

# Knowledge, Attitude and Practice of Administration of Intravenous Drugs among Dental Students

**Running Title:** Intravenous drugs administration Among Dental Practitioners

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**Abstract:** **Aim:** To study the knowledge attitude and practice regarding administration of intravenous drugs among dental students. **Background:** Intravenous drugs is often used because of the control it provides over the dosage and in some situations, the patient may require quick medication. This includes medical emergencies such as heart attack stroke poisoning etc. Intravenous drug administration sends the medication directly into the blood stream, thus it has better bio availability. It has two types of administration depending on the duration of need. They are short term need, immediate need and long term need. For short term needs standard catheter or a needle is used, this is to administer pain medications or antibiotics during the patient's stay in the hospital. For immediate need an IV push or bolus is given which quickly sends a one time dose of drug into the patients bloodstream. For long term need IV infusion can be used. This is precise and can be controlled. IV medications are generally safe but if it exceeds dosage limits it can cause both mild and dangerous side effects. To prevent this the doctor should be aware of the dosage to be given and the side effects it leads to. **Materials and Methods:** A questionnaire was designed to evaluate the knowledge and awareness of intravenous drugs among dental students. The questionnaire consisted of 10 questions. The survey was conducted for the students of saveetha dental college, Chennai, who are in their undergraduate course of dentistry according to dental council of India and were undergoing one year mandatory internship. **Result:** From the above research it has been inferred that almost 94% of the students do not have enough awareness about intravenous drugs and their administration which has to be given a thought about. But most of them had a superficial knowledge about intravenous drugs which can be improved by conferences and seminars regarding this subject. **Conclusion:** Knowledge about intravenous drugs and their administration was found to be inadequate among dental students. The results of this study emphasize the need for the improvement of training of dentists regarding intravenous drugs and their administration at undergraduate level

**Keywords:** Intravenous drugs, dental students, administration, bioavailability, dosage

## 1. Introduction

Intravenous route of drug administration is one of the most important routes of drug administration due to 100% bioavailability and the immediate medication it provides<sup>(1)</sup>. The ultimate responsibility of a dentist is to have an effective management of an emergency situation, so in such cases intravenous drugs come in handy. So the dentist should be well trained in prescribing the correct drug and dosage which has to be given intravenously<sup>(2)</sup>. As a doctor he should also be aware of the consequences it leads to if the drug or the dosage prescribed is wrong. Every dentist should have the basic knowledge to recognise, assess and prescribe a medicine accordingly<sup>(3)</sup>. Successful treatment relies on how good the diagnosis is and the effectiveness of the medicine prescribed and its mode of administration.<sup>(4)</sup> An accurate medical history is extremely important for the dentists to identify any predisposing factors that could give rise to an unforeseen event. It is important that the dentists are properly trained to administer intravenous drugs.<sup>(5)</sup> Not all drugs can be administered intravenously, hence the doctors have to be aware about the various types of drugs and its mode of administration. Dental students have little understanding about intravenous drugs and its administration and there's very little in depth data about their significance in their professional practice. For this reason all dentists should be well trained to administer intravenous drugs.<sup>(6)</sup>

Hence, a survey among the students of saveetha dental college was planned to evaluate their knowledge and awareness about intravenous drugs and their administration.

## 2. Materials and Methods

**Subject:** Dental students

**Materials:** Intravenous drugs questionnaire

**Procedure:**

A questionnaire was designed to evaluate the knowledge and awareness of intravenous drugs among dental students. The questionnaire consisted of 10 questions. The survey was conducted for the students of saveetha dental college, Chennai, who are in their undergraduate course of dentistry according to dental council of India and were undergoing one year mandatory internship. Questions were concerned with the drugs used intravenously, their dosage, patient preference and difficulty in administration etc. The number of students involved in this study were 112 who were randomly selected. The entire group of students involved in this study were informed about the survey individually so that an opportunity was not given for them to discuss the answers among themselves. The participants included in the survey were 3<sup>rd</sup> years, final years and interns of saveetha dental college. Only the subjects willing to participate were included in the study. Students other than these years were excluded from the study. Students who haven't given their consent were also excluded.

