
UNIT 9 COMPUTERIZATION IN NURSING

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9.0 OBJECTIVES

After completing this unit, you should be able to:

- explain the significance and benefits of computerization in nursing;
- apply the knowledge of a computer in a hospital; and
- explain about telemedicine, tele-nursing and its basic concepts.

9.1 INTRODUCTION

This practical is dedicated to computers and their use in the field of medicine in general and Nursing in specific. In BNSL-212, Block 1 you have learnt how to run various applications and programmes on the computer. However, their practical applications in day-to-day life in a clinic or hospital needs to be understood.

Computers have tremendous role in nursing practice, now a day Computer facilities are integral part of diagnostic equipment, imaging systems, clinical labs. It helps nursing staff in keeping medical record, data analysis of disease & patient, laboratory computing, patients care using computer operated medical equipment , computer assisted medical decision making, tele-services etc.

In this practical we will discuss on the various applications of a computer in Nursing practice. You will also learn the different aspects of a computer that may be helpful and useful in a hospital setting.

9.2 WHY COMPUTERS IN NURSING

With fast changing information technology system use of computers has become essential in medicine and nursing practice. The nursing practice techniques are well translated on computer networking. So it is important for every nurse to develop the efficiency in use of computer.

9.2.1 Goals of Computerization in Nursing Practice

The various reasons that cause the increased use of computers in Nursing are:

- **Improved Efficiency:** Computers can rapidly process, store, and release information, helping the nurse clinician in nursing diagnosis and in planning Nursing Care of the patient.
- **To Do Work Accurately:** Computerized data, including medical and nursing records and prescriptions, eliminates the possibility of human mistakes, offering considerable advantages over manual methods.
- **To Create a Modern Image of the clinic/ Hospital:** By offering efficient services in a timely manner, computers help Nurses to provide better care to their patients. Computerization enhances clinical efficiency, in turn enhancing the image of the hospital and its working staff.
- **Better Utilization of Resources:** Computerization allows for quick and easy data sharing, eliminating needless duplication of work and allowing hospital staff to devote more time to clinical practice and patient care.
- **Decreasing Expenditure and Saving Time:** The appropriate use of computers can help decrease hospital expenses and save precious time in patient care.
- **Valuable Guidance to Patients Over Past History:** Easy accessibility to records help in providing prompt guidance to patients over past history.
- **Use Accumulated Data for Research and Analysis:** The data you have possessed over a couple of years is valuable for research and analysis of medical and nursing intervention

9.2.2 Benefits of Computerization

Computerization has the following benefits in nursing:

- Improved professional care
- Better accuracy (by decreasing human error)
- Effective time management
- Better ward management and hospital administration
- Enhanced image of nursing and hospital set-up
- Useful tool for educating both the patients, the nursing students and peer group.

9.2.3 Applications of Computers in Medical and Nursing Establishment

As computers are heavily used for storing and retrieving data, the application can be administrative, clinical, tele-nursing, teleconferencing etc. also. The following text describes the application of computer in medical and nursing establishment.

a) Administrative

Administrative work is a part of any nursing practice, whether it is a small clinic in a quiet rural area or an acute-care hospital serving an entire state. Computers are effective devices that help to reduce the amount of clerical work, thus saving time and utilizing for patient care. They have proven to be very useful for a number of administrative issues few example are given below:

Patient's Appointments: Depending upon the workload, doctor appointments can be scheduled for better patient care and time management. Registrations of the patients (OPD, Indoor and Emergency) can be well maintained.

Follow-up/Track Missed up Visits: Medical software offers great flexibility in checking follow-up visits, which are so vital for patient's convenience. Rescheduling visits when they are missed, reminder letters, and substitute consultations are better managed with the help of computerization.

Billing and accounting: Computerization also helps the clinic with its financial needs such as patient billing, break-up of collection, statement of expenses and staff salaries. Good accounting software are available which can be used.

Inventories of Drugs and Supplies: Computers are extremely useful for better management of supplies and available stock of drugs, linens and equipment. Due to oversight and manual mistakes, many drugs are wasted because of their expiry dates. This, and many other inventory-related problems, can easily be tackled by a computerized inventory system. Whenever any drug/equipment is purchased and/or utilized, the computer can generate a list of stock in hand, along with future requirements at any given point of time. This helps in effective ward management.

