"EMPOWERING NURSES THROUGH ADVANCED TECHNOLOGY" : ANALYSIS

Nursing

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ABSTRACT

There is hardly a treatment intervention or health programme in which nurses or midwives do not play a part. Technological development and use must always be patient centred, clinically owned and led, and aligned with local systems and aspirations. As the primary users of health informatics and technologies, nurses must begin to play a leading role in driving forward this agenda.

Objectives:
1. To assess the accessibility of advanced technologies for nurses
2. To explore opinion of clinical nurses, nurse educators, nurse administrators, medical practioners and patients regarding empowering nurses with advanced technology.
3. To compare opinion of clinical nurses, nurse educators, nurse administrators, medical practioners and patients regarding empowering nurses with advanced technology

Materials & Methods Observational descriptive study : Cross sectional method
a. **Study Setting:** Various wards of a tertiary level hospital, Lucknow
b. **Study Population :** Clinical nurses, nurse educators, nurse administrators, doctors and patients of a tertiary level hospital, Lucknow .

Results – Most of the participants have exposure to SPO2 monitor, cardiac monitors, IV infusion pumps, ventilators, CPAP machines . they are not familiar with biometrics, real time locating systems etc.,

All the participants agreed that emerging technologies can empower nurses and influence the outcome of care

KEYWORDS

Emerging technologies

Introduction

Looking back over the past few years, many people would have never been able to understand how significantly technology would affect the way we work, live, and play. The healthcare industry has been one area that technology has helped. Patient care has been drastically improved by these advances, as have the nurses and doctors who use new measures. The job of a nurse today looks nothing like it did 10, 20 or even 30 years ago (1).

Registered Nurses and Clinical nurses have changed the way they administer patient care. They are able to increase their workflow all while limiting their human errors. In return, it makes their job safer, and it is also less challenging on their bodies. Over the years, there have been seven major enhancements that have changed the nursing field. Today, these advancements are being used at top hospitals and health care facilities across the world. These practices have made nursing a better profession to be a part of (2).

Need & significance in Nursing:

Emerging technologies must become mainstream in nursing practice and care as quickly as possible if we are to address some of the major challenges facing the profession. They will help to make nursing more attractive to a generation brought up with technology. Technologies will help improve patient safety, tackling some of the gaps and obstacles in care that have such devastating effects on people's health and experience. Finally, technologies will be fundamental to supporting and improving quality systems, providing a degree of transparency and accountability that has been lacking before (3).

Review of literature

We need a critical mass of nurses who are able to understand the effect that health informatics and technologies can have on quality, and promote their use. This is a big task, given that many nurses are yet to see routine use of common technologies such as portable tablets, webcams and video conferencing. There are also huge questions around culture, education and inclusion. Nursing is a multigenerational workforce and, for many of its members, information technology will be like 'a second language' learnt later in life; its use will always be accompanied by some degree of anxiety (8). That is why nurse leaders must take steps to embed technology firmly in education, in supervision and mentorship, and in all parts of workforce and performance development. Ensuring that health informatics and technologies will fulfil their potential requires unity in creating an e-enabled profession while remaining alert to the inevitable

challenges it brings (3).

Health IT is about quality, safety and innovation - it is not an end in itself. Its development and use must always be patient centred, clinically owned and led, and aligned with local systems and aspirations. As the chief nursing officer says, there is hardly a treatment intervention or health programme in which nurses or midwives do not play a part. As the primary users of health informatics and technologies, nurses must begin to play a leading role in driving forward this agenda (4).

Methodology
A study on "Empowering Nurses through Advanced Technology" among nursing staff posted to a tertiary level hospital, Lucknow

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Assumption:
1. Nursing staff has accessibility to advanced technologies.
2. Clinical nurses, nurse educators, nurse administrators, doctors and patients have a positive outlook regarding empowering nurses with advanced technology

Study Design

Observational descriptive cross sectional design
a. **Study Setting:** Various wards of a tertiary level hospital, Lucknow
b. **Study Population :** Clinical nurses, nurse educators, nurse administrators, doctors and patients of a tertiary level hospital, Lucknow .
Sample Size: 100 calculated from previous study results.
The sample consists of 40 Clinical nurses, 10 nurse educators, 10nurse administrators, 20 doctors and 20 patients of a tertiary level hospital, Lucknow .

c. **Sampling technique**
A technique of purposive (non probability) sampling was adopted

d. Tool
1. Check list to assess the accessibility of advanced technologies to nurses posted to a tertiary level hospital.
2. Likert scale to analyze the opinion of Clinical nurses, nurse educators, nurse administrators, doctors and patients of a tertiary level hospital, Lucknow.

e. Validity & Reliability
   Tools validated by experts in   Nursing & Hospital

Administration.
Reliability of the tool was measured by pilot study.

f. Ethical consideration
1. Ethical clearance for conducting the study taken Written Informed consent taken from the participants

