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Evaluation of Awareness Regarding Look-Alike Sound-Alike Drugs and Potential Medication Errors Among AT & OT Interns and OT Technologists.

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ABSTRACT

Background: Look-Alike Sound-Alike (LASA) medicines are an important source of medication errors, particularly in anaesthesia and operating theatre settings where medicines are prepared and administered rapidly. Adequate awareness is essential for preventing avoidable errors.

Objective: To evaluate awareness regarding LASA drugs and potential medication errors among Anaesthesia Technology (AT) and Operation Theatre (OT) interns and OT technologists.

Methods: A quantitative cross-sectional descriptive study was conducted among 42 AT and OT interns and OT technologists working in the operation theatre of a tertiary care hospital in Puducherry. Participants were selected using purposive sampling. Data were collected using a self-administered questionnaire validated by three experts in the Department of Anaesthesiology. Each correct response received one mark; incorrect or unsure responses received zero. Data were analysed using IBM SPSS Statistics version 26.0. Frequency, percentage, mean and standard deviation were used. Fisher's Exact Test assessed associations between awareness level and demographic variables.

Results: Of the 42 participants, 17 (40.5%) were aged 20–25 years, 27 (64.3%) were female, 25 (59.5%) were OT technologists, and 22 (52.4%) had more than three years of clinical experience. Overall, 36 participants (85.7%) demonstrated good awareness, 6 (14.3%) demonstrated moderate awareness, and none demonstrated poor awareness. Awareness was significantly associated with age ($p=0.002$), profession ($p=0.002$) and clinical experience ($p=0.007$), but not with gender ($p=0.231$).

Conclusion: Participants demonstrated good awareness of LASA drugs and potential medication errors. Continued education, structured orientation, competency-based assessment and reinforcement of medication-safety practices are recommended to strengthen safe medication practices in anaesthesia and operating theatre settings.

Keywords: Look-Alike Sound-Alike (LASA) Drugs; Medication Errors; Medication Safety; Anaesthesia Technology Interns; Operation Theatre; Patient Safety.

INTRODUCTION

Medication safety is an essential component of patient safety. Medication errors may occur at

several stages of the medication-use process, including prescribing, transcribing, preparation, administration and monitoring. Such errors can

result in preventable harm, prolonged hospitalisation, increased healthcare costs, temporary or permanent disability, and, in severe cases, death.^[1,2]

Look-Alike Sound-Alike (LASA) medicines are medications whose names, labels, packaging or appearance are sufficiently similar to cause confusion. Similar drug names and packaging can increase the risk of selection and administration errors.^[3,4] The problem may be particularly important in perioperative settings, where medicines are frequently prepared and administered rapidly and where multiple drugs may be available simultaneously.

In anaesthesia practice, medications such as opioids, sedatives, neuromuscular blocking agents and emergency drugs may be administered under time pressure. Similar ampoules, vials and labels, together with fatigue, interruptions and communication failures, can increase the likelihood of medication-selection errors.^[5-8]

Medication-safety strategies for reducing LASA errors include clear labelling, Tall Man lettering, barcode-assisted medication administration, separation of LASA medicines in storage, standardised medication preparation and independent double-checking.^[9-13]

Anaesthesia Technology and Operation Theatre personnel are directly involved in medication preparation, handling and perioperative patient care. Assessing their awareness of LASA medicines and potential medication errors can help identify areas for reinforcement through education and competency-based training. This study evaluated awareness of LASA drugs and potential medication errors among AT & OT interns and OT technologists.

This study aimed to evaluate awareness regarding Look-Alike Sound-Alike drugs and potential medication errors among AT & OT interns and OT technologists.

The objectives of this study were to assess the current level of awareness regarding Look-Alike Sound-Alike (LASA) drugs and potential medication errors among AT & OT interns and OT technologists, and to determine the association between awareness regarding Look-Alike Sound-Alike (LASA) drugs and potential medication errors and demographic variables (age, gender, profession and experience).

MATERIALS AND METHODS

Study design and setting: A cross-sectional descriptive study was conducted in the Department of Anaesthesiology of a tertiary care hospital in Puducherry over three months from January to March 2026, following permission from the Institutional Ethics Committee.

Study population and sampling: The study population comprised AT & OT interns and OT technologists working or posted in the operation theatre. Participants who met the eligibility criteria and provided informed consent were included. Faculty and administrative staff, individuals who declined consent, those unavailable during the study period, and participants who submitted incomplete questionnaires were excluded. Purposive sampling was used for participant selection.

