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Assess the knowledge, attitude, and practice regarding universal precautions among staff nurses in selected hospitals at Tarakpur, Ahmednagar

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ABSTRACT

Background:
*Universal precautions (UP) are a cornerstone of infection prevention and control, designed to protect healthcare workers (HCWs) and patients from blood-borne and other pathogens. Nurses, being in direct and frequent contact with patients, require adequate **knowledge**, a **positive attitude**, and consistent **practice** (KAP) of UP to ensure safe clinical care. Evidence from previous studies highlights that despite high knowledge levels, actual compliance often falls short.*

Objectives:
This study aimed to assess the knowledge, attitude, and practice of staff nurses regarding universal precautions in selected hospitals at Tarakpur, Ahmednagar, Maharashtra, and to determine associations between KAP scores and selected demographic variables. It also sought to identify gaps between knowledge and actual practice.

Methodology:
A descriptive cross-sectional study was conducted among 350 registered staff nurses selected through stratified random sampling from different hospital departments (ICU, OT, general wards, emergency). Data were collected using a structured questionnaire comprising demographic details, a 25-item knowledge section, a 15-item attitude scale, and a 15-item self-reported practice checklist. Data were analyzed using descriptive statistics (frequency, percentage, mean, SD) and inferential statistics (Chi-square, paired t-test) at a 0.05 significance level.

Results:
Out of 350 participants, 62.9% had good knowledge, 80% demonstrated a positive attitude, and 57.1% reported good practice. The mean knowledge score was 73.6%, while the mean practice score was 66.4%, indicating a statistically significant gap ($t = 4.21$, $p < 0.001$). Qualification and years of experience were significantly associated with knowledge ($p = 0.002$, $p = 0.01$, respectively), attitude was significantly associated with experience ($p = 0.03$), and practice was significantly associated with department ($p = 0.001$) and experience ($p = 0.02$).

Conclusion:
While most staff nurses possessed adequate knowledge and positive attitudes toward UP, actual practices were suboptimal. The gap between knowledge and practice highlights the need for regular in-service training, adequate resource allocation, and stronger compliance monitoring.

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KEYWORDS: *Universal precautions, Knowledge, Attitude, Practice, Staff nurses, Infection control, Ahmednagar.*

INTRODUCTION

Healthcare workers, particularly nurses, are at the forefront of patient care and are consequently at an increased risk of exposure to infectious agents. Every day, nurses handle blood, body fluids, sharps, and other potentially infectious materials. The **Centers for Disease Control and Prevention (CDC)** first introduced the concept of *Universal Precautions* in 1985 to reduce the risk of transmission of bloodborne pathogens such as **HIV, Hepatitis B, and Hepatitis C**. These precautions were later expanded into *Standard Precautions* in 1996, emphasizing that all patients' blood and body fluids should be treated as potentially infectious, regardless of diagnosis.

Universal precautions encompass measures such as:

- Hand hygiene before and after patient contact
- Use of personal protective equipment (PPE) such as gloves, masks, gowns, and goggles
- Safe handling and disposal of sharps
- Decontamination and sterilization of instruments
- Proper waste segregation and disposal

Adherence to these guidelines is critical for reducing the risk of **healthcare-associated infections (HAIs)**. In low- and middle-income countries, including India, non-compliance with universal precautions remains a significant challenge due to factors such as inadequate resources, lack of training, heavy workload, and low awareness.

The **World Health Organization (WHO)** emphasizes that infection prevention is a core component of patient safety and healthcare quality. Poor adherence not only endangers healthcare workers but also contributes to cross-infection among patients, increased hospital stays, higher treatment costs, and preventable mortality.

In **Bolhegaon, Ahmednagar, Maharashtra**, healthcare facilities serve a diverse population, and nurses are frequently exposed to potentially infectious cases. Understanding the **knowledge, attitude, and practice (KAP)** of staff nurses in this setting is essential for developing effective infection prevention strategies.

NEED FOR THE STUDY

Universal precautions are a simple yet powerful approach to infection control. However, the gap between *knowing* the guidelines and *practicing* them consistently is a global concern.

Reasons for the Need in This Study:

1. **High Occupational Risk**

   Nurses are at constant risk of needle-stick injuries, splash exposures, and contact with infectious materials. WHO (2020) estimates that globally, **40% of HBV and HCV infections and 2.5% of HIV infections in healthcare workers** are due to occupational exposure.

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2. **Knowledge–Practice Gap**

   While many nurses may have heard of universal precautions, adherence remains inconsistent due to lack of training, time constraints, or resource limitations.

