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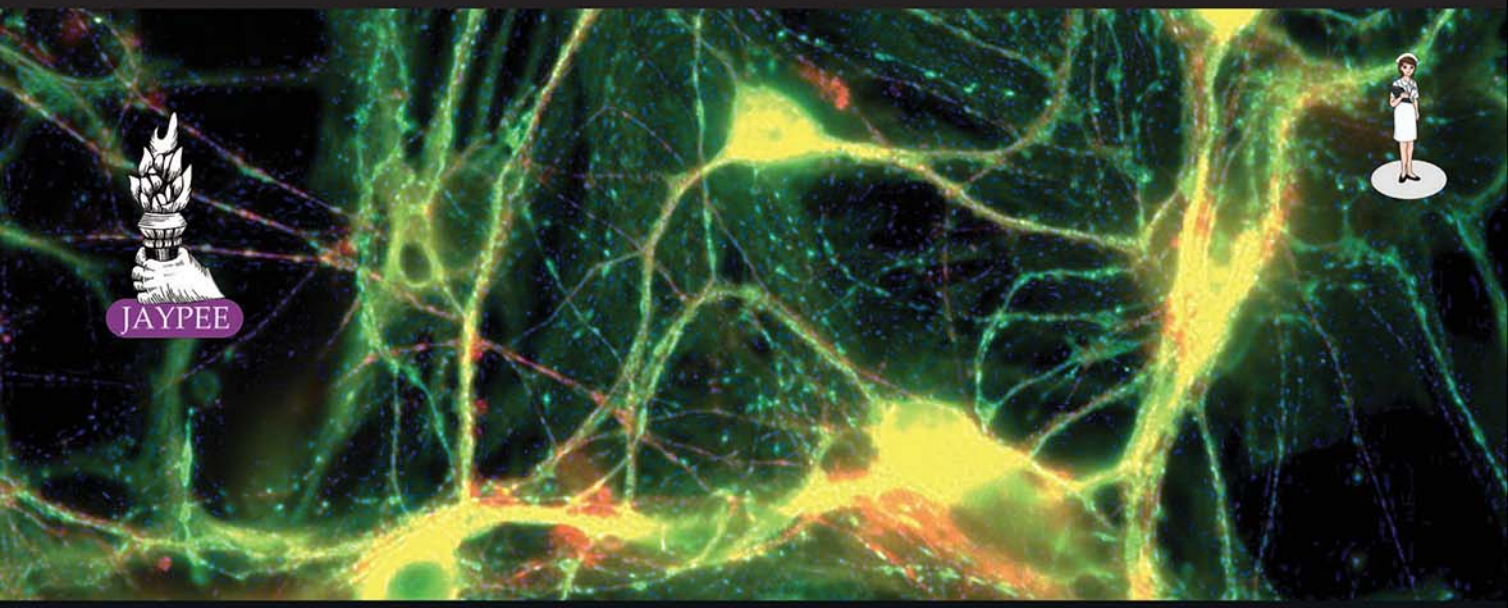
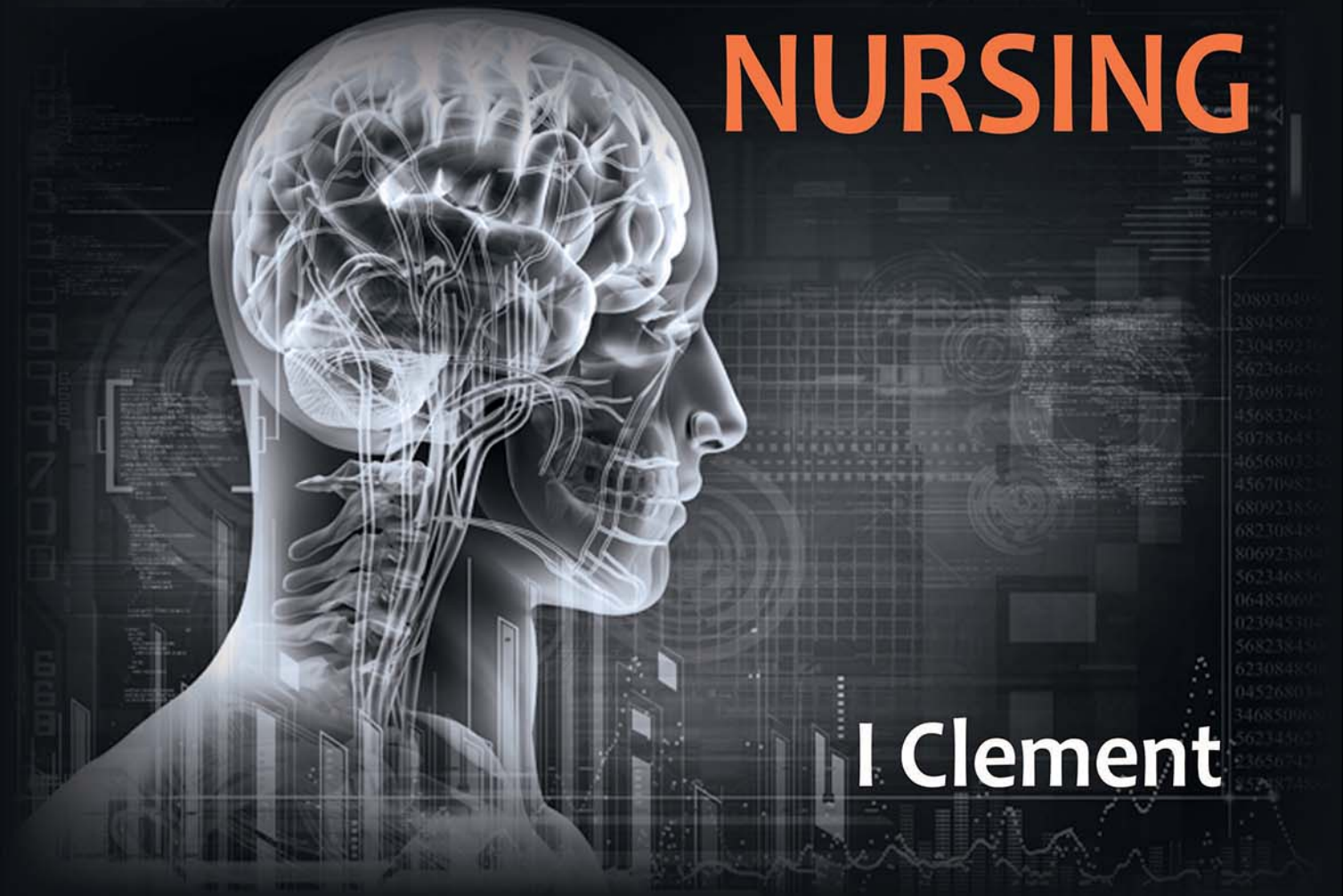