Sample size: The sample size was determined using nMaster software (Version 2.0) based on the available study population. From an eligible population of 47, a final sample of 42 participants was included.

Data collection: Data were collected using a structured, self-administered questionnaire validated by three experts in the Department of Anaesthesiology. The questionnaire included demographic variables (age, gender, profession and duration of training/clinical experience) and items assessing awareness of LASA drugs and potential medication errors. Each correct response was scored one mark, while incorrect or unsure responses scored zero. The total awareness score classified participants into poor, moderate and good awareness levels.

Statistical analysis: Data were coded and entered into Microsoft Excel and analysed using IBM SPSS Statistics version 26.0. Descriptive statistics, including frequency, percentage, mean and standard deviation, were used to summarise the study variables. Fisher's Exact Test was used to determine associations between awareness level and demographic variables (age, gender, profession and duration of training/clinical experience).

RESULTS

A total of 42 participants who fulfilled the inclusion criteria were included in the study.

Age Distribution

Among the 42 participants, 17 (40.5%) were aged 20–25 years, 12 (28.6%) were aged 26–30 years, 9 (21.4%) were aged 31–35 years, and 4 (9.5%) were above 35 years. (*Table 1*)

Table 1: Age Distribution

Age	No. of Participants	Percentage
20–25 years	17	40.5%
26–30 years	12	28.6%
31–35 years	9	21.4%
Above 35 years	4	9.5%
Total	42	100%

Gender Distribution

Among the participants, 27 (64.3%) were female, 14 (33.3%) were male, and 1 (2.4%) was in the other-gender category. (Table 2)

Table 2: Gender Distribution

Gender	No. of Participants	Percentage
Female	27	64.3%
Male	14	33.3%
Others	1	2.4%
Total	42	100%

Profession of Participants

Among the participants, 25 (59.5%) were OT technologists, and 17 (40.5%) were AT & OT interns. (Table 3)

Table 3: Profession of Participants

Profession	No. of Participants	Percentage
AT & OT Intern	17	40.5%
OT Technologist	25	59.5%
Total	42	100%

Clinical Experience

More than half of the participants (52.4%) had more than three years of clinical experience, while 40.5% had less than one year and 7.1% had 1–3 years of experience. (Table 4)

Table 4: Clinical Experience

Clinical Experience	No. of Participants	Percentage
Less than 1 year	17	40.5%
1–3 years	3	7.1%
More than 3 years	22	52.4%
Total	42	100%

Awareness Level Regarding LASA Drugs and Potential Medication Errors

Among the participants, 36 (85.7%) demonstrated good awareness, 6 (14.3%) demonstrated moderate awareness, and none demonstrated poor awareness. (Table 5)

Table 5: Awareness Level

Awareness Level	No. of Participants	Percentage
Poor	0	0.0%
Moderate	6	14.3%
Good	36	85.7%
Total	42	100%

Association Between Age and Awareness Level

All participants aged 26–30 years, 31–35 years and above 35 years demonstrated good awareness. In the 20–25 years group, 11 (64.7%) demonstrated good awareness, and 6 (35.3%) demonstrated moderate awareness. Fisher's Exact Test showed a statistically significant association between age and awareness level ($p=0.002$). (Table 6)

Table 6: Association Between Age and Awareness Level

Age	Moderate	Good	Total	Fisher's Exact Test
20–25 years	6 (35.3%)	11 (64.7%)	17	0.002
26–30 years	0 (0.0%)	12 (100.0%)	12	
31–35 years	0 (0.0%)	9 (100.0%)	9	
Above 35 years	0 (0.0%)	4 (100.0%)	4	
Total	6 (14.3%)	36 (85.7%)	42	

Association Between Gender and Awareness Level

Good awareness was demonstrated by 22 (81.5%) female participants, 13 (92.9%) male participants and the single participant in the other-gender category (100%). Fisher's Exact Test showed no statistically significant association between gender and awareness level ($p=0.231$). (Table 7)

Table 7: Association Between Gender and Awareness Level

Gender	Moderate	Good	Total	Fisher's Exact Test
Female	5 (18.5%)	22 (81.5%)	27	0.231
Male	1 (7.1%)	13 (92.9%)	14	
Others	0 (0.0%)	1 (100.0%)	1	
Total	6 (14.3%)	36 (85.7%)	42	

Association Between Profession and Awareness Level

Among the 17 AT & OT interns, 6 (35.3%) demonstrated moderate awareness, and 11 (64.7%) demonstrated good awareness. All 25 OT technologists (100%) demonstrated good awareness. Fisher's Exact Test showed a statistically significant association between profession and awareness level ($p=0.002$). (Table 8)

