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Assessment of Knowledge and Skill of Nursing Staff in Tertiary Care Hospital

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ABSTRACT
Background: Nurses are a critical part of the health care system. Adequate knowledge and clinical skills of nursing staff decrease the risk of hospital-acquired infection, post-operative complications, and length of stay in hospitals and finally reduce the morbidity and mortality of patients. To assess the knowledge and skills of nursing staff working in a tertiary care hospital
Methods: Nursing staff were interviewed for knowledge and skills from the wards of tertiary care hospital.
Results: Knowledge of nurse staff is excellent and good regarding the vitals, routine investigation, universal precaution and needle stick injury, but knowledge of biomedical waste management and intravenous cannulation are poor and average, respectively. In compliance with the practice of these skills, vitals, universal precaution, and intravenous cannulation are excellent and reasonable. Still, needle stick injury prevention practice is average, and biomedical waste management is poor.
Conclusion: Orientation programs should be providing regarding biomedical waste management, and prevention of needle stick injury so that satisfactory improvement in the knowledge and practice of clinical skills among nurses is developed.

Key-words: Knowledge, Skill, Routine investigation, Universal precaution, Needle stick-injury, Biomedical waste management, Intravenous cannulation

INTRODUCTION

Nursing process is a systematic, rational method of planning and providing individuals with nursing care [1,2]. Nursing care is caring for patients in hospitals or communities by nursing professionals. Nurses are the most vital part of the health system and play an essential role in the care of patients [3]. Professional practice demands competence in knowledge and skills. They have a role in promoting, preventing, and rehabilitating patients' health.

Nurses are caring providers; they provide hands-on care to patients. Nurse is a caretaker, communicator, and counselor [4]. Today's healthcare has a multidisciplinary approach, so nurses with various disciplines must work as team members to care for patients [5]. The International Code of Nursing Ethics states that the fundamental responsibility of a nurse is to conserve life and promote health International Council of Nursing [6]. Nursing encompasses autonomous and collaborative care of individuals of all ages, families, groups and communities [7].

American nurses' Association states that nursing practice is goal-oriented and adaptable to service the needs of individuals, families, and communities during health and illness [8]. Qualities of nurses are knowledge, caring, discipline, good communication, and responsibility. Nurses are one of the largest professionals in the health care system and are responsible for care 24 hours a day

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in the ward [9]. The study aims to assess nursing care in tertiary care hospital by assessing the knowledge and skills of nursing staff. The study was carried out in tertiary care hospital.

MATERIALS AND METHODS

Place of the study- The study was carried out in a tertiary care hospital in Jabalpur, India.

Sample size- The study population comprised 100 nurses working in wards of various departments. It is a cross-sectional study.

RESULTS

It is a questionnaire-based study. The questionnaire has two parts. The first part contains questions related to the assessment of knowledge. The second part is related to questions about clinical skills and their practice.

Part A- In the context of knowledge, a questionnaire concerns patients' Vitals (pulse, blood pressure, respiration rate, temperature). In routine patient investigations (CBC, urine, and blood). In universal precautions (guideline and its practice). In needle stick injuries, (prevention and transmission of disease). In Biomedical waste management (color coding system and its use).

In Insertion of intravenous cannula (types of needles and its uses) Part B- In context compliance of clinical skill and practice, the questionnaire is about Vitals of patients, Routine investigation of patients, Universal precautions, Needle stick injuries, Biomedical waste management, Intravenous cannulation.

Inclusion criteria- Participants who are willing and consent to participate in the study. Nurses working in the ward of a hospital are included in the study.

Exclusion criteria- Participants not willing to participate in the study.

Ethical approval- Study approval was obtained from the Ethical Committee of Medical College. Nurses take consent for participation.

The response was recorded as zero (not having a correct answer and one (having an accurate answer. Then, based on their scores, they were divided into excellent (>75 %), good (51-75%), average (26-50 %), and poor (0-25%).

One hundred nurses participated in study. 58 % staff nurse are excellent and 25% are good in vitals knowledge while 13% are average and 4% are poor. In routine investigation 36% are excellent, 34% are good while 20% are average and 10 % are poor in knowledge. In universal precaution, 50% are excellent, 14% are good while 21 % are average and 15% are poor in knowledge. In needle stick injury, 52% are excellent, 28% are good while 11% are average and 9% are poor in knowledge. In biomedical waste management, 18% are excellent, 28% are good while 24% are average and 30 % are poor in knowledge. In intravenous cannulation 5% are excellent, 24% are good while 52 % are average and 19% are poor in knowledge (Table 1).

Table 1: Assessment of Knowledge among nursing staff

Knowledge regarding parameters	Excellent (> 76%)	Good (51-75%)	Average (26-50 %)	Poor (0-25%)
Vitals	58	25	13	4
Routine investigation	36	39	20	10
Universal precaution	50	14	21	15
Needle stick injury	52	28	11	9
Biomedical medical waste management	18	28	24	30
Insertion of IV Cannulation	5	24	52	19

In compliance with the practice of these knowledge parameters, the same parameters are used in the study. In the practice of vitals, 19% are excellent, 76% are good, 4% are average, and 1% are poor. In routine investigation, 6 % are excellent, 5% are good 19% are average, and 70% are poor. In the universal precaution guidelines, 84% are excellent, 12% are good, 2% are average, and 2% are poor. In the practice of needle stick injury, 1% are excellent, 17% are good, 37% are average, and 45 % are poor. In biomedical waste management, 2% are excellent, 3% are good 3% are average, and 92% are poor. In intravenous cannulation, 4% are excellent, 70% are good 23 % are average, and 3% are poor (Table 2).

