially we analyzed the demographic data of expert nurses (age and work experience) and represented it on bar graph.

Secondly we analyzed the data of demographic data of TKR patient (age, gender, educational status, diet, socioeconomically status and co morbidities) and represented them on a bar graph.

Thirdly we analyzed the defining characteristic of impaired physical mobility. For that first we assessed the reliability of each defining characteristic by using the above formula.

In our research the primary defining characteristics had a weighted score of 0.8 and above, while secondary were categorized with the weighted score of 0.5 to 0.79 and those below 0.5 were termed as irrelevant.

DIAGRAMMATIC REPRESENTATION OF CONCEPTUAL FRAMEWORK



REVIEW OF LITERATURE

"Literature adds to reality, it does not simply describe it.It enriches the necessary competency that daily life requires and provides; and in this respect, it irrigates the deserts that our lives have already become."-C.S.LEWIS

This chapter deals with the review of literature. According to Polit and Hungler (1978) reviewing the literature is important to gain a better understanding and the insight necessary to develop the conceptual framework in which the problem can be examined. It helps in the formulation of a specific problem, acquaints the investigator to what is already known in relation to the problem under review. It provides a basis for assessing the feasibility of a research problem and gives information on the research approach

CONTENT VALIDATION STUDY ON DEFINING CHARACTERISTICS OF NURSING DIAGNOSIS

1) A study to describe predictive power of clinical indicators for 'Self-care deficit' was done by nursing students in Los Angeles; (April-1998).A sample of 414 hospitalized patients was selected based on physical examination and interview. Patients with the diagnostic label of self-care deficit were significantly older in age, had a greater number of nursing diagnoses, required greater assistance in activities of daily living, and were less mobile than those without the diagnostic label. While 18 of 32 clinical indicators were positively related to self-care deficit, five clinical indicators were sufficient to diagnose SCD .Further development of the method may be useful in improving diagnostic accuracy and efficiency of nursing diagnoses.

2) A study to validate the nursing diagnosis of 'Anxiety 'among expert Brazilian nurses and clinicians using NANDA international defining characteristics and to compare the clinical judgments of the experts and clinicians was conducted by college of nursing, Brazil (2008). A convenience sample of 120 nurses was evaluated using a semi structured questionnaire based on the framework of the diagnostic content validation model. NANDA international

defining characteristics of the Brazilian Portuguese version were used. The results showed that among the 71 characteristic of anxiety, 8 were identified as critical defining characteristics of anxiety (score>or = 80) by the expert nurses. Brazilian nurses accepted the NANDA international definition for nursing diagnosis of anxiety although some defining characteristics might differ due to cultural differences. They recognized that the adequate preparation of undergraduate and postgraduate nurses in nursing diagnosis is important in improving the quality of care given to patients.

3) A study to validate the defining characteristics described in the NANDA-I taxonomy & those identified through a literature review for the nursing diagnosis 'nausea'. The study adopted the Fehring's model, (1987). A sample of 52 nurses who scored more than 5 on the criteria in Fehring's (1994) established for experts selection were selected through an active search for expert professional. They concluded that out of 52 experts who answered the instrument, 82.69% agree that the nursing diagnosis nausea belongs to domain 12 - comfort and class 1-physical comfort (78.85%). The large majority agrees with the statement and definition of NANDA 1 (98.08% AND 82.69% respectively) out of 12 defining characteristics analysed, 4 were classified as main (report of nausea, increased salivation, aversion towards food and gagging sensation) and 8 at secondary (increase swallowing sour taste in mouth, paleness, tachycardia, sweating, feeling of heat and cold, alteration in blood pressure and pupil dilation). No variable was considered irrelevant. The total score of the diagnosis obtained by adding individual score, divided by the total number of defining characteristics were classified according to the obtained scores: main (weighted average of 0.80 or higher), secondary (means between 0.50 and 0.79) and irrelevant (means 0.50 or less).

4) A study to validate the defining characteristics of 'Body image disturbance' and to specify its major and minor defining characteristics in Japanese culture in Japan by a group (Ogasawara C et al) in Osaka University. Using Fehring's content validation model a qualified sample of 149 RNs with average of 10 years of clinical experience and knowledge of nursing diagnosis was given a questionnaire which consisted of 21 defining

characteristics from NANDA, 8 additional items from the literature and 2 distracting characteristics. 4 major diagnostic content validation score of 0.75 and higher and 15 minor defining characteristics with DCV scores from 0.60-0.74 were identified. This study provides a foundation for further study of cultural appropriate defining characteristics for use in Japan.

5) A study to validate the nursing diagnosis 'Fear' in paediatric nursing care was conducted by a group (Jana Markova, Lenka Mazalova, Jana Kamenickove, Jana Zapletalova, and Zdena Miksova) in 2012. The sample selected were paediatric patients aged between 6-16 years and the model used was DCV. The project sub goals were to select a group of NANDA-1 nursing diagnosis, to make diagnostic assessments and conclusions in a group of subjects and to examine the rate of agreement between diagnostic conclusions made by two experts. Of the 26 characteristics studied diagnosis Fear the Fehring's model classified 4 as minor (weighted ratio R between 0.651 and 0.569) and 22 as non-relevant. (R < or equal to 0.5) of the 7 related factors one was classified as minor(R=0.595) and the others as non-relevant (R<0.5)

STUDIES RELATED TO NURSING PROCESS

6) A study to validate four nursing outcomes indicators of the nursing outcomes classification-NOC for the nursing diagnosis 'Self-care deficit: Bathing/hygiene' presented by master's students in Brazil postoperative orthopaedic patient. An instrument containing the outcomes indicators self-care: activities of daily living, self-care: Bathing, Self-care: hygiene and Self-care: oral hygiene was built, along with a Likert scale ranging from 1 to 5 (1=not important, 5=extremely important). The experts were nurses who care for these patients for at least a year and make use of nursing diagnosis. Out of 34 indicators, 2 (6%) were considered as main temporary indicators, 22 (65%) as secondary temporary indicators and 10 (29%) were discarded. The main and secondary temporary indicators will be used during the bathing observation of patients in postoperative of total hip replacement, and their development will be monitored. Study limitations include the

delayed return and some nurses' difficulty to fill out the instrument, besides the lack of knowledge on the NOC.

7) A cross-sectional retrospective study to validate the Nursing Process from literature to practice done by a group (Simoni Pokorski, Maria Antonito Mores, Regis Chiarelli, Angelita Paganin Costanzi, Endf). The sample comprised of medical records of adult patient admitted to a surgical, clinical or intensive care unit were reviewed to identify the nursing process steps accomplished during the first 48th hour after admission. The form of data collection was structured according to other records. The study concluded that out of 302 medical records were evaluated nursing records and physical examination were included in over 90% of them. Nursing diagnosis was not found in any of the records. Among the steps performed prescription was the least frequent. Evolution of the case was described in over 95% of the records. Study concluded that all nursing step recommended in the literature, except for diagnosis are performed in the research institution.

CONTENT VALIDATION STUDY RELATED TO IMPAIRED PHYSICAL MOBILITY

8) A cross sectional clinical validation study of 'Impaired physical mobility' of patients submitted to cardiac catheterization by the post graduate nursing students, Brazil (October 2012). Sample used were 250 patients by Fehring's content validity model. 3 of the 11 NANDA - International defining characteristics assessed in this study were validated: limited range of motion, limited ability to perform gross motor skills, and difficulty turning, although discomfort was not validated as it rarely occurred. Implication was validation studies are important for advancing evidence-based practice.