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### 3. Results

In the present study totally about 112 students participated. The participants group consisted of both boys and girls. All the students answered all the 10 questions in the questionnaire. The responses varied from student to student. It was noted that most of them had very few ideas about intravenous drugs. The results obtained from the questionnaire are as follows, 39% of the students unpredictable absorption is the major disadvantage of administering IV drugs. 45% of the patients do interrupt during IV drug administration. The participants stated that only 19% of the patients wanted IV drugs while 73% of them preferred oral medication. 94% of the participants do not have enough training in IV administration. Even though they were not well trained in IV medication the students suggested IV medication as the best mode of drug administration since they were aware of the fact that IV drug has the most bio availability. Almost 49% of them suggested intravenous drug administration is the best. Almost 57% of the students said that they didn't even attend any conferences or sessions about intravenous drugs which should be improved.

### 4. Discussion

The present study examined the knowledge, attitude and administration of intravenous drugs among dental students and found that the dental students were mostly unaware about the intravenous drugs and the recent advances and consequences of them. A study conducted by Jaqueline et al showed the following observations. According to them the errors committed during administration of intravenous drugs is 66.9%. The type of medications administered varies with patient to patient as does the intravenous delivery access (i.e. peripheral, jugular, subclavian).<sup>(7)</sup> The occurrence of these errors are in conjunction with the fact that these students rarely seek out reference materials, but instead rely on other colleagues who may not always have correct information regarding medication administration, can contribute to the potential for error.<sup>(8)</sup> Context specific decision support pushed to the point of care could provide information to students who may be unfamiliar with drugs given for a particular case.<sup>(9)</sup> Short messages intended to address some of the most frequent types of errors such as administration rates, appropriate administration access, and amount of fluid to be delivered could be displayed on a bar code medication administration (BCMA) device after the patient and drug have been scanned at the bedside<sup>(10)</sup>. Forcing the students to acknowledge these messages through system design blocks would provide the right information at the right time to decrease administration errors. In another study Givens et al found that most interruptions during administration are due to automatic dispensing machines (66%).<sup>(11)</sup> Gurses and Crayons in their study assessed the work environment and proposed that they are distracted mostly due to the noise in their place of work (46%).<sup>(12)</sup> This survey evaluated the knowledge of intravenous drugs among dental students most of them did not know about them. The results of this study confirm that undergraduate dental students perceive a need for more intense training and education about intravenous drugs.

These data demonstrate that students are administering many drugs and multiple drugs at the same time; are often interrupted; and rarely seek information regarding correct administration, even when this information is readily available. In addition, students are frequently required to independently make judgments regarding correct drug administration from protocols and to self-dispense these drugs without consultation with the staffs.<sup>(13)</sup> The opportunity for error during the course of drug administration is frequent, and the occurrence of these errors is supported by the questionnaire data collected. This study shows that there are both multiple causes for medication administration error and multiple opportunities for system checks that may help reduce the incidence of these errors. All in all dental students were sensitive about their superficial knowledge labour intravenous drugs and they expect this topic to be an integral part of their education. Institutions offering undergraduate health courses should find the educational formats needed to build the confidence necessary for dental students and professionals to be active in stressful situations that threaten a patient's life.<sup>(14)</sup>

### 5. Conclusion

Knowledge about intravenous drugs and their administration was found to be inadequate among dental students. The results of this study emphasise the need for the improvement of training of dentists regarding intravenous drugs and their administration at undergraduate level, postgraduate and continuing education levels till satisfactory results are seen. The dental council of India and health universities need to develop strategies to train students and professionals gain appropriate knowledge about intravenous drugs.<sup>(15)</sup>

### References

- [1] Barker KN, Flynn EA, Pepper GA, Bates DW, Mikeal RL. Medication Errors Observed in 36 Health Care Facilities. *Arch Intern Med* 2002;162(16):1897-1903.
- [2] Kopp B, Erstad B, Allen M, Theodorou A, Priestley G. Medication errors and adverse drug events in an intensive care unit: Direct observation approach for detection. *Critical Care Medicine* 2006;34(2):415-425.
- [3] Moss J. Technological system solutions to clinical communication error. *Journal Administration* 2005;35(2):S1-S3. of Nursing
- [4] Coiera E, Tombs, V. Communication behaviours in a hospital setting: an observational study. *British Medical Journal* 1998;316(7132):673-676.
- [5] Coiera E, Jayasuriya R, Hardy J, Bannan A, Thorpe M. Communication loads on clinical staff in the emergency department. *The Medical Journal of Australia* 2002;176(9):415-418
- [6] Needleman J, Buerhaus P, Mattke S, Stewart M, Zelevinsky K. Nurse-Staffing Levels and the Quality of Care in Hospitals. *N Engl J Med* 2002;346(22):1715-1722. Bloom JR, Alexander JA, Nuchols BA. Nurse staffing patterns and hospital efficiency in the United States. *Social Science & Medicine* 1997;44(2):147-155.