Table 2: Assessment of clinical skill and its practice among nursing staff

Skill assessment parameters	Excellent (>76%)	Good (51-75%)	Average (26-50 %)	Poor (0-25%)
Vitals	19	76	4	1
Routine investigation	6	5	19	70
Universal precaution	84	12	2	2
Needle stick injury	1	17	37	45
Biomedical medical waste management	2	3	3	92
Insertion of IV Cannulation	4	70	23	3

DISCUSSION

Nursing care is one of the important aspects of the treatment and recovery of patients. The present study is carried out to assess knowledge and skill. Patients' vitals (Blood pressure, pulse, respiratory rate, temperature) are routinely taken in wards to determine their health status. It is taken by nursing staff per doctors' orders or recorded once to four hours, according to a patient's condition. In the current study, we find that 58 % are excellent, 25% are good, 13 % are average, 4% are poor in knowledge, while in practice, 19% are excellent, 76% are good, 4% are average and 1% is poor. A Study, "assessment of knowledge and their practice of vitals", Kariwala *et al.* [10] show that 12 % are excellent, 17% are good, 25% are average, 41% are poor and 33 % are very poor in monitoring vitals.

In CBC, blood sugar, urine routine and microscopy are routine investigations done by doctors in patients. In CBC, the total WBC and platelet count are considered. The nursing staff is supposed to have knowledge of the investigation and to practice the correct collection of samples. In our study, we assess a few parameters of blood and urine investigation in terms of knowledge and practice. In current research, 36% are excellent, 34% are good, 20% are average, 10% are poor in knowledge, while in practice, 6% are excellent, 5% are good, 19% are average and 70% are poor. A Study, "assessment of knowledge and their practice of vitals", by Kumar *et al.*

[11] shows that 24% are excellent, 36% are good, 29% are average, 28% are poor, 11% are very poor in knowledge of routine investigation. It is similar to our study knowledge of routine investigation.

Universal precautions are guidelines to protect the healthcare worker from exposure to infections. It is also vital to prevent infection of patients in hospitals, patient-to-patient infections, and from patient to staff or vice versa. We assess the knowledge of universal precautions and their practice in wards. In the current study, we find that 50% are excellent, 14% are good, 21% are average, 15% are poor in knowledge, while in practice, 84% are excellent, 12% are good, 2% are average and 2% are poor. A study about universal precautions in healthcare workers by Singh *et al.* [12] shows that 69.25% have good knowledge. It is higher than our study. 62% has good and average compliance with universal precaution practice, it is higher than our study. Study of Devaliya *et al.* [13] showed that hand-washing compliance among nurses was 40%.

It is pick of a needle or sharps during work in wards. We assess the knowledge and practice of prevention of needle stick injury. In the current study, we find that 52% are excellent, 28 % are good, 11% are average, and 9% are poor in knowledge, while in practice, 1% are excellent, 17% are good, 37% are average and 45% are poor. A study of knowledge, attitude and practice among healthcare workers on needle stick injuries done by Alam

[14] shows that 21 % have expertise and 30 % have taken preventive measures for NSI. It is less than our study.

It is generated in hospitals. It is appropriately segregated and disposed of. In the present study, we assess the knowledge and practice of segregating BMW per the guidelines [15] of color code containers in wards. In the current study, we find that 18% are excellent, 28% are good, 24 % are average, 30% are poor in knowledge, while in practice, 2% are excellent, 3% are good, 3% are average and 92% are poor. A study on knowledge, attitude and practice of biomedical waste by Sekar *et al.* [16] found 14% are good in knowledge, 70% are average in knowledge, and 17% are good and 40% are average in practice, it is lesser in knowledge and higher in practice. Another study to determine knowledge and practice regarding biomedical waste among paramedical workers done by Sharma *et al.* [17] found that 58% have average knowledge level and 77 % have average practice.

 It is one of the daily procedural tasks of nursing staff inwards. In the present study, we assess knowledge and practice of IV cannulation. In the current research, we find that 5% are excellent, 24% are good, 52% are average, 19% are poor in knowledge, while in practice, 4% are excellent, 70% are good, 23% are average and 3% is poor. A study of knowledge and practice towards care and maintenance of peripheral intravenous cannula among nurses by Osti *et al.* [18] in 2019 found that 82.47 % have proper knowledge and 84.72% have correct practice, which is higher than our study. Another study, knowledge and practice on IV Cannulation among nurses, by Thresiamma *et al.* [19] found that 68.8% had average and 20.8% had poor Knowledge on IVC. It is similar to our study.

CONCLUSIONS
In the present study, the knowledge of most staff nurses is excellent regarding vitals, routine investigation, universal precaution and needle stick injury. Still, knowledge of biomedical waste management and intravenous cannulation is poor and average. In compliance with these parameters, vitals, universal precaution, and intravenous cannulation are excellent and good. Still, the practice of needle stick injury prevention is average, and biomedical waste management is poor.

Recommendation
Based on the present study, the following points are recommended. In-service training of nursing staff should be conducted. Orientation programs should be provided about biomedical waste management and prevention of needle stick injury so that nurses' knowledge and practice of clinical skills are satisfied.

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