9) A clinical validation study of 'Impaired physical mobility' in patients with stroke was conducted by the MSc nursing students in Brazil A total 121 patients were evaluated at rehabilitation units from (November 2007 - March 2008) through an interview and physical examination. The diagnosis was present in 90%. Difficulty turning was the most present characteristic and there were 3.4 related factors per patient, and most reported

decrease strength and endurance besides neuromuscular impairment (100%). The defining features that were mostly observed were difficulty in turning sides, decreased reaction time, non-coordinated movement and limited capacity to perform fine motor abilities. Postural instability was not found in any of the patient. Related factors like decrease muscle strength and neuromuscular losses were found in 100% of the population. Therefore, the importance of nursing diagnostic process stands out with a view to identify the main defining features and develop an efficient and individualized action plan.

STUDY RELATED TO TOTAL KNEE REPLACEMENT PATIENTS

10) A cross-sectional observational study on variations in delivery and exercise content of physical therapy rehabilitation following total knee replacement surgery by Carol Otis, Department of physical therapy of Arcadia University, USA in 2014. Purposes of this study were to describe the amount and exercise content of PT provided in the terminal episode of PT care following TKR and to examine factors associated with utilization and content. Subjects included participants in the clinical trial of behavioural interventions for patients undergoing primary unilateral TKR who had completed their post TKR rehabilitation. 102 in/out patient care and 40 in home care. Information on utilization and exercises were extracted from retrospective review of the PT records.90 (88%) outpatient and 27 (68%) home care PT records showed were checked. Records showed variability in timing, amount and content of PT. Patient receiving outpatient PT had more visits and remained in PT longer ($P<0.001$). Exercises known in the TKR literature were utilized more frequently in the outpatient setting ($P=0.001$) than in home care. Records from settings had limited documentation of strengthening progression. The study reveals considerable variability in timing, utilization and exercise content of patient following TKR and suggests suboptimal exercise for strengthening.

NURSING CARE PLAN OF TKR PATIENTS

11) In the nursing care plan of patients of total knee replacement with the nursing diagnosis - Impaired physical mobility following defining characteristics was found : pain and weakness in weight-bearing extremity associated with surgery on the knee; prescribed activity and weight-bearing restrictions following total knee replacement; generalized weakness associated with surgery; depressant effect of anaesthesia and some medications (e.g. narcotic [opioid] analgesics, centrally acting muscle relaxants, some antiemetic);fear of falling, dislocating prostheses, and compromising surgical wound, reluctance to attempt movement, difficulty purposefully moving within the physical environment; Reports of pain/discomfort on movement; Limited ROM; decreased muscle strength/control

12) **DEMOGRAPHIC DATA ON OSTEOARTHRITIS**

Osteoarthritis is the most common form of arthritis in the UK. The risk of developing osteoarthritis increases from the late 40s.In the UK 8.75 million people in the have sought treatment for osteoarthritis. 33% of people aged 45 years and over, 49% of women and 42% of men of those aged 75 years and over. Women are more likely than men to have sought treatment. A total of 45000 TKR were performed last year in India. During the previous 5 years the number of TKR performed in India has increased to an average of 30% each year and the same growth rate is expected in coming 10 years. This translates into more than 3lakh 50 thousand TKR by the end of decade. This data brings into focus the importance and need to discuss certain issues related to TKR in terms of the needs of Indian or Asian population.

Optimum mobility is primary expectation of every patient undergoing TKR. This expectation can be fulfilled only with timely interventions for impaired physical mobility. This brings into picture the importance of accurate nursing diagnosis and interventions. From the above review it has been found that one of the conditions that interfere with patient's mobility is total knee replacement surgery, but very less study have been conducted on validation of defining characteristics of nursing diagnosis impaired physical mobility in TKR patients. So there is need to further refining .Apart from the defining

characteristics given by NANDA we found that there are certain defining characteristics such as pain and fear of dislocation of prosthesis in the nursing care plans which needs further validation. We also noted that Fehring's content validity model is one of the most appropriate model for validating the defining characteristics of nursing diagnosis.

CHAPTER -3

RESEARCH METHODOLOGY

The methodology of research indicates the general pattern of organizing the procedure for gathering valid reliable data for the purpose of investigations. Thus research methodology organizes all the components of the study in a way that is more likely to result in valid answers to the sub problems that have been posed,

This chapter deals with the description of methods and different steps used for collecting and organizing the data.it includes research approach, research design, the setting of the study, sample and sampling techniques, data collecting procedure and plan for data analysis.

RESEARCH APPROCH

The research approach explains the basic procedure for the conduct of research enquiry. It also suggests possible conclusion to be drawn from the data. In the present study, a descriptive approach was used to validate the defining characteristics of NANDA nursing diagnosis 'Impaired physical mobility 'diagnosed in patients with Total knee replacement using expert nurses. Research approach or research design refers to the way in which the investigator plans or structures the research process.

In order to answer the research questions and, meet the aims and objectives of the study it was important to select the most appropriate design and explain the link from research question to method. In practice the selection of the research design depends largely on the beliefs and values of the investigators, the resources available and cost; and also the time available and how accessible the respondents are (Leedy and Ormond 2001; Creswell 1994).

A number of factors influenced the choice of the research methodology. The overriding consideration of the research design was to ensure that the research questions were answered. This was determined in terms of both substantive and methodological issues. In the present study the researchers ensured that substantively the design matched the aims of the research. Methodologically the main design issues were that the research design provides the most accurate, unbiased, interpretable answers possible to the research questions and whether it yields replicable results.

RESEARCH DESIGN

The investigator's overall plan for obtaining answers to the research question for testing the research hypothesis is referred to as research design.

The research design incorporates the most important methodology decisions that a researcher makes in conducting a research study. It depicts the overall plan for organization of scientific investigation. It helps the researcher in the selection of subjects and observation of the type of statistical analysis to be used to interpret the data. The research design for the present study is non-experimental descriptive study.

VARIABLE OF THE STUDY

Variables are the conditions or characteristics that the investigator manipulates, controls or observes. In this study univariate variable is used.

Defining characteristics of nursing diagnosis "impaired physical mobility" is the variable of the study.

SETTING OF THE STUDY

The Setting is defined as the physical location and condition in which data collection takes place in a study. It may be natural setting or laboratory setting depending upon the study topic and the researcher choice.

The setting of this study is clinical area where we get post-operative TKR patients, for which we have selected FORTIS HOSPITAL BHANDUP.

POPULATION

Population refers to total category of person or objects that meet the criteria for study established by the researcher having and observable characteristic in common.
Target population refers to the population that the researcher wishes to study, and is the population about which the researcher wishes to make a generalization.
In our study our target population is TKR patients.
Accessible refers to aggregate of cases which confirm the designated criteria and meet the criteria for inclusion in the study. That is available for the researcher.

In our study accessible population is TKR patients from Fortis Institute hospital.

SAMPLE AND SAMPLING SIZE

Sample is a subset of population selected to participate in a study.

In this study, the sample is 20 TKR patients which were selected based on selection criteria.

CRITERIA FOR SAMPLE SELECTION

Patients were selected based on the following criteria:

- First and second post-operative day
- Impairment in mobility is only due to TKR and not due to any other co-morbidity
- Patients who are willing to be a part of the study.

SAMPLING TECHNIQUE

Sampling refers to the process of selecting a portion of the designated population to represent the entire population.

As the selection of the samples depends upon their availability, the sampling technique used was non probability convenience method of sampling. This entails the use

of the most readily available respondents in the study, until the desired sample is reached. (Burns and groove, 1987)

Non probability sampling involves selecting a sample through nonrandom methods.

In our study, the sampling used is Non-probability convenient sampling. The sample of study is TKR patients of Fortis hospital.

TECHNIQUE AND TOOL:

A) <u>Technique:</u>

1) **Interview technique:** To elicit the personal information and medical information of the respondents.
2) **Observational technique**: This research incorporates collection of data with respect to the defining characteristics of NANDA nursing diagnosis "Impaired physical mobility" among TKR patients. Thus, the observational technique was thought to be the most suitable one and accepted as the defining characteristics can be accurately assessed in the patients through observation.