Textbook on NEUROLOGICAL & NEUROSURGICAL NURSING



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Emerging Trends and Issues in Neuroscience Nursing

2

INTRODUCTION

Neurological nursing is a very challenging nursing specialty dealing with assessment, nursing diagnosis and management of many neurological disorders for which nurses provide patient care. This includes trauma, brain injuries, stroke, seizures, tumors, headaches, infections and aneurysms, as well as a host of other neurological complexities. The dimensions of healthcare delivery are evolving continuously, with higher consumer expectations, technological innovations and cross cultural sensitivity bringing about Copernican Revolution demanding higher standards in quality of health care and accountability on the part of its practitioners.

The role of the neuronurse in the management of a patient with neurological disorders is very important and indispensable. The nursing staff should be aware of all the medical and technical advances in the field of neuronursing and neuroscience to enable them to perform their duties in superlative manner.

TECHNOLOGICAL ADVANCEMENT

As science evolves and newer discoveries are made in the area of neuroscience, the nurses are also moving forward defining newer roles and making one's contribution in the field. New techniques including special electrodes that can touch the surface of cells, optical imaging, human brain scanning machines and silicon chips containing artificial neural networks are changing the face of modern neuroscience all the time.The replacement of pneumoencephalography by computed tomography (CT) in the early 1970s led to a revolution in neurological and neurosurgical practice. Myelography was also improved by the introduction of safer water-soluble dye as was angiography by digital subtraction angiography.

Neuroimaging Visualizing Brain Structure and Function

Techniques like positron emission tomography (PET), CT and functional magnetic resonance imaging (fMRI) are used to diagnose brain disorders and levels of consciousness. Research is progressing to see if and how these technologies can be used to analyze behavior or identify an individual. These technologies raise important questions about the privacy of the mind and how we make decisions.

Coma to Brain Death: Recognizing Disorders of Consciousness

With new imaging techniques, we are learning that even patients who seem unaware can have brain activity that is now being revealed. Distinguishing coma from persistent vegetative state and minimally conscious state requires a clinical diagnosis. Increasingly, imaging scans are used to raise appreciation and understanding of brain activity or lack of activity despite a patient's diagnosed state of consciousness. This is a field of rapidly increasing knowledge that may prevent other contentious and divisive cases such as that of Terri Schiavo.

