A study to assess the support provided by the care givers for common complications among quadriplegic patients of selected hospitals, Kolkata, West Bengal

Mousumi Mondal

Clinical instructor, govt college of nursing, ID &BG Hospital campus, kolkata,west Bengal
MSc Nursing in orthopedic and rehabilitation Nursing

Abstract: A descriptive survey was conducted to assess the support provided by the care givers for common complications among quadriplegic patients of selected hospitals, Kolkata, West Bengal. The objectives were to find out the common complications present among quadriplegic patients, to assess support provided by the care givers for the common complications, to find out the association between supports provided by the care givers and selected demographic factors. The conceptual framework used in study is the Dorothea Orem's Self Care Deficit Theory. Non probability convenience sampling technique was followed to select 60 patients as the sample of the study. Structured interview schedule and record analysis Performa were used to collect data. The study finding revealed that maximum 35% patients belonged to 28-37 years of age group, majority75% of the patients were male, most of the patients' 52% neurological level of injury was incomplete. 41.66% patients had respiratory problems, 78.33% had pressure sores and all of them had bowel problems, bladder problems and mobility and transfer problems. Most of the care givers 33.33% are brothers of the patients and 73.33% care givers are male, majority 36.66% of their educational qualification was higher secondary, most of them had no previous experience of caring quadriplegic patients. 48% of the care givers are giving moderate support for respiratory problems of patients, 40.42% giving poor support for pressure sore problems, 53.33% giving moderate support for bowel problems, 67.74% giving poor support for bladder problems and 45% providing poor support for mobility and transfer problems. Significant associations were found between the presence of complications and neurological level of injury and between the previous experience of the care givers andsupport provided for selected problems.

CHAPTER I

INTRODUCTION

Background of the study

Paralysis can be eitherpartial, periodic, complete, or incomplete. Paralysis of both the arms and legs has been traditionally been called quadriplegia. The ward 'quad' comes from the Latin for four and 'plegia' comes from the Greek for inability to move. Currently the term tetraplegia is becoming more popular, but it means the same thing. Tetra is from the Greek for inability to move.[1] The common cause of quadriplegia are spinal cord trauma,brainstem lesion, fibrocartilaginous embolism, congenital stenosis of cervical medullary canal, acute blood loss, tumour growth within spinal cord, vertebral disc prolapse,multiple myeloma, bony metastases, vertebral dislocation causing spinal cord compression, metatropic dwarfism, tumour growth in vertebra, hypotension, osteoporosis, glioma, epidural haemorrhage, tuberculosis, subdural haemorrhage, acute disseminated encephalitismetachromatic leukodystrophy, dissecting aortic aneurysm and AIDS.[2]

Quadriplegia is the paralysis of both upper and lower limbs resulting (with exceptions) from a spinal cord injury, most often the result of some sort of trauma caused by accidents, but sometimes due to medical conditions (illness). Most individuals with quadriplegia are wheelchair users, but this visible disadvantage is combined with associated impairments that, even though often hidden, are nevertheless troublesome, source of complications. Quadriplegia is caused when the damage is located in the cervical region of the spine. Quadriplegias account for one third of all spinal

cord injuries. Accidents are the most common cause of spinal cord injuries; the number of cases is between 1000 and 1500 annually. Young adults are thus the most commonly affected population (15-35 years old), and they tend to be male more often than female. Overall, the estimated number of paraplegic and quadriplegic individuals in France varies between 25,000 and 30,000, including not only spinal cord injuries, traumatic but also similar conditions such as spina bifida.[3]

There are many signs and symptoms of damage to the spinal cord related to its physiology. They include, motor disorders, pain, sensory disorders, genital and sexual disorders, urethral and anal sphincter disorders, respiratory disorders, autonomic nervous system disorders, and other associated disorders.[3]

Quadriplegics are prone to various urological complications as a direct/ indirect result of spinal cord lesions. These complications include neurogenic bladder, urinary tract infections, renal and bladder calculi, obstructive uropathy, renal failure and bladder neoplasm. In a study conducted on 105 patients with spinal cord lesions it was found that 86% of those with upper motor neuron lesions who had accompanying involuntary bladder contractions had dyssynergic urethral sphincters.[4]

The resultant residual urine can become a medium for bacterial growth with resulting UTI and functional obstruction with accompanying dilation of the upper respiratory tract and impaired renal function, 22% of patient with non contractile detrusor muscles were found to have dyssynergic external sphinter. Patients with spinal lesions at T 6 or above may also develop autonomic hyperreflexia as the bladder becomes over distended. [4]

The nerve signals to chest and diaphragm may be weakened or destroyed by the spinal cord lesions making the breath difficult or impossible. If the diaphragm is wholly paralyzed then ventilator is used. Some people are able to wean away from ventilator by learning how to consciously control their breathing. People with quadriplegia are at increased risk for pneumonia and other respiratory infections.Medications and respiratory exercises are used to help prevent respiratory problems.[2]

Healthy individuals with quadriplegia generally have a reduced metabolic rate. However, individuals with quadriplegia who develop pressure ulcers may have an elevated metabolic rate. Pressure sores are common in quadriplegic patients.It is revealed in a study that 85% of individuals develops pressure sore at least once during their lifetime. Pressure ulcers are challenge for the individuals. It has many consequences such as immobilization, which can lengthen hospital stays and influence the quality of life dramatically. [5]

Immobility often causes psychological and social effects on person, since immobility cannot be cured even by using drugs in most cases. Mobility solution for physically impaired people specially who are suffering from quadriplegia in the higher level of C1-C7 are using mobility devices like motor power wheel chair or manual wheel chair.[6]

Family caregivers are unpaid providers of care who often need help to learn how to become competent, safe volunteer workers who can better protect their family members (i.e., the care recipients) from harm. Most patients have families that are providing some level of care and support. According to a study the spouse or other relatives are the care providers. 69.8% of care providerswere females. Most partners provided various kinds of support. ADL support and other practical support were given much more often by partners of persons with serious disability, but less difference was seen regarding emotional support. Professional (paid) support was obtained by 45.3% of all couples. Perceived burden of support was high in 24.8% of partners of persons with serious disabilities against 3.9% of partners of persons with minor disabilities.[7]

They are the key support person for many persons with quadriplegia. Family caregivers operate as an integral component of the health care delivery system and are responsible for a wide range of services that, in the past, were provided formally by traditional health care providers and that usually have to be given for an indefinite period. Study on the impact of assuming the primary care giver role following traumatic spinal cord injury shows a distinct change in role from spouse and lover to care provider and this ultimately contributed to relationship change and loss of former identity. Poor problem solving abilities of care giver were associated with the occurrence of complications and adjustment problems of person with quadriplegia in the early phase of the injury.[8]

The care givers' knowledge about the complications will help them to direct their care to quadriplegic patients throughout their lifespan. So, assessment of support they are providing to quadriplegic patients is necessary to identify any gap in knowledge, problem solving abilities of caregiver.

Need of the study

A spinal cord lesion very often results in an everlasting complete or incomplete muscle paralysis, sensory loss and autonomous dysfunction below the level of injury. During rehabilitation, patients receive education and training to give them sufficient skills and knowledge about the injury to deal with its consequences in daily life. Among other topics,

much attention is paid to a healthy lifestyle and prevention of secondary impairments. However persons with quadriplegia nevertheless often experience complications after discharge.[9]

Quadriplegics, often the victims of spinal cord injuries (SCI), face challenges regarding their physical, psychological and social functioning and a substantial proportion of persons with SCI need support in these areas for the rest of their lives. High quality nursing care is mandatory because patients with quadriplegia have experienced varying degree of loss of motor power, deep and superficial sensation, vasomotor control, bladder and bowel control, etc. They are faced with potential problems related to immobility, skin break down and pressure ulcers recurring urinary infections, contractures and psychosocial disruptions. These problems may persist for whole life.

The terms family caregiver and informal caregiver refer to an unpaid family member, friend, or neighbour who provides care to an individual who has an acute or chronic condition and needs assistance to manage a variety of tasks, from bathing, dressing, and taking medications to tube feeding and ventilator care. Recent surveys estimate there are 44 million caregivers over the age of 18 years (approximately one in every five adults).Most caregivers are women who handle time-consuming and difficult tasks like personal care.[9]

Family care givers are critical partners in the plan of care for patients with chronic illness. Nurse should be concerned with several issues that affect patient safety and quality of care as the reliance on family care giving grows. Improvement can be obtained through communication and caregiver support to strengthen caregiver competency and teach care giver new skills that will enhance the patient safety. Patients with quadriplegia are totally dependent on their care givers who should have proper knowledge and skills about the care of respiratory problems, bowel care, bladder care, pressure sore care, mobility and transferring.[10]

A study on burden of care and its impact on health related quality of life of care givers of individuals with spinal cord injury found thatquadriplegia and secondary complications stand out among the clinical characteristics that contributed to greater care burden and worse the health related quality of life. Association between care burden and health related quality of life revealed that greater the care burden the worse the health related quality of life. It was concluded that, preventing care burden to strategies that prepare patients for hospital discharge, integrating support network, and enabling access to health care services are interventions that could minimize the effects arising from care burden and contribute to improving health related quality of life.[11]

The researcher's experience revealed that patients with quadriplegia are totally dependent on their care givers. In most of the patients, care givers manage the problems of patients after injury like assisting the patient in deep breathing exercise, helping tocough out lung secretions, abdominal massage, introduction of enema, proper positioning during passing stool, catheterization, and push method to pass urine according to advice.

The study will identify what types of complications the quadriplegic patients are experiencing and how the caregivers are supporting them for those particular conditions. So after completing the study by discussing the main finding and providingmethodological reflection, recommendations for future research and practice implications can be done.

Problem statement

A study to assess the support provided by the care givers for common complications among quadriplegic patients of selected hospitals, Kolkata, West Bengal

Purpose of the study

To investigate about the prevalence of common complications among quadriplegic patients and support provided by the care giver for the complications.

Objectives of the study

1. To find out the common complications present among quadriplegic patients
2. To assess the support provided by the care givers for the common complications among quadriplegic patients.
3. To find out the association between supports provided by the care givers and selected demographic variables.

Assumptions

The study assumed that

- Quadriplegia has the potential to give rise to complications related to respiratory tract, bladder and bowel functions, mobility and skin conditions.
- The care givers of quadriplegic patients bear the burden of care and provide support to maintain those functions.

Delimitations

The study was delimited to

- The physical complications of patients with quadriplegia
- The patients aged between 18 years and 60 years

Operational definitions

- **Common complications:** In the study common complications refer to secondary impairment after injury among post quadriplegic patient affecting physiologic condition related to respiratory problem, bowel problems, bladder problems, mobility problems, and pressure sores as measured by record analysis Performa.
- **Respiratory problems:** in the study respiratory problem includes breathing difficulty, difficulty in coughing out secretion as measured by record analysis Performa.
- **Bowel problems:** bowel problems includes bowel leakage, diarrhea, constipation as measured by record analysis Performa
- **Mobility problems:** In the study mobility problem includes transfer of patient from bed to chair and wheel chair to bed as measured by record analysis Performa.
- **Pressure sores:** pressure sore refers to the problem affecting the physiologic condition of patient including disruption in the skin continuity due to pressure, moisture or friction as measured by observation checklist.
- **Bladder Problems:** In the study bladder problems includes use of bladder management method (indwelling catheter /clean intermittent catheter) for urinary incontinence and retention as measured by record analysis Performa.
- **Care giver:** In the study care givers refer to any person who is taking care of patient and maintaining the activities of daily living and self care needs.
- **Support:** In the study support indicates the patient's perception about the assistance he /she is receiving from caregiver as measured by structured interview schedule.
- **Quadriplegic patients:** The patients diagnosed as quadriplegia and registered in N.I.O.H, Kolkata, R.G Kar Medical College and Hospital, I.P.G.M & R SSKM Hospital would be referred to as quadriplegic patients

Conceptual framework:

Conceptual framework formalizes the thinking process so that others may read and know the frame of reference basic to the research problem. It is the process of moving from abstract idea to concrete ideas. The conceptual framework served as a guide to research and springboard for the generation of research hypothesis. The conceptualframework for the present study is based on Dorothea Orem's (1980) Self Care Deficit Theory. It is considered as client centered, because it mainly evolves the patient as the main focus of care as the quadriplegic patients are deviated from the normal function.

This theory consists of five broad heading such as Self Care Requisite, Self Care Agency, Self Care Demand, Self Care, and Self Care Deficit.

Self care requisite:

The developmental self care requisites are related to life changes of individual or life cycle stages like poor health, illness and associated problems. The present study includes the developmental self care requisites that are age, gender, education, marital status, and common complications developed after injury.

Self care agency:

Care givers' ability to provide special care and support to the patientsincluding age, relationship with the patient, educational qualificationand previousexperience of caring quadriplegic patient.

Self care demand:

Quality of support provided by care givers to meet the self care needs of the quadriplegic as measured by structured interview schedule.

Self care:

Practice of activities those care givers initiate on behalf of quadriplegic patients for bowel care, bladder care, pressure sore care, and mobility and transferring.

Self care deficit:

The demand to care for oneself and when the individual is able to meet that demand, self care is possible. When the demand is greater than individual's capacity and ability to meet it, an imbalance occurs and this is called a self care deficit.

The Theoretical Framework adopted for the study is presented in figure 1.

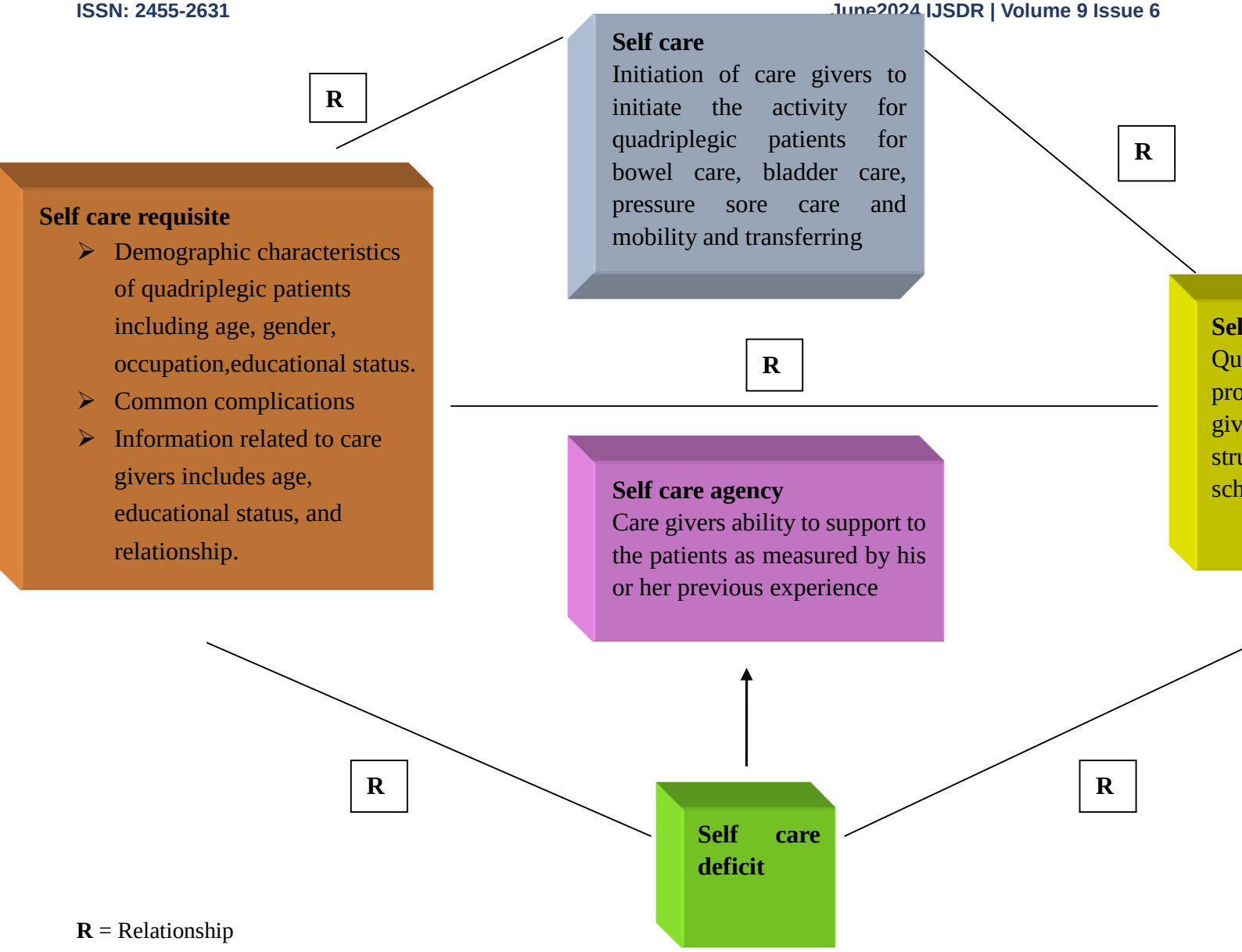


Fig. 1:Conceptual framework for the study based on Dorothea Orem's Self Care Deficit Theory ummary

This introductory chapter deals with the background of the study, need of the study, statement of problem, purpose, objectives, assumptions, delimitations, operational definitions and theoretical framework.

Organization of the report

The content matter of this report was organized in five chapters and will be presented as follows-

Chapter II: Would deal with the review of literature to study

Chapter III: Would present the methodology and plan of data collection.

Chapter IV: Would show the details of data analysis and interpretation.

Chapter V: Would deal with major findings, discussion in relation to other studies, conclusions, implications, limitations and recommendation.

The end of the chapter will also give a selected list of the references and appendices of the study.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is one of the most important steps in research process. The main purpose of literature review is so convey to the readers about the work already done and the knowledge and ideas that have already been established on a particular topic of research[12]. The literature reviewed for the present study was based on extensive survey of books, journals, international nursing studies and data search which help the investigator to develop deeper insight into the

problem and gain information on what had been done in the past. The reviewed literature in the present is organized under the following:

Section A: Review of literature related to common complications of quadriplegia patients

Section B: Review of literature related to support provided by the care giversof quadriplegic patients

Section A: Review of literature related to common complications of quadriplegic patients

KiracUnal, Zeynep MD, Umay et al (2017) conducted a study on a rarely seen complication that causes increased in morbidity in tetraplegic patients: Zenker Diverticula. The study revealed that although spinal cord injury damages the spinal cord, physiological changes due to SCI can affect many organs and system of the human body. While respiratory problems are common following cervical SCI, dysphegia is relatively uncommon,secondary complication that occurs after cervical SCI. The study report a case of recurrent aspiration pneumonia due to Zenker diverticula in 26 year old tetraplegic patient with a chronic history of silent aspirations and dysphagia contributing to functional disability.[13]

Zuhal, ozister,kutuluskuklusumruozel et al (2015)conducted astudy on outcomes of bowel program in spinal cord injury patients with neurogenic bowel dysfunfunction. 55 traumatic SCI patients out of spinal shock who received rehabilitation program in the clinic between March 2006 and September 2008 were included in the study. Neurogenic bowel dysfunction score was used to assess the severity of neurogenic bowel dysfunction. At least one gastrointestinal problem was identified in 44 (80%) of the 55 patients before bowel program. Constipation (56%, 31/55) and incontinence (42%, 23/55) were the most common gastrointestinal problems. Digital rectal stimulation was the most common method for bowel evacuation, both before (76%, 42/55) and after (73%, 40/55) bowel program. Oral medication, enema and manual evacuation application rates were significantly decreased and constipation, difficult intestinal evacuation, abdominal distention, and abdominal pain rates were significantly reduced after bowel program. In addition, mean neurogenic bowel dysfunction score was decreased after bowel program.[14]

B Yılmaz, Y Akkoc, R Alaca et al (2014)published a study on intermittent catheterization in patients with traumatic spinal cord injury: obstacles, worries, level of satisfaction. 269 patients performing IC for at least 3 months were asked to fill-out a questionnaire about their opinions on IC. In total, 69.5% of patients performed IC themselves, 10.4% had performed by their mothers, 7.8% by another caregiverand 7.4% by their spouse. For the 72 (26%) patients unable to apply IC, reasons were insufficient hand function (56.1%), beingunable to sit appropriately (35.4%) and spasticity (8.5%). In all, 70% of male patients had insufficient hand function, 20% could notsit and 10% had spasticity while 56.3% of female patients could not sit, 37.5% had insufficient hand function and 63% hadspasticity. Difference between sexes was found to be statistically significant ($P<0.05$). Worries patients had when starting IC werefear of being dependent on IC (50.2%), accidentally injuring self (43.8%), embarrassment (43.2%), causing an infection (40.2%),bleeding (32.7%), fear of feeling pain (30.2%) and hygiene (24.7%). More women felt embarrassment; other items were similar inboth sexes. In all, 46.9% of patients had urinary incontinence in intervals.[15]

SI Afsar, OUYemisci, SNS Cosar and N Cetin (2013) published a study on compliance with clean intermittent catheterization in spinal cord injury patients: a long-term follow-up study, in the study bladder management method of 164 new spinal cord injured patients were noted at discharge from rehabilitation center and follow-up. Patients were questioned whether they continued the initial bladder emptying method at follow-up, reasons for discontinuation and the history of treated UTIs. The most common bladder management method at discharge from inpatient rehabilitation center was clean intermittent catheterization (CIC) (63.4%). At follow-up 42% of the patients who used CIC changed their bladder emptying method. Rate of reverting to urethral indwelling catheter (IC) was 21.4%. Reasons for the patients who switched to IC application were recurrent UTIs, incontinence, nephrolithiasis, dependence on care givers and urethral strictures. For all patients, the frequency of treated UTI in 1 year was 38.8%. The number of UTIs was highest in patients using IC.[16]

A Scheel-Sailer, A Wyss, C Boldt, et al (2013) conducted a study on location, grade of pressure ulcers and association with specific patient characteristics in adult spinal cord injury patients during the hospital stay: a prospective cohort study. A total of 185 patients were included in the study and observed for the entirety of their hospitalization. The prevalence of at least one pressure ulcer (PU) was 49.2% in all patients, compared with 25.4% in the group of patients admitted without PUs. The incidence was 2.2 per person and year. In 91 patients, a total of 219 PUs were observed.

PUs were most frequently located on the foot (36.1%), and the coccyx/sacrum (15.1%). The risk for occurrence of a PU increased with age (odds ratio (OR) ¼1.04) and post SCI (OR¼1.03). In the multivariate analyses, the risk for PUs was lower for patients with the American Spinal Injury Association (ASIA) Impairment Scale (AIS) of C or D (ORC¼0.25, ORD¼0.28) compared with patients with AIS of A.[17]

Roop sing et al(2012)in their study reported that the psychosocial problems affecting SCI patients include sexual dysfunction, problems of social adjustments, burden of family strained partner relationships and sleep disturbances. The frequent hospitalizations, inability to return to pre injury occupation, immobility and lack of autonomy can adversely affect the community reintegration and quality of life of SCI patients.[18]

McKinly et al (2012)found that pressure ulcers were the most common secondary medical complications of SCI with prevalence rates ranging from 15.2 % 1 year after injury to 29.4% at 20 years after injury and pressure ulcer treatment often necessitates long lasting activity modifications and restrictions that can have a negative psychosocial impact on individuals and their families. Apart from this, the other sequelae include social isolation, alteration of body image, lost income, odour and drainage. In some individuals pressure ulcer may prove fatal.[19]

Pickett, Gwynedd E. MD, FRCSC; Campos-Benitez, Mauricio MD et al (2006) conducted study on epidemiology of traumatic spinal cord injury. Retrospective review was done to describe the incidence, clinical features, and treatment of traumatic spinal cord injury (SCI) treated at a Canadian tertiary care center. Hospital records are reviewed on all patients with traumatic SCI between January 1997 and June 2001 (n = 151).Variables assessed included age, gender, length of hospitalization, type and mechanism of injury, associated spinal fractures, neurologic deficit, and treatment. Annual age-adjusted incidence rates were 42.4 per million for adults aged 15–64 years, and 51.4 per million for those 65 years and older. Motor vehicle accidents accounted for 35% of SCI. Falls were responsible for 63% of SCI among patients older than 65 years and for 31% of injuries overall. Cervical SCI was most common, particularly in the elderly, and was associated with fracture in only 56% of cases. Thoracic and lumbar SCI were associated with spinal fractures in 100% and 85% of cases, respectively. In-hospital mortality was 8%. Mortality was significantly higher among the elderly. Treatment of thoracic and lumbar fractures associated with SCI was predominantly surgical, whereas cervical fractures were equally likely to be treated with external immobilization alone or with surgery.[20]

M Wyndaele, and J-J Wyndaele (2006) conducted a study on Incidence, prevalence and epidemiology of spinal cord injury: what learns a worldwide literature survey? .The objectives was to provide an overview of the literature data on incidence, prevalence and epidemiology of spinal cord injury (SCI) worldwide and to study their evolution since 1977. The result showed that two studies gave prevalence of SCI, and 17 incidence of SCI. The published data on prevalence of SCI was insufficient to consider the range of 223–755 per million inhabitants to be representative for a worldwide estimate. Reported incidence of SCI lies between 10.4 and 83 per million inhabitants per year. One-third of patients with SCI are reported to be tetraplegic and 50% of patients with SCI to have a complete lesion. The mean age of patients sustaining their injury at is reported as 33 years old, and the sex distribution (men/women) as 3.8/1.[21]

JosesBloemenVrencken, Jos Hendricks, Macel post et al (2005) conducted a study on health problems of persons with spinal cord injury living in Netherlands. Data were collected by using questionnaire focused on 26 health problems that individuals with spinal cord injury might experience. The questionnaire was sent to all 997 members of the patients association, of whom 454 was respondent. Among them 20% have complete tetraplegia, 14% incomplete tetraplegia, complete paraplegia 46.7%, incomplete paraplegia 19.3%. The cause of injury are traffic accidents 32.7%, sports injury 18.9% fall 9.6%, accidents at working place 8.9%. The main health problems facing by the participants are bladder regulation 70.9%, bowel regulation 61%, spasm 56.6%, pan 55.3%, oedema 48.5%, pressure sore 35.9% breathing problems 19.02%. Problems of daily living are also big issue of patients with SCI. 31.5% people having difficulty in ADL, 39.2% people having sexuality problem, 35.2% having difficulties being dependent on personal help. The lowest prevalence was found among respondents who had their SCI between 5 to 19 years. The highest prevalence of pressure sores and contractures was found among respondent who had their injury more than 19 years.[22]

R Klotz, PA Joseph, JF Ravaud, L Wiart, M Barat and The Tetra®gap Group (2002)conducted study on The Tetra®gap Survey on the long-term outcome of tetraplegic spinal cord injured persons: Part III; medical complications and associated factors. The study is a multicentre epidemiological survey carried out using self- administered questionnaires

studying the global long-term outcome of TSCI (tetraplegic spinal cord injured persons) patients after the initial phase of rehabilitation. The data for 1668 patients were analyzed. The rate of re hospitalizations was 74.4% with on average three stays per patient and as reported causes, in descending order: urinary complications, systematic follow-up, pressure sores, respiratory complications, contractures, bowel complications, pains and secondary fractures of the lower limbs. At the time of the survey, 84.7% of patients mentioned awkward contractures, 73.8% pains, 55.9% embarrassing urinary leakage and 14.1% pressure sores. With regard to persons suffering from complete motor lesion, urinary complications and pressure sores were more frequently reported, whereas for persons suffering from incomplete motor lesions, awkward contractures and pains were more frequent. In the elderly, pains were more often mentioned, and pressure sores and pain were also the most common in patients coming from lower socio-professional status. Contractures and pain decreased with time. All these complications but pressure sores and pain are statistically interrelated.[23]

Willam O. Mc.Kinley, Anie B Jackson et al (1999)conducted a study on long term medical complications after traumatic spinal cord injury: a regional model system analysis.Data were reviewed from the National SCI Statistical Center on annual evaluations performed at 1, 2, 5, 10, 15, and 20 years after injury on patients injured between 1973 and 1998.Secondary medical complications at annual follow-up years,were evident including pneumonia/atelectasis, autonomic dysreflexia, deep venous thrombosis, pulmonary embolism, pressure ulcers, fractures, and renal calculi. Pressure ulcers were the most frequent secondary medical complications in all years. The incidence of pneumonia/atelectasis was 3.4% between rehabilitation discharge and year-1 follow-up with those most significantly at risk being older than 60 years (years 1, 2, 5, 10) and tetraplegia-complete (years 1, 2). The incidence of calculi (kidney and/or ureter) was 1.5% at 1-year follow-up and 1.9% at 5 years and was more frequent in patients with complete tetraplegia.[24]

R Levi, C Hultlingl, MS Nashl, and A Seiger et al(1995)conducted a study on The Stockholm spinal cord injury study: Medical problems in a regional SCI population. The study shows that Out of a regional traumatic spinal cord injury population consisting of 379 individuals, 353 (93.1 %) participated in the present study. Subjects were individually interviewed using semi-structured protocols, previous medical records were available for over 96% of subjects, and were used in all these cases to minimize recall bias. Cause of injury, prevalence of present medical symptoms and occurrence of medical complications in the post-acute, post-discharge phase were recorded. Many subjects had experienced complications since discharge from initial hospitalization, especially urinary tract infections, decubitus ulcers, urolithiasis, and neurological deterioration. Prevalence of medical symptomswas also high. More than 41% of subjects with spastic paralysis reported excessive spasticity to be associated with additional functional impairment and/or pain, Almost two-thirds of subjects reported significant pain, with a predominance of neurogenic-type pain. Bladder and bowel dysfunction were each rated by nearly 41% of subjects as a moderate to severe life problem.[25]

Jerzy Kiwerski (1992) conducted a study on Respiratory problems in patients with high lesion quadriplegia. Injuries to the cervical spine involving spinal cord lesion belong to the group of the most difficult cases in traumatic surgery with poorest prognoses. They showed the severe disability and are accompanied by early and late complications in many systems such as respiratory, urinary and musculo skeletal system. The clinical material comprises 262 patients with spinal injury at C1-C5 levels, admitted within the first few to several hours of after injury with symptoms of quadriplegia and who were treated between 1975 and 1988. The most frequent were injuries to the lower cervical vertebrae. Lesion of the C1-C5 intravertebral space and of the C5 vertebral body account for 71% of all cases.[26]

Section B: Review of literature related to support provided by the care givers of quadriplegic patients

JP Engkasan, CJ Ng and WY Low (2015) published a qualitative study on the decisional roles of patients, their caregivers and doctors on the method of bladder drainage after spinal cord injury. The objectives of the study were to explore the roles of patients, their caregivers and doctors when making decisions on the method of bladder drainage after spinal cord injury (SCI). The study was conducted on 17 male patients with Semi structured (one-to-one) interviews with SCI, 4 caregivers and 10 rehabilitation professionals. Eight themes describing the respective decisional roles of patients, their caregivers and doctors emerged from the analysis: patient's right and responsibilities, patient as an informed decision maker, forced to accept decision; surrogate decision maker, silent partner; doctor knows best,

over-ride patient's decision, or reluctant decision maker. Both patients and doctors acknowledged the importance of patient autonomy but not all patients had the chance to practice it. Some felt that they were forced to accept the doctor's decision and even alleged that the doctor refused to accept their decision. Doctors considered the caregiver as the decision maker in cases that involved minors, elderly and those with tetraplegia. Some patients considered bladder problems an embarrassing subject to discuss with their caregivers and did not want their involvement. Doctors were described as knowledgeable and were trusted by patients and their caregivers to make the most appropriate option. Some doctors were happy to assume this role whereas some others saw themselves only as information providers.[27]

Jeanne M. Zanca (2014)conducted a study on Systematic Assessment of care giving skill Performance by individuals with tetraplegia and their caregivers. The objective of the study is to create an assessment tool for use by clinicians during inpatient rehabilitation to systematically evaluate and describe competence in self direction of care and care giving skills. Key findings derived from rehabilitation chart reviews include the following: the persons who receive care giver education during the inpatient rehabilitation stay are varied, including spouses, children, parents and friends of the persons with tetraplegia as well as hiredattendants. A wide variety of topics related to self care, activity of daily living, equipment use, secondary complications, emergency preparedness and medical issues appeared in clinical documentation of patients and care givers training. Clinicians use several techniques to assess the ability of the person with tetraplegia and their caregivers to direct or perform care tasks. These include the level of independence with which a task is performed or directed, quality, accuracy, frequency, completeness and extent to which further training is needed.[28]

Juan Carlos Arango-Lasprillaa,Silvia Leonor OliveraPlazab, Allison Drewa et al (2010) published a study on Family needs and psychosocial functioning of caregivers of individuals with spinal cord injury from Colombia, South America. Method of the study was 37 caregivers completed a caregiver needs questionnaire composed of 27 questions (1–5 scale) and 9 subscales (emotional, information, economic, community, and household support, respite, physical health, sleep, and psychological health). The study result showed that information, economic, emotional, community support, and respite needs were most frequently reported among this group of Colombian caregivers. Forty-three percent of the family caregivers reported some level of depression, 68% reported being overwhelmed by their caretaking responsibilities, and 43% reported dissatisfaction with their lives. Information, emotional, economic, physical, sleep, and psychological needs were positively correlated with depression and burden. Those with more household, physical, sleep, economic, and psychological needs had less satisfaction with life and social support. Caregivers with more community and respite needs had less social support, while those with more emotional needs had less satisfaction with life. Caregivers with more respite needs had more burden and those with more household needs had more depression.[29]

Adele Dickson, Grainne O' Brien, Richard Ward, David Allan et al (2008)conducted a study on the impact of assuming the primary care giver role following traumatic spinal cord injury: an interpretative phenomenological analysis of the spouse's experience. The study aimed to explore the lived experience assuming the primary caregiver role in a group of spouses of individual living with traumatic spinal cord injury (injuries range from paraplegia to quadriplegia). Regarding the emotional impact of spinal cord injury, participants reported an almost instantaneous sense of loss, emptiness and grief during the injured persons rehabilitative period and feeling of anxiety were reported in anticipation of their return to the family home. A distinct change in role from spouse and lover to care provider was reported and this ultimately contributed to relationship change and loss of former identity.[30]

MWM Post, J. Blomen and LP White (2005) conducted a study on burden support for partners of persons with spinal cord injuries. A cross sectional survey was done on patients of Netherlands. All members of the Dutch patients'organisation DON (N¼1004) and their caregivers, if applicable, were invited. Physical disability of the person with SCI was measured using the Barthel Index (BI). A number of secondary conditions, other practical problems and psychosocial problems were recorded. Partner support was described using a list of ADLsupport, other practical support and emotional support. Burden of support was measured by a six-item measure (Cronbach's alpha 0.92). Nonparametric descriptive statistics and correlations were used. Linear regression was used to identify predictors of caregiver burden. Responses were obtained from 461 persons with SCI. Of 265 couples, patient as well as partner data were available. Mean age of the partners was 49.4 years (SD 12.2) and 69.8% were women. Mean BI of the persons with SCI was12.3

(SD 4.7) on a 0–20 scale and 60.4% were seriously disabled (BIo15). Most partners provided various kinds of support. ADL support and other practical support were given much more importance often by partners of persons with serious disability, but less difference was seen regarding emotional support. Professional (paid) support was obtained by 45.3% of all couples. Perceived burden of support was high in 24.8% of partners of persons with serious disabilities against 3.9% of partners of persons with minor disabilities. Significant predictors of caregiver burden were (in order of importance) the amount of ADL support given, psychological problems of the patient, partner age, partner gender, BI score and time after injury (total explained variance 47%).[31]

Summary

This chapter deals with the review of the related literature regarding the common complications among quadriplegic patients and support provided by care givers for those complications. The review of literature in this chapter facilitates the investigator in designing and conducting the study. Literature also helped to establish the need for the study, develop conceptual frame work, adopt a research design, develop tools and decide on plan for data analysis.

CHAPTER III

RESEARCH METHODOLOGY

Research methods include all those techniques/methods that are adopted for conducting research. On the other hand, research methodology is the way in which research problems are solved systematically.[32]It includes rational for choice of the research approach, the tools used, the setting, sampling technique, the pilot study, the data collection procedure and the plan for analysis. The present chapter deals with a brief description of methodology adopted for the study.

Research approach

The present study was intended to identify the support provided by the care givers for common complications among quadriplegic patients. In the view of nature of the problem and to accomplish the objectives of the study quantitative research approach was adopted.

Research design

The research design is the overall plan for addressing a research question. In this study non experimental descriptive survey design was incorporated.

Variables

Research variable: Support provided by the caregivers of quadriplegic patients for respiratory problems, pressure sore problems, bladder problems, bowel problems, and mobility and transfer problems

Demographic variable:

- Demographic characteristics of the quadriplegic patients, e.g. age, gender, marital status, educational qualification, occupation, type of family, monthly family income.
- Information related to care givers including age, gender, educational qualification, previous experience of caring quadriplegic patients and relationship with the patients.

Setting

The present study was conducted in Orthopaedic indoor, Neuro surgery and Physical Medicine outpatient and inpatient department of I.P.G.M.E&R, S.S.K.M Hospital Kolkata, physical medicine outpatient department of R.G. KarMedical College and Hospital, outpatient and inpatient department of N.IO.H, Kolkata, West Bengal.

Reasons for selection of the setting were:

- ✓ Availability of the sample
- ✓ Administrative approval and expectation of cooperation from the authority
- ✓ Feasibility of conducting the study
- ✓ Familiarity with the setting

Population

Population is the set of people or entities to which the results of a research are to be generalized.[33]For this study the

population is the quadriplegic patients aged between 18 and 60 years.

Sample

Sample is a subset of population that is selected for a particular study. For this study samples were 60 quadriplegic patients in I.P.G.M.E&R, S.S.K.M Hospital, R.G. KarMedical College and Hospital and N.I.O.H, Kolkata, West Bengal.

Sample selection criteria

Inclusion criteria:

- Patientsof both genders.
- Patients at least after 6 month of injury.
- Patients aged between 18 and 60 years.
- Patient diagnosed and registered during the study period.

Exclusion criteria:

Patients with severe cognitive impairment

Sampling technique:

The selection of sampling technique is largely dependent upon their availability. Therefore non probability convenience sampling technique was used to select the sample on the basis of their inclusion and exclusion criteria.

Data collection tool and technique

An important aspect of any investigation is the collection of appropriate information which provides necessary data to answer the research questions. The selection and development of the tools were based on objectives of the present study. Data collection tool and techniques are presented in table 1

Table 1 Data collection tools and techniques

Name of the tool		Variables to be measured	Technique
Tool I	Structured interview schedule		Interviewing
Part A		Demographic data of the quadriplegic patients	
Part B		Information related to care giver	Interviewing
Tool II	Record analysis Performa	Complications of quadriplegic patients	Record reviewing
Tool III	Structured interview schedule	Support provided by the care givers for the common complications of the quadriplegic patients	Interviewing

Development of tools

The following steps were adopted to develop tools for the study by the investigator:

- An extensive review of research and non research literature was done related to common complications of spinal cord injury patients.
- Guidance from experts was sought to screen the items for relevance and feasibility.
- Professional experience of the researcher in the clinical field of orthopedic, community, neurosurgery, physical medicine and rehabilitation was utilized.
- Peer group discussion
- Development of first draft of the tool with the help of guide

- Establishment of content validity of the tool.
- Pretesting of the tool
- Computation of reliability
- Development of final draft of the tools

Description of the tools

The following tools were developed for collecting data:

ToolI Part A:Structured interview schedule for collection of demographic data of the patients

This part of the tool constituted items on demographic data of the participants including age in years, gender, marital status, educational qualification, occupation, type of family, monthly family income.

Tool I Part B: Information related to care givers

This part of the tool constituted items on information related to care givers including age of the care givers, relationship with the patients, educational qualification, and previous experience of caring quadriplegic patients.

Tool II: Record analysis proforma for collecting data related to presence of common complications

This tool includeditemsrelated to common complications of quadriplegic patients includingcause of injury, neurological level of injury, duration of injury and presence of complications.

Tool III: Structured interview schedule to identify care givers support for the common complications

As there is no consolidated tool available, this structured interview schedule was made by the researcher with the help of opinion of the experts. Various books, standard tools, researcher's personal experience and tools used in others studies were consulted to identify the main complications of quadriplegic patients. Among the complications most common identified included respiratory problems, pressure sore problems, bladder problems, bowel problems and mobility and transfer problems.

- **Support for respiratory problems** consisted of various areas like changing position on bed, helping in coughing out secretions, assisting in deep breathing exercise, helping to use breathing aids. Total number of items was four. Each question had three alternatives that are never, sometimes, always. Scores of 1(one) for 'never' 2(two) for 'sometimes' and 3(three) for 'always'responses were accorded. The minimum score possible from the interview schedule was 4 and maximum score possible was 12. The support for respiratory problems was decided to be rated as good support(10-12), moderate support(07-09), and poor support(04-06).
- **Pressure sore problems** consisted of various areas like checking of skin twice a day, changing of position 2 hourly, giving daily bath, cleaning of skin and making the skin dry after bathing, use of cream or oil in skin, giving back care, changing the pressure sore dressing, giving support to the pressure points and bed making. Totalnumber of items was ten. Each question had three alternatives that are never, sometimes, always. Scores of 1(one) for 'never' 2 (two) for 'sometimes' and 3 (three) for 'always' responses were accorded. The minimum score possible from the interview schedule was 10 and maximum score possible was 30. The support for pressure sore problems were decided to be rated as good support (25-30), moderate support (15-24), poor support (10-14).
- **Bowel problems** included changing cloth immediately after bowel elimination, use of laxatives, softener and digital stimulation for elimination.Total number of items was five. Each question had three alternatives that are never, sometimes, always. Scores of 1(one) for 'never' 2 (two) for 'sometimes' and 3 (three) for 'always' responses were accorded. The minimum score possible from the interview schedule was 5 and maximum score possible was 15. The support for bowel problems was decided to be rated as good support(13-15), moderate support(09-12), poor support (05-08).
- **Support for bladder problems** wassubdivided in two parts; patients with intermittent catheter and patients with indwelling catheter. For intermittent catheter, support items included washing hands, lubrication of catheter, use of gloves, performing CIC every 4-6 hours, changing of cloths immediately after leakage. For indwelling catheter, the support items included keeping the urobagin hanging position from the bed, giving catheter care.

Bladder management was categorized in two types.For indwelling catheterization total number of items was four. Each question had three alternatives that are never, sometimes, always. Scores of 1(one) for 'never' 2 (two) for 'sometimes'

and 3 (three) for 'always' responses were accorded. The minimum score possible from the interview schedule was 4 and maximum score possible was 12. The support for indwelling catheterization programme was decided to be rated as good support(10-12), moderate support(07-09), poor support(04-06).

For intermittent catheterization, total number of items was six. Each question had three alternatives that are never, sometimes, always. Scores of 1(one) for 'never' 2 (two) for 'sometimes' and 3 (three) for 'always' responses were accorded. The minimum score possible from the interview schedule was 6 and maximum score possible was 18. The support for indwelling catheterization programme was decided to be rated as good support(14-18), moderate support(10-13), poor support(06-09).

- **Support for mobility and transferproblems** includeditems of giving explanation before transfer, parking of wheel chair as close as possible to the patient, lock the wheel chair before transfer, move the arm rest and foot rest before transfer.Total number of items was five. Each question had three alternatives that are never, sometimes, always. Scores of 1(one) for 'never' 2 (two) for 'sometimes' and 3 (three) for 'always' responses were accorded. The minimum score possible from the interview schedule was 5 and maximum score possible was 15. The support for respiratory problems was decided to be rated as good support(13-15), moderate support (09-12), poor support (05-08).

Content validity of the tools

To establish the content validity,the tools were submitted to9 experts from the field of Physical Medicine and Rehabilitation, Community Medicine, Medical Surgical Nursing, OrthopaedicSurgery and Neurosurgery. The experts were chosen based on their clinical experience, expertise and interest on the problem area. The experts were requested to give their opinion on accuracy, relevancy and appropriateness of the items and corrections were done according to the experts' suggestion and percentage of agreement. Minor modifications were made in the tools according to their suggestions and opinion from guide. The three tools were translated into Bengali by the investigator and were submitted to a language expert and there is cent-percent agreement on all items.

Pretesting of the tool:

The tools were pre tested to

- Check the clarity and feasibility of the items.
- Check the ambiguity of the statement.
- Determine the time taken to collect data from a particular patient.
- Check any other difficulty faced by the investigator or expressed by the respondents related to the tools.

The pretesting of the tool was done on 10 patients after getting permission from concerned authority. All items were well understood by the patients and the average time taken by each subject to complete data collection tool was about 15-20 minutes.

Reliability of the tools:

Reliability of the tool was calculated by test re test method from the data gathered during the pre testing the tool. The correlation coefficients (r) were as follow:

- Support for the respiratory complications: 0.87
- Support for pressure sore): 0.84
- Support for bowel problems: 0.93
- Support for bladder problems: 0.79
- Support for mobility and transfer problems: 0.90

All the values indicate that the tools were reliable.

Pilot study

Pilot study is small scale version or trial run designed to test the methods to be used in a larger, more rigorous study which is sometimes referred to as parent study.[34]The pilot study was conducted from 07.12.16 to 17.12.16 at I.P.G.M.E & R, S.S.K.M Hospital Kolkata, R.G. KarMedical College and Hospital and N.I.L.D, Kolkata after obtaining administrative permission. The pilot study was conducted on 10 respondents. It was done to assess the effectiveness of the tool, to find out the feasibility of the study and to decide the plan of statistical analysis.

The investigator introduced herto the patients and explained the purpose of the study and informed consent was obtained from the respondents. Convenience sampling technique was used to select the sample. The data collection for the pilot study was done according to the plan of the final study.

Procedure for data collection for final study

The final data collection procedure was conducted at S.S.K.M Hospital (I.P.G.M.E&R), R.G. Kar Medical College and Hospital and National Institute for the LocomotorDsabilities, Kolkata from 3rd week of December to January 2017. All formalities were fulfilled before conducting final study such as

- Ethical committee approval was obtained from the National Institute for the Locomotor Disabilities, Kolkata.
- Administrative permission was sought from director of S.S.K.M Hospital (I.P.G.M.E&R), R.G. Kar Medical College and Hospital.
- Data were collected from physical medicine and rehabilitation department, neurosurgery ward and orthopedic ward and rehabilitation ward of N.I.O.H.
- 3-5 participants were interviewedper day and for each participant 25-30 minutes were required to complete the total interview schedule.
- The investigator introduced her to the patients and explained the purpose of the study and informed consent was obtained from the respondents and formal permission was taken from the sister-in-charge and staff nurses of the respective wards.
- Convenience sampling technique was adopted to get the estimated sample size of 60. The sample selection was done as per the inclusion criteria.
- After completing the total procedure the investigator thanked the quadriplegic patients.
- The investigator faced few problems during data collection. Data collection was not smooth every time. Some time the respondents were stressed and not willing to allow interview to continue and complete the data collection procedure.

Plan for data anlysis

The analysis of the data would be based on objectives and by using descriptive and inferential statistics. The following plan of data analysis was developed with the opinion of experts (statistician).

Section IA: Findings related to the frequency and percentage distribution of the patients according to demographic variables.

Section IB: Findings related to the frequency and percentage distribution of the patients according to their clinical profile.

Section IC: Findings related to the frequency and percentage distribution of the care givers according to personal information.

Section II: Findings related to the frequency and percentage distribution of the respondents according to the presence of common complications of quadriplegia.

Section III: Findings related to the frequency and percentage distribution of the care givers according to their support provided for prevention of complications.

Section IV: Findings related to association between presence of complications and neurological level of injury among quadriplegic patients.

Section V: Findings related to the association between supports provided by the care givers and selected demographic variables.

Summary

This chapter dealt with the research methodology which consisted of research approach and design, the setting, population, sample, sampling techniques, steps of developing tools, content validity and reliability of the tool, pilot study, procedure of data collection and plan for data analysis.

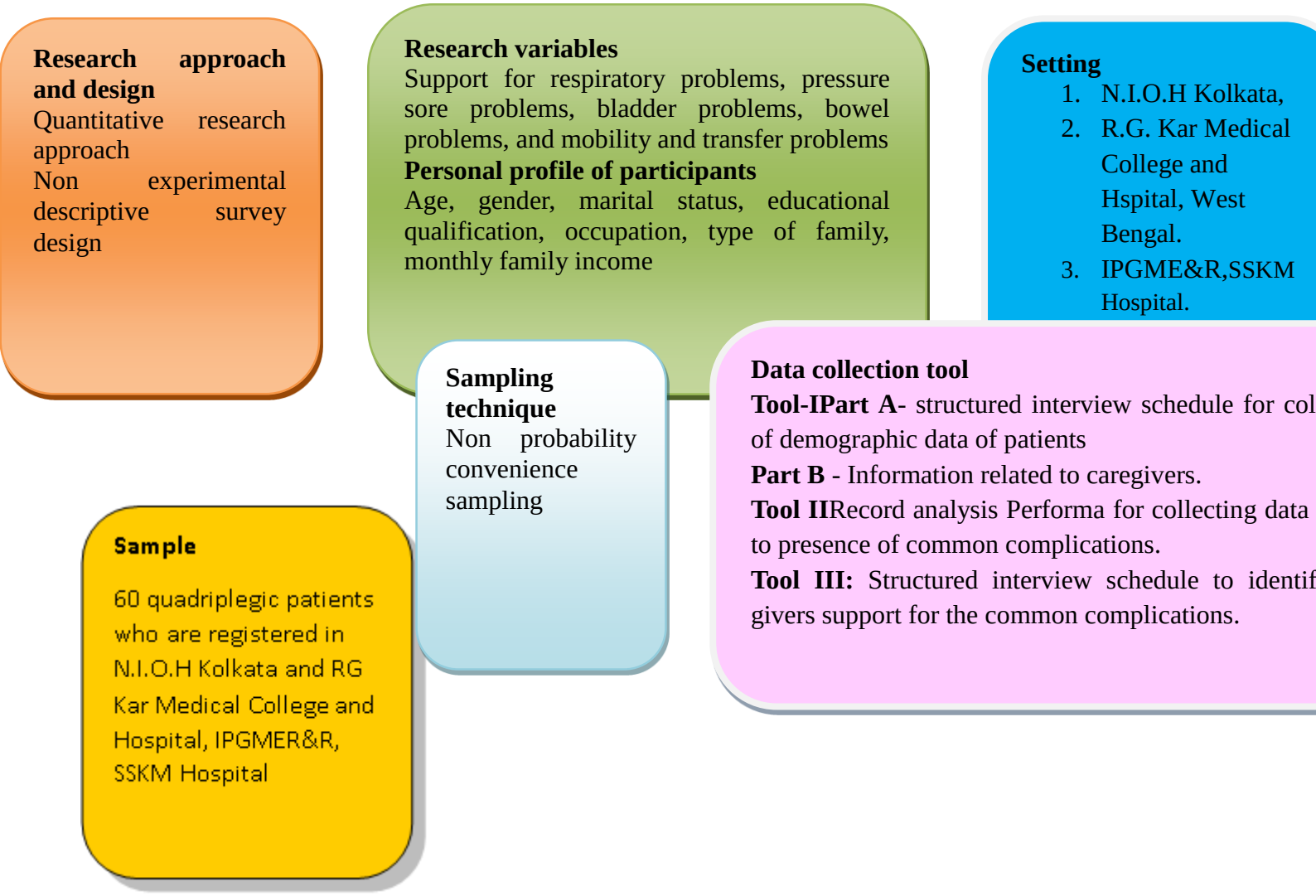


Fig. 1: Schematic representation of research methodology adopted for the present studyCHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The word analysis means the categorizing, ordering and summarizing the data statistically to obtain answers to research question. This chapter deals with the analysis and interpretation of data obtained from 60 patients with quadriplegia. Both descriptive and inferential statistics were used to analyze, classify and tabulate the data.

Objectives of the study

1. To find out the common complications present among quadriplegic patients
2. To assess the support provided by the care givers for the common complications
3. To find out the association between supports provided by the care givers and selected demographic variables

Organization of the study findings

The data were organized and presented under the following sections.

Section IA: Findings related to the frequency and percentage distribution of the patients according to demographic variables.

Section IB: Findings related to the frequency and percentage distribution of the patients according to their clinical profile.

Section IC: Findings related to the frequency and percentage distribution of the care givers according to their personal information.

Section II: Findings related to the frequency and percentage distribution of the respondents according to the presence of common complications of quadriplegia.

Section III: Findings related to frequency and percentage distribution of the care givers according to their support for prevention of the complications

Section IV: Findings related to association between presence of complications and neurological level of injury among quadriplegic patients.
Section V: Findings related to the association between supports provided by the care givers and selected demographic variables.
Section IA: Findings related to the frequency and percentage distribution of the patients according to demographic variables.

Table 2 Frequency and percentage distribution of the respondents according to their age, gender and marital status

n=60

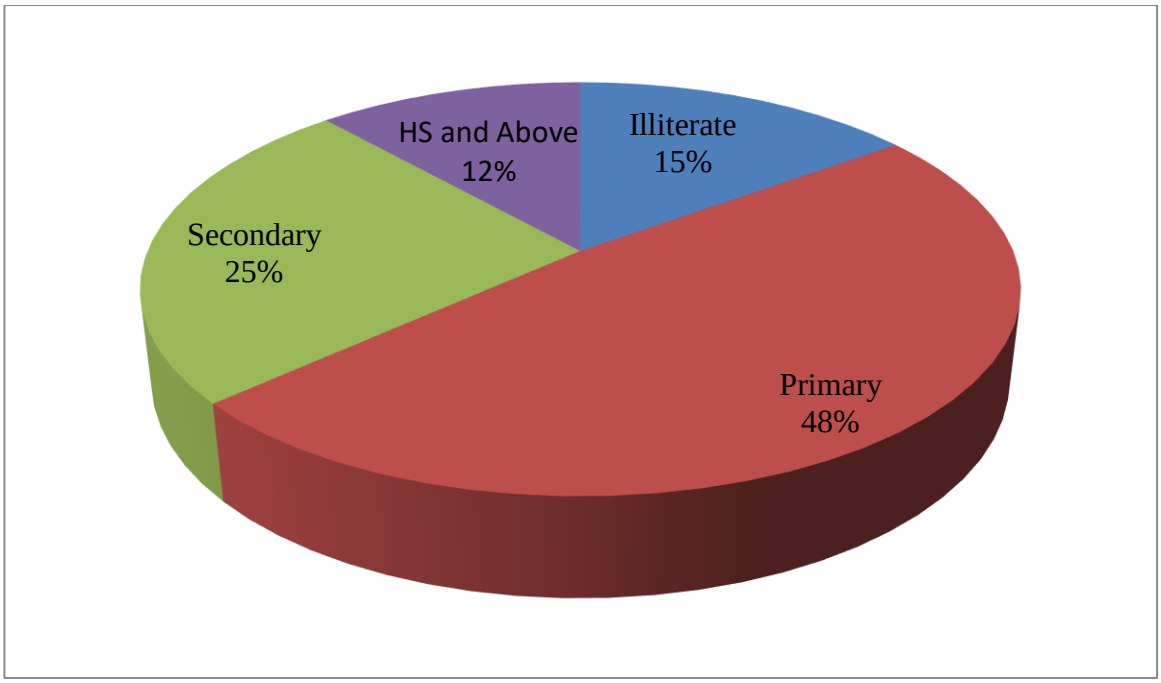
Data presented in table 2 indicated that maximum (21; 35%) patients belonged to age group of 28-37 years, 15 (25%)

Variables	Frequency	Percentage
Age in years		
18-27	15	25
28- 37	21	35
38-47	19	31.66
48-57	5	8.33
Gender		
Male	45	75
Female	15	25
Marital status		
Unmarried	36	60
Married	22	36.66
Divorced	02	3.33

belonged to 18-27 years, 19 (31.66%) belonged to 38-47 years and 5(8.33%) patients belonged to 48-57 years.

Data also revealed that the majority of the patients(45; 75%) were male, and 15(25%) were female.

Maximumnumber of patients(36; 60%) were unmarried, 22(33.66%) were married and only 2(3.33%) were divorced.



n=60

Fig. 3: Pie diagram showing the frequency andpercentage distribution of the patients according to their educational qualification.

Data presented in figure3 indicated that 9 (15%) patientswere illiterate, 29(48%) had primary level of education, 15(25%) had passed secondary school examination, 7(12%) passed higher secondary and above.

n=60

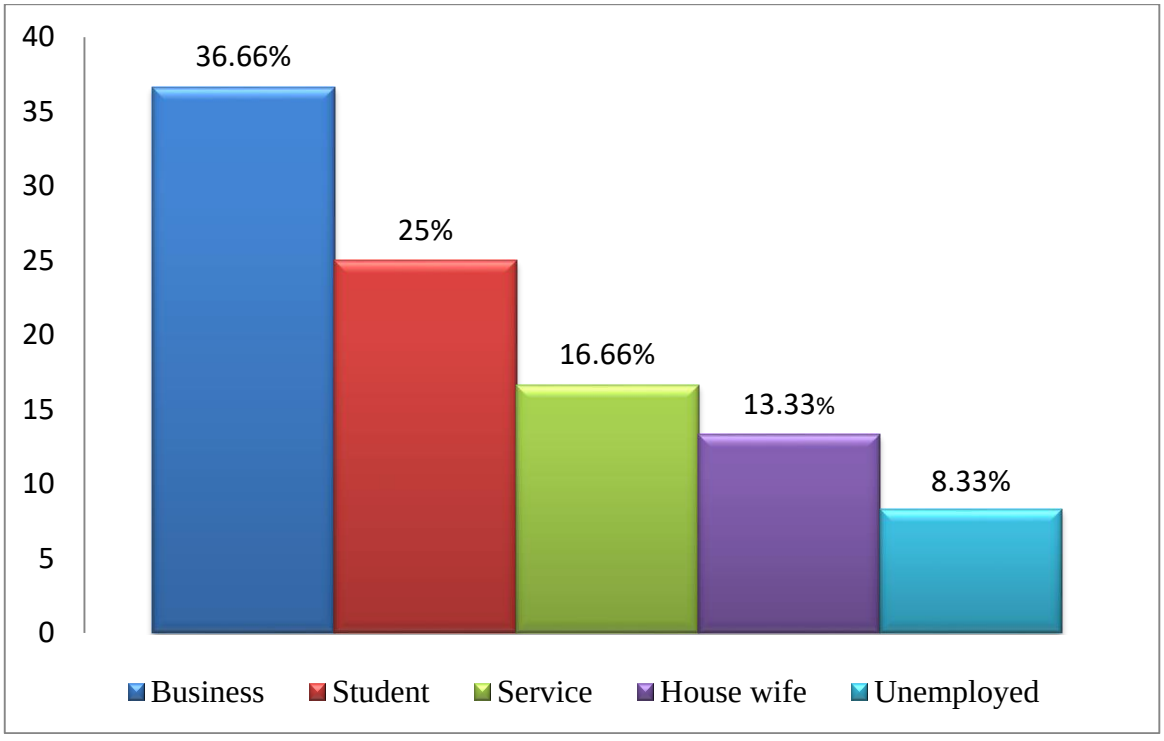


Fig. 4: Bar diagram showing the frequency and percentage distribution of the patients according to their occupation

Data presented in figure 4 indicated that maximum (22; 36.66%) patients were business men, 15(25%) were students, 10(6.66%) were service holders, 8(3.33%) were house wives and 5(8.33%) were unemployed.

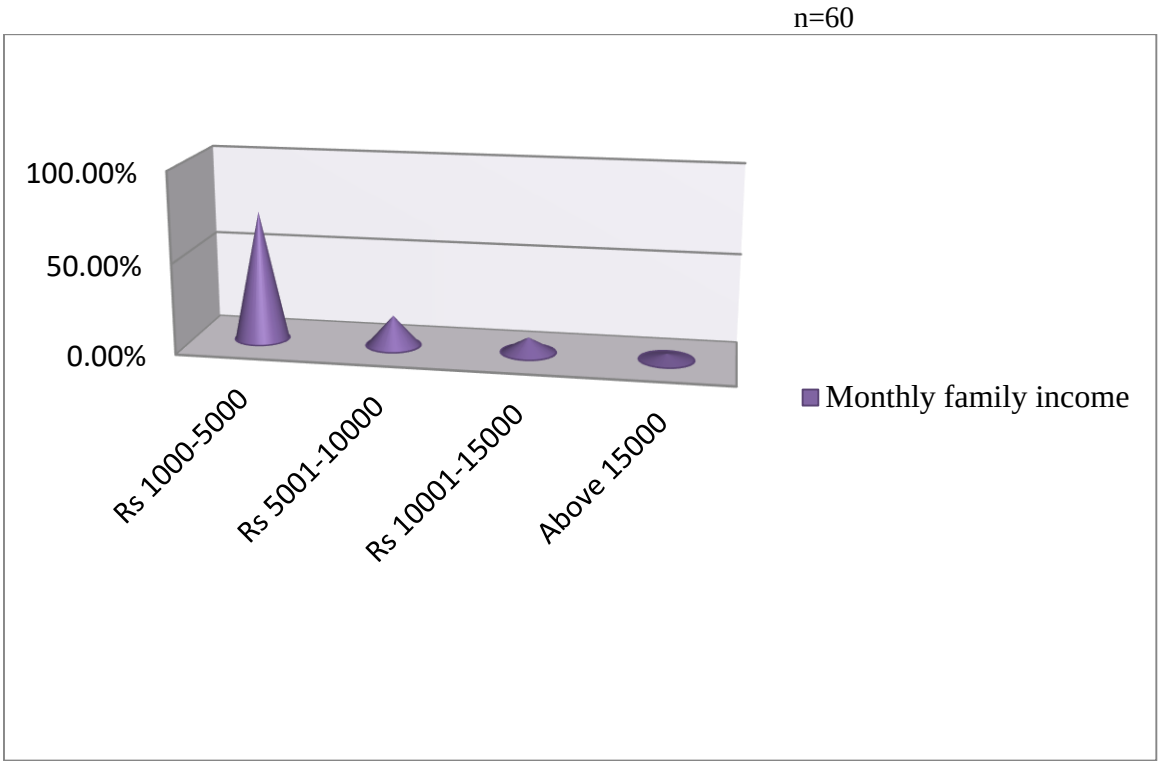


Fig. 5: Conical diagram showing the frequency and percentage distribution of the patients according to their monthly family income

Data presented in the conical diagram indicated that maximum 43(71.66%) patients had family income of Rs. 1000-5000 per month, 10(16.66%) had family income of Rs 5001-10000, 5(8.33%) had monthly family income between Rs 10001 and15000 and rest 2(3.33%) patients had family income above Rs15000 per month.

Table 3 Frequency and percentage distribution of the patients according to their type of family

Type of family	Frequency	Percentage
Nuclear	40	66.66
Joint family	20	33.33

Data presented in table 4 showed that 40(66.66%) patients belonged to nuclear family and 20(33.33%) belonged to joint family.

Section IB: Findings related to the frequency and percentage distribution of the patients according to their clinical profile.

n=60

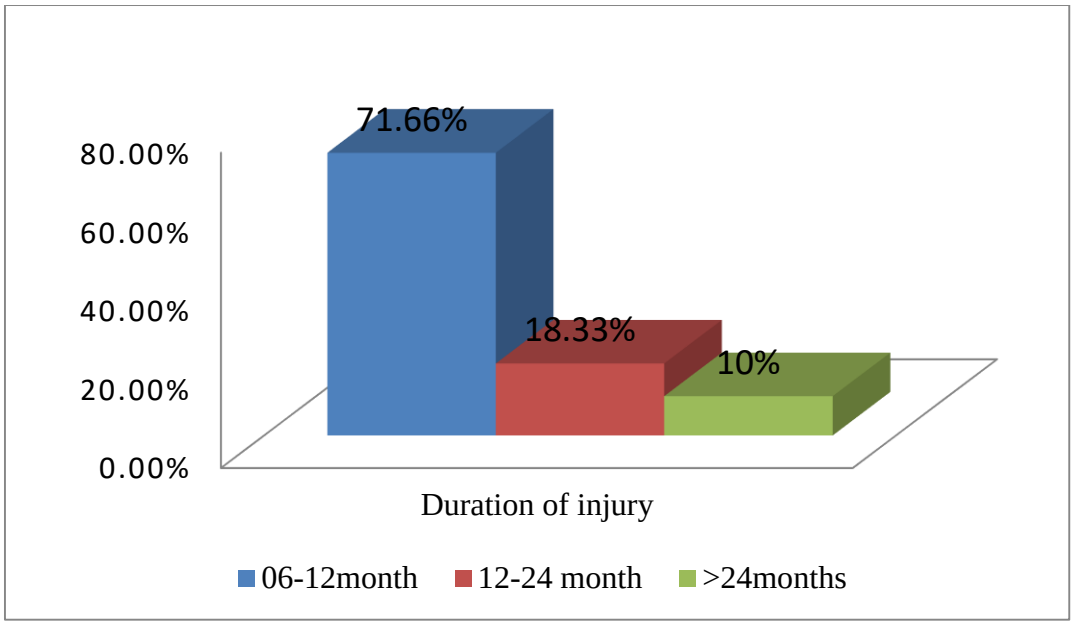


Fig.6: Bar diagram showing the percentage distribution of quadriplegic patients according to their duration of injury.

Data revealed in figure 6 that most of the patients(43; 71.66%) had the history of injury within 1year, 11 (18.33%) patients had within 2 years and only 6(10%) patients met the injury before 2 years.n=60

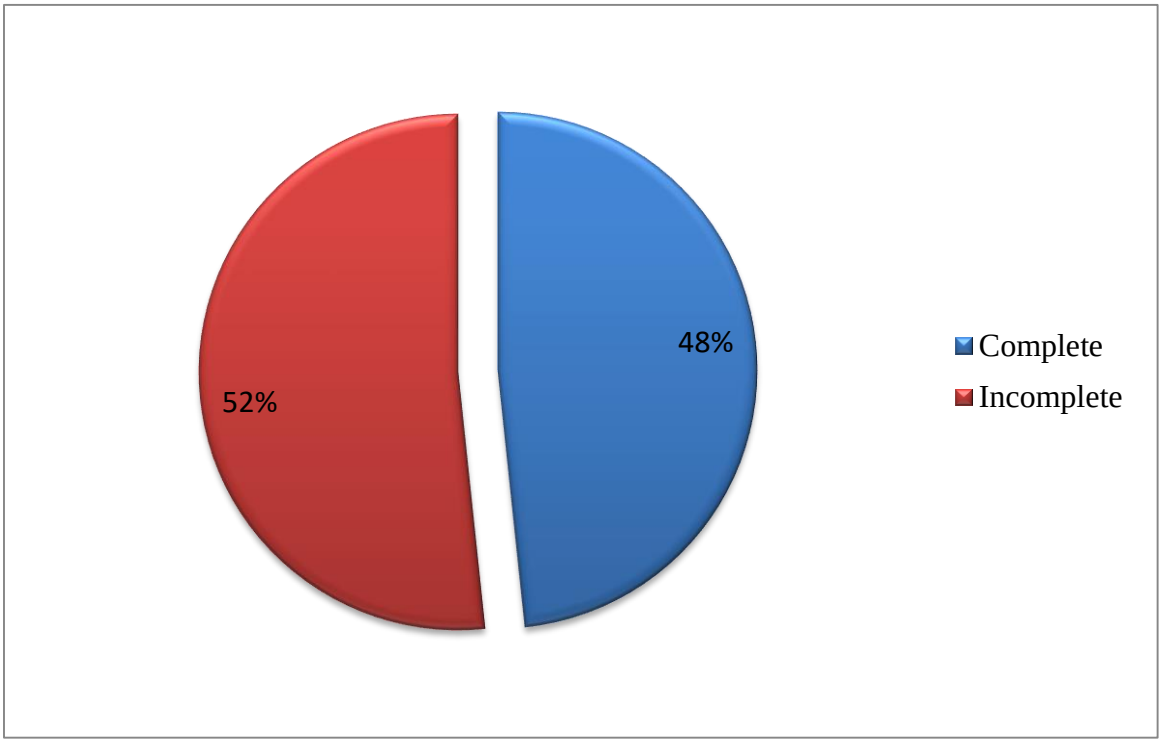


Fig. 7: Pie diagram showing the percentage distribution of quadriplegic patients according to their neurological level of injury.

Data presented in figure 7 revealed that patients were more or less equally distributed in complete(29; 48%) and incomplete (29; 48%) group as far as their neurological level of injury was concerned.

n=60

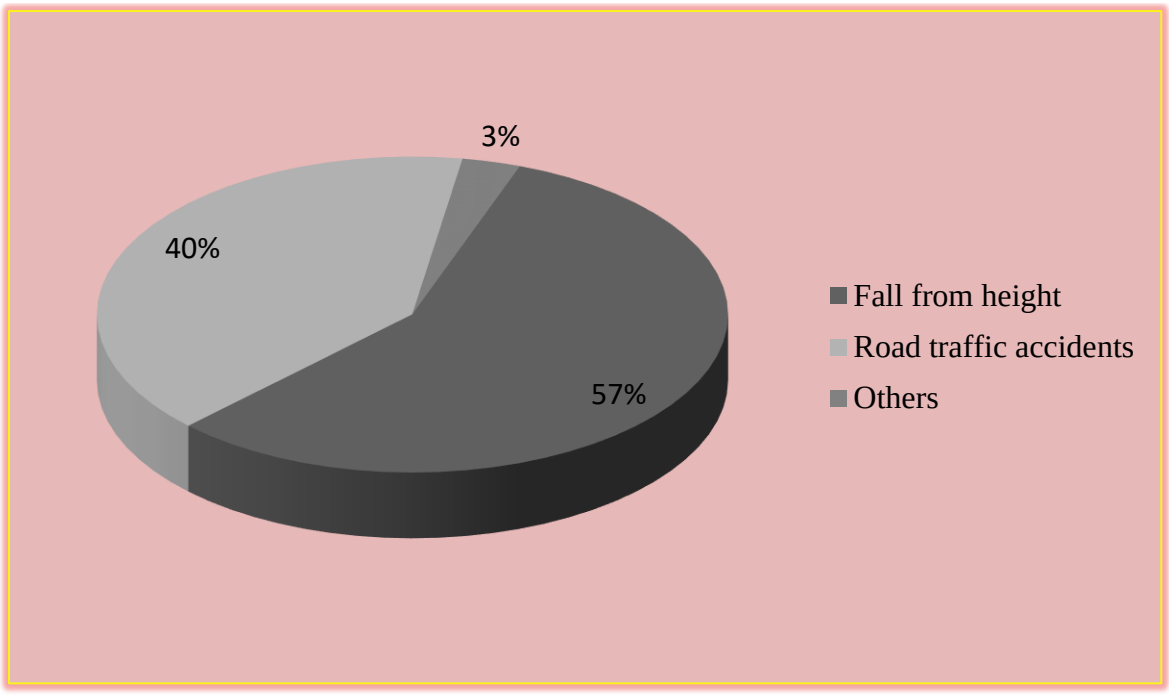


Fig. 8: Pie diagram showing the percentage distribution of quadriplegic patients according to their cause of injury

Data presented in figure8 revealed that in most of the patients (34; 57%) the cause of injury was fall from height, followed by road traffic accidents (24; 40%)

Section IC: Findings related to the frequency and percentage distribution of the care givers according to personal information.

Table 4 Frequency and percentage distribution of the care givers of quadriplegic patients in terms of their age, gender, educational qualification

n=60

Variables	Frequency	Percentage
Age in years		
<35	21	35
>35	39	65
Gender		
Male	44	73.33
Female	16	26.66
Educational qualification		
Illiterate	14	23.33
Primary	6	10
Secondary	18	30
Higher secondary	22	36.66

Data presented in table 4 revealed that maximum (39; 65%) number of the care givers belonged to the age group of above 35 where and only (21; 35%) of the care givers belonged to the age group of below 35 years.
Data also indicated that (44; 73.33%) care givers were males, and (16; 26.66) were females.

Data also revealed that (14; 23.33%) care givers were illiterate, (6; 10%) had primary level of education, (18; 30%) had passed secondary examination and 22 (36.66%)had passed higher secondary.

Table 5 Frequency and percentage distribution of the care givers according to their relationship with the patients, and previous experience of caring quadriplegic patients

n=60

Variables	Frequency	Percentage

Relationship with the patients		
Father	7	11.66
Mother	6	10
Brother	20	33.33
Sister	2	3.33
Friend	8	13.33
Spouse	10	16.66
Daughter	2	3.33
Son	6	10
Previous experience of caring quadriplegic patients		
Yes	6	10
No	54	90

Data presented in table 5 indicated that maximum number of care givers (20; 33.33%) were the brothers of the patients followed by the spouses (10; 16.66%).
Most of the care givers (54; 90%) had no previous experience of caring quadriplegic patients.

Section II: Findings related to the frequency and percentage distribution of the respondents according to the presence of common complications of quadriplegia.

Table 6 Frequency and percentage distribution of the respondents according to their presence of complications

n=60

Variables	Frequency	Percentage
Respiratory problems		
Present	25	41.66
Absent	35	58.33
Bowel problems		
Present	60	100
Absent	nil	--
Bladder problems		
Presence of clean intermittent catheter	31	51.66
Presence of indwelling catheter	29	48.33
Pressure sore problem		21.66
Present	47	78.34
Absent	13	
Mobility and transfer problems		100
Present	60	--
Absent	nil	

Data presented in table 6 showed that all the quadriplegic patients (100%) had bladder problems, bowel problems and mobility and transfer problems. Forty seven 47(78.33%) patients had pressure sore problems, and 25 (41.66%) had respiratory problems.

Table 7 Frequency and percentage distribution of the respondents according to their bladder control, bowel control, and presence of pressure sore

n=60

Variables	Frequency	Percentage
Bladder control		
Complete loss	29	48.33
Partial loss	31	51.66
Bowel control		
Complete loss	32	53.33
Partial loss	28	46.66
Pressure sore		
Hip area	18	30
Back area	20	33.33
Elbow	16	26.66
Other area	10	16.66

Data presented in table 7 represented that (29; 48.33%) patients had complete loss of bladder control, (32; 53.33%) patients had partial loss of bowel control.
Data also revealed that pressure sores were present at all the potential areas of the patients' body surfaces, back area being the maximum one (18;30%). Sometimes one patient had developed pressure sores in more than one area.

Section III: Findings related to frequency and percentage distribution of the care givers according to their support for prevention of the complications

Table 8 Frequency and percentage distribution of the care givers according to their support for the respiratory problems

n = 25

Support for respiratory problem	Never Fr	%	Sometimes Fr	%	Always Fr	%
Changing position	6	24	15	60	4	16
Cough out secretion	4	16	14	56	7	28
Assist in deep breathing exercise	8	32	11	44	6	24
Helping to use spirometry	5	20	10	40	10	40

Data presented in table 8 revealed that (15; 60%) of the care givers sometimes changed patient's position in bed and (4; 16%) never did this. Fourteen (56%) care givers sometimes helped the patients in coughing out secretion. Eleven (44%) care givers sometimes assisted the patients in deep breathing exercise, andonly (10; 40%) care givers helped the patients in doing spirometry.

Table 9 Frequency and percentage distribution of the care givers according to support for respiratory problems

n= 25

Respiratory support score	Frequency	Percentage
Good support (10-12)	7	28
Moderate support (7-9)	12	48
No/poor support (4-6)	06	24

Maximum possible score: 12; Minimum possible score: 04

Data presented in table 9 showed that majority (12; 48%) of the care givers provided moderate support to the patients, (7;28%) gave good support and (6; 24%) care givers are used to provide poor support to the patients with quadriplegia.

Table 10 Mean, median, standard deviation and mean % of support for respiratory problems

n= 25

Variables	Mean	Median	Standard deviation	Mean%
support for respiratory problems	8	8	1.97	72.72

Maximum possible score: 12; Minimum possible score: 04

Data presented in table 10 showed that the mean and median of support for respiratory problem score was 8 and standard deviation was 1.97.

Table 11 Frequency and percentage distribution of the care givers according to their support for the pressure sore problems

n= 47

Support for pressure sore	Never		Sometimes		Always	
	Fr	%	Fr	%	Fr	%
Checking of skin twice daily	18	38.29	25	53.19	4	8.51
Daily bathing	9	19.14	15	31.91	23	48.93
Cleaning and drying skin daily	21	44.68	17	36.17	9	8.51
2hourly position changing	16	34.04	23	48.93	4	8.51
Use of cream or oil	19	40.42	19	40.42	9	19.14
Back care	43	91.48	4	8.51	0	0
Changing pressure sore dressing daily	13	27.65	20	42.55	14	29.78
Application of medicine over the wound	13	27.65	20	42.55	14	29.78
Giving support to pressure points	39	82.97	4	8.51	4	8.51
Bed making	30	63.82	13	27.65	4	8.51

Data presented in table 11 showed that (25; 53.19%) care givers sometimes changing position 2nd hourly, only 8.51% care givers changes position always. (23; 48.93%) care givers gives daily bathing to the patients (9;19.14%) care givers never gives bath to the patients. (21; 44.68%) caregivers do not clean and dry the skin after bathing and (43; 91.48%) care givers do not give back care to the patient, (13; 29.78%) care givers change the pressure sore dressing and apply medicine daily, (39; 82.97%) of the care givers do not gives support to the pressure points, (30; 63.82%) care givers do not make the bed crease free.

Table 12 Frequency and percentage distribution of the care givers according to support for pressure sore problem

n = 47

Pressure sore support score	Frequency	Percentage

Good support (26-30)	3	6.38
Moderate support (16-25)	25	53.19
No/poor support (10-15)	19	40.42

Maximum possible score: 30; Minimum possible score: 10

Data presented in table 12 showed that majority of the care givers (25; 23.19%) were giving moderate support to the patients, (3; 6.38%) were giving good support and (19;40.42%) care givers were providing poor support to the patients with quadriplegia.

Table 13 Mean, median, standard deviation and mean % of support for pressure sore problems

n= 47

Variables	Mean	Median	Standard deviation	Mean%
Support for pressure sore problems	16.85	17	4.51	80.45

Maximum possible score: 30; Minimum possible score: 10

Data presented in table 13 showed that the mean of the support for pressure sore problem was 16.85, the median 17 and standard deviation was 4.51.

Table 14 Frequency and percentage distribution of the care givers according to their support for the bowel problems

n=60

Support for bowel problems	Never		Sometimes		Always	
	Fr	%	Fr	%	Fr	%
Changing cloth immediately after evacuation	18	30	18	30	24	40
Cleaning the patient after bowl leakage	15	25	20	33.33	25	41.66
Abdominal massage	34	56.66	26	43.33	nil	--
Manual evacuation	48	80	12	20	nil	--
Use laxatives and suppository	23	38.33	37	61.66	nil	--

Data presented in table 14 shows that majority of the care givers (24; 40%) were used to always change cloths after bowel evacuation, (25; 41.66%) care givers cleaned the patients immediately after evacuation, (34; 56.66%) did not perform abdominal massage for evacuation, (37; 61.66%) care givers sometimes gave laxatives or suppository to the patients for helping to pass stool.

Table 15 Frequency and percentage distribution of the care givers according to support for bowel problems

n= 60

Bowel problems support score	Frequency	Percentage
Good support (13-15)	32	53.33
Moderate support (9-12)	28	46.66
No/poor support (5-8)	Nil	--

Maximum possible score: 15; Minimum possible score: 5

Data presented in table 15 showed that majority of the care givers (32; 53.33%) gave moderate support to the patients, (28; 46.66%) care givers providedmoderate support to the patients with quadriplegia for their bowel problems.

Table 16 Mean, median, standard deviation and mean % of support for bowel problems

n=60

Variables	Mean	Median	Standard deviation	Mean%
Support for bowel problems	8.5	9	1.70	70.83

Maximum possible score: 15; Minimum possible score: 5

Data presented in table 16 showed that the mean of the support for bowel problem was 8.5, the median was 9 and standard deviation was 1.70.

Table 17 Frequency and percentage distribution of the care givers according to their support for the bladder problems (Clean intermittent catheter; CIC)

n=31

Support for bladder problems (CIC)	Never		Sometimes		Always	
	Fr	%	Fr	%	Fr	%
Washing hands	24	77.41	6	19.35	1	3.32
Use of gloves	26	19.35	4	12.90	1	3.22
Catheterization 4-6 hourly	nil	--	15	48.38	16	51.61
Cleaning of perineum	25	80.64	2	6.45	3	9.67
Cleaning immediately after leakage	22	70.96	6	19.35	3	9.67
Lubricate the catheter	28	90.32	2	6.45	nil	--

Data presented in table 17 showed that (24; 77.41%) care givers were not used to wash their hands before clean intermittent catheterization (CIC), (16; 51.61%) care givers always catheterized the patients at 4 to 6 hours interval. Twenty five (80.64%) caregivers never cleaned the perineum after catheterization and (28; 90.32%) caregivers never lubricated the catheter before introduction.

Table 18 Frequency and percentage distribution of the care givers according to support bladder problems (CIC)

n=31

Bladder problems support score	Frequency	Percentage
Good support (15-18)	10	32.25
Moderate support (10-14)	21	67.74
No/poor support (6-9)	Nil	--

Maximum possible score=18; Minimum possible score=6

Data presented in table 18 revealed that majority (21; 67.74%) of the caregivers provided moderate support and (10; 32.25%) provided good support to their patientsfor bladder problems.

Table 19 Mean, median, standard deviation and mean % of total support for bladder problems n=31

Variables	Mean	Median	Standard deviation	Mean%
Support for bladder problems (CIC)	8.77	8	1.80	67.46

Maximum possible score=15; Minimum possible score=5

Data presented in table 19 showed that the mean score of support for bladder problems (CIC) was 8.77, the median was 8 and standard deviation was 1.80.

Table 20 Frequency and percentage distribution of the care givers according to their support for the bladder problems (CIC)

n=29

Support for bladder problems (indwelling catheter)	Never Fr	%	Sometimes Fr	%	Always Fr	%
Keeping the catheter in hanging position	3	10.34	8	27.58	17	58.62
Empty uro bag immediately after full	1	3.44	20	68.96	7	24.13
Catheter care	7	24.13	17	58.62	04	13.79
Perineal care	5	17.24	17	58.62	06	20.68

Data presented in table 20 showed that (17; 58.62%)care givers always kept the uro bag in hanging position from bed, (20; 68.96%)care givers emptied the uro bag immediately after it became full, (17; 58.62%) care giver sometimes gave catheter care, (5; 17.24%) care giversnever gaveperineal care.

Table 21 Frequency and percentage distribution of the care givers according to total support bladder problems (indwelling catheter)

n=29

Bladder problems support score	Frequency	Percentage
Good support (10-12)	8	27.58
Moderate support (7-9)	18	62.06
No/poor support (4-6)	3	10.34

Maximum possible score: 12; Minimum possible score: 4

Data presented in table 21 showed that majority of the care givers (18; 62.06%) were giving moderate support to the patients, (8; 27.58%) care givers were providing good support to the patients with quadriplegia on indwelling catheter.

Table 22 Mean, median, standard deviation and mean % of total support for bladder problems n=29

Variables	Mean	Median	Standard deviation	Mean%
Support for bladder problems (indwelling catheter)	8.77	8	1.80	67.46

Maximum possible score=10; Minimum possible score=4

Data presented in table 22 showed that the mean of the support for bladder problems (indwelling catheter)score was 8.85, the median was 9 and standard deviation was 1.58.

Table 23 Frequency and percentage distribution of the care givers according to their support for the mobility and transfer problem support

n=60

Support for bladder problems (indwelling catheter)	Never Fr	%	Sometimes Fr	%	Always Fr	%

Stay close during transfer	29	48.33	18	30	13	21.66
Parking the wheel chair as close as possible	29	48.33	19	31.66	12	20
Giving previous explanation	49	81.66	6	10	5	08.33
Lock the wheel chair before transfer	17	28.99	22	36.66	21	35
Move the arm rest and foot rest before transfer	21	35	18	30	21	35

Data presented in table 23 showed that only (13; 21.66%) care givers stayed close to the patients during transfer, (12; 20%) care givers always used to park the wheel chair as close as possible before transfer, only (5; 8.33%) care givers gave explanation to the patients before transfer, (17; 28.99) care givers did not lock the wheel chair before transfer, (21; 35%) care givers always moved the arm rest and foot rest before transfer.

Table 24 Frequency and percentage distribution of the care givers according to support for mobility and transfer problems

n=60

Mobility and transfer problems support score	Frequency	Percentage
Good support (13-15)	09	15
Moderate support (9-12)	24	40
No/poor support (5-8)	27	45

Maximum possible score=15; Minimum possible score=5

Data presented in table 24 showed that majority of the care givers (24; 40%) gave moderate support to the patients, (27; 45%) care givers were providing poor support to the patients with quadriplegia and only (9; 15%) care givers gave good support to the patients.

Table 25 Mean, median, standard deviation and mean % of total support for mobility and transfer problems

n=60

Variables	Mean	Median	Standard deviation	Mean%
Support for mobility and transfer problems	8.76	9	2.93	62.57

Maximum possible score=10; Minimum possible score=4

Data presented in table 25 showed that the mean of the support for mobility and transfer problems score was 8.76, the median was 9 and standard deviation was 2.93.

Section IV: Findings related to the association between common complications of quadriplegic patients and neurological level of injury.

Table 26 Chi square test of association and its significance existing between common complications of quadriplegic patients and their neurological level of injury

n= 60

Neurological level of injury	Total complications score <median	≥median	Total	Chi- square χ^2
Complete	8	21	29	4.81*
Incomplete	2	31	31	
Total	10	52	60	

χ^2 (1) =3.84, p<0.05

Data presented in table 26 showed that among 29 quadriplegic patientswith complete neurological level of injury, 8 scored below median and 21 scored at and above median of the total complications score. Similarly, among 31 patients with complete neurological level of injury, 2 scored below median and 50 scored at and above median of the total complications score.

Chi square test of association was computed between presence of complications and level of injury of the respondents. The score was found to be statistically significant at 0.05 level of significance. So it could be concluded that presence of complications was dependent on the level of injury.

Section V: Findings related to the association between supports provided by the care givers and selected demographic variables.

Table 27 Chi square test of association and its significance existing between previous experience of the care givers and support scores of bowel problems

n=60

Previous experience of caring quadriplegic patients	Support score of bowel problems <median	≥median	Total	Chi- square χ^2
Yes	6	12	18	4.31*
No	26	16	42	
Total	32	28	60	

χ^2 (1)=3.84), p<0.05

Data presented in table 27 showed that among 18 caregivers who had the previous experience of caring the quadriplegic patients, 6 scored below median and 12 scored at and above median of the bowel problem support score. Similarly,among 42 care givers with no previous experience of caring the patients, 26 scored below median, 16 scored at and above median of the bowel problem support score.

Chi square test of association was computed between previous experience and support for bowel problems. The score was found to be statistically significant at 0.05 level of significance. So it could be concluded that providing support for bowel problem was dependent on previous experience of the care givers.

Table 28 Chi square test of association and its significance existing between previous experiences of the care givers and support scores of mobility and transfer problems

n=60

Previous experience of caring quadriplegic patients	Support score of mobility problems <median	≥median	Total	Chi- square χ^2
Yes	12	6	18	6.61*
No	13	29	42	
Total	25	35	60	

χ^2 (1)=3.84, p<0.01

Data presented in table 28 showed that among 18 caregivers with the previous experience of caring the quadriplegic patients, 6 scored below median and 12 scored at and above median of the bowel problem support score. Similarly,among 41 care givers with no previous experience of caring the patients, 13 scored below median and 29 scored at and above median of the bowel problem support score.

Chi square test of association was computed between previous experience and support for mobility and transfer problems. The score was found to be statistically significant at 0.01 level of significance. So it could be concluded that providing support for mobility and transfer problems was dependent on previous experience of the care givers.

Table 29 Chi square test of association and its significance existing between previous experience of the care givers and support scores of respiratory problems

n=25

Previous experience of caring quadriplegic patients	Support score of respiratory problems <median	≥median	Total	Chi- square χ^2
Yes	2	4	6	0.68
No	10	9	19	
Total	12	13	25	

χ^2 (1)=3.84, p<0.05

Data presented in table 29 showed that among 6 caregivers with the previous experience of caring the quadriplegic patients, 2 scored below median and 4 scored at and above median of the respiratory problem support score. Similarly,among 19 care givers with no previous experience of caring the patients, 10 scored below median and 9 scored at and above median of the respiratory problem support score.

Chi square test of association was computed between previous experience and support for respiratory problems. The score was found to be statistically not significant at 0.05 level of significance. So it could be concluded that providing support for respiratory problem was not dependent on previous experience of the care givers.

Table 30 Chi square test of association and its significance existing between previous experience of the care givers and support scores of pressure sore problems

n=47

Previous experience of caring quadriplegic patients	Support score of pressure sore problems <median	≥median	Total	Chi- square χ^2
Yes	12	6	18	4.62*
No	12	17	29	
Total	24	23	47	

χ^2 (1)=3.84, p<0.05

Data presented in table 30 showed that among 18 caregivers with the previous experience of caring the quadriplegic patients, 12scored below median and 6 scored at and above median of the pressure sore problem support score. Similarly, among 29 care givers with no previous experience of caring the patients, 12 scored below median and 17 scored at and above median of the pressure sore problem support score.

Chi square test of association was computed between previous experience and support for pressure sore problems. The score was found to be statistically significant at 0.05 level of significance. So it could be concluded that providing support for pressure sore problem was dependent on previous experience of the care givers.

Table 31 Chi square test of association and its significance existing between educational qualification of the care givers and support scores of pressure sore problems

n=47

Educational qualification	Support score of pressure sore problems <median	≥median	Total	Chi- square χ^2
Up to class X	16	12	28	0.43
Above class X	9	10	19	
Total	25	22	47	

χ^2 (1)=3.84, p<0.05

Data presented in table 31 showed that among 28 caregivers with Up to class X educational qualification, 16scored below median and 12 scored at and above median of the pressure sore problem support score. Similarly, among19 care givers with educational qualification of above class X, 9 scored below median and 10 scored at and above median of the pressure sore problem support score.

Chi square test of association was computed between educational qualification and support for pressure sore problems. The score was found not to be statistically significant at 0.05 level of significance. So it could be concluded that providing support for pressure sore problem of the patients was independent of the educational qualification of the care givers.

Table 32 Chi square test of association and its significance existing between educational qualification of the care givers and support scores of bowel problems

n=60

Educational qualification	Support score of bowel problems <median	≥median	Total	Chi- square χ^2
Up to class X	15	25	40	0.036
Above class X	7	13	20	
Total	22	38	60	

χ^2 (1)=3.84, p<0.05

Data presented in table 32 showed that among 40 caregivers educational qualification of up to class X, 15scored below median and 25 scored at and above median of the bowel problems support score. Similarly, among 20 care givers with educational qualification of above class X, 7 scored below median and 13 scored at and above median of the bowel problems support score.

Chi square test of association was computed between educational qualification and support for bowel problems. The score was found not to be statistically significant at 0.05 level of significance. So it could be concluded that support provided by the caregivers for bowel problem of the patients was independent oftheir educational qualification.

Table 33 Chi square test of association and its significance existing between educational qualification of the care givers and support scores of bladder problems

n=31

Educational qualification	Support score of bladder problems <median	≥median	Total	Chi- square χ^2
Up to class X	7	13	20	0.06
Above class X	4	7	11	
Total	11	20	31	

χ^2 (1)=3.84, p<0.05

Data presented in table 33 showed that among 20 caregivers with educational qualification up to class X, 7 scored below median and 13 scored at and above median of the bowel problems support score. Similarly, among 11 care givers of educational qualification above class X, 11 scored below median and 7 scored at and above median of the bowel problems support score.

Chi square test association was computed between educational qualification and support for bladder problems. The score was found not to be statistically significant at 0.05 level of significance. So it could be concluded that support for bladder problem provided by the care givers was independent of their educational qualification.

Table 34 Chi square test of association and its significance existing between educational qualifications of the care givers and support scores of mobility and transfer problems

n=60

Educational qualification	Support score of mobility and transfer problems <median	≥median	Total	Chi- square χ^2
Up to class X	16	22	38	0.06

Above class X	12	10	22
Total	28	32	60

χ^2 (1)=3.84, p<0.05

Data presented in table 34 showed that among 38 caregivers with educational qualification up to class X, 16 scored below median and 22 scored at and above median of the bowel problems support score. Similarly, among 22 care givers with educational qualification above class X, 12 scored below median and 10 scored at and above median of the bowel problems support score.

Chi square test association was computed between educational qualification and support for mobility and transfer problems. The score was found not to be statistically significant at 0.05 level of significance. So it could be concluded that support provided for mobility and transfer problems was independent of educational qualification of the care givers.

Summary:

This chapter deals with objectives of the study, organization of the findings, findings related to demographic variables, findings related to patients clinical profile, findings of information related to care givers, findings related to presence of complications, findings related to distribution of care givers support provided to the patients, findings related to association between presence of complications and neurological level, findings related to the association between supports provided by the care givers and selected demographic variables.

CHAPTER V

Major Findings, Discussion, Conclusion, Implications, Limitation and Recommendation

This chapter presents the major findings of the study, discussion in relation with finding of the other studies, conclusion drawn, and implications of the study in nursing practice, nursing education, nursing administration and research. This chapter ends with the limitations and recommendations for future study in the field of study.

Major findings of the study

Findings related to frequency and percentage distribution of the patients according to selected demographic variables:

- Majority of the respondents(21; 35%) belonged to age group of 28-37 years.
- Majority of the respondents(45; 75%) were males.
- The maximum numbers of the respondents (36; 60%) were unmarried.
- Most of the respondents(29; 48%) had primary level of education.
- Most of the respondents(43; 71.66%) had family income of Rs. 1000-5000/- per month.
- Most of the respondents(40; 66.66%) belonged to the nuclear families.
- The majority (46; 76.66%) of the respondent lived in own home.
- Most of the (42; 70%) respondent lived in rural area.

Findings related to frequency and percentage distribution of the patients according to their clinical profile:

- In most of the patients (34; 57%), the cause of injury was fall from height.
- Only (25; 41.66%) patients had respiratory problems.
- Most of the respondents (80%) faced transfer problems from bed to wheel chair.
- Most of the (50; 83.33%) respondents faced transfer problems from wheel chair to bed.
- Maximum (31; 51.66%) respondents had partial loss of bladder control.
- Most of the (20; 33.33) respondents had pressure sore in back area.

Findings related to frequency and percentage distribution of the patients according to information related to care givers:

- Maximum care givers (39; 65%) belonged to the age group of above 35 years.
- Most of the care givers (44; 73.33%) were males.
- Maximum (36.66%) care givers passed higher secondary.
- Maximum care givers (20; 33.33%) were the brothers of the patients.
- Most of the care givers (54; 90%) had no previous experience of caring quadriplegic patients.

Findings related to frequency and percentage distribution of the care givers according to support for the respiratory problems:

- Majority (15; 60%) of the care givers sometimes changed patient's position in bed.
- Most of the care givers (12; 48%) gave moderate support to the patients for respiratory problems.
- Majority (44%) of the care givers sometimes assisted the patients in deep breathing exercise.

Frequency and percentage distribution of the care givers according to their support for the pressure sore problems:

- Most of the (23; 48.93%) care givers gave daily bath to the patients.
- Only 21(44.68%) caregivers do not cleaned and dried the skin of the patients after bathing.
- Majority (13; 29.78%) of the care givers changed the pressure sore dressing and applies medicine daily.
- Majority of the care givers (25; 23.19%) provided moderate support to the patients for pressure sore problems.

Frequency and percentage distribution of the care givers according to their support for the bowel problems

- Majority of the care givers (32;53.33%) gave moderate support to the patients.
- Majority of the care givers 24 (40%) were always changing cloths after bowel evacuation.
- Most of the (34; 56.66%) care givers did not perform abdominal massage for evacuation.
- Most of the) care givers (37; 61.66) sometimes gave laxatives or suppository to the patients for helping to pass stool.

Findings related to frequency and percentage distribution of the care givers accordingto support for bladder problems

- Majority of the care givers (10; 32.25%) gave moderate support to their patients.
- Most of the (17; 58.62%)care givers kept the uro bag in hanging position from bed.
- Most of the 58.62% care giver sometimes gave catheter care.
- 62.06% care givers gave moderate support to the patient for bladder problems.

Findings related to frequency and percentage distribution of the care givers according to support for mobility and transfer problems

- Most of the care givers (13; 21.66%) stayed close to the patient during transfer.
- Most of the care givers (12; 20%)are always used to park the wheel chair as close as possible before transfer.
- Only 5 (8.33%) care givers gave explanation to the patient before transfer.
- Maximum (17; 28.99) care givers did not lock the wheel chair before transfer.
- Most of the care givers (21; 35%) always move the arm rest and foot rest before transfer.
- Majority of the care givers (24; 40%) gave moderate support to the patient.

Discussion in relation to other study findings

Findings related to major variables

The study was conducted with the core purpose of assessing the support provided by the care givers for common complications among quadriplegic patients and find out the association between supports provided by the care givers and selected demographic factors. On the basis of the objectives of the present study and its findings, a discussion was held in relation to other studies.

A study was conducted by M Wyndaele, and J-J Wyndaele (2006) on Incidence, prevalence and epidemiology of spinal cord injury. One-third of patients with SCI are reported to be tetraplegic and 50% of patients with SCI to have a complete lesion. The mean age of patients sustaining their injury as is reported 33 years old, and the sex distribution (men/women) as 3.8/1[20].

In the present study, 48% patients have a complete lesion, most of the patients age (35%) are between 28- 37 years and the sex distribution was 75% male and 25% are female.

A study was conducted by JosesBloemenVrencken, Jos Hendricks, Macel post et al, (2005), on health problems of persons with spinal cord injury living in Netherlands. The study showed that among 454 respondents, 20% have complete tetraplegia, 14% have incomplete tetraplegia. The cause of injury are traffic accidents 32.7%, sports injury 18.9% fall 9.6%, accidents at working place 8.9%. The main health problems are facing by the participants are bladder regulation 70.9%, bowel regulation 61%, spasm 56.6%, pan 55.3%, oedema 48.5%, pressure sore 35.9% breathing problems 19.02% . Problems of daily living are also big issue of patients with SCI. 31.5% people were having difficulty in ADL, 39.2% people in sexuality problem, 35.2% having difficulties being dependent on personal help. The highest prevalence of pressure sores and contractures was found among respondents who had their injury more than 19 years[21]. This present study showed that among 60 patients 48% are complete quadriplegic and 52% are incomplete quadriplegic. The cause of injury are road traffic accidents 40%, fall from height 24%. The main complications faced are respiratory problems 41.66%, bowel problems 100%, bladder problems using clean intermittent catheterization 51.66% and using

indwelling catheter 48.33%, pressure sore problems 78.33%, mobility and transfer problems 100%.

A study was conducted by SIAfsar, OU Yemisci, SNS Cosar and N Cetin, (2013) on compliance with clean intermittent catheterization in spinal cord injury patients. The result showed that the most common bladder management method at discharge from inpatient rehabilitation center was clean intermittent catheterization (CIC) (63.4%). At follow-up, 42% of the patients who used CIC changed their bladder emptying method. Rate of reverting to urethral indwelling catheter (IC) was 21.4%. Reasons for the patients who switched to IC application were recurrent UTIs, incontinence, nephrolithiasis, dependence on care givers and urethral strictures[15].

Similarly, in the present study use of clean intermittent catheterization was seen among 51.66% and use of indwelling catheterization was seen among 48.33% patients. Reasons for the patients who switched to IC application were not identified in the study.

A study was conducted by Jeanne M. Zanca (2014) on Systematic Assessment of skill Performance by individuals with tetraplegia and their caregivers. Result showed that the persons who receive care giver education during the inpatient rehabilitation stay are varied, including spouses, children, parents and friends of the persons with tetraplegia as well as hiredattendants. A wide variety of topics related to self care, activity of daily living, equipment use, secondary compilations, emergency preparedness and medical issues appeared in clinical documentation of patients and care givers training[27].

Similarly in the present study the persons who giving support are varied, including parents, spouses, children and friends of the quadriplegic patients. The care givers are supporting the patients in various secondary complications including respiratory problem, bowel problems, bladder problems, mobility problems, and pressure sores. The present study also showed significant association between past experience of the care givers and support for the common complications.

A study was conducted by MWM Post, J. Blomen and LP White, (2005), on burden support for partners of persons with spinal cord injuries. A cross sectional survey was done on patients of Netherlands. The study showed that most partners provided various kinds of support. ADL support and other practical support were given much more often by partners of persons with serious disability, but less difference was seen regarding emotional support. Professional (paid) support was obtained by 45.3% of all couples. Perceived burden of support was high in 24.8% of partners of persons with serious disabilities against 3.9% of partners of persons with minor disabilities. Mean age of the partners was 49.4 years and 69.8% are women[31].

In the present study, in majority of the cases (33.33%) support was provided by the brothers of the quadriplegic patients, most of the care givers age was more than 35 years (65%), 73.33% caregivers are males and 26.66% are females.

Conclusion

The present study was conducted on 60 quadriplegic patients. Patient's care givers support was identified for the common complications among them. Majority of the care givers were providing moderate support to the quadriplegic patients. From the study finding it can be concluded that the care givers need more knowledge about the complications of the patients. Planned teaching programme can be organized for the care givers on bowel and bladder care, pressure sore care and mobility and transferring techniques.

Implications

Nursing practice

Nurse has an important role in providing proper teaching on various secondary impairments of the patient to the care givers. Care giver is the main part of caring patients. Care givers' hard work and caring attitude help the patient to maintain better health out come. As care givers always stay with the patients the nurse should assess the capability of the care givers before planning the teaching programme.

Nursing administration

There is an increase need for awareness programme for the care givers of the quadriplegic patients as they have to give care for long time, for whole life in many occasions. So staff nurses should initiateand plan the teaching program based on the identified complications of quadriplegic patients. Staff nurses should provide learning environment for the care givers of quadriplegic patients, and make proper discharge planning for them.

Nursing research

One of the main aims of nursing research is to contribute knowledge to expand and broaden scope of nursing. This is possible only if nurses are taking initiative to conduct further research. Research should be done to find out various innovative methods for effective teaching to improve knowledge and improve practice. Research can be done on health problems and felt needs of the spinal cord injury patients. Research can be done to find out Knowledge and practice of care givers on various secondary complications.

Limitations

The findings of the present study would not be generalized because of the following reasons

- Convenience sampling

- Small sample size
- Very restricted set up
- Limited dimension

Recommendations

On the basis of the findings of the study following recommendations were made for further research.

- A similar study could be replicated by using larger sample.
- Planned teaching program can be plannedfor the care givers after assessment of support.
- Follow up study can be conducted to identify the support at home environment.

Summary

This chapter dealt with the summary of the findings, discussions, conclusions, implications, limitations and recommendations.

References

1. Quadriplegia. Brain and spinal cord.org. NEWSOME, MELTON, page no. 1 http://www.rightdiagnosis.com/q/quadriplegia/causes.htm#causedescription
2. Common caiuses of quadriplegia. Right diagnosis.com, page no. 1 http://www.brainandspinalcord.org/quadriplegia/
3. Jean-Francois, Spinal Cord Injury: Paraplegic and Quadriplegic injuries.
4. Howard N Fenster, Gayle D. Scarrow. Quadriplegia: urological complications.1989 Feb; 35: page no 297-299.
5. A Scheel-Sailer, A Wyss, C Boldt, MW Post, V Lay3.Prevalence, location, grade of pressure ulcers and association with specific patient characteristics in adult spinal cord injury patients during the hospital stay: a prospective cohort study. Spinal Cord 2013, 51(13): 828-833.
6. AVeerubhotla, S Kumar, S Bachhal and A Kumar. Mobility assistance of patients with quadriplegia. Journal of Scientific and Indian Research. 2015 Feb; 14: page no 102-104.
7. National Alliance for Caregiving, AARP. Caregiving in the U.S. Bethesda, MD: National Alliance for Caregiving, AARP; 2004 Apr.
8. Metlife Mature Market Institute. The Metlife study of sons at work balancing employment and eldercare: Findings from a national study by the National Alliance for Caregiving and The Center for Productive Aging at Towson University. Westport, CT: MetLife Mature Market Institute; 2003 Jun.
9. Adele Dickson, Grainne O'Richard Ward, David Allan et al, the impact of assuming primary care giver roll following traumatic spinal cord injury: an interpretative phenomenological analysis of the spouse.
10. Willam ,O.Mc.Kinley, Anie B. Jackson, et al. long term medical complications after traumatic spinal cord injury: A regional model system analysis.(1999); 80(11): 1402-1410.
11. McKinley WO, Jackson AB, Cardnas DD, De Vivo MJ. Long term medical complication after traumatic spinal cord injury: a regional model system analysis. Arch phys med Rehabl.1999 Nov; 80(11):1402-10.
12. Polit. Denise F, Beck. CharylTatano; Nursing Research;9th edition; Wolters Kluwer India Pvt Ltd, New Delhi.
13. KiracUnal, Zeynep MD, Umay et al.A rarely seen complications that causes inceased in morbidity in tetraplegic patients: Zenker Diverticula.(2017)
14. Zuhal, Ozisler, KurtulusKoklu, SumruOzel et al. outcomes of bowel program in spinal cord injury patients with neurogenic bowel dysfunction.(2011)
15. B Yılmaz, Y Akkoc, R Alaca et al, published a study on intermittent catheterization in patients with traumatic spinal cord injury: obstacles, worries, level of satisfaction, Spinal Cord (2014) 52, page no. 826–830.
16. SI Afsar, OU Yemisci, SNS Cosar and N Cetin, compliance with clean intermittent catheterization in spinal cord injury patients: a long-term follow-up study, Spinal Cord (2013); 51, page no. 645–649.
17. A Scheel-Sailer, A Wyss, C Boldt et al. location, grade of pressure ulcers and association with specific patient characteristics in adult spinal cord injury patients during the hospital stay: a prospective cohort study, Spinal Cord, (2013); 51, page no 828–833
18. Sing R, Dhankar SS, Rohilla R. Understanding psychosocial issues in persons with spinal cord injury and impact of remedial measures. International journal of psychosocial rehabilitation. 2012; 16 (1): 95-10.
19. McKinley WO, Jackson AB, Cardnas DD, De Vivo MJ. Long term medical complication after traumatic spinal cord injury: a regional model system analysis. Arch phys med Rehabl.1999 Nov;80(11):1402-10.
20. Pickett, Gwynedd E. MD, FRCSC; Campos-Benitez, Mauricio MD et al. epidemiology of traumatic spinal cord injury.2006;23(20):125-27.
21. M Wyndaele, and J-J Wyndaele, Incidence, prevalence and epidemiology of spinal cord injury: what learns a worldwide literature survey? , Spinal Cord (2006); 44, page no. 523–529.

22. JosesBloemenVrencken, Jos Hendricks, Macel post et al. Disability and rehabilitation; 2005;27(22):1381-1389.
23. R Klotz, PA Joseph, JF Ravaud, L Wiart, M Barat and The Tetra®gap Group.International Spinal Cord Society.(2002) 40, 457 – 467.
24. Willam ,O.Mc.Kinley, Anie B. Jackson, et al. long term medical complications after traumatic spinal cord injury: A regional model system analysis.(1999); 80(11): 1402-1410.
25. R Levi, C Hultlingl, MS Nashl, and A Seiger et al. Stockholm spinal cord injury study: Medical problems in a regional SCI population, Spinal Cord , (1995); 33, page no. 308-315.
26. Jerzy Kiwerski .Respiratory problems in patients with high lesion quadriplegia. (1992).
27. JP Engkasan, CJ Ng and WY Low, Who decides? A qualitative study on the decisional roles of patients, their caregivers and doctors on the method of bladder drainage after spinal cord injury, Spinal Cord (2015) 53, page no.130–134.
28. Jeanne M. Zanca. Systematic Assessment of caregiving skill Performance by individuals with tetraplegia and their caregivers. Sep 2014; (Grant # W81XWH-12-1-0553).
29. Juan Carlos Arango-Lasprillaa,Silvia Leonor OliveraPlazab, Allison Drewa et al. Family needs and psychosocial functioning of caregivers of individuals with spinal cord injury from Colombia, South America, Neuro Rehabilitation, (2010); 27, page no 83–93.
30. Adele Dickson, Grainne O'Richard Ward, David Allan et al, the impact of assuming primary care giver role following traumatic spinal cord injury: an interpretative phenomenological analysis of the spouse.
31. MWM Post, J. Blomen and LP Whiteet al.international Spinal Cord society2005;43; 311–319.
32. Kothary CR. Research methodology, 2nd edition New Delhi; New age international limited publishers; 2006.
33. Sharma K. Suresh; Nursing Research & Statistics; Elsevier 2011; page no 145.
34. Burns N, Grove K S. Understanding Nursing Research. 4th edition. Noida: Elsevier; 2008.
35. SmeltzerSC,Bare B G , Hinkle J L, Cheever K H . Brunner &Suddarth's Text Book of Medical Surgical Nursing. Vol. II 12th ed. Reprint 2011. New Delhi WoltersKuluwer (India) Pvt. Ltd. page no- 2010-2015.
36. Lewis's, Heitkemper,Driksen,O'Brien, Bucher. Medical Surgical Nursing Assessment and Management of Clinical Problems. Reprint 2014. Reed Elsevier (India) Pvt. Ltd.
37. Brar N.K, Raweat HC. Text Book of Advanced Nursing Practice. 1st Edition 2015. Jaypee Brothers Medical Publishers Pvt.Ltd. page no- 601-605.
38. Basher.P.S, Khan Y.S. A Concise Text Book of Advance Nursing Practice. 1st Edition Reprint 2013.
39. Baldwin KM, Garza CS, et al. davis's Manual of Critical Care Therapeutics, 1st edition. 1995. Jaypee Brothers Medical Publishers p ltd.
40. Tomy, alligood. Nursing theorists and their work. 6th Edition. 2006. Mosbey publishers. page no- 318-336.