

EVALUATE THE EFFECTIVENESS OF COMPUTER ASSISTED TEACHING (CAT) PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF SELECTED COMPLICATIONS RELATED TO IMMOBILIZATION AMONG THE IMMOBILIZED ORTHOPAEDIC PATIENTS (IOP) AT SHREE JAYA CHAMARAJENDRA HOSPITAL, HASSAN

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ABSTRACT

Immobilization and inactivity are frequently present in patient with involvement of musculoskeletal and neurological systems and also among critically ill patients. An immobilized individual is at a greater risk of developing complications like Pressure sore, Deep Vein Thrombosis, Hypostatic Pneumonia, Constipation, Contracture. Computer Assisted Teaching programme is used to improve the knowledge of immobilized orthopedic patients to prevent some of the selected complications. An evaluatory approach with pre-experimental one group pre-test – post-test design was used. Thirty immobilized orthopedic patients were selected using convenient non- probability sampling technique. Data was collected by using personal proforma and structured knowledge questionnaire and Computer Assisted Teaching programme was given by using power point presentation. The mean pretest knowledge score of Immobilized Orthopaedic Patients is 16.37, standard deviation is 3.2, pretest mean percentage is 48.1% and standard deviation percentage is 9.4 %. The mean post- test knowledge score is 28.10, standard deviation is 2.3, post-test mean percentage is 82.6% and standard deviation percentage is 6.9 %. Chi square test value was computed between knowledge levels and selected demographic variables of Immobilized Orthopedic Patients. Findings revealed that the Gender (7.18), Education level (11.66), Religion (5.76), Type of family (4.34), Type of diet (5.29), Duration of stay in hospitalization (10.72) was significantly associated with their knowledge level. Hence the research hypothesis H_1 is accepted at $P < 0.05$ level of significance, Inferring that knowledge of Immobilized Orthopedic Patients is been influenced by their selected personal variables. The findings of the study showed that the Computer Assisted Teaching programme was effective in all the areas in improving the knowledge of prevention of selected complications among the immobilized orthopedic patients.

KEYWORDS: Immobilization complications, Immobilized Orthopedic Patients; Computer Assisted Teaching programme.

INTRODUCTION

The human body is meant to be mobile. The physiologic process of the body's system and organs are facilitated by mobility. Mobility is an individual ability to move about freely, which serves many purposes, such as expression of an emotion with nonverbal gesture, self-defense, satisfaction of basic needs, performance of activities of daily living and recreational activities.^[1,2] To maintain optimal physical mobility, the musculoskeletal and nervous system of the body must be intact and

functioning. Injury and disease can lead to numerous alterations in musculoskeletal function. Injuries are the predictable consequence of people's action within a risky environment.^[3] The rapidly advancing industrialization, rising transportation, strenuous sports, challenging adventures, acts of violence and home accidents have been the cause of tragic injuries to thousands of people every year.^[4] The most common problem arises from motor vehicle accidents. Road traffic accidents kill more than one million people each year and injure millions more across the globe. Road deaths and injuries are

increasing at a faster pace in Asia than other regions of the world. India accounts for about 10 percent of road accident fatalities occurring worldwide and an estimated 12,75,000 persons are grievously injured on the road every year.^[5] 'Bed rest' is a modality of treatment in orthopaedic patients. It initially appears to be of benefit to the healing body. But detrimental effects of immobility far outweigh the positive effects of bed rest.^[1] Many orthopaedic patients are immobilized because of either their condition or their treatment regimen. Some of the major complications of immobilization are pressure sore, deep vein thrombosis, hypostatic pneumonia, constipation and contracture. Early recognition of complications in patients after orthopaedic surgery and trauma is essential to avoid long term undesirable sequel. In many instances interventions to prevent development of such complications fall within the independent scope of nursing practice.^[6]

Immobilization affects all the system of the body. External pressure applied to the soft tissue of the body, especially over bony prominence produces ischemic changes in skin and underlying tissues. Venous stasis leads to deep vein thrombosis. Immobilization leads to pneumonia due to the pooling of secretions and constipation which is the infrequent and difficult passage of stools.^[8] Prolonged swelling, scar formation of soft tissue after prolonged period of immobilization which ends in joint stiffness and contracture.^[9] Adequate knowledge can prevent complication of immobilization patients and care givers play a vital role in preventing interventions, it avoids lots of discomfort for the patient.