- [7] Buchan J. Nursing shortages and evidence-based interventions: a case study from Scotland. *International Nursing Review* 2002;49(4):209-218
- [8] Im EO, Chee W. Nurses' acceptance of the decision support computer program for cancer pain management. *Cin-Computers Informatics Nursing* 2006;24(2):95-104.
- [9] Fitzmaurice D Hobbs R, Murray E, Holder R, Allan T, Rose P. Oral anticoagulation management in primary care with the use of computerized decision support and near-patient testing. *Archives of Internal Medicine* 2000;160:2343-2348.
- [10] Vadher B, Patterson DLH, Leaning, M. Comparison of oral anticoagulant control by a nurse practitioner using a computer decision-support system with that by clinicians. *Clin Lab Haem* 1997;19:203-207.
- [11] Bakken S, Douglas, K., Galzagorry, G., Lahey, A., Holzemer, W. A template-based approach to support utilization of clinical practice guidelines within an electronic health record. *J Am Med Inform Assoc* 1998;5(3):237-244
- [12] Lobach D, Hamond, W. Computerized decision support based on clinical practice guideline improves compliance with care standards. *American Journal of Medicine* 1997;102(1):89-98.
- [13] Oniki T, Clemmer T, Pryor A. The effect of computer-generated reminders on charting deficiencies in the ICU. *J Am Med Inform Assoc* 2003;10:177-187.
- [14] Ozbolt J, Ozdas, A., Waitman L., Smith J, Brennan G, Miller R. Decision support for patient care: Implementing cybernetics. In: al. MFe, editor. *MEDINFO* 2004; 2004; San Francisco: IMIA; 2004. p. 70-73.

## Questions

Questions	Options
1. What are the most common class of intravenous drugs given ?	Anti infectives- 32% Analgesics - 27% Electrolytes- 41%
2. Most common problem encountered while administering a drug intravenously	Wrong time - 31% Wrong dosage -50% Wrong drug - 19%
3. Do the patients interrupt often ?	Yes - 40% No - 60%
4. Do you think it's safe to self administer intravenous drugs ?	Yes - 44% No - 56%
5. How often do you administer intravenous drugs ?	Daily - 25% Once a week- 48% More than a week - 27%
6. Best mode of drug administration	Oral -14% Rectal - 25% Intravenous -43% Subcutaneous- 16% Intramuscular- 2%
7. Drug administration preferred by patients	Oral -34% Rectal -18% Intravenous- 31% Sub cutaneous -12% Intramuscular-5%
8. Years of experiences as a dental practitioner?	One year - 31% Two years - 42% More than two years - 27%
9. Have you attended any conferences about intravenous drugs ?	Yes- 43% No -57%
10. Which do you think is the major disadvantage of administering intravenous drugs ?	Excess drug concentration- 39% Unpredictable absorption-40% Injury it causes -21%