Staff Details/payroll: Details such as staff bio-data (in detail), attendance and absenteeism, taking care of leave, etc., can be managed with the help of a good Payroll Software. More accuracy and sophistication can be implemented by the use of Smart Card /Magnetic Card Readers. These devices can be attached to the computer where the check-in/check-out in between exit from the office premises by the staff can be automatically recorded.

Correspondence: Reports, Referral letters and "Thank You" notes can be created easily, and addresses or graphs can be prepared and updated regularly.

b) Clinical

The clinical applications of computer in the health-care field deal with aiding a nurse in professional practice, which may vary depending on specialty. Several areas of clinical practice are streamlined with the help of computerization as under:

Prescription: A prescription will do away with the age-old saying, that a doctor's handwriting is always illegible. Printed from a computer, a prescription will be clear and decent dosage will be automatically calculated, and time consuming writing work of nursing personnel is eliminated as

relevant instructions and important side-effects could be printed in common language.

Investigations: Computerization of diagnostic services is an immense benefit to the patient. As it will help in starting the treatment for the patient early. Computer generated reports have the advantage of a built-in checks for accuracy and reference values based upon the age and the gender of the patient. Computerized interpretation of reports such as cardiopographs have become available, which will help the nurse to plan nursing interventions immediately based on nursing diagnosis. Computer-aided management, such as estimation of risk of chromosomal anomalies such as Down's syndrome, are now available as well.

Devices used for developing medical imaging like magnetic resonance imaging (MRI), ultrasound, CT scans and X-Rays, which are being used for study and diagnosis of diseases are controlled by computers.

Drug Dosages: Calculation of drug dosages becomes a difficult task when dealing with hepatic/renal diseases, debilitating conditions or children. With available software, dosage calculations are easily performed, and specific instructions for the patient are just as easily viewed or printed.

Nursing Records: Computerized Nursing records are more efficient and more useful as compared to manually prepared records. Recorded nurses notes, I/O Charts, nursing diagnosis records can be retrieved very easily. These records can be extremely helpful for statistical analysis, nursing audit, medical audit and legal purposes.

Patient/Parent education: Software packages offer an important tool for health education in nursing practice. These programs can be used to educate patients while they wait for their turn in the reception area of the hospital. This issue assumes further importance due to increased public awareness on health and disease such as diet, immunization, first-aid measures, and stress management.

In-patient care: Computerized indoor records help to keep the patient's history details, examination findings, investigations, treatment, and surgery/procedure performed and details of nursing care provided. Computerization also helps in patient monitoring.

Computer-based patient monitoring machines are being used to monitor heart rate, respiratory activity, blood pressure and other critical vital signs, it has the ability to automatically update a patient's information and notify hospital staff.

Computers in ICU: ICU nursing personnel need ready access to volumes of miscellaneous information, like protocols and drug dosages. A Computer in the ICU, with Internet access, connects the caretaker to all the information s/he may need.

9.2.4 Other Applications

Internet and E-mail

The advent of the Internet and E-mail allows the international nursing community to interact and collaborate in an incredibly convenient way. The sharing of medical and nursing knowledge and academic discussions are

immensely facilitated by the Internet through a computer modem. Mailing lists and online forums allow the global nursing community to advance in unison, the whole being far greater than the sum of its parts. Now a day many secure and personalized email services are available.

With Net Meeting and Video Conferencing you can hold digital conversations with doctors and nurses or any team associates around the world without spending a fortune. Net Meeting also makes it possible for you to work with a group of people, sending text messages, and transferring files. With the correct hardware installed on your computer, you can also have live, face-to-face meetings, video conferencing, etc.

Now a day nursing staff communicates with patients and other medical professionals through email, instant messaging, **video chats, and webinars**. By using these internet services nursing staffs are able to stay updated with the latest developments in medical field, they can also consult with colleagues and other medical staff in real-time and receive opinions for diagnoses and treatment options.

Internet, in fact, provides a wide range of interactive and informative contents.