NEED FOR THE STUDY

An average of approximately 50% of the hospitalized individuals has mobility impairment. Immobilization and inactivity are frequently present in patient with involvement of musculoskeletal and neurological systems and also among critically ill patients. An immobilized individual is at a greater risk of developing complications. Patients on the orthopaedic service are those who require treatment for fractures, deformities, and diseases or injuries of some part of the musculoskeletal system. Some patients will require surgery, immobilization, or both to correct their condition. The majority of patients not requiring surgical intervention will be managed by bed rest, immobilization, and rehabilitation.

The orthopaedic patients have immobility imposed on them either due to their condition or indirectly due to the treatment like cast, tractions, splints, implants and internal fixators.^[7] In the comparison to the other hospitalized patients who had major surgeries and were allowed to ambulate in short period, the orthopaedic patients were completely confined to bed because weight bearing on affected limb was not permitted. The economic consequences of injuries are significant because they cause more loss of working years than other diseases like cancer and heart disease.^[10]

A patient with acute conditions may be in hospital for many days. The problem faced by the orthopaedic patients may be many since they spend long time in hospital. In such patients alteration in the level of physical mobility results from prescribed restriction of movement in the form of bed rest, physical restriction of movement, through internal and external devices, voluntary restriction of movement or impairment or loss of motor function. Early mobilization of patients suffering injuries has been the most accepted method of treatment in majority of hospitals.^[2] Some of the major complications of immobilization are Pressure sore, Deep Vein Thrombosis, Hypostatic Pneumonia, Constipation and Contracture. Early recognition of common complications in patients after orthopaedic trauma is essential to avoid long term problems. Complications developed due to prolonged bed rest and immobilization are much easier to prevent than to treat.

Pressure sores are common among elderly patients with femoral fractures and tend to occur when the patients has just been brought into hospital. Vulnerability to pressure injury because of immobilization begins with the initial fracture. Understanding how pressure ulcers develop is the key to prevent them.

Deep Vein Thrombosis occurs in at least 5% of all immobilized patient. Most Deep Venous Thrombi occur in the calf and mainly originate in the soleus sinus. Researchers believe that 80% of the clots lyse before reaching the level of the knee. Patients with proven Deep Venous Thrombi involving the popliteal or more proximal leg veins have a 50% chance of developing pulmonary emboli. Mortality from untreated pulmonary embolism is 20% to 35%. Deep Vein Thrombosis is another major complication found among trauma patients, those with spinal cord injury, lower extremity fractures and pelvic injuries.^[11] DVT occur in lower extremities lead to major health problems like thromboembolism.^[12] Pneumonia is estimated to occur in 0.5% to 1% of all hospitalized patients and 15% to 20% of intensive care patients. Prolonged lying down also lead to pooling of secretions which lead to Hypostatic Pneumonia, Constipation due to lack of movement of the extremities. Prevention or early detection of symptoms related to this dysfunction is the key for the care of orthopaedic patients.^[4] Constipation and faecal impaction are common in immobilized patients, results from decreases peristalsis and constrictive sphincters. Faecal impaction is a fairly common complication of long-term constipation in the elderly and bedridden occurring in about 30% of all nursing home residents.

Early mobilization is the trend now a day.^[4] specialized educations in case of orthopaedic patients include an understanding of the common complications for which patients require monitoring. The evaluation occurred on exercise on daily basis to overcome stiffness and to keep muscles strong and the measures to reduce the incidence of pressure.^[7,8] Another study was done on effectiveness

of elastic compression stockings for prevention of Deep Vein Thrombosis showed that out of 624 patients 51 (13%) developed DVT with stockings applied and control group out of 581 patients (27%) developed DVT.^[13] This shows that these problems are major concerns. Hence the investigator was further promoted to do such a study.

