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Evaluation of Prescription Writing Skill of Dental Students and Professionals Working in Dental Teaching Institute in Haryana

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Abstract

Background: Prescription is an integral part of practice in the field of dentistry. Errors in prescription can be either knowledge or writing related. Understanding the lacunae gives an insight to improvement in this vital clinical skill.

Aim: To evaluate prescription writing pattern in a dental teaching Institute in Haryana with primary objective to identify the most common errors in prescription writing among students and faculty and secondary objective to assess overall performance and prescription writing skills.

Methods and Material: The hospital based cross-sectional, descriptive survey was conducted with 194 participants with a problem based approach requiring response in the form of complete prescription. Undergraduate students of third and final year, interns along with post graduate students and faculty were included. Each prescription was analysed for 28 parameters. Six prescriber related, five patient related, eleven drug related, and seven Miscellaneous parameters. Each parameter was scored as one if present and zero if absent. Total score for each parameter and total score of each prescription was calculated and graded as poor score 0-7, medium or fair score 8-14, good score 15-22.and 22-30 excellent.

Results: The patient and doctors related parameters were most deficient followed by miscellaneous and drug related parameters. Maximum prescription were of fair quality. Undergraduate prescription was well written in comparison to other groups.

Conclusions: There is a need to emphasis, audit and revise the art of prescription writing throughout the curriculum and later stages too.

Key-words: Prescription writing errors, Undergraduate students, Interns, Faculty, Dentistry

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Introduction

Prescription is an instruction written by a practitioner that authorizes a patient to be issued a medicine or treatment. It is an important document in treatment of patient.[1] *Pre* means before and *script* means writing or written and it reflects that it is an order that must be written down before a compound drug is prepared. In today's era of preformed drugs it is an important document for dispensing drug by a pharmacist and for patient to follow instructions. Thus error in prescription can majorly affect appropriate drug intake and proper treatment of the patient. Prescription errors can be knowledge related or writing or transcription related.[2] Right decision and then correct transcription are essential for ideal prescription. Prescribing drugs is integral to clinical practice of dentistry. The very limited literature concerning prescription writing errors in dentistry particularly involving undergraduate students in North India motivated us to take up this study.[(3),(4)] Moreover understanding the flaws give great insight to self improvisation and direction to the points to be emphasised in correct writing process.

Aim

The aim of study was to evaluate prescription writing pattern in the institute with primary objective to identify the most common errors in prescription writing among dental students and faculty and secondary objectives to assess overall performance and quality of prescription writing skills among undergraduates, interns, postgraduate and faculty.

Subjects and Methods

The hospital based cross-sectional, descriptive survey was conducted in Department of Oral Medicine and Radiology, in a dental teaching institute in Haryana. Ethical clearance was obtained from institutional ethical committee.

The participants included were dental students i.e. third years, final years, interns, post-graduate students and faculty members. An informed consent was obtained from the willing participants. A self-designed problem based questionnaire along with information regarding level of education to be mentioned on front page with blank back page was provided to write prescription. The validity of same was established by a group of expert and also a pilot survey was done on 15 participants. The sample of 190 was calculated on basis of 68% moderate to good quality prescription. To adjust for 20% no response and on basis of pilot study 240 forms were distributed.

After required modification final Performa a total of 28 parameters were analyzed as per various national and international formats and WHO guidelines. Parameters were categorized under 4 headings for simplicity and orientation i.e. *six prescriber related parameters* i.e., name, hospital address, telephone no, signature, professional degree and registration number, *five patient related parameters* (5) i.e. name, age, gender, address and diagnosis. *Eleven drug related parameters (*11) i.e. brand name, generic name, form, dose, route of administration, frequency, duration, direction of drug use, symbolic representation of drug dosage, quantity to be dispensed and refill information and *six miscellaneous parameters* (6) i.e. date on prescription, legible handwriting, symbol Rx, use of blue ink, use of indelible ink and signature near the last drug prescribed.

Scoring: Each parameter was given a score of 1(Present), 0(Absent). It was done by a single examiner to avoid any bias. Data was entered in excel sheet and SPSS 17 was used. Total score for each parameter in all 4 groups was assessed by frequency table and chi square test. Total score of every parameter and each prescription was also calculated and score of all five groups were calculated and graded as poor i .e. score 0-7, fair score 8-14, good score 15-22.and 22-29 excellent.