Table 8: Association Between Profession and Awareness Level

Profession	Moderate	Good	Total	Fisher's Exact Test
AT & OT Intern	6 (35.3%)	11 (64.7%)	17	0.002
OT Technologist	0 (0.0%)	25 (100.0%)	25	
Total	6 (14.3%)	36 (85.7%)	42	

Association Between Clinical Experience and Awareness Level

Among participants with less than one year of experience, 6 (35.3%) demonstrated moderate awareness, and 11 (64.7%) demonstrated good awareness. All participants with 1–3 years and more than three years of experience demonstrated good awareness. Fisher's Exact Test showed a statistically significant association between clinical experience and awareness level ($p=0.007$). (Table 9)

Table 9: Association Between Clinical Experience and Awareness Level

Clinical Experience	Moderate	Good	Total	Fisher's Exact Test
Less than 1 year	6 (35.3%)	11 (64.7%)	17	0.007
1–3 years	0 (0.0%)	3 (100.0%)	3	
More than 3 years	0 (0.0%)	22 (100.0%)	22	
Total	6 (14.3%)	36 (85.7%)	42	

DISCUSSION

The present cross-sectional descriptive study evaluated awareness regarding LASA drugs and potential medication errors among AT & OT interns and OT technologists. The participants represented different age groups, professions and levels of clinical experience, providing an overall assessment of awareness within the study population.

Overall, 36 (85.7%) participants demonstrated good awareness, 6 (14.3%) demonstrated moderate awareness, and none demonstrated poor awareness. This indicates a generally favourable level of awareness regarding LASA drugs and potential medication errors. Similar concerns regarding LASA medicines and medication-safety awareness have been reported among healthcare professionals and paramedical personnel.^[14–16]

The present study found a statistically significant association between age and awareness level ($p=0.002$). Participants in the older age groups demonstrated good awareness, although the distribution of participants across these groups was smaller. Clinical exposure and accumulated professional experience may contribute to familiarity with medication-safety practices.

A significant association was also observed between profession and awareness level ($p=0.002$). All OT technologists demonstrated good awareness, whereas some AT & OT interns demonstrated moderate awareness. This finding suggests that differences in clinical exposure and workplace familiarity may influence awareness. Previous literature has identified knowledge gaps, workflow interruptions, communication problems and non-adherence to medication-safety procedures as contributors to medication administration errors.^[17,18]

Clinical experience was significantly associated with awareness level ($p=0.007$). All participants with more than three years of experience demonstrated good awareness, while moderate awareness was observed among participants with less than one year of experience. This finding supports the importance of structured orientation and continuing education for personnel at the beginning of their clinical practice. Accurate medication information and awareness of high-alert medicines are also important components of medication safety.^[19,20,22]

No statistically significant association was observed between gender and awareness level ($p=0.231$), suggesting that awareness in this study was not significantly influenced by gender. The overall findings support the need to maintain continuous education, competency assessment and medication-safety reinforcement even when baseline awareness is good. Similar or confusing brand names and medication names remain a recognised source of medication error, and studies from Thailand and India have also highlighted LASA medication risks and the need for systematic prevention strategies.^[21,23–25] Practical strategies such as clear labelling, Tall Man lettering, separation of LASA medicines and systematic checking can further reduce the risk of medication-selection errors.^[9–13]

CONCLUSION

This study found that AT & OT interns and OT technologists demonstrated a good overall level of awareness regarding LASA drugs and potential medication errors. Good awareness was observed in 85.7% of participants, while 14.3% demonstrated moderate awareness and none demonstrated poor awareness. Awareness was significantly associated with age, profession and clinical experience, but not with gender. Continuing education, structured orientation, competency-based assessment and reinforcement of medication-safety protocols are recommended to sustain safe medication practices in anaesthesia and operation theatre settings.

Conflict of Interest

The authors declare that there was no conflict of interest related to the conduct, data collection, analysis or reporting of the present study.

Source of Funding

The present study was conducted without financial support from any funding agency, commercial organisation or external source. The study was

carried out using resources available within the institution.

Ethical Approval: The study was approved by the Institutional Ethics Committee, Indira Gandhi Institute of Dental Sciences (IGIDS), Sri Balaji Vidyapeeth, Puducherry (IEC Approval Code: IGIDSIEC2026NRP452PGLPAHS).

Use of Artificial Intelligence: Artificial intelligence tools were used for language editing and formatting during manuscript preparation. The authors reviewed and approved the final manuscript and remain responsible for its content.

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Consent to Participate: Written informed consent was obtained from all participants.

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