Graphs and Charts

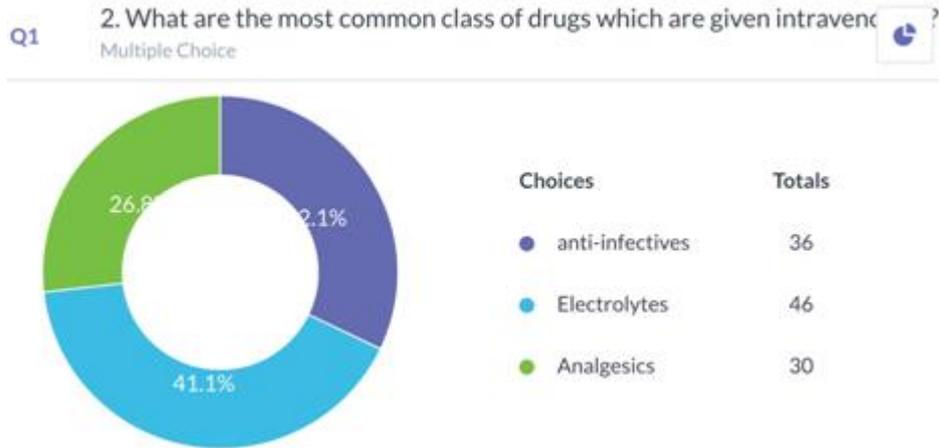


Figure 1: Percentage of Drugs Given Intravenously

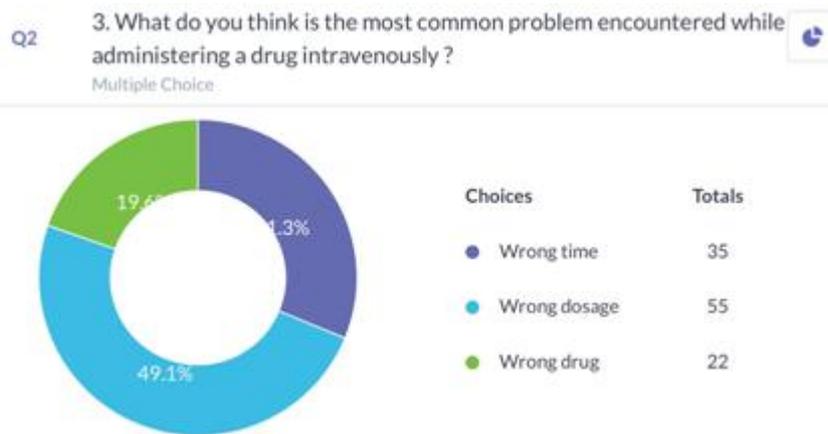


Figure 2: Common Problem Encountered

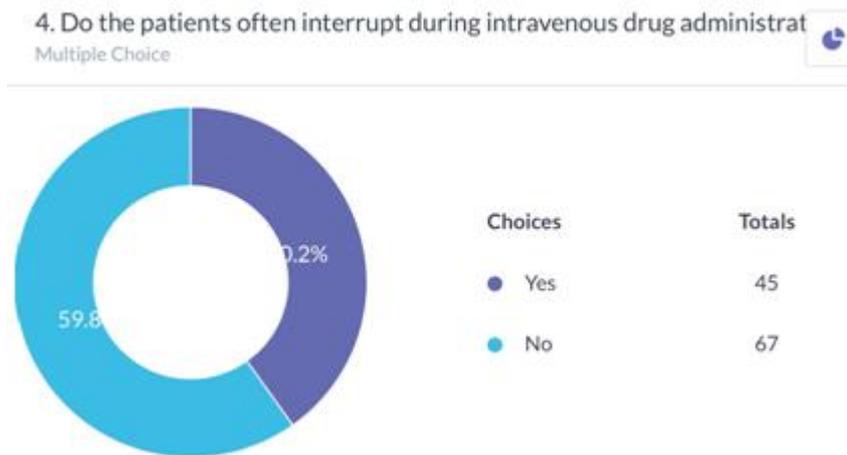


Figure 3: Percentage of Interruption

Q4 5. Do you think it is safe to self administer drugs intravenously?  
 Multiple Choice