Results

Total of 240 survey form were distributed of which 219 form were returned back and among these 19 (empty performa received back), five interns thought there was no need to prescribe for given situation while one final year responded that physician should be consulted. Rest 194 received survey form were analysed for 28 criteria. Total distribution of participants in 5 different groups was –third year (63), final year (32), interns (30), postgraduate (39) and faculty (30). Total score for each parameter was calculated among five groups to analyse frequency of representing each parameter.

In Prescriber related (6) information name was present in 12.4% (24), hospital address in 14.9% (29), telephone number in 0.5% (1), signature in 17% (33), professional degree 7.6% (15), registration no. in 3.6% (7). Detail distribution in various groups mentioned in [Table 1].

Table 1: Analysis of Prescriber related information parameters among all five groups

		Group					
		MDS faculty	**PG student**	**Intern**	**BDS final year**	**BDS III year**	**p value**
		Count	**Count**	**Count**	**Count**	**Count**	
Name	Absent	29(14.95%)	39(20.1%)	30(15.46%)	27(13.92%)	45(23.2%)	0.00
	Present	1(0.52%)	0(0%)	0(0%)	5(2.58%)	18(9.28%)	
Hospital Address	Absent	30(15.46%)	39(20.1%)	30(15.46%)	28(14.43%)	38(19.59%)	0.00
	Present	0(0%)	0(0%)	0(0%)	4(2.06%)	25(12.89%)	
Telephone Number	Absent	30(15.46%)	39(20.1%)	30(15.46%)	31(15.98%)	63(32.47%)	0.2
	Present	0(0%)	0(0%)	0(0%)	1(0.52%)	0(0%)	
Signature	Absent	26(13.4%)	37(19.07%)	29(14.95%)	28(14.43%)	41(21.13%)	0.00
	Present	4(2.06%)	2(1.03%)	1(0.52%)	4(2.06%)	22(11.34%)	
Professional Degree	Absent	30(15.46%)	39(20.1%)	30(15.46%)	27(13.92%)	53(27.32%)	0.002
	Present	0(0%)	0(0%)	0(0%)	5(2.58%)	10(5.15%)	
Registration Number	Absent	30(15.46%)	39(20.1%)	30(15.46%)	31(15.98%)	57(29.38%)	0.039
	Present	0(0%)	0(0%)	0(0%)	1(0.52%)	6(3.09%)	

In patient related criteria (5) name was present in 41.20% (80), age in 39.7% (77), gender 38.7% (75), address in 6.2% (12), diagnosis in 11.3% (22) [Table 2].

Table 2: Analysis of Patient related information parameters among all five groups

		Group					
		MDS faculty	**PG student**	**Intern**	**BDS final year**	**BDS III year**	**p value**
		Count	**Count**	**Count**	**Count**		
Name	Absent	26(86.7%)	36(92.3%)	19(63.3%)	26(81.2%)	7(11.1%)	0.00
	Present	4(13.3%)	3(7.7%)	11(36.7%)	6(18.8%)	56(88.9%)	
Age	Absent	26(86.7%)	36(92.3%)	22(73.3%)	26(81.2%)	7(11.1%)	0.00
	Present	4(13.3%)	3(7.7%)	8(26.7%)	6(18.8%)	56(88.9%)	
Gender	Absent	26(86.7%)	36(92.3%)	24(80%)	26(81.2%)	7(11.1%)	0.00
	Present	4(13.3%)	3(7.7%)	6(20%)	6(18.8%)	56(88.9%)	
Address	Absent	29(96.7%)	39(100%)	30(100%)	31(96.9%)	53(84.1%)	0.003
	Present	1(3.3%)	0(0%)	0(0%)	1(3.1%)	10(15.9%)	
Diagnosis	Absent	30(100%)	35(89.8%)	29(96.7%)	31(96.9%)	47(74.7%)	0.00
	Present	0(0%)	4(10.2%)	1(3.3%)	1(3.1%)	16(25.3%)	

In drug related (11) brand name was present in 90.2% (175), generic name in 10.8% (21), form in 70.6% (137), dose in 100% (196), route of administration 100% (196), frequency in 82% (159), duration in 77.8% (151), direction of drug use 4.6% (9), symbolic representation of drug dosage 45.9% (89), quantity to be dispensed in 2.6% (5) and refill information in 0.15%(3) [Table 3].

