

ORIGINAL RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE OF PHARMACOVIGILANCE AMONG UNDERGRADUATE MEDICAL AND DENTAL STUDENTS OF A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Background: Under-reporting of suspected adverse drug reactions by health professionals is a widespread problem. To strengthen the pharmacovigilance program, medical students should be well trained about adverse drug reaction reporting from the very beginning. The objective of present study was to assess knowledge, attitude, and practice of pharmacovigilance among undergraduate medical and dental students of a tertiary care teaching hospital.

Methods: A cross-sectional study was conducted among first and second-year medical and dental students on March 2021. An online questionnaire was used to collect data. The frequency of different measures mentioned by respondents was noted. The total score was compared among different subgroups using Mann-Whitney test.

Results: Out of 238 students, 204 students (85.7 %) responded. Among them, medical students were 157 (77%) and dental students were 47 (23%). The medians for total knowledge, total attitude and total practice scores were 4, 7 and 2 respectively. Thus, respondents had good attitude towards pharmacovigilance but their knowledge and practice were not adequate. When MBBS students were compared with the BDS students, it was found that the median for total scores for knowledge and attitude were not significantly different ($p > 0.05$) but there was statistically significant difference ($p < 0.05$) between median for total practice scores.

Conclusions: Positive attitude was noted among undergraduate medical and dental students towards pharmacovigilance, but knowledge and practice were not adequate. Thus, the study indicates the need for integrating interventions and education related to pharmacovigilance in undergraduate medical curricula to prepare them for future practice.



INTRODUCTION

World Health Organization (WHO) defines Pharmacovigilance as “science and activities relating to detection, assessment, understanding and prevention of adverse effects or any other drug related problems.”¹ All medical professional should have a level of understanding about pharmacovigilance of drugs to prescribe, rationalize and detect Adverse Drug Reaction (ADR) and timely management of these ADR to prevent harm.

It is evident that under-reporting of suspected Adverse Drug Reactions (ADRs) by health professionals is a widespread problem globally and in Nepal as well.^{2,3} The major reason behind under reporting of ADRs is due to lack of trained and dedicated staffs and lack of awareness regarding detection, communication and spontaneous monitoring of ADRs among the physicians, nurses, pharmacists and dentists.^{4,5}

In order to improve the reporting of ADRs, it is important to improve the Knowledge, Attitude and Practice (KAP) of the healthcare professionals regarding ADR reporting and pharmacovigilance. A number of studies have documented the

lack of KAP, regarding ADRs in doctors, nurses, pharmacists.⁶⁻⁸ Few studies have been conducted on undergraduate medical and dental students about KAP regarding Pharmacovigilance in Nepal.^{9,10} To strengthen pharmacovigilance program, medical students should be well trained about the ADR reporting from the very beginning.^{9,11} Their proper training can bring about major change in reporting of ADRs and thus successful functioning of pharmacovigilance program.

The current study was taken to assess the KAP of pharmacovigilance among undergraduate medical and dental students of a tertiary care teaching hospital with an objective to disclose the true picture of the undergraduate medical and dental students who are future doctors and thereby addresses the changes required during the undergraduate study period for the overall improvement of the pharmacovigilance system. Medical students could play a major role on successful implementation of pharmacovigilance program if adequate knowledge and skill are imparted to them during undergraduate training career. Therefore, this study was being conducted to assess awareness of pharmacovigilance among the medical and dental students so that areas in which they lack can be

known and fulfilled by effective interventions and policies.

METHODS

This cross-sectional study was carried out to assess knowledge, attitude and practice of pharmacovigilance among undergraduate medical and dental students of KIST Medical College and Teaching Hospital (KISTMCTH). The study was approved by Institutional review committee of KISTMCTH (Reference no. 077/78/31). Data collection was done from first to the second week of March 2021, just after the lockdown due to COVID-19 pandemic using a structured questionnaire. All first and second-year medical and dental students were approached for the study. The total number of students were 238. A written consent was obtained from the students prior to the data collection as an e-consent in the google form. Those who did not give the consent were excluded from the study. An online questionnaire was used to collect data which was prepared using Google form. The link was sent to students through social networking accounts and personal emails. Students completed the questionnaire after signing an integrity pledge and committing not to refer to any external sources or friends and other persons while answering the survey.

Demographic information was collected including age, sex, program and year of study. The questionnaire contained 24 questions (9 to test knowledge, 8 to test Attitude and 7 to test practice) was used as a data collection tool in this study. The questionnaire was framed by consulting the literature^{9,12,13} and discussing with the experts and validated by the content experts. The questionnaire was pretested among 18 MBBS and BDS students who were studying in third year. Based upon the response of pretesting, modifications were made and the final questionnaire was prepared which was used in the study.