Tele-nursing

Tele-nursing refers to the exchange of expertise in various areas like nursing diagnosis data over a distance. It is divided into the following categories:

- a) **Tele-consultation:** A nurse clinician and nurse specialist providing consultation to the patient at a distance. It is used through palm top computers in developed countries.

In Tele-consultation Nurse staff uses computers and smartphones for video chats to advise patients remotely . They can help patients in rural areas without travelling to a hospital. In the case of any pandemic like COVID-19, natural disaster, telemedicine can greatly help in patient care.

- b) **Tele-mentoring:** A nurse clinician providing training /advice to another nurse clinician at a remote site, specially for mental health nursing, maternal and child care, medical surgical nursing and community nursing.

The Internet has made tele-consultation and tele-mentoring much cheaper and more effective for many practicing nurses, as all that is required is, a PC, a high-speed modem, and a camera allowing video in real time to be transmitted to another computer. The ease and accessibility of modem has dramatically aided the health care of Third World countries, who in times of crisis can receive consultations from world-class subject and clinical specialists thousands of miles away.

Nursing Presentation

Using programs like Microsoft Power point to create visually pleasing presentations gives an added depth to the topic, and enhances the learning experience for the audience. Photographs taken in the ward, can be managed and tailored to nurse's needs with a computer.

Nursing Education

Computer assisted instruction (CAI) is a valuable teaching aid for health care students, testing them with frequent quizzes to ensure that the material read has been properly absorbed. While human instruction and feedback has no substitute, various computer programs can act as a supplementary educational tool, enhancing the students learning experience and quality of education. Studies done by Nurse researcher on computer assisted learning does explain the use of computer complimenting in education.

Research

Through an electronic patient database, well organized for easy data retrieval, clinical research and statistical analysis of patient data is tremendously facilitated

Literature search

Online access to various nursing databases, connects a practitioner to an enormous amount of nursing literature and academic journals, allowing the nurse researcher to stay current and upto date with what is happening at forefront of her/his particular field.

Record management and analysis

Computer helps nursing staff in managing information related to diseases and health statistics. It also helps in compiling, analyzing and interpreting research work related to nursing professional or nursing student.

Check Your Progress 1

- 1) Discuss the clinical uses of computers in Nursing
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- 2) Describe the advantages of computerization in a hospital or clinic.
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- 3) What do you understand by Tele nursing? Explain the categories.
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9.3 LET US SUM UP

Computerization of any hospital or clinic is desirable as it improves efficiency, increases accuracy of work, creates a modernized image of

the establishment, reduces expenditure, saves time and assists in patient counseling, research and analysis.

9.4 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- 1)
 - a) Prescription: A prescription will be clear and decent looking, dosage will be automatically calculated, and time consuming writing work is eliminated. Investigations: Computer generated reports have the advantage of a build-in check for accuracy and reference values based upon the age and the gender of the patient.
 - b) Drug dosages: With available software, dosage calculations are easily performed, and specific instructions for the patient are just as easily viewed or printed.
 - c) Nursing records: Computerized nursing records are most efficient and more useful as compared to manually prepared records, and can be retrieved very easily. These records can be extremely helpful for statistical analysis, medical audit, Nursing audit and medico-legal purpose.
 - d) Patient/Parent education: Software packages offer an important tool for health education in nursing practice.
 - e) In-patient care: Computerized indoor records help to keep history details, examination findings, investigation, treatment, nursing care and surgery/procedures performed.
- 2)
 - Improved professional care
 - Better accuracy (by decreasing human error)
 - Effective time management
 - Better word management and hospital administration
 - Enhanced image of nursing and hospital set up
 - Useful tools for educating both the patient and nursing and the medical students.
- 3) Tele nursing refers to the exchange of medical and nursing diagnosis data over a distance. It is divided into the following categories:
 - a) Tele-consultation: A nurse clinician providing consultation to the students/nurse the help of plam computer at a distance.
 - b) Tele-mentoring: A nurse clinician providing training/advice to another nurse clinician at a remote site.

9.5 ACTIVITY

Make a list of various types of records being maintained on the computer in your hospital or health facility. Place a print out copy in your records.