Table 3: Analysis of Drug related information parameters among all five groups

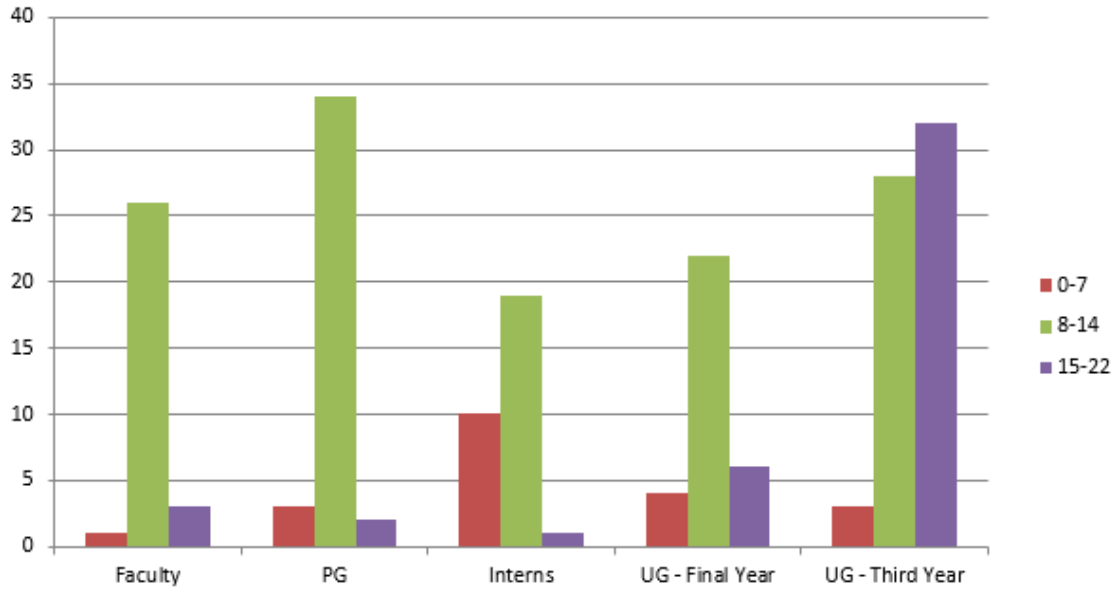
		Group					
		MDS faculty	**PG student**	**Intern**	**BDS final year**	**BDS III year**	**p Value**
		Count	**Count**	**Count**	**Count**		
Brand name	Absent	0(0%)	1(2.6%)	6(20%)	1(3.1%)	0	0.005
	Present	30(100%)	38(97.4%)	24(80%)	31(96.9%)	52(82.5%)	
Generic Name	Absent	30(100%)	38(97.4%)	30(100%)	29(90.6%)	46(73%)	0
	Present	0(0%)	1(2.6%)	0(0%)	3(9.4%)	17(27%)	
Form	Absent	8(26.6%)	5(12.8%)	12(40%)	2(6.2%)	30(47.6%)	0.00
	Present	22(73.3%)	34(87.2%)	18(60%)	30(93.8%)	33(52.4%)	
Dose	Absent	30(100%)	39(100%)	30(100%)	32(100%)	63(100%)	
	Present	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
Route of Administration	Absent	30(100%)	39(100%)	30(100%)	32(100%)	63(100%)	
	Present	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	
Frequency	Absent	3(10%)	8(20.5%)	12(40%)	7(21.9%)	5(8%)	0.003
	Present	27(90%)	31(79.5%)	18(60%)	25(78.1%)	58(92%)	
Duration	Absent	5(16.6%)	11(28.2%)	11(36.7%)	5(15.6%)	11(17.4%)	0.15
	Present	25(83.3%)	28(71.8%)	19(63.3%)	27(84.4%)	52(82.5%)	
Direction of drug Use	Absent	28(93.3%)	33(84.6%)	30(100%)	32(100%)	62(98.4%)	0.005
	Present	(0%)	(0%)	(0%)	(0%)	(0%)	
Symbolic Representation of Drug dosage	Absent	2(6.6%)	6(15.4%)	0(0%)	0(0%)	1(1.5%)	0.00
	Present	7(23.3%)	13(33.3%)	18(60%)	8(25%)	59(93.7%)	
Quantity to be dispensed	Absent	23(76.6%)	26(66.6%)	12(40%)	24(75%)	4(6.3%)	0.02
	Present	27(90%)	37(94.9%)	30(100%)	32(100%)	63(100%)	
Refill information	Absent	3(10%)	2(5.1%)	0(0%)	0(0%)	0(0%)	0.5
	Present	30(100%)	39(100%)	30(100%)	31(96.9%)	61(96.8%)	