Figure 4: Self Administration of Intravenous Drugs

Q5 6. How often do you administer intravenous drug ?  
 Multiple Choice

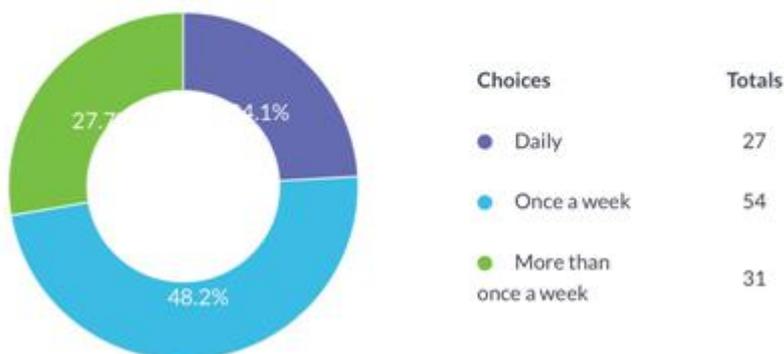


Figure 5: Percentage of Intravenous Drug Administration

7. Which do you think is the best mode of drug administration?  
 Multiple Choice

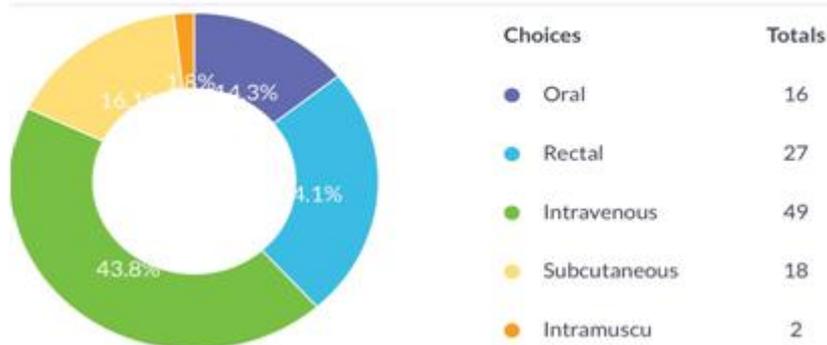


Figure 6: Best Mode of Drug Administration

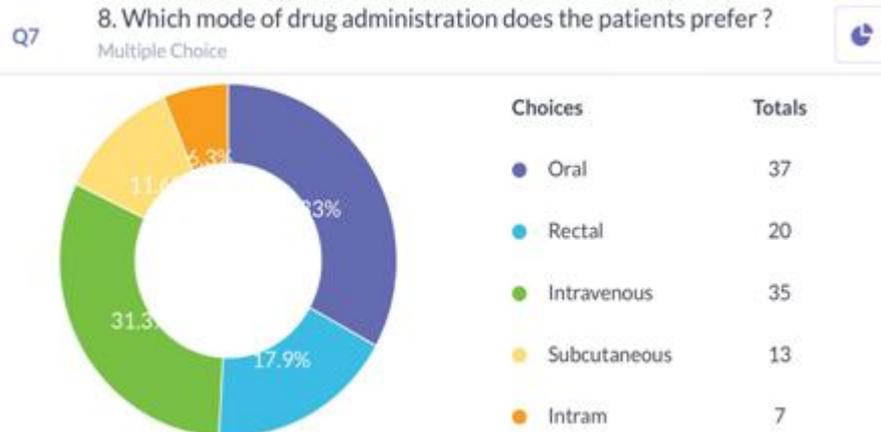


Figure 7: Percentage of Preference By The Patients

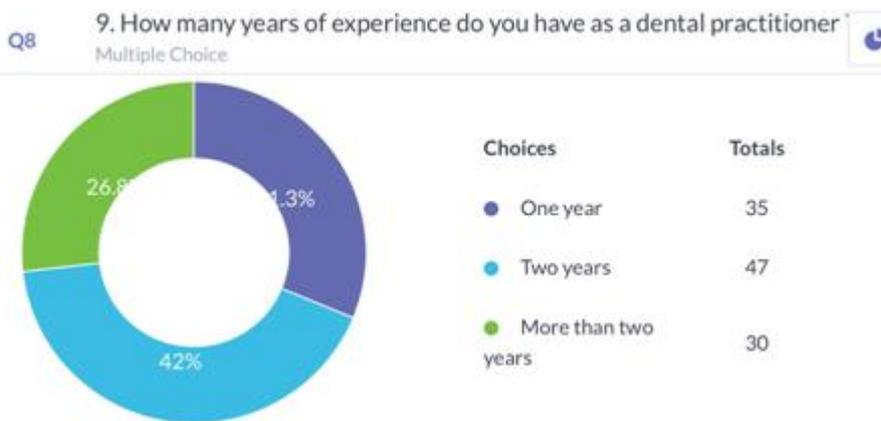


Figure 8: Years of Experience



Figure 9: Percentage of Conference Attended

Q10 11. Which do you think is the major disadvantage of administering intravenous drugs?  
Multiple Choice

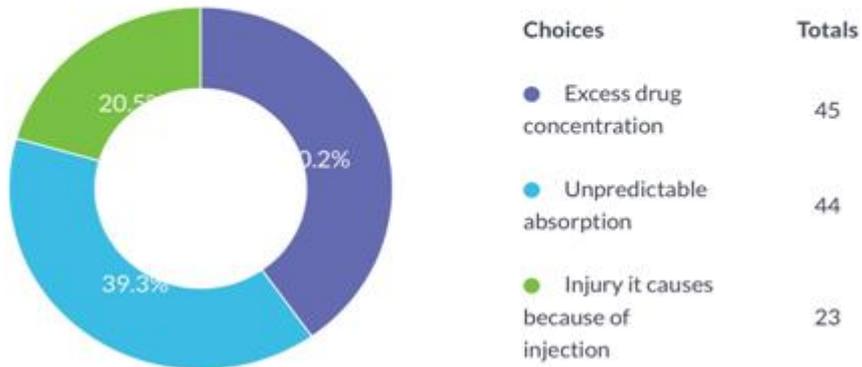


Figure 10: Major Disadvantage Of Administering Intravenously