All the correct/yes answers were scored as "1" and all the incorrect/no answers were scored as "0". The maximum possible score for knowledge was 9, for attitude was 8 and for practice was 7. Thus, the maximum possible total score was 24 by adding all the scores for KAP.

The responses obtained were downloaded as a Microsoft Excel document. It was then exported to SPSS version 16.0 for Windows to perform further analyses. Different demographic parameters and other parameters like knowledge, attitude and practice were analyzed descriptively and tabulated as number and percentage. Median scores were calculated as total scores did not follow a normal distribution. The total score was compared among different subgroups using Mann–Whitney test. p value less than 0.05 was considered significant.

RESULTS

Out of 238 students, 204 students (85.7 %) responded. Among them, medical students were 157 (77%) and dental students were 47 (23%). Most of the respondents were from MBBS first year, 87 (42.6%). The majority of respondents, 102 (50%) were from age group 21-23 years and were male, 109 (53.4%). The age wise distribution of respondents has been shown in

Table 1. The gender distribution, stream and year of study wise distribution of the respondents have been shown in Figures 1 and 2.

Table 1: Age wise distribution of respondents

Age (in years)	Number (%)
18-20	95 (46.6)
21-23	102 (50)
24-26	6 (2.9)
Above 26 years	1 (0.5)

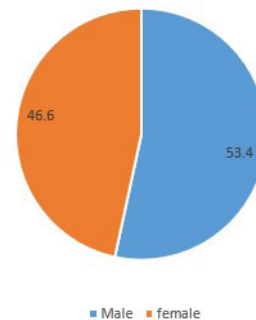


Figure 1: Gender wise distribution of Respondents

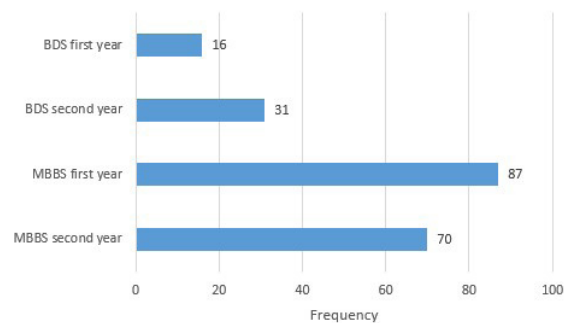


Figure 2: Stream and year of study wise distribution of respondents

Most of the respondents, 153 (75%) were aware of the term pharmacovigilance. Majority knew the definition of pharmacovigilance, 169 (82.8%) and Adverse drug reaction, 178 (87.3%). Very few, 4 (2%) had heard about the term Naranjo Probability Scale and only 22 (10.8%) respondents knew there is pharmacovigilance committee in their college. The details regarding the responses for knowledge-based questions are listed in Table 2.

Almost all, 203 (99.5%) of respondents thought that ADR reporting was necessary. Most of them, 172 (84.3%) thought that medical students could play a role in ADR reporting and thus, most of them, 165 (80.9%) believed that ADR reporting should be included in Pharmacology practical for first and second years. One hundred and ninety-eight respondents (97.1%) thought that ADR reporting benefits both patients and doctors and 171 (83.8%) respondents believed that pharmacovigilance activities would help to reduce the morbidity and mortality. The details regarding the responses for attitude based questions are listed in Table 3.

Table 2: Number of respondents answering each question correctly/yes for knowledge-based questions

Questions based on knowledge	Number (%)
Are you aware of the term pharmacovigilance?	153 (75)
Pharmacovigilance is the science of detection, assessment, understanding and prevention of adverse effects. Do you agree?	169 (82.8)
Adverse drug reaction (ADR) is any response to a drug which is noxious and unintended and which occurs at doses normally used in man. Do you agree?	178 (87.3)
The international centre for drug safety monitoring is located in	57 (27.9)
Where is the National pharmacovigilance center in Nepal located?	88 (43.1)
Is ADR reporting included in your curriculum?	47(23)
Have you heard about the term Naranjo Probability Scale?	4 (2)
Do you know about any drug withdrawal from the Nepalese market because of drug toxicity?	131 (64.2)
Is there any Pharmacovigilance Committee in your college?	22 (10.8)

Table 3: Number of respondents answering each question correctly/yes for attitude based questions