B) <u>Tool</u>:

In our study tool consisted of three sections i.e.

Section1- Demographic data of expert nurses,

Section2- demographic data of patients,

Section3- 12 defining characteristic with their operational definitions described on observational checklist. The experts were asked to indicate whether given defining characteristics were present or absent.

DEVELOPMENTOF THE TOOL

The development of the tool is the step by step procedure for which investigator adopted a practical and theoretical approach.

Prior to the preparation of the tool the investigator reviewed various literature on books, journals and websites to find out the defining characteristics and their conceptual definitions of impaired physical mobility in post TKR patients. Opinions and guidance regarding the questionnaire was taken from lecturers and physiotherapists.

Thus the investigators personal observations, .clinical experience, the opinion of the experts and literature review helped in the formulation of tools,

VALIDITY:

The content validity of the tool is concerned with the extent to which tool reflex the variable it seeks to measure.

To determine the content and construct validity the tool was prepared and given to experts from nursing fields. And individualized evaluation from 11 M.sc teachers from Fortis college of Nursing was obtained. Significance was incorporated in the tool with consultation of our guide.

RELAIBILITY:

The reliability of the tool refers to the extent to which all the instrument's items are measuring the same attribute. The observational tool was administered to 5 respondents in the clinical area. Interrater reliability showed high agreement between the researchers observation of 5 respondents. The correlation Kappa co-efficient computed on the entire tool was r=1.

PILOT STUDY:

Pilot test is a small scale study in which the results are only preliminary and intended only to assist in design of a subsequent study.

A pilot study was conducted from 10/03/2015-15/03/2015 in the medical surgical wards of Fortis Hospital in order to ensure feasibility of the tools and the research methodology and to assess the practicability of the research study. The pilot study group comprised of 5 patients similar to the intended study subjects. The pilot study determined that there was no ambiguity or extraneous material in the observational checklist.

The respondents were selected as per the selection criteria of the study, both the researchers approached each patient and took their informed consent. The investigators promised an assurance of maintaining the confidentiality of the data. The confidentiality

applied to the responses of the individual respondents and name of the respondents (anonymity) who would participate in the research.

The first researcher collected the patients data based on interview at the bedside and assessed the patient thereafter as per the observational tool. Approximately 10 minutes later, the second researcher assessed the same respondent. Each patient was observed for the period of 15-20 minutes. This plan of data collection was continued till 5 respondents were recruited in the study. Weighted interrater reliability ratio formula stated in Fehring's CDV model was used to examine the result of the pilot test.

Pilot study indicated that 11 of the 12 defining characteristics fell into major criteria and one into minor criteria. Total DCV score was 0.91 which indicated fair reliability.

DATA COLLECTION PROCESS

The period of data collection commenced from 17/03/2015-29/03/2015.Prior to the commencement of pilot study, formal administrative permission was obtained. The data collection was done in one stage. The same plan was implemented as per the pilot study

PLAN FOR DATA ANALYSIS

1) The data would be organized in master code sheet

2) The demographic data of the expert clinical nurses would be analyzed using frequency percentage

3) Demographic data and illness related data of the respondents would be analyzed using frequency percentage,

4) The data of the observational tool will be analyzed by interrater reliability for the nursing diagnosis ability ratio as stated in the Fehring's CDV model, to analyze major and minor defining characteristics for the nursing diagnosis "Impaired Physical Mobility "in TKR patients.

CHAPTER 4

ANALYSIS, INTERPRETATION AND DISCUSSION

Analysis and interpretation of data is the most important phase of research process, which involves the computation of the certain measures along with searching for pattern of relationships that exists among the data group. Data collection is followed by analysis and interpretation of data, where collected data are analysed and interpreted in accordance with study objectives. Analysis and interpretation of data includes compilation, editing, coding, classification, and presentation of data. Analysis and interpretation of qualitative and quantitative data follow different path.

This chapter deals with the analysis and interpretation of the data collected in which (two expert nurses) expert nurse1 and expert nurse 2, observed total 20 TKR patients.

The data collected was classified based on the objective of the study in the following manner.

TABLE 1: DEMOGRAPHIC DATA OF EXPERT NURSES

TABLE1 (A): AGE of Expert nurses (mean =31.5)

N=20

SR NO	AGE OF EXPERT NURSE	YEARS
1	EXPERT NURSE 1	36
2	EXPERT NURSE 2	27

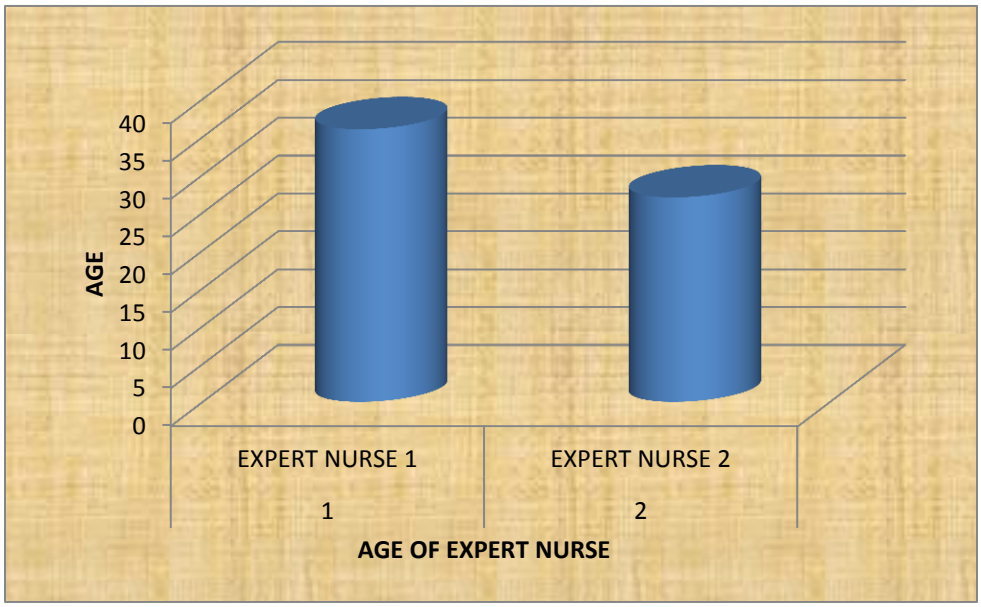


FIGURE NO (1): Age of expert nurse

INTERPRETATION: Figure no.1 indicates age of the expert nurses

TABLE 1(B): CLINICAL EXPERIENCE OF EXPERT NURSES (Mean=8)