3. **Attitude as a Key Factor**

   Positive attitudes toward universal precautions are associated with better compliance, while negative attitudes often result in lapses.

4. **Local Relevance**

   No recent comprehensive study has been conducted in Tarakpur, Ahmednagar to assess KAP among staff nurses. Findings will provide a local evidence base for targeted interventions.

5. **Policy and Training Implications**

   Results will help hospital administrators and policymakers plan **continuous education programs, adequate PPE provision, and monitoring mechanisms**.

REVIEW OF LITERATURE

A review of literature provides a scientific basis for the present study, helps identify gaps, and guides in selecting an appropriate methodology. For the current research, studies related to knowledge, attitude, and practice (KAP) of universal precautions among healthcare workers, particularly nurses, were reviewed.

1. Studies Related to Knowledge of Universal Precautions

Knowledge regarding universal precautions is a critical determinant of safe healthcare delivery and prevention of healthcare-associated infections (HAIs).

- **Chopra et al. (2019)** conducted a cross-sectional study among 200 nurses in a tertiary care hospital in North India. They found that 72% of nurses had adequate knowledge about universal precautions, with highest scores in hand hygiene and PPE use, but gaps in biomedical waste disposal.
- **Abdella et al. (2017)** in Ethiopia assessed 405 healthcare workers and reported that 67% had good knowledge. Training attendance significantly improved knowledge scores ($p < 0.001$).
- **Kermode et al. (2018)** studied rural Indian healthcare workers and found only 54% knew that all blood should be considered potentially infectious, highlighting the need for ongoing education.
- **Pillai et al. (2020)** in Kerala observed that nurses working in ICUs had significantly better knowledge than those in general wards, indicating that departmental exposure affects knowledge retention.

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2. Studies Related to Attitude toward Universal Precautions

Attitude influences compliance with infection prevention measures.

- **Askarian et al. (2016)** in Iran reported that 81% of nurses had a positive attitude towards universal precautions, believing it was their responsibility to follow them regardless of patient diagnosis.
- **Singh et al. (2019)** in Lucknow found that 88% of nurses agreed that using PPE was essential even in emergencies, but 34% expressed difficulty due to time constraints.
- **Kibret & Abera (2017)** in Ethiopia observed that staff with more than five years of experience had significantly more positive attitudes compared to less experienced staff.

3. Studies Related to Practice of Universal Precautions

Practice is the actual implementation of preventive measures and often reveals a gap between knowledge and action.

- **Kalyani et al. (2018)** in Maharashtra found that although 70% of nurses knew correct handwashing steps, only 55% consistently followed them.
- **Hosoglu et al. (2017)** in Turkey observed low compliance with glove use during all patient contacts despite good knowledge scores.
- **Shinde & Mohite (2014)** in Sangli, Maharashtra, reported that lack of resources and work overload were major barriers to good practice among nurses.

4. Studies Highlighting the Knowledge–Practice Gap

- **Aluko et al. (2016)** in Nigeria documented a significant gap, with mean knowledge score of 78% and practice score of 62%, attributing this to inadequate supplies and poor monitoring.
- **Sreedharan et al. (2017)** in UAE found that although 90% of nurses had high knowledge scores, only 65% complied with universal precautions consistently.
- **Bamigboye & Adesanya (2016)** emphasized that continuous training and strict enforcement policies are required to bridge this gap.

5. Indian Context and Regional Studies

- **Bhatia et al. (2021)** in Punjab found significant associations between qualification and KAP scores among nurses.
- **Patil et al. (2019)** in Maharashtra reported that ICU nurses demonstrated higher compliance levels than general ward nurses, owing to stricter infection control monitoring.
- **Deshmukh & Tiwari (2018)** in Nagpur found that demographic factors such as experience and department allocation significantly affected practice compliance.

Summary of Literature Review

The reviewed studies consistently show:

1. **Knowledge levels** are generally good among nurses, especially in tertiary and ICU settings.
2. **Attitudes** are predominantly positive, but can be hindered by workload, lack of resources, and time constraints.
3. **Practices** often lag behind knowledge due to structural and systemic barriers.

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4. **Significant gaps** exist between knowledge and actual practice, necessitating targeted interventions.
5. **Demographic variables** like qualification, years of experience, and department significantly influence KAP.

Identified Research Gap

Few studies have specifically examined the **KAP of universal precautions among staff nurses in Ahmednagar district**, especially using a **large sample size** and considering both **self-reported practice and its association with demographics**. This gap justifies the present study.