The researcher also observed the same during clinical posting that education regarding complications of immobilization among orthopaedic patients is important one while planning the nursing care. Many orthopaedic patients were found to have inadequate knowledge regarding prevention of complications of immobilization and most of them suffer with complications. The present study is an attempt to give knowledge to orthopaedic patients regarding prevention of selected complications of immobilization, the cause for it, signs and symptoms and how to manage or prevent the selected complications by Computer Assisted Teaching programme. Thus, the patients will be more aware of complications and will try to prevent it. Hence, the study becomes more apt to the situation and more relevant. This motivated me to undertake this study evaluate the effectiveness of computer assisted teaching programme on knowledge regarding prevention of selected complication related to immobilization among the immobilized orthopaedic patients at Shree Jaya Chamarajendra Hospital, Hassan.

OBJECTIVES

The objectives of the study are

1. To assess the knowledge regarding prevention of selected complications related to immobilization among Immobilized Orthopedic Patients before and after administration of Computer Assisted Teaching programme
2. To evaluate the effectiveness of Computer Assisted Teaching programme on knowledge regarding prevention of selected complications related to immobilization among Immobilized Orthopedic Patients
3. To find out the association of pre-test knowledge scores of Immobilized Orthopedic Patients with their selected demographic variables.

Operational Definitions

a) Knowledge

It refers to the understanding of immobilized orthopaedic patients regarding the activities, which prevents selected complications related to immobilization as verbalized to specific items on a validated questionnaire.

b) Immobilized Orthopedic Patients

It refers to clients who are admitted to orthopaedic and Trauma ward and confined to bed, for more than 48 hours.

c) Selected complications

In this study, selected complications refers to Pressure sore, Deep Vein Thrombosis, Hypostatic Pneumonia, Constipation and Contracture.

d) Prevention of selected complication

It refers to measures to be taken during confinement to bed to avoid complications like Pressure sore, DVT, Hypostatic Pneumonia, Constipation and Contracture.

e) Computer Assisted Teaching Programme:

It refers to the systematic organization of content on prevention of selected complications regarding immobilization which will be taught with the help of computer aid.

ASSUMPTIONS

1. Immobilized Orthopaedic Patients have some knowledge about complication of immobilizations.
2. Computer Assisted Teaching programme will enhance the knowledge regarding complications of immobilization.

HYPOTHESIS

H₁: The mean post-test knowledge scores regarding prevention of selected complications related to immobilization among the immobilized orthopaedic patients will be significantly higher than their mean pre-test knowledge scores.

H₂: There will be a significant association of pre-test knowledge scores regarding prevention of selected complications related to immobilization among the immobilized orthopaedic patients with their selected demographic variables.

Delimitations

The study is limited only to immobilized orthopaedic patients in Shree Jaya Chamarajendra Hospital, Hassan.

RESEARCH METHODOLOGY

Research Approach

A quantitative evaluative approach was used in present study.

Research Design

Pre Experimental One group Pre-test- Post-test research design was adopted for the present study. The pre-test was carried out for assessing the knowledge of immobilized orthopaedic patients on prevention of selected complications related to immobilization and CAT was administered. Post test was conducted on the 7th day following the pre-test.

Variables

The variables of the present study were

Independent variable: Computer Assisted Teaching programme on prevention of selected complications related to immobility.

Dependent variable: Knowledge of patients on prevention of selected complications of immobilization among immobilized orthopaedic patients.

Demographic variable: Age, Gender, Religion, Type of family, Family income, Educational qualification, Occupation, Previous exposure to information, Duration of hospitalization, Type of diet, Method of relaxation, and Type of treatment.

Setting of The Study

The study was conducted among immobilized orthopaedic patients regarding prevention of selected complications related to immobilization in the orthopaedic wards of Shree Jaya Chamarajendra hospital, Hassan.