3   Findings & Interpretation
The data was analysed with the help of descriptive statistics

Table 1: Accessibility of Emerging Technologies for nurses working in various Clinical fields
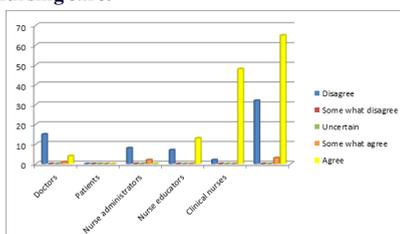
Clinical fields	
Various emerging technologies	**Percentage of accessibility**
SPO2 monitor, NIBP monitors, Cardiac monitors, IV Infusion pumps, Ventillators, CPAAP machines, ABG analysers, Portable X ray manchines, Local wireless telephone net works	100
FiO2 monitor	4
Ultrasound devices to monitor FHR and see foetus inside the womb	34
Vein viewers to help placing an IV, by pin pointing the exact location to minimize patient distress.	23
Hands-free devices such as Vocera's Call Badge provide the ultimate in communication while a nurse is engaged in active patient care or associated tasks	0
Tablet computers, wireless internet connections and mobile wireless computer stations to make reference materials available and faster communication.	75
High-tech systems of medication retrieval and delivery, such as bar coding and verification.	0
Real time locating systems (RTLS) use radiofrequency identification tags, ultrasound, or infrared technology to tag and track medical equipment.	0
Centrally monitoring equipment maintenance cycles and streamlining patient flow and bed management	0
Electronic health record (EHR) systems replacing outdated paper records.	0
Biometrics, or the science of identifying people through physical characteristics such as fingerprints, handprints, retinal scans, palm vein prints, voice recognition, facial structure, and dynamic signatures	0
Staff development programmes via specialized software, video conferencing facilities and online classes to obtain expert advice and rapid career advancement .	12

Tab 2. Frequency table : Opinion   of nurses, doctors & patients on the role of emerging technologies to empower nurses and influence on out come of care
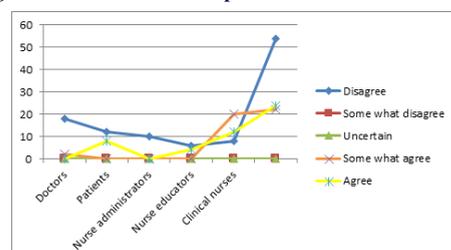
	Criteria	Disagree	Some what disagree	Uncertain	Somewhat agree	Agree
1	There is hardly a treatment intervention or health programme in which nurses or midwives do not play a part	0	0	0	0	100
2	Human touch is the art of nursing. Nurses need to be actively involved in determining how best to use technology without eliminating human touch.	0	0	0	0	100
3	We need more nurses who understand the effect of health informatics and technologies on quality of care - and promote their use	0	0	0	0	100
4	Advanced technologies will help to make nursing more attractive to a generation brought up with technology.	0	0	0	0	100
5	Technologies will help improve patient safety, tackling some of the gaps and obstacles in care that have such devastating effects on people's health and experience.	0	0	0	0	100
6	Nursing is a multigenerational workforce and, for many of its members, information technology will be like 'a second language' learnt later in life. Its use will always be accompanied by some degree of anxiety.	30	21	2	22	25
7	Nurse leaders must take steps to include technology firmly in education, in supervision and mentorship, and in all parts of workforce and performance development.	0	0	0	0	100
8	Technologies are able to increase nurse's work out put while limiting their human errors.	0	0	0	0	100
9	Nurses can use smart phones and apps to receive text messages and alarms from their patients.	54	0	0	22	24
10	Emerging technologies cause blurring of the line between man and machine in turn that will continue to increase ethical issues in nursing care.	32	0	0	3	65

***All the participants agreed that emerging technologies can empower nurses and influence the outcome of care.

Fig 1: Emerging technologies cause blurring of the line between man and machine in turn that will continue to increase ethical issues in nursing care.

Fig 2: Nurses can use smart phones and apps to receive text messages and alarms from their patients

All the participant unanimously agreed that there isa hardly a treatment intervention or health programme in which nurses do not play a part and technologies will help improve patient safety, tackling some of the gaps and obstacles in care that have such devastating effects on people's health and experience.

Only 25% participants agreed that nursing is multigenerational workforce and for many of its members information technology will be like 'a second language' learnt later in life. Its use will always be accompanied by some degree of anxiety.

65% of participants agreed that emerging technologies cause blurring of the line between man and machine in turn that will continue to increase ethical issues in nursing care.

Recommendations:
• A longitudinal prospective study may be undertaken to assess ethical considerations and emerging technologies in nursing.
• An experimental study on impact of emerging technologies on outcome of nursing care can be undertaken.

Conclusion
With innovations in medical devices and software, technological improvements are literally changing the way that nurses practice, including everything from how they deliver care to patients to how they manage clinical workflows. The Internet allows nurses to share their experiences and feelings. As technology transforms the profession, nurses adapt and change as well. The big question is: What will the rest of the twenty-first century bring?

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