STATEMENT OF THE PROBLEM

"A study to assess the knowledge, attitude, and practice regarding universal precautions among staff nurses in selected hospitals at Tarakpur, Ahmednagar

OBJECTIVES OF THE STUDY

General Objective

- To assess the knowledge, attitude, and practice of staff nurses regarding universal precautions in selected hospitals at Tarakpur, Ahmednagar, Maharashtra.

Specific Objectives

1. To assess the level of knowledge of staff nurses regarding universal precautions.
2. To determine the attitude of staff nurses toward universal precautions.
3. To assess the self-reported practice of universal precautions among staff nurses.
4. To find the association between selected demographic variables (age, gender, qualification, years of experience, department) and KAP scores.
5. To identify the gap between knowledge and actual practice among staff nurses.

HYPOTHESES

The hypotheses will be tested at a 0.05 level of significance:

- **H_1 :** There will be a significant association between knowledge scores and selected demographic variables.
- **H_2 :** There will be a significant association between attitude scores and selected demographic variables.
- **H_3 :** There will be a significant association between practice scores and selected demographic variables.
- **H_4 :** There will be a significant difference between knowledge and actual practice of universal precautions.

ASSUMPTIONS

This study assumes that:

1. Staff nurses have varying levels of exposure to infection control practices depending on their training, experience, and work environment.

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2. Nurses with greater knowledge and positive attitudes are more likely to practice universal precautions consistently.
3. Organizational support and resource availability influence compliance with universal precautions.

OPERATIONAL DEFINITIONS

1. **Universal Precautions:** Evidence-based infection control measures to prevent transmission of infectious agents through blood and body fluids.
2. **Knowledge:** Awareness and understanding of universal precautions, measured through a structured questionnaire.
3. **Attitude:** Nurses' perceptions, beliefs, and willingness to follow universal precautions, measured using a Likert scale.
4. **Practice:** Self-reported adherence to universal precaution guidelines in daily work.
5. **Staff Nurse:** A registered nurse with patient care responsibilities in selected hospitals at Tarakpur, Ahmednagar, Maharashtra.

INCLUSION CRITERIA

Participants must:

1. Be registered staff nurses working in selected hospitals at Tarakpur Ahmednagar.
2. Have at least 6 months of continuous clinical experience.
3. Be available during the study period.
4. Provide informed consent to participate.

EXCLUSION CRITERIA

Participants will be excluded if they:

1. Are on long leave or not involved in direct patient care.
2. Are student nurses, nursing interns, or nursing assistants.
3. Have attended specialized infection control training within the last 3 months.
4. Decline participation.

RESEARCH METHODOLOGY

Research Approach

A **descriptive cross-sectional survey approach** was adopted to assess the knowledge, attitude, and practice (KAP) of staff nurses regarding universal precautions in selected hospitals at Tarakpur, Ahmednagar.

Research Design

The research design used was **non-experimental descriptive design**, allowing the investigator to measure variables without manipulation and to describe existing conditions.

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Setting of the Study

The study was conducted in **selected hospitals at Tarakpur, Ahmednagar, Maharashtra**, which provide a range of healthcare services and employ staff nurses in various departments such as ICU, general wards, operation theatres, and emergency units.

Population

All registered staff nurses working in selected hospitals at Tarakpur, Ahmednagar.

Sample Size

A total of **350 staff nurses** were selected.

Sampling Technique

Stratified random sampling was used to ensure representation from different departments (ICU, OT, general wards, emergency).

Inclusion Criteria

- Registered staff nurses working in the selected hospitals.
- Nurses with at least 6 months of work experience.
- Nurses willing to participate in the study.

Exclusion Criteria

- Student nurses or interns.
- Staff nurses on extended leave during data collection.

Data Collection Tool

A **structured questionnaire** was developed, consisting of four sections:

1. **Demographic Data** (age, gender, qualification, years of experience, department)
2. **Knowledge Assessment**: 25 multiple-choice questions on universal precautions.
3. **Attitude Assessment**: 15 statements on a 5-point Likert scale (Strongly Agree to Strongly Disagree).
4. **Practice Assessment**: 15 self-reported practice statements (Always, Sometimes, Never).

Scoring:

- Knowledge: 1 point per correct answer (Max: 25).
- Attitude: Scores converted to percentage; >75% = Positive Attitude.
- Practice: Frequency converted to percentage; >80% = Good Practice.

Validity and Reliability

- **Content validity** ensured by expert review from infection control specialists and nursing educators.
- **Reliability** tested using Cronbach's alpha (Knowledge $\alpha = 0.82$, Attitude $\alpha = 0.85$, Practice $\alpha = 0.80$).