SR NO	CLINICAL EXPERIENCE OF EXPERT NURSE	YEARS
1	EXPERT NURSE 1	13
2	EXPERT NURSE 2	3

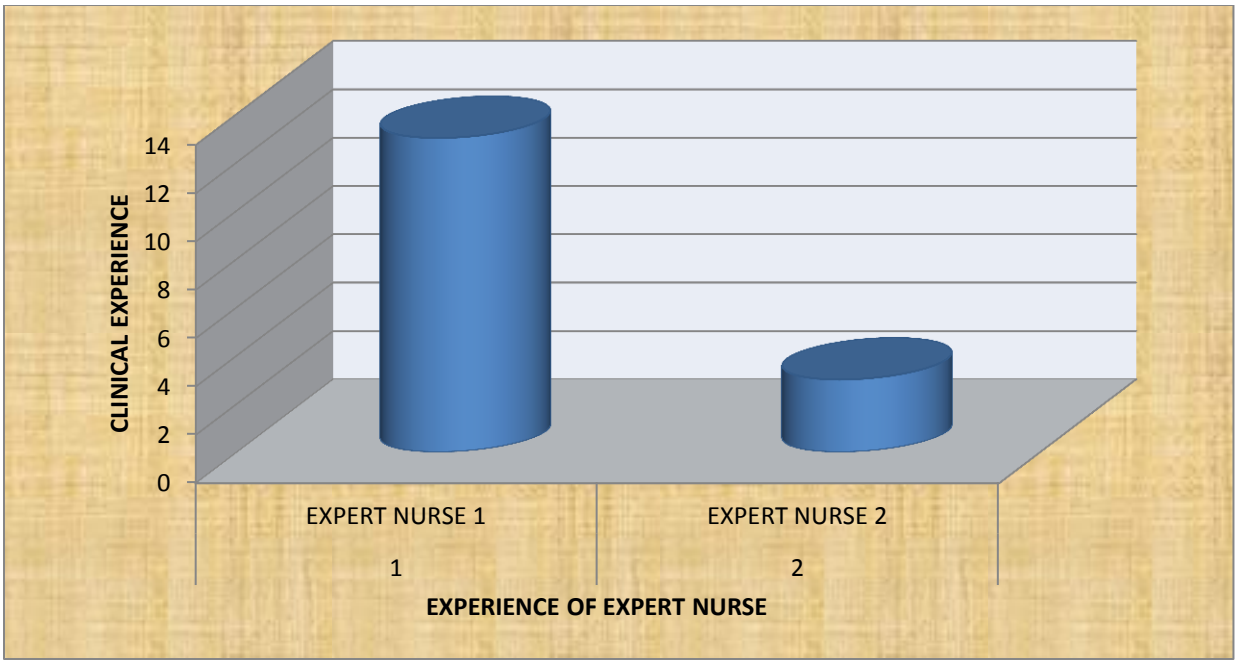


FIGURE NO (2): Experience of expert nurses

INTERPRETATION:

According to the above represented data (depicted in table no.1A and 1B) the expert nurses in this study are of 27 and 36 years giving mean of 31.5 years and have work experience of 3 and 13 years resulting in mean of 8 years.

TABLE 2: DEMOGRAPHIC DATA OF CLIENT

TABLE: 2(A) GENDER OF TKR PATIENTS

(N-20)

SR NO	GENDER	FREQUENCY	%
1	MALE	6	30%
2	FEMALE	14	70%

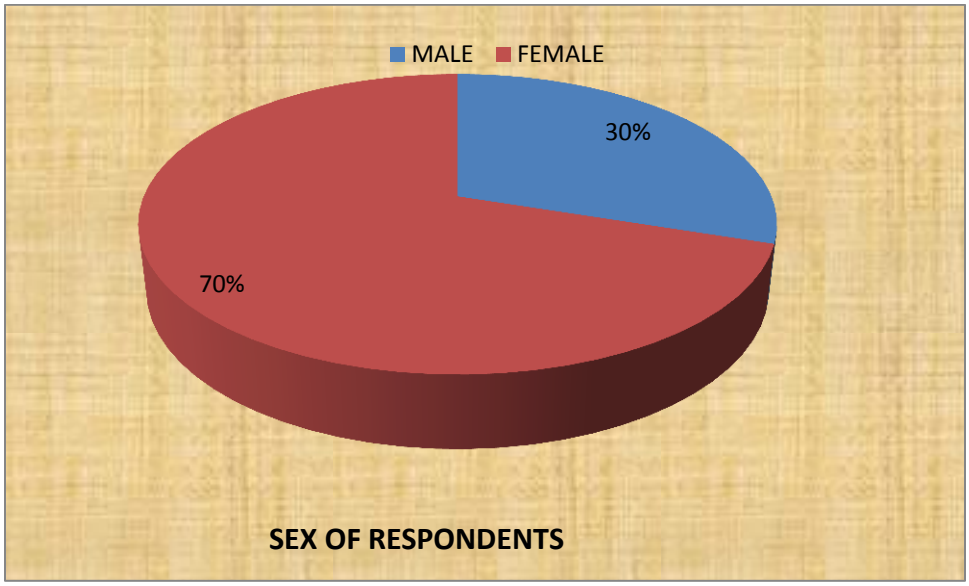


FIGURE NO 3: Gender of respondents

INTERPRETATION: Figure no (3) indicates that majority of patients who undergo TKR are females (70%)

TABLE: 2(B): AGE OF THE TKR PATIENT

(N=20)

SR NO	AGE GROUP	TOTAL	PERCENTAGE
1	50-59 years	11	55%
2	60-69 years	6	30%
3	70-79 years	3	15%

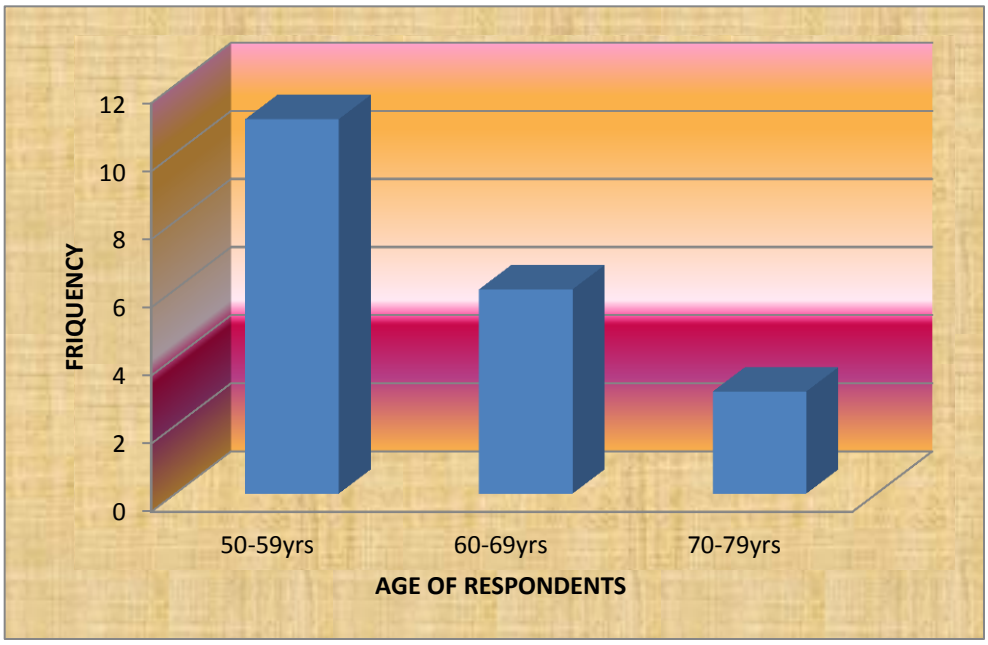


FIGURE NO 4: Age of respondents

INTERPRETATION: Figure no (4) indicates that maximum patients undergoing TKR are in the age group of 50-59 years

TABLE: 2(C): HIGH RISK GROUP

(N-20)

SR NO	RISK FACTOR	FREQUENCY	%
1	AGE > 50	20	100%
2	CO-MORBIDITY	7	35%

3	HEREDITARY	2	10%

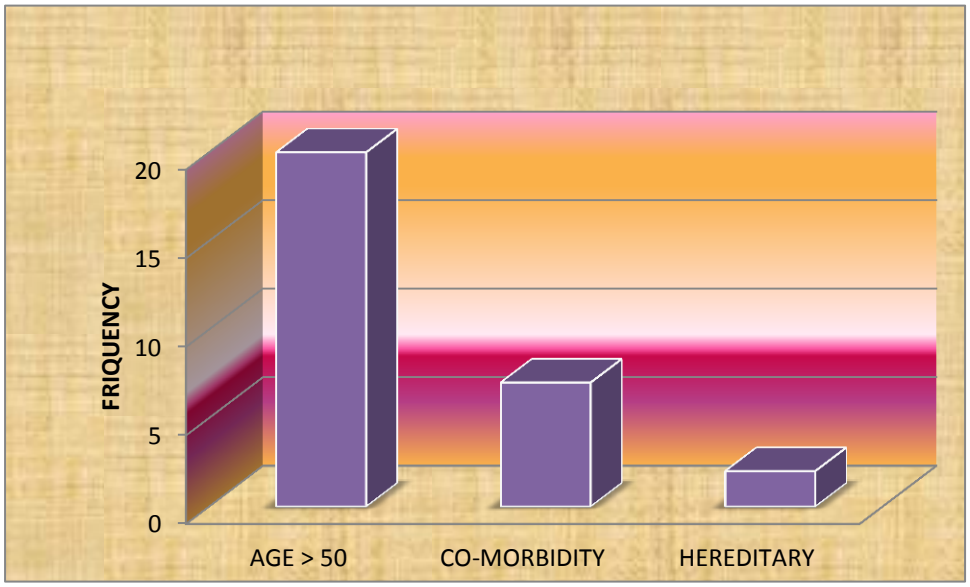


FIGURE NO 5: Risk factors of respondents

INTERPRETATION:

Figure no (5) indicates that patients who are more than 50 years of age pose the highest risk for undergoing TKR

TABLE: 2(D): SOCIO-ECONOMIC STATUS OF TKR PATIENTS

(N-20)

SR NO	SOCIO –ECONOMIC STATUS	FREQUENCY	%
1	UPPER CLASS	4	20%
2	MIDDLE CLASS	14	70%
3	LOWER CLASS	2	10%

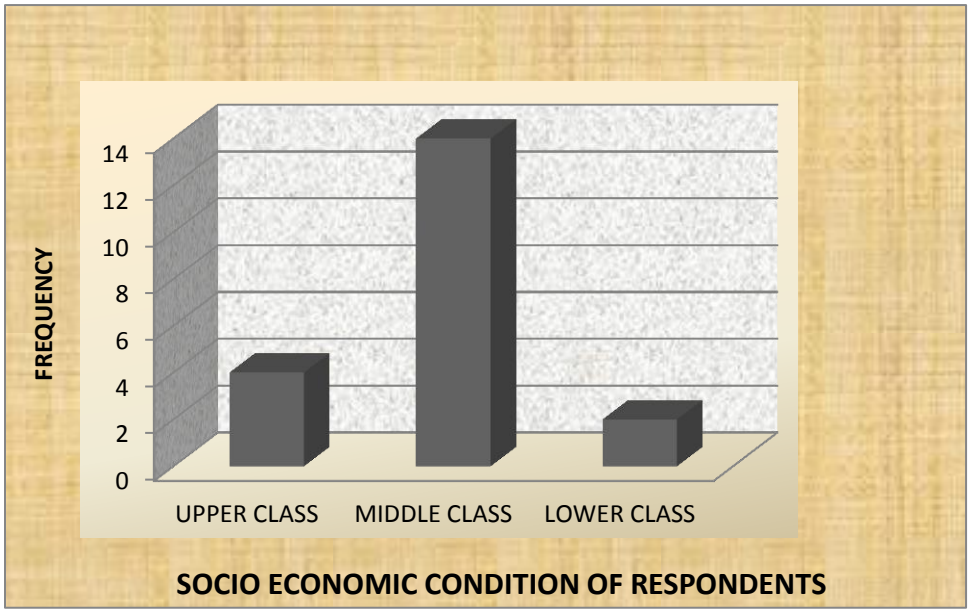


FIGURE NO 6: Socio economic condition of respondents

INTERPRETATION: Figure no (6) indicates that people who fall into middle class have higher chances of undergoing TKR surgery

TABLE 2(F) EDUCATIONAL STATUS OF TKR PATIENTS

(N=20)

SR NO	EDUCATIONAL STATUS	FREQUENCY	%
1	GRADUATE	6	30%
2	UNDER-GRADUATE	14	70 %

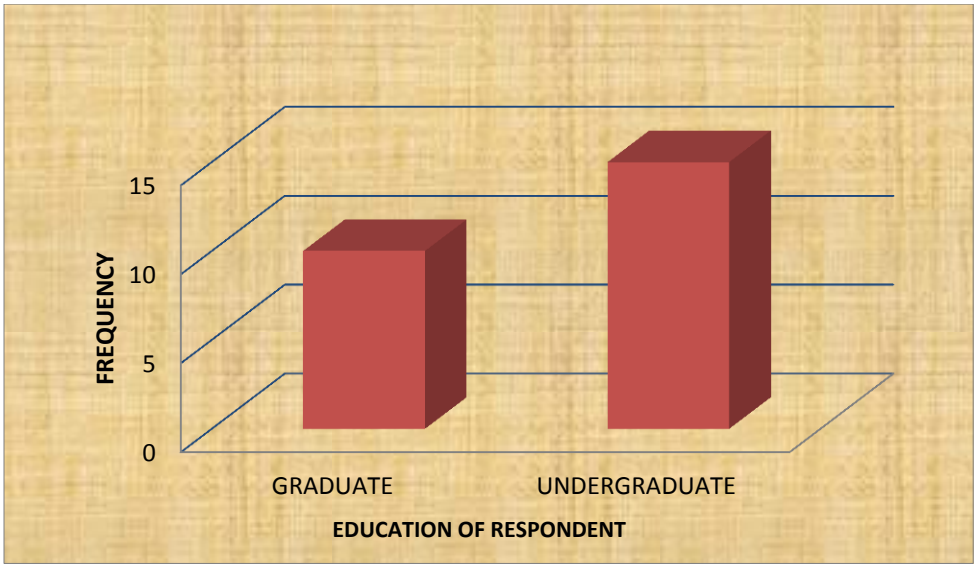


FIGURE NO 7: Education of respondents

INTERPRETATION: The above figure indicates that people who are less educated are more likely to undergo TKR surgery

TABLE NO. 3: DEFINING CHARACTERISTIC OF IMPAIRED PHYSICAL MOBILITY IN TKR PATEINTS AND THEIR WIEGHTED RELIABILITY RATIO

(N=20)

SR NO	DEFINING CHARACTERISTICS	WEIGHTED RELIABILITY RATIO
1	RELUCTANCE IN ATTEMPT TO MOVE	1
2	DIFFICULTY IN MOVING WITHIN THE PHYSICAL ENVIRONMENT	1
3	LIMITED RANGE OF MOTION	1
4	FEAR OF FALLING	0.95
5	FEAR OF DISLOCATION OF PROSTHESIS	0
6	REPORTOFPAIN/DISCOMFORT ON MOVEMENT	1
7	GAIT CHAINGES	0.9
8	POSTURAL INSTABILITY	0.92
9	SLOWED MOVEMENT	1
10	UNCOORDINATED MOVEMENT	0.76
11	DECREASED REACTION TIME	0.92
12	DECREASED MUSCLE ENDURANCE STRENGTH	1