Questions based on attitude	Number (%)
Do you think ADR reporting is necessary?	203 (99.5)
Do you think medical students could play a role in ADR reporting?	172 (84.3)
Should ADR reporting be included in Pharmacology practical for first and second years?	165 (80.9)
Should pharmacovigilance be taught in detail to healthcare professionals?	187 (91.7)
The healthcare professional responsible for reporting adverse drug reaction in a hospital are:	169 (82.8)
Do you think ADR monitoring and reporting center should be there in all teaching hospitals?	183 (89.7)
Do you think ADR reporting benefits both patients and doctors?	198 (97.1)
Will Pharmacovigilance activities help to reduce the morbidity and mortality?	171 (83.8)

More than half, 118 (57.8%) of respondents had come across with any patient experiencing Adverse Drug Reaction but only 15 (7.4%) had seen the ADR reporting form. Only few of them, 29 (14.2%) knew where to report ADR and only 13 (6.4%) respondents had been trained on how to report ADR. So, only 56 (27.5%) of respondents felt that they were adequately prepared to report ADR in their future practice. The details regarding the responses for practice-based questions are

listed in Table 4.

The medians for total knowledge, total attitude and total practice scores were 4, 7 and 2 respectively. Thus, respondents had good attitude towards pharmacovigilance but their knowledge and practice were not adequate. The details regarding the total median scores for KAP with first and third quartiles (Q1 and Q3) are listed in Table 5.

Table 4: Number of respondents answering each question correctly/yes for practice-based questions

Questions based on practice	Number (%)
Have you ever come across with any patient experiencing Adverse Drug Reaction?	118 (57.8)
Have you ever seen an ADR reporting form?	15 (7.4)
Have you read any article regarding adverse drug reactions?	133 (65.2)
Do you know where to report ADR?	29 (14.2)
Have you ever visited any ADR monitoring center?	6 (2.9)
Have you ever been trained on how to report ADR?	13 (6.4)
Do you feel you are adequately prepared to report ADR in your future practice?	56 (27.5)

Table 5: Total median scores for KAP with Q1 and Q3

Scores	Median	Q1	Q3
Total knowledge score	4	3	5
Total attitude score	7	7	8
Total practice score	2	1	2
Total knowledge, attitude and practice score	13	12	15

The comparison of MBBS students with the BDS students showed that the median for total scores for knowledge and attitude were not significantly different ($p > 0.05$). The total

practice scores of MBBS and BDS respondents were found to be statistically different. The details regarding KAP scores for MBBS and BDS are listed in Table 6.

Table 6: Total median KAP Scores with interquartile range for MBBS and BDS

Scores	MBBS		BDS		p-value
	Median	IQR	Median	IQR	
Total knowledge score	4	2	4	2	0.502
Total attitude score	8	1	7	2	0.164
Total practice score	2	1	1	1	0.027
Total knowledge, attitude and practice	14	3	13	5	0.074

DISCUSSION

The awareness of pharmacovigilance among the healthcare professionals is very important to prevent ADRs. Medical students could play a major role on successful implementation of pharmacovigilance program if adequate knowledge and skill are imparted to them during undergraduate training career.⁹⁻¹¹ In the current study, majority of the respondents knew the standard definitions of pharmacovigilance and ADR which is similar to the study carried out by Gupta et al.¹⁴ However, 72.1% and 56.9% of the respondents did not know the locations of international center for drug safety monitoring and national pharmacovigilance center respectively showing their lack of awareness. These findings are different from a study carried out in by Meenakshi et al.¹³ where 61% participants knew the location of international center for drug safety monitoring and 71% participants knew the location of national pharmacovigilance center in India. The reason for this contradiction may be due to more awareness activities regarding pharmacovigilance in Indian medical institutions than in Nepalese medical institutions.

Majority of respondents (80.9 %) in this study thought that ADR reporting should be included in Pharmacology practical for first and second years which is similar to a study by Meher et al.¹⁵ where more than 85% participants felt the same. Moreover, most of the respondents (91.7 %) in the current study thought that pharmacovigilance should be taught in detail to healthcare professionals. Similar findings are seen in other studies.^{16,17} Furthermore, 89.7% of respondents thought that ADR monitoring and reporting center should be there in all teaching hospitals. A study in India reported that only 46.9% of participants thought that establishing ADR monitoring center in every hospital was necessary.¹⁹

Majority of the respondents in current study had come across with any patient experiencing ADR but 14.2% respondents knew where to report ADR. Similar lack of practice was seen in study carried out by Era et al.¹⁷ Very few respondents had seen an ADR reporting form and only 6.4% respondents were

trained to report the ADR. The results of the current study are in agreement with similar researches done by Deo et al⁹ and Era et al.¹⁹ The lack of practice can be attributed to the fact that the first two years in the course