In miscellaneous parameters (6) date on prescription was present in 27.3% (53), legible handwriting 92.3% (179), symbol Rx 88.11% (171), use of blue ink 91.8%(178), use of indelible ink 96.4% (187),signature near the last drug prescribed 30.9% (60) participants. The group wise distribution mentioned in [Table 4]

Table 4: Analysis of Miscellaneous parameters among all five groups

		Group					
		MDS faculty	PG student	Intern	BDS final year	BDS III year	
		Count	Count	Count	Count	Count	p Value
Date on Prescription	Absent	25(83.3%)	37(94.9%)	29(96.7%)	25(78.1%)	25(39.7%)	0.00
	Present	5(16.7%)	2(5.1%)	1(3.3%)	7(21.9%)	38(60.3%)	
Legible Handwriting	Absent	1(3.3%)	2(5.1%)	9(30%)	1(3.1%)	2(3.2%)	0.00
	Present	29(96.7%)	37(94.9%)	21(70%)	31(96.9%)	61(96.8%)	
Symbol RX	Absent	2(6.7%)	8(20.5%)	9(30%)	2(6.2%)	2(3.2%)	0.001
	Present	28(93.3%)	31(79.5%)	21(70%)	30(93.8%)	61(96.8%)	
Use of Blue ink	Absent	2(6.7%)	1(2.6%)	6(20%)	1(3.1%)	6(9.5%)	0.07
	Present	28(93.3%)	38(97.4%)	24(80%)	31(96.9%)	57(90.5%)	
Use of indelible Ink	Absent	0(0%)	1(2.6%)	6(20%)	0(0%)	0(0%)	0.00
	Present	30(100%)	38(97.4%)	24(80%)	32(100%)	63(100%)	
Signature as near the last drug Prescribed	Absent	21(70%)	28(71.8%)	26(86.7%)	26(81.2%)	33(52.4%)	0.005
	Present	9(30%)	11(28.2%)	4(13.3%)	6(18.8%)	30(47.6%)	

Comparison of mean score third year prescription had greater share of good prescription followed by final year, faculty, postgraduate students and interns. On analysing the overall scores and grouping them in poor, medium and good, majority of prescription were of medium rank. Total 10.82% prescriptions were of poor quality, maximum i.e. 66.49% prescriptions were of medium quality and 22.68% were of good quality. The third year prescriptions were having maximum share of good prescription.



Graph 1: Analysis of Prescription quality score category wise

Discussion

Prescription writing errors are most preventable errors which by means of careful introspection can lead to improved quality care to patient as it is an important document between health care professional and patient.

Dental professional regularly write prescription. As per as Dental council of India curriculum which is followed in all the dental colleges in India, Pharmacology subject is introduced in second year. Knowledge about drugs and prescription writing is gained in second year and gradually third year onwards students under supervision start prescribing as they enter clinics in third year. Therefore in our study we included the participants third year onwards.[5] For the sake of uniformity and as we wanted to evaluate skills of students who in clinical setup write under supervision we followed a problem based approach rather than studying the OPD prescriptions.

In Prescriber related (6) information lacunae were in order telephone number 0.5%, registration no 3.6%, professional degree 7.6%, name 12.4%, hospital address 14.9%, signature 17%. Majority of prescription showed major lacunae in mentioning these parameters. Our results were in agreement with results of Siddharth et. al.[6], Ballal et. al.[7], Wali et. al.[8] but in contrast with Sujatha et. al.[9] who represented better representation of name (21.4%), hospital address (99.4%) professional (13.6%) though parameters like registration number and telephone number were less mentioned similar to our study. Signature which is important for validation of prescription was less represented in our study i.e. 17% in contrast with Siddharth et. al.[6] (96.7%) and Sujatha et. al.[9] (86.4%).

The variation can be explained by difference in methodology as this study was done in tertiary care centre where they analysed prescription written on hospital pad collected from hospital pharmacy while we provided blank page where all these parameters needed to be mentioned. Prescriber related information is important for patient and pharmacist to contact back in case of any discrepancy and for validation of prescription awareness about them should be well emphasized.