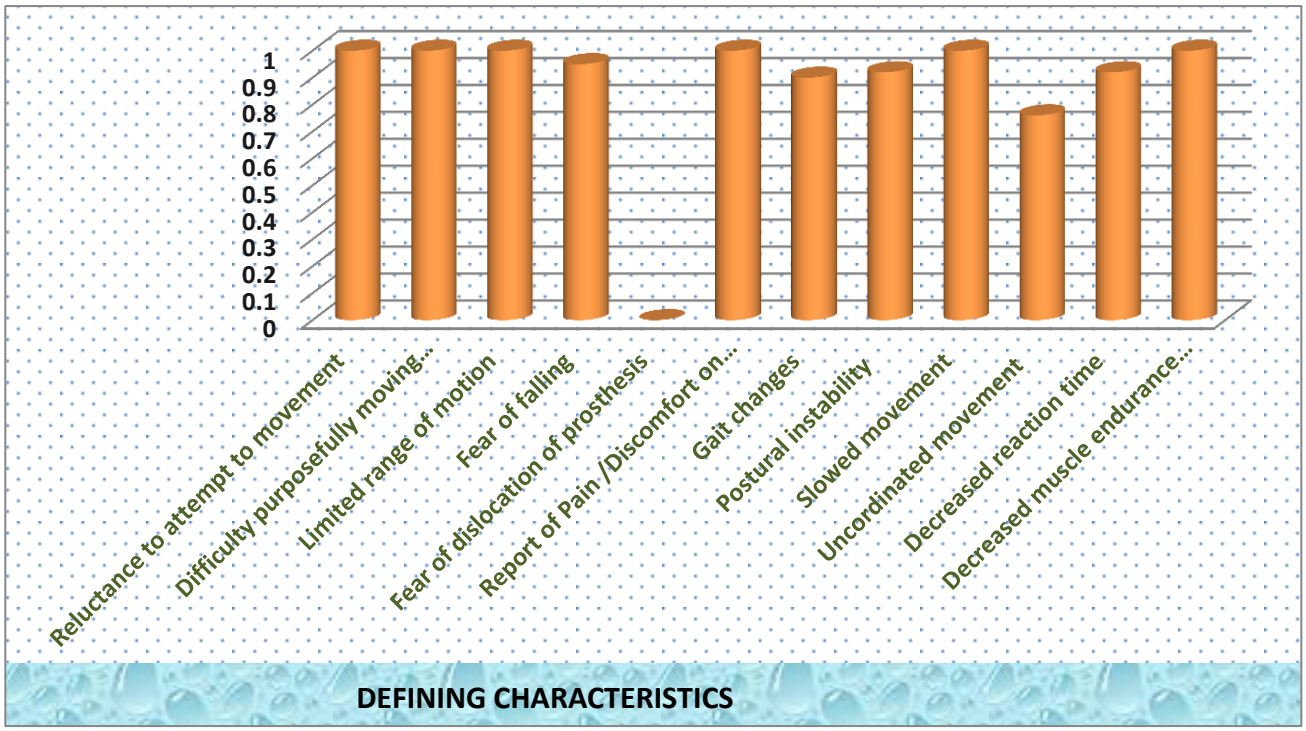


FIGURE NO 8: Defining Characteristics

INTERPRETATION: The above figure shows that reluctance in attempt to move, difficulty in moving within the physical environment, limited range of motion, fear of falling, report of pain/discomfort on movement, gait changes, postural instability slowed movement, decreased reaction time fall into the major criteria whereas unco-ordinated movement fall into the minor category and fear of dislocation of prosthesis was discarded due to minimum reliability score.

SR NO	DEFINING CHARACTERISTICS	WEIGHTED RELIABILITY RATIO
A]	MAJOR CHARACTERISTICS	
1	RELUCTANCE IN ATTEMPT TO MOVE	1
2	DIFFICULTY IN MOVING WITHIN THE PHYSICAL ENVIRONMENT	1
3	LIMITED RANGE OF MOTION	1
4	FEAR OF FALLING	0.95
5	REPORT OF PAIN /DISCOMFORT ON MOVEMENT	1
6	GAIT CHAINGES	0.9
7	POSTURAL INSTABILITY	0.92
8	SLOWED MOVEMENT	1
9	DECREASED MUSCLE ENDURANCE STRENGTH	1
10	DECREASED REACTION TIME	0.92
B]	MINOR CHARACTERISTICS	
1	UNCOORDINATED MOVEMENT	0.76
C]	DISCARDED	
1	FEAR OF DISLOCATION OF PROSTHESIS	0

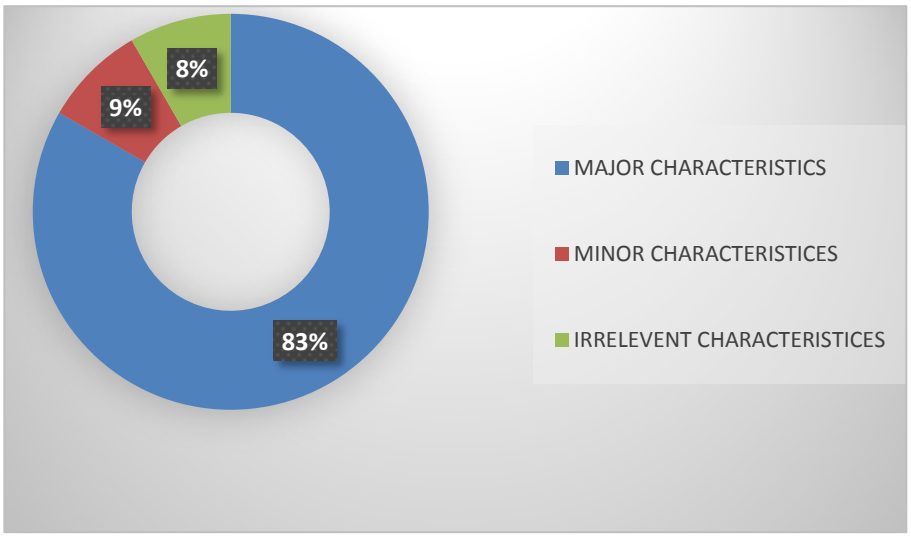


FIGURE NO 9

INTERPRETATION:

The above figure indicates that other than defining characteristics given by NANDA which are reluctance in attempt to move, limited range of motion, decreased muscle endurance/strength, difficulty in moving within the physical environment, gait changes, decreased reaction time, postural instability slowed movement, uncoordinated movement the characteristics that fell into the major criteria is report of pain.

CHAPTER-5

SUMMARY, FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

This chapter deals with a brief summary of the study and its significant findings. The chapter is perhaps a means to an end; but not an end in itself as it offers avenues that can be taken up for further and more intensive research studies.

Mobility is paramount if elderly patients are to maintain any independent living. Restricted movements affect the performance of most activities of daily living. Elderly patients are also at increased risk for the complications of immobility. Osteoarthritis most often affects middle age to elderly people. It is the top cause of disability in elderly people. When the joint damage due to osteoarthritis cannot be repaired, option of total knee replacement emerges. Most patients who undergo TKR are at the age of 50-80.In our study we chose to include patients in the first and second post-operative days as impairment in mobility is at its peak in these days. Stiffness &fibrosis in joint, blood clots leading to DVT & pulmonary embolism are some of the complications that can be avoided if defining characteristics of impaired physical mobility are identified on time and appropriate interventions are implemented. This study aimed to investigate which defining characteristics of NANDA nursing diagnosis 'Impaired physical mobility' can be validated and can be categorized into major and minor.

OBJECTIVES:

1. To develop and validate an observational tool with the defining characteristics operationally defined through ROL for the nursing diagnosis impaired physical mobility in TKR patients.

2. To assess the defining characteristics of the nursing diagnosis 'impaired physical mobility' in patients with TKR using the selected sample of expert nurses.

3. To identify which defining characteristics the nurses consider major and minor in the nursing diagnosis 'impaired physical mobility' in patients with TKR.

HYPOTHESIS:

H_I: Defining characteristics of impaired physical mobility given by NANDA nursing diagnosis are valid.

RESEARCH METHODOLOGY:

The study adopted a descriptive methodology approach. The study was conducted in Fortis hospital, Mulund. The study examined the research variable-defining characteristics of nursing diagnosis 'impaired physical mobility'. In this study the sample comprised of 20 TKR patients. They were selected on the basis of their willingness to participate and their first and second post-operative day status. The study was conducted in the medical-surgical wards & ICUs. This research incorporates the use of collecting data with respect to the defining characteristics of NANDA nursing diagnosis 'Impaired physical mobility'. It aimed to assess the defining characteristics and categorize them into major and minor. With respect to assessing the defining characteristics an observational technique was adopted as the study was based on Fehring's CDV model. An observational checklist was prepared and operational definition of each defining characteristic was developed keeping ROL and objective of the study as the base. Expert nurses were selected to carry out the observation and identify the defining characteristics as present or absent. Tool comprised of 3 sections. Section 1: Demographic data of expert nurses, Section 2: Demographic data of patients who underwent TKR, Section 3: An observational checklist consisting of defining characteristics of impaired physical mobility along with their operational definitions. Many literatures were reviewed and defining characteristics were identified. The observational checklist included the characteristics given by NANDA and those taken from reviewed

literatures. The tool was prepared considering the personal observations from clinical experience of the investigators, opinion of the experts and literature reviews.