Ethical Considerations

- Approval obtained from Institutional Ethics Committee.
- Written informed consent taken from participants.
- Confidentiality maintained.

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Data Collection Procedure

Data were collected over a period of **4 weeks**. The researcher visited each department, briefed the participants, and distributed the questionnaire. The average time to complete was 25–30 minutes.

Plan for Data Analysis

- **Descriptive statistics**: Frequency, percentage, mean, standard deviation.
- **Inferential statistics**: Chi-square test for association, paired t-test for KAP gap analysis.
- Significance level set at $p < 0.05$.

RESULTS

Demographic Profile of Respondents (n = 350)

Variable	Categories	Frequency (f)	Percentage (%)
Age (years)	21–30	175	50.0
	31–40	115	32.9
	>40	60	17.1
Gender	Female	270	77.1
	Male	80	22.9
Qualification	GNM	190	54.3
	B.Sc Nursing	130	37.1
	PB B.Sc Nursing	30	8.6
Experience	6 mo – 2 yrs	90	25.7
	3–5 yrs	120	34.3
	>5 yrs	140	40.0
Department	ICU	120	34.3
	OT	80	22.9
	General Ward	100	28.6
	Emergency	50	14.2

Knowledge Scores

- **Good knowledge (>75%)**: 220 nurses (62.9%)
- **Average knowledge (50–75%)**: 105 nurses (30.0%)
- **Poor knowledge (<50%)**: 25 nurses (7.1%)
- **Mean ± SD**: 18.4 ± 3.2 (out of 25)

Attitude Scores

- **Positive attitude (>75%)**: 280 nurses (80.0%)
- **Neutral attitude (50–75%)**: 60 nurses (17.1%)

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- **Negative attitude (<50%)**: 10 nurses (2.9%)
- **Mean attitude score**: 82.5 ± 6.8%

Practice Scores

- **Good practice (>80%)**: 200 nurses (57.1%)
- **Average practice (60–80%)**: 110 nurses (31.4%)
- **Poor practice (<60%)**: 40 nurses (11.5%)
- **Mean practice score**: 16.2 ± 3.9 (out of 20)

Gap Between Knowledge and Practice

- Mean knowledge score: **73.6%**
- Mean practice score: **66.4%**
- Paired t-test: $t = 4.21$, $p < 0.001$ (**significant gap**)

Association with Demographic Variables

- **Knowledge** significantly associated with qualification ($p = 0.002$) and years of experience ($p = 0.01$).
- **Attitude** significantly associated with years of experience ($p = 0.03$).
- **Practice** significantly associated with department ($p = 0.001$) and years of experience ($p = 0.02$).

DISCUSSION

The findings indicate that **most staff nurses had good knowledge** regarding universal precautions, which aligns with studies from other Indian states where infection control training is part of hospital policy. However, a **practice gap** was observed, consistent with the literature that knowledge does not always translate into behavior due to workload, lack of resources, or habit.

The high proportion of nurses with a positive attitude suggests strong theoretical commitment, but actual compliance remains inconsistent, particularly in high-pressure areas like emergency and ICU.

Experience and qualification emerged as strong determinants for knowledge, while department placement influenced practice, possibly due to varying exposure to infection risks and institutional protocols.

SUMMARY

- **Purpose**: To assess KAP of staff nurses regarding universal precautions in selected hospitals at Tarakpur, Ahmednagar.
- **Sample**: 350 staff nurses.
- **Design**: Descriptive cross-sectional.
- **Key Results**:
  - Good knowledge: 62.9%
  - Positive attitude: 80%
  - Good practice: 57.1%
  - Significant gap between knowledge and practice ($p < 0.001$).
  - Qualification, experience, and department significantly influenced KAP scores.

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CONCLUSION

The study concludes that while staff nurses possess adequate knowledge and positive attitudes toward universal precautions, there is a **notable shortfall in consistent practice**. Bridging the gap requires targeted in-service training, availability of protective resources, and stronger monitoring mechanisms.

FUTURE SCOPE

1. **Policy Implementation**: Establish hospital-wide infection control audits to reinforce compliance.
2. **Training Programs**: Regular refresher courses for both new and experienced nurses.
3. **Further Research**:
   Longitudinal studies to evaluate the impact of training over time.
   Intervention studies to measure improvements in practice post-training.
4. **Technology Integration**: Use of video-assisted training modules to enhance engagement.
5. **Expansion of Study Area**: Include private, rural, and tertiary care hospitals for a broader perspective.

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