In patient related information lot of lacunae were observed with least mentioned being address, diagnosis followed by gender, age and name. All the parameters are important for correct dispensing, record maintenance of pharmacist and as per the WHO guidelines.[10] In consensus with our observation Wali A et. al.[8] and Ballal et. al.[7] also observed major lacunae in diagnosis and address parameters followed by other parameters like gender, age and name while in contrast Siddharth et. al.[6] in tertiary care setup who observed better representation i.e. diagnosis in 97% and address in 64.7% and Sneha et. al.[12] who reported that name, hospital number and address were well mentioned in medical prescription studied. Low representation of these important parameters can be due to heavy clinical workload and multitasking in clinical setting or shear negligence and need to be reinforced thoroughly. Parameters like exact age are utmost important required for adult and child dose decision. In our study numerical representation only was observed unlike a Nigerian study[11] that reported mentioning of adult/child data in age column.

Drug related information received maximum representation. This also reflects that prescription writing as such is considered to be drug knowledge though we didn't analysed accuracy of factors but in general there was an increased awareness about mentioning these parameters. The most common flaws were lack of refill information, quantity to be dispensed, symbolic representation of frequency, generic name followed by form, duration. Well mentioned parameters include route, dosage, frequency, brand name. Our results were in consensus with Siddharth et. al.[6], Wali A et. al.[8] though Ballal et. al.[7] reported lower representation of duration, dose and form.

Among generic and brand names variation is a big concern. It was advocated by Medical Council of India (MCI) as well as Dental Council of India (DCI) to mention generic names in prescription[13,14]. It gives patient an economical alternative. In our study we observed that 90.2% prescription had brand names and only 10.8% had generic names. Sneha K et. al. observed brand name mentioned in 72.6% and 27.4% by generic name (2014)[12]. Sujatha et. al. observed 99.8% prescription had brand names .Generic names were mentioned only in 1.63% prescription studied by

Siddharth et. al. [6] and in 4% prescription by Wali A et. al. [8]. More awareness and representation and giving patient the alternative need to be well emphasized and inculcated in prescription writing.

Among the Miscellaneous factors performance was better, similar results were reported by Wali A *et. al.* (2012)[8], J Kumar *et.* al. (2010)[15]. The common errors were in date on prescription followed by signature near last drug prescribed parameters. While symbol Rx, use of indelible ink, legible handwriting, use of blue ink were well represented. Date on prescription which is an important parameter for record, validity and follow up and to prevent misuse especially in habit forming and narcotic drugs prescription. Our results were not in agreement with Sujatha *et.* al. (2016)[9] who analysed OPD prescriptions.

Signature near the last drug prescribed is also important to prevent unauthorised addition of any drug and was not well represented i.e. only in 30.9% prescription. Importance and relevance of same should be well stated in teaching the art of prescription writing.

The parameters like use of indelible ink, use of blue ink, signature near the last drug prescribed which were included in our study are relatively less frequently studied.

Among the various category third year students scored better while postgraduate and interns scored low. Similar results were reported by Sujatha et. al. (2016) [9] and-Varghese-N J-*et al*[16].

Prescriptions written by undergraduate students are well scrutinized and same is reflected by their writing pattern. Moreover faculty prescription were also more in medium range which could be explained by habit of allotting juniors and students to complete the prescription especially in relation to patient and prescriber related factors or multitasking. Moreover use of pre-printed form and computerised prescription can also enhance omitting lot of errors. There is a need of continuous and progressive training and regularly revisiting this essential and important clinical skill.

Limitation

Sample size was small and it was a unicentric survey so results cannot be generalised to entire population. Overall knowledge based errors and number of drugs prescribed were not analysed.

Conclusion

As we observed majority of prescription, required further improvement, it's an urgent and important field of concern. Prescriber and patient related information was less represented .Drug related information was comparatively well mentioned though mentioning the generic drugs should be also emphasised. Prescription audit can help us to improve and reinforce our writing skill thus imparting better patient care. Our study emphasis this essential art should be regularly reinforced and revisited throughout the clinical training and afterwards.

Key Message: Prescription writing errors are common. It's an essential skill and should be re evaluated and revisited throughout the curriculum and revisited and reinforced later also to provide better patient care too.

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