Sampling Criteria

Inclusion criteria and Exclusion criteria

a) Inclusion criteria: Immobilized orthopedic patients are those who are:

1. Immobilized for a minimum two days.
2. Above the age of 18 years.
3. Willing to participate.
4. Can read and write English or Kannada.

b) Exclusion criteria

1. Critically ill.
2. Unconscious orthopedic patients.

group of 28-37 years, 3 (10.0%) were in the group of 38-47 years. Among them 20 (66.7%) of the samples were males and 10 (33.3%) were females. 14 (46.7%) were SSLC, 11 (36.7%) were having education of PUC, 5 (16.6%) were having education of Degree. Majority of them 12 (40.0%) were Coolie, 11 (36.7%) were Farmers, 7 (23.3%) were Home makers. In that 21 (70.0%) were Married, 9 (30.0%) were Unmarried. Most of the samples 27 (90.0%) were Hindus, 3 (10.0%) were Muslims. There were 24 (80.0%) were Nuclear, 6 (20.0%) were Joint family. 14 (46.7%) were having income of 5,001-10,000, 9 (30.0%) were having income of 10,001-20,000, 7 (23.3%) were having income below 5,000. Most of them 23 (76.7%) were taking Mixed diet, 7 (23.3%) were taking Vegetarian diet. 25 (83.3%) were having no previous knowledge, 3 (10.0 %) were having previous exposure through Mass media, 2 (6.7 %) were having previous knowledge through family members. 16 (53.3%) were in the hospital from 2-12 days, 11 (36.7%) were in the hospital from 13-23 days, 3 (10.0%) were in the hospital for more than 23 days.

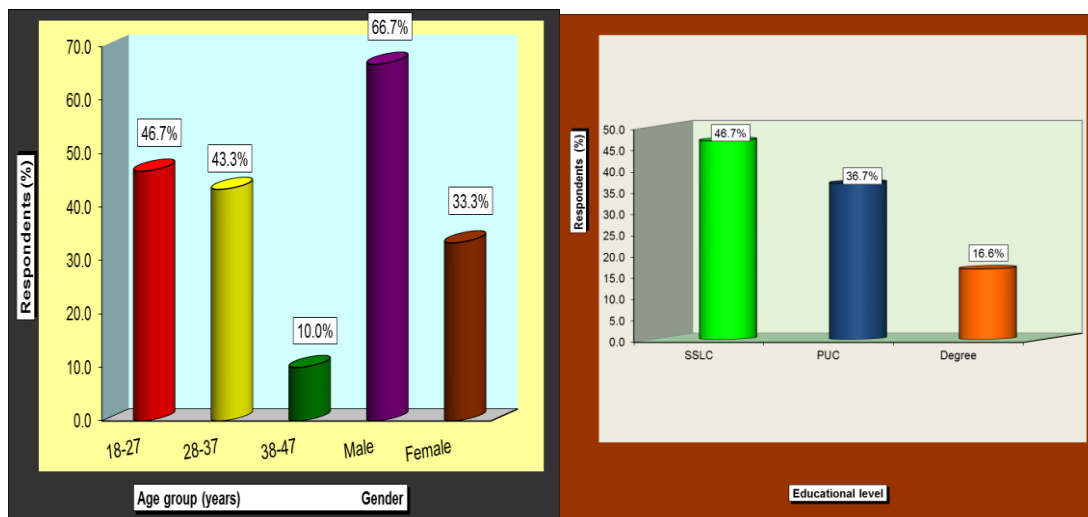
The findings of the study was supported by a study conducted in St. Johns Hospital which revealed that that in the total 40 samples, 24 (60%) were in the age group of 30-40 years, 31 (77.5%) were males, 21 (30%) were having high school education, 23 (57.5%) were doing semi-skilled occupation. 32(80%) were married, 29 (60%) of patients stayed in the hospital for less than 15 days.^[43]

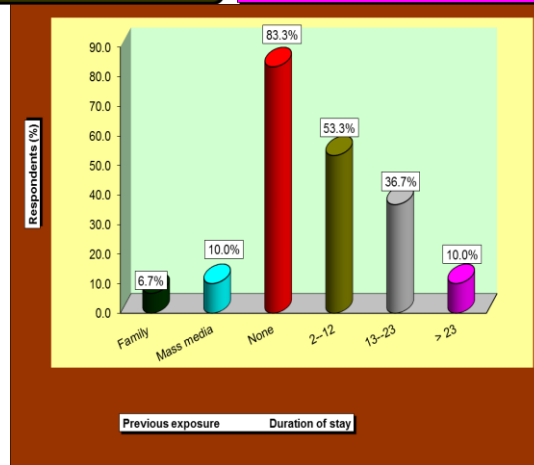
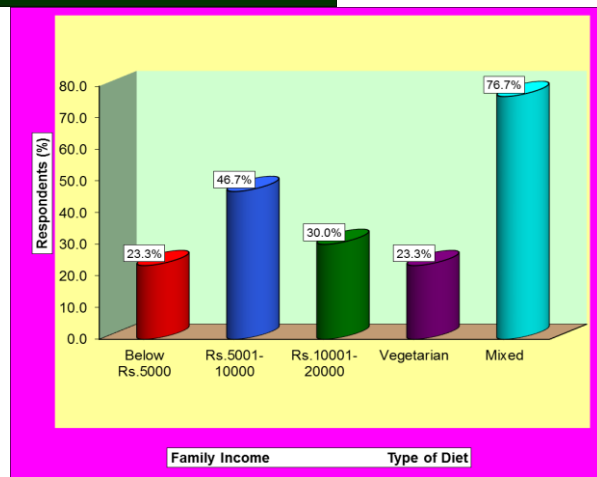
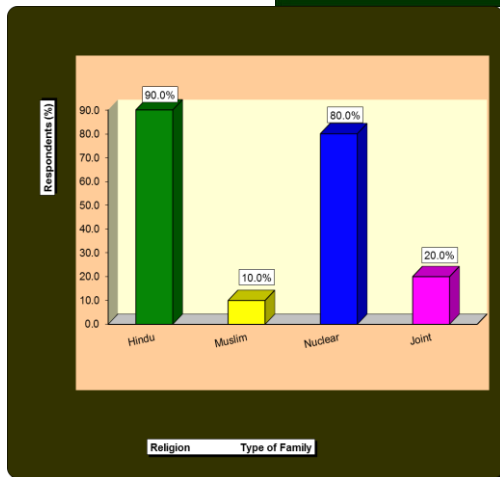
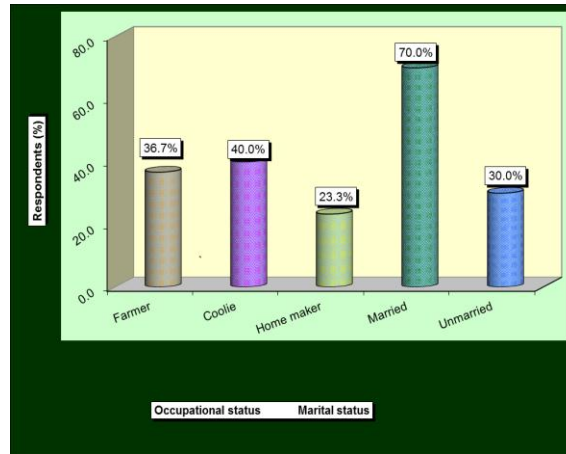
RESULTS

Section-1

Findings related to selected personnel variables of IOP related to prevention of selected complications related to immobilization at Shree Jaya Chamarajendra hospital, Hassan.

In the study majority of the IOP were in the age group of 18-27 years with 14 (46.7%), 13 (43.3%) were in the age





Section-2

Findings related to pretest and post-test mean, standard deviation, mean percentage and standard deviation percentage of knowledge scores of IOP regarding prevention of selected complications related to immobilization.

The mean pretest knowledge score of IOP is 16.37, standard deviation is 3.2, mean percentage is 48.1% and standard deviation percentage is 9.4 %. The mean post-test knowledge score is 28.10, standard deviation is 2.3, mean percentage is 82.6% and standard deviation percentage is 6.9 %.

The findings of the study was supported by other study showing that the overall pretest mean knowledge score of IOP was 8.62 and standard deviation of 3.32. The mean posttest knowledge scores of IOP was 9.95 and standard deviation was 3.32.^[43]

Section-3: Aspect wise Mean Pre test and Post test Knowledge on Prevention of selected complications related to Immobilization

No.	Knowledge Aspects	Respondents Knowledge (%)						Paired 't' Test
		Pre test		Post test		Enhancement		
		Mean	SD	Mean	SD	Mean	SD	
I	Immobilization	66.7	24.3	90.0	15.3	23.3	26.0	4.91*
II	Pressure sore	42.8	16.5	82.8	13.9	40.0	19.1	11.47*
III	Deep vein Thrombosis	41.9	12.2	79.0	10.3	37.1	12.6	16.13*
IV	Hypostatic Pneumonia	44.8	20.8	81.9	12.7	37.1	22.6	8.99*
V	Constipation	44.0	16.7	84.0	14.0	40.0	22.5	9.74*
VI	Contracture	58.9	21.8	82.8	13.9	23.9	20.0	6.55*
	Combined	48.1	9.4	82.6	6.9	34.5	10.6	17.83*

* Significant at 5% level, $t(0.05, 29df) = 2.045$

The data presented in the Table 7 and 8 shows that in the group the mean difference or the enhancement between pre and post-test mean of knowledge is 11.73. This indicates an increase in knowledge after administration of CAT. According to aspect wise the enhancement was 40.0% for pressure sore and constipation, 37.1% for DVT and Hypostatic pneumonia, 23.9% for contracture and 23.3% for immobilization. The overall enhancement of mean percentage is 34.5% and SD percentage is 10.6%. To find the significance of the gain in knowledge paired "t" test was computed and the obtained value of knowledge $t_{29} = 17.83$ was found significant at $P < 0.05$ level of significance.

Section-4

Findings related to association between pretest knowledge scores and their personnel demographic variables of IOP regarding prevention of selected complication related to immobilization with their selected personal variables

Chi square test value was computed between knowledge levels and selected demographic variables of IOP like Age, Gender, Educational level, Occupational status, Marital status, Religion, Type of family, Family income, Type of Diet, Previous exposure to educational programme, Duration of stay in hospital. Among all these variables only Gender (7.18), Education level (11.66), Religion (5.76), Type of family (4.34), Type of diet (5.29), Duration of stay in hospitalization (10.72). Hence the research hypothesis H_2 is accepted at $P < 0.05$ level of significance.

Nursing Implications

The findings of the present study have implications in the field of nursing education, nursing practice, nursing administration and research. This study implies that the IOP have to be properly trained on how to prevent complications by doing certain exercises, change of positions, taking proper nutritious diet, intake of plenty of water. This will improve the quality of life of IOP as well as prevent the complications, avoid diseases and economic loss. Every students and staffs should be encouraged to teach the orthopedic patients the importance of these exercises and diets. Medicine and science have developed newer effective measures as well

as tolerated medicine, different types of diet and behavioral interventions to prevent and control the complications of immobilization. The effective use of resources for the control of complications due to immobilizations will provide enormous savings in money and human suffering. Education is an important tool one of the most cost effective intervention of the purpose nurses can play an important role in this aspects. Since most of the IOP belongs to low socio economic group it is felt need of the patients to learn the aspects to prevention of complications so that they can save money, time, reduce sufferings and prevent life threatening complications. Nursing administration should make arrangements for providing education programmes for patients and their relatives during stay in the hospital and also for the patients in the OPD. A separate room can be allotted with sufficient materials and facilities so as to conduct educational programmes more effectively, nursing administrator can participate in this programme and demonstrate the same to the community people during their home visits. It is preferable to have a orthopedic patients association at the hospital level, were they would be able to share the experience and motivate one another to manage and prevent the complications that are caused by immobilization. A separate fund for all these activities has to be raised from donation to meet the cost of insulin for patients and their families. If nurses take initiative to conduct research studies to increase the knowledge and ability of the patients to perform all the activities efficiently to improve the quality of life and prevent or reduce complication.

By conducting research and formulating new theories, researcher can improve the knowledge, skill and attitude of nurses and ultimately can improve the standard of nursing profession.

LIMITATIONS

Generalization of the findings was limited because of the limited sample size ($n=30$) and use of convenient non-probability sampling technique. The subjects were selected only from one hospital in Hassan; hence generalization is not possible. The study was limited only to those who were able to read and write Kannada or English.

RECOMMENDATION

A study can be replicated on the larger sample. A study could be conducted in different hospitals to find the effectiveness of prevention of selected complications related to immobilization among the immobilized orthopedic patients. A similar study could be replicated with a control group. A comparative and experimental study can be conducted to find out the knowledge and practice of prevention of selected complications related to immobilization among the immobilized orthopedic patients, who are admitted in the orthopedic hospitals.

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