Neurogenetics: The Complexity of Individuality

Neurogenetics focuses on the genes involved in heritable neurological diseases and is concerned with how genetics can contribute to cognition, behavior and personality. Questions about eugenics, genetic determinism, genetic exceptionalism, genetic enhancement and the privacy of genetic information are all of ethical concern.

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Neuropharmacology and Chemical Neuroenhancement

Research has improved our ability to understand, diagnose and treat personality, social and behavioral disorders. The ability to manipulate a person's mood, memory and perception with pharmaceuticals not only holds great promise for those afflicted but also raises questions about the use of psychoactive drugs as elective enhancements for people who are otherwise well. Are we medicalizing ordinary behavior? Deep brain stimulation (DBS) is the surgical placement of electrodes inside the brain to send electrical impulses to specific areas of the brain.

Neurotechnology: New Tools for Stimulating and Responding to Brain Activity

Technological innovations such as brain implants, robotics and DBS can be used to treat neurological and psychiatric disorders. While these technologies treat diseases and injuries, many people are concerned with the potential for future misappropriation of these technologies for the purposes of enhancement and control.

Scientific and technological advancements are neither inherently good nor evil. Rather, it is how they are used and applied to society that can be assessed and valued. As a culture, we tend to promote the unfettered use of technology whenever it is developed, but the steady increase of hype and unsupported research findings surrounding the promise of brain research warrant some measure of caution. Protection of patients and research volunteers, especially those who are vulnerable, must be a primary concern.

RESEARCH IN NEUROSCIENCES

Research in various areas of neurosciences leads to the development of newer arenas for neuronurses. Coma stimulation program is one such, which systematically stimulates a comatose person to increase patient's level of responsiveness. Organized and meaningful stimuli are presented to the patient by a trained nurse, involving the family and caregivers. Nurses need to improve their skills and prove their competencies for taking up such specialized roles. For example, to provide hyperbaric oxygen therapy (HBOT), which is proven to speed up the healing of neuronal injuries due to hypoxia, the nurse needs to be trained and acquire competencies.

The programming of the brain pacemaker after a DBS surgery is an example of an area of nursing intervention, which can be acquired by training. The home care of DBS patients and follow-up clinics for them can be led by a nurse. Thus, as newer modalities are being introduced, the nurses need to update them. Not only in these therapeutic modalities has the nurse carved her niche but also in various diagnostic modalities. An example is the bedside monitoring bispectral index (BIS), which of sedation in a person on a scale of 0–100.

The neuronurses also actively involve themselves in ongoing trials in collaboration with multiple other disciplines. For example, trials on thrombolytic therapy for stroke patients, stem cell therapy, gene therapy, etc. are areas, which need the hands of a nurse in its implementation phase. They educate the caregivers about these novel therapies and involve in the follow-up care of these patients.

NEUROTRAUMA-RELATED ISSUES

At the global level, it is estimated that the annual incidence and mortality from traumatic brain injury (TBI) is 220 per 100,000 per year. It is estimated that nearly 1 million people are injured, 200,000 people die and nearly 1 million require rehabilitation services every year in India. In Karnataka, the population with incidence of TBI was 79,100 and the mortality rate was 10,500. Every year, in the Bangalore city nearly 10,400 people sustain brain injury, while 2,000 people are hospitalized and about 1,000 people die from brain injuries. Male populations were at higher risk with a male female ratio of 4:1. Sixty five percent had injuries between 16 and 45 years of age. Most of the TBI were road traffic injury, (59%), followed by falls commonly seen in children and elderly (25.0%), assaults (10.3%), hit by or fall off an external object, work-related injuries and sports injuries accounted for 2.5%, 0.1% and 0.2%.

Neurotrauma and issues in neuronursing brings our concern that trauma remains one of the major health hazards of modern time. It is a major cause of death in developing and developed countries. Because of its uniqueness and complexity of patients with head and spinal trauma, nursing has evolved in its own right as a specialized field of nursing. The crisis of head injury involves the family as well as the individual. The impact of TBI on family system brings certain issues in neuronursing practices. They are:

1. Acute stress and emotional changes.
2. Ineffective coping.
3. Grieving.
4. Role conflict and role fatigue.
5. Role constriction and inadequate support.