VALIDITY & RELIABILITY:

To determine the content and construct validity, the tool was prepared and given to experts from the nursing field and physiotherapist. An individualized evaluation was taken from 11 M. Sc. Nursing teachers to have thorough content validation of tool. All of them remarked that the tool was comprehensive. Significant suggestions were incorporated in the tool in consultation with our guide.

PILOT STUDY:

Pilot test is a small scale study in which the results are only preliminary and intended only to assist in design of a subsequent study.

A pilot study was conducted from 10/03/2015-15/03/2015 in the medical surgical wards of Fortis Hospital in order to ensure feasibility of the tools and the research methodology and to assess the practicability of the research study. The pilot study group comprised of 5 patients similar to the intended study subjects. The pilot study determined that there was no ambiguity or extraneous material in the observational checklist.

The respondents were selected as per the selection criteria of the study, both the researchers approached each patient and took their informed consent. The investigators promised an assurance of maintaining the confidentiality of the data. The confidentiality applied to the responses of the individual respondents and name of the respondents (anonymity) who would participate in the research.

The first researcher collected the patients data based on interview at the bedside and assessed the patient thereafter as per the observational tool. Approximately 10 minutes later, the second researcher assessed the same respondent. Each patient was observed for the period of 15-20 minutes. This plan of data collection was continued till 5 respondents

were recruited in the study. Weighted interrater reliability ratio formula stated in Fehring's CDV model was used to examine the result of the pilot test. Pilot study indicated that 11 of the 12 defining characteristics fell into major criteria and one into minor criteria. Total DCV score was 0.91 which indicated fair reliability.

DATA GATHERING PROCESS:

The period of data collection commenced from the 17/03/2015-29/03/2015.A formal administrative permission was obtained from the Principal of the college during which the research was discuss in entirety with them.

The patients were informed about their participation in the study by the expert nurses. The expert nurses approached the patients during the slotted hour in their respective wards. At the onset, the patients were briefed about the study. They were informed about their rights as 'the respondents' of the study & regarding the 'Data Protection Act'. An informed consent was obtained from them. They were briefed about the tools & the data that was expected from them. The respondents were communicated that they were free to ask for any kind of clarifications from the investigators. The expert nurses took around 15-20 minutes time to fill out the observation checklist. During this period the expert nurses thoroughly observed the patients for the presence or absence of defining characteristics and marked accordingly. The expert nurses 1 & 2 observed the patients in silence and any discussion about the defining characteristics was avoided to prevent further bias in the study.

MAJOR FINDINGS OF THE STUDY:

DEMOGRAPHICS:

1. According to the study findings, majority of respondents were females-14 (70%)
2. Most of the respondents in our study, were in the age group of 50-59 years-11 (55%)

3. Most of the respondents were under graduates-14 (70%)
4. Majority of the respondents hailed from middle-class family-14 (70%)

CLASSIFICATION OF DEFINING CHARACTERISTICS:

1. Majority of the defining characteristics i.e. 10 out of 12 were categorized under major criteria[reluctance in attempt to move(1),difficulty in purposefully moving within the physical environment(1),limited range of motion(1),fear of falling(0.95),report of pain(1),gait changes(0.9),postural instability(0.92),slowed movement(1) ,decreased muscle endurance strength(1),uncoordinated movement(0.76),fear of dislocation of prosthesis(0),decreased reaction time(0.92) were taken. Results indicated 10 major (weighted ratio=0.8 and above) and 1 minor(weighted ratio=0.5 to 0.79) defining characteristic and 1 defining characteristic were irrelevant (weighted ratio below 0.5).Total DCV score was 0.87
2. Cohen's Kappa Index value was 1 which indicated that the defining characteristics are reliable.

RECOMMENDATIONS FOR THE FURTHER STUDY

1. Defining characteristics of Impaired physical mobility in other medical disease conditions such as stroke, cardiac catheterization, other orthopedic conditions such as (fracture, total hip replacement, degenerative conditions of bones) etc. can be validated.
2. Such studies can also be done in other settings such as old age home, orthopedic wards of government sectors, rehabilitation centers etc.
3. Defining characteristics of nursing diagnosis other than impaired physical mobility can be validated using Fehring content validation model.
4. Study to be carried out using Expert nurses who meets the minimum score of 5 as per the criteria recommended by Fehring content validation model.
5. Sample size of the respondents should be increased to make the study generalized.

IMPLICATIONS FOR FURTHER STUDY

- Based on the results of the study, nurses are able to recognize impaired physical mobility in patients, making them confident in formulating the diagnosis then plan and intervene correctly for the benefit of the patients.
- Nursing leaders have the responsibility to observe how diagnosis is formulated by the nurses. Clear and known defining characteristics of any nursing diagnosis will make it easier to set criteria for evaluating nurses formulating the diagnosis.
- Defining characteristic of the nursing diagnosis impaired physical mobility should be added to the nursing curriculum so that students are able to identify patients suffering from impaired physical mobility, planning and interventions will be easier. This should also be a part of Continuing education program.
- The findings from this study will help nurses to assess patients having impaired physical mobility in the first and second postoperative day of TKR.
- Fehring content validation model can be used to validate more than one nursing diagnosis at a time.
- Expert nurses criteria should be more precisely undertaken for an effective study.

CONCLUSION

Impaired physical mobility is an overwhelming symptom experienced by variety of patients who undergo TKR especially on their first and second postoperative day. Nurses should be educator and supporter throughout the course of assessment and diagnosis.Knowledge provided by the nurses proves helpful for the patients to improve their coping abilities to manage impaired physical mobility in their postoperative phase

Although, impaired physical mobility related to various disorders like stroke, cardiac catheterization, etc. are studied by many health related disciplines, impaired physical mobility related to TKR are not well recognized and wildly accepted. Nursing research in collaboration with other discipline may lead to better understanding of impaired physical mobility.

To date, no systematic program exists for diagnosis of impaired physical mobility as multidimensional phenomenon. Future research and practice should focus on providing systematic and integrative assessment program based on clinical studies and observations.

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APPENDIX A

INFORMED CONSENT

TITLE: "A descriptive study to validate the defining characteristics of 'Impaired physical mobility NANDA nursing diagnosis 'diagnosed among patients who underwent total knee replacement using the selected sample of expert nurses."

(Please read the document and sign it at the bottom of the page if you consent to participate in the investigative project

I understand that the purpose of this research is to validate the defining characteristics of NANDA nursing diagnosis in patient with TKR. I understand that the objective is to validate which defining characteristic is primary and secondary.

I understand that by participating in this research I will be asked to complete a questionnaire. There will be neither risk nor discomfort to me with the participation in this research will be given 15-20 minutes for the completion of this observational checklist.

I understand that the participation in this study is absolutely voluntary and that I can withdraw from the study at any time without giving any reason and without any loss of any kind to me. I also understand that this information I provide will be treated confidential, so that it is impossible to trace this information back to me individually, as all raw data will be kept in a secured area by the researcher. I understand that in accordance with the data protection act, this information will be retained indefinitely. I also understand that the result of this research will be reported as aggregate summary data and no individually identifiable information will be provided. I also have a right to review the result of this research, if I wish to do so. A copy of the result may be obtained by me by contacting the researcher.

I have read and understood the foregoing information explaining the purpose of this research and my rights and responsibilities as a respondent. My signature below designates my consent to participate in this research, according to the terms and conditions outlined above.

Name:

Signature with date:

APPENDIX B

LETTER SEEKING EXPERT OPINION IN VALIDATING THE CONTENT & CONSTRUCT OF THE TOOL

From,

Research Group-2

FIN, Mumbai

_____

_____

SUB: CONTENT VALIDITY OF THE TOOL.

Respected Madam/Sir,

We the undersigned students have undertaken the following Research topic for our research project in partial fulfillment of the P. B. B.Sc. Nursing program.

"A descriptive study to validate the defining characteristics of 'impaired physical mobility 'NANDA nursing diagnosis diagnosed among patient who underwent total knee replacement using the selected sample of expert nurses."

May we kindly request you to validate the content and construct of the tool & give your valuable suggestions?

Objectives of our study:

1. To develop and validate the observational tool with the defining characteristics operationally defined through ROL for the nursing diagnosis impaired physical mobility in TKR patients.

2. To identify the defining characteristics of the nursing diagnosis 'impaired physical mobility' in patients with TKR.
3. To identify which defining characteristics the nurses consider primary and secondary in the nursing diagnosis 'impaired physical mobility' in patients with TKR.

Yours sincerely,

Jisha Roy

Ayshabee Patel

Mrunal Bhopalbade

Anita Nana Wakshe

Suchita Gaonkar

Anita Bande

Place: Mumbai

Date:

APPENDIX C

TOOL

AIM OF THE TOOL: To validate the defining characteristics of 'impaired physical mobility' NANDA nursing diagnosis using a selected sample of expert nurses, i.e. to identify which defining characteristics the nurses consider primary and or secondary.

INSTRUCTIONS:

- Please read and follow the instructions specified in the tool
- This tool consists of three sections
- You have a choice to tick any number of options mentioned in the table

SECTION 1: This section consists of the demographic data of expert nurse.

SECTION 2: This section consists of demographic data of TKR patients.

SECTION 3: This section consists of the defining characteristics for NANDA diagnosis "Impaired Physical Mobility" in patients with TKR.

SECTION 1

DEMOGRAPHIC DATA OF EXPERT NURSE:

Instruction: Please state your response in the space provided or tick in the box, as appropriate

PERSONAL DATA

1) Age ☐
2) Gender
   - ➢ Male ☐
   - ➢ Female ☐

3) ACADEMIC QUALIFICATION

- P. B. B. Sc. Nursing ☐

4) Undertaken any Course in orthopedics(specify) ☐

YES/NO

5) Clinical experiences (Specify the area and duration of work)

Prior to P.B.B.Sc. Nursing _____

CLINICAL EXPERIENCE OF EXPERT NURSE:

- Have you worked in orthopedic department?
- Yes ☐
- No ☐

If yes mention years of experience…….

- Have you attended any workshop related to orthopedics?
- Yes ☐
- No ☐
- If yes then mention if it is taken by nursing or medical personnel…….
- Yes ☐
- No ☐
- Have you worked in an orthopedic department?
- Yes ☐
- No ☐
- Have you used NANDA-1 diagnosis in your clinical practices?
- Yes ☐
- No ☐

SECTION-2

PATIENT DEMOGRAPHIC DATA

a) Patient name :

b) Age:

50-59 years: ☐

60-69 years: ☐

70-79years ☐

c) Sex :
MALE: ☐
FEMALE: ☐

d) Marital status :
MARRIED ☐
SINGLE ☐
DIVORCED ☐

e) Educational status :
GRADUATE: ☐
UNDERGRADUATE: ☐

f) Socio-Economic condition :
UPPER: ☐
MIDDLE: ☐
LOWER: ☐

g) Other Co-morbidities :

HYPERTENSION: ☐

DIABETES: ☐

HYPOTHYROIDISM: ☐

h) Diagnosis :

i) Since how long he got diagnosed :

- Factors responsible for osteoarthritis:

Smoking ☐

Menopause ☐

Alcohol ☐

Family history ☐

Obesity ☐

Previous injury ☐

Diabetes ☐

SECTION 3

Defining characteristic of NANDA nursing diagnosis "IMPAIRED PHYSICAL MOBILITY"

DEFINING CHARACTERISTIC	***PRESENT***	***ABSENT***
Reluctance in attempt to move: *Patient demonstrate Unwillingness and verbalizes disinclination to perform physical activity.*		
Difficulty in purposefully moving within the physical environment: *Patient experiences difficulty in moving on bed and while getting transferred from bed to chair and mobilizing in ward passage.*		
Limited range of motion: *Patient is unable to get his knee entirely straight /full extension (no space between the back of knee and bed) and not able to bent/flex knee to at least 90%*		
Fear of falling: *Patient demonstrates apprehension of falling due to lack of confidence in new prosthesis while walking.*		
Fear of dislocation of prosthesis*: Patient has a persistent fear of his newly placed prosthesis being dislocated while performing physical movement.*		
Report of pain/discomfort on movement*: patient verbalizes and demonstrates pain in the form of report of pain on Wong baker scale between 0 to 10.*		
Gait changes: *Patient will have walking abnormalities and unsteady walking patterns due to surgery.*		
Postural instability: *Patient is not able to keep his body in stable or balance position.*		
Slowed movement *: Patient moves or proceeds with little or less than usual speed or velocity.*		

Uncoordinated movement: *Patient unable to coordinate movements which lead to unsteady, to and fro motion of the middle of the body.*		
Decreased Reaction Time: *Patient's interval of time between application of stimulus and detection of response is decreased. (walking)*		
Decreased Muscle Endurance ,Strength*: Patient's ability or capacity of muscle or muscle group to exert maximal force against resistance is decreased.*		

APPENDIX D
MASTER CODE SHEET

DC1	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
EXP1	5	3	4	5	4	4	4	4	4	5	5	4
EXP1	5	3	4	5	4	4	4	4	5	5	4	4
DC2												
EXP1	4	4	4	4	5	4	4	4	5	5	4	4
EXP2	4	4	3	4	4	4	4	4	5	5	4	4
DC3												
EXP1	4	4	4	4	4	4	4	4	4	4	4	5
EXP2	4	4	4	4	4	4	4	4	4	4	4	5
DC4												
EXP1	4	3	3	4	4	5	5	4	4	4	4	4
EXP2	4	3	3	5	4	5	5	4	5	5	5	4
DC5												
EXP1	1	1	1	1	1	1	1	1	1	1	1	3
EXP2	1	1	1	1	1	1	1	1	4	1	1	3
DC6												
EXP1	5	5	4	4	4	4	5	5	4	5	5	5
EXP2	5	5	5	5	4	5	5	5	4	5	5	4
DC7												
EXP1	4	4	4	4	4	4	4	3	4	4	4	4
EXP2	4	4	4	4	4	4	4	3	4	4	5	4
DC8												
EXP1	5	3	3	4	4	4	4	4	3	4	4	4
EXP2	5	3	4	5	5	4	4	5	4	4	4	4
DC9												
EXP1	4	4	4	4	3	4	5	4	5	4	4	5
EXP2	4	4	4	5	5	5	5	4	4	5	5	5
DC10												
EXP1	4	3	3	3	4	4	4	3	4	4	3	2
EXP2	4	3	4	4	4	4	4	4	4	4	3	2
DC11												
EXP1	3	3	3	3	2	3	3	3	3	3	3	3
EXP2	3	3	3	3	2	3	3	3	3	3	3	3
DC12												
EXP1	4	4	4	2	4	4	4	4	4	4	4	4
EXP2	4	4	4	4	4	4	4	4	4	4	4	4

FIGURE NO	TITLE	PAGE NO
1	**Demographic data of expert nurses** Age of expert nurses	
2	Clinical experience of expert nurses Demographic data of patients	
3	Gender of TKR patients	
4	Age of TKR patients	
5	High risk groups in TKR patients	
6	Socio-economic status of TKR patients	
7	Educational status of TKR patients	
8	Weighted ratio of reliability:-Defining characteristics of Impaired Physical Mobility	