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NEUROSCIENCE NURSING PRACTICE

Neuroscience nurses are also in the team to make these technological advancements available to the patients and their families without losing the humane touch. They are uniquely qualified for the case management of patients with both acute and catastrophic illnesses as well as ones, which are chronic in nature. This makes them distinct from other specialties in nursing. They not only involve in complex care by taking active part in implementation of newer diagnostic and therapeutic modalities but also have to extensively interact and coordinate with medical, behavioral and surgical disciplines. Upcoming roles like legal nurse consultant in neurounits are an example of such an interaction, where the nurse coordinates between legal personnel and medical team.

Nurse-led clinics are also emerging, giving further heights for nursing practice. In the context of neuroscience nursing, clinics for health promotion to control lifestyle diseases, follow-up clinics for post DBS surgery patients, etc. has proven benefits.

Evidence-based Practice

One of the phenomenological studies conducted by Lilly Esther (2008) in the area of lived-in experience of caregivers of TBI has brought out many themes. They are given below.

Theme 1: Constrained Physical Health

No desire to eat food at all. Experienced loss of appetite altered eating pattern, decreased food intake, increased consumption of beverages, sleeplessness and decreased hours of sleep, while caring their close relative.

Theme 2: Emotional Conflict

Anxiousness, worries and fluctuation of mind. Negative thoughts such as depression degrees.

Theme 3: Need for Adequate Social Support

Geographical distance, low economic condition of family, lack of manpower support contributes to inadequate support system for the caregivers.

Theme 4: Searching for a Meaning and Religious Practices

Frequently asking them why this unfortunate incident occurred to their family and trying to introspect one's own behaviors like punishment, sins, mistakes, etc.

Theme 5: Disturbance of Occupational Life

Not in a position to take up responsibility of occupation.

Theme 6: Financial Constraint

Loans from relatives, friends, neighbor, keeping jewels in pawnshop, credit from office. Hospital care dimension; not happy about the restricted visiting hours and infrastructure of the hospital.

ROLE OF NURSE IN NEUROSCIENCE NURSING

1. Arrange for regular family counseling.
2. Have more number of staff in acute areas like casualty and ICU in order to give qualitative and family-centered care.
3. Care for the caregiver is a concept that needs to be recognized.
4. Acknowledge the grieving process.
5. Provide emotional support.
6. Provide comfortable environment.
7. Include family member in providing direct care.
8. Exchanging complete and unbiased information between families and professionals in a supportive manner.
9. Provide written information on home care of patients with head injury at the time of discharge.
10. Explain all procedures using understandable terms.
11. Encouraging and facilitating family-to-family support and networking.
12. Recognizing and respecting different methods of coping.
13. Meeting the need for consultation to caregivers when they are sick.

CONCLUSION

Scientific and technological advancements are neither inherently good nor evil; rather, it is how they are used and applied. It is clear that in the face of rapidly emerging brain technology and scientific research, neuroethical issues urgently need to be addressed. Neurotrauma is a devastating experience. Admission of the patient to the hospital further disrupts the family system.

Neuronursing today seems to be making alignment between technology and true presence in the care of

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patients and their family members. Competence with technologies is an expression of caring in nursing. This perceived congruence can be appreciated as a reality, creating and supporting the desire to illustrate caring in a high technology environment.

As time evolves, as new discoveries in the field of neuroscience is made, as there is a paradigm shift in health care from mere cure to health enhancement, it is the vital duty of neuronurses to carve their niche in the domain of neurosciences and present oneself to the consumer community with newer roles and better service.

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Textbook on
Neurological and Neurosurgical Nursing

Salient Features

- Neurological and neurosurgical nursing are the most challenging nursing specialties. This textbook has 21 sections and 177 chapters
- Helps the nurses to understand and provide excellent care to patient with neurological and neurosurgical conditions
- Provides in-depth information in a very simple language and presentation. It includes neuroanatomy, assessment, diagnostic evaluation and management of the complete range of neurological disorders for which nurses can provide best patient care
- Useful for all the nursing students doing different courses such as regular book for GNM, PB BSc (N), Basic BSc (N) and MSc (N), and also for staff nurses working in neuromedical and surgical wards, intensive care units and nurse educators teaching neuroscience nursing
- Well-explained, illustrated with diagrams and tables for better understanding
- The entire text is illustrated in simple and clear English where the students gain better understanding about the subject
- Covers entire syllabus of neuroscience nursing as per Indian Nursing Council (INC); meets the requirements for neuronursing, and provides the strong base for nursing students and staff nurses working in neuromedical and surgical units
- All the chapters are systematically organized; student-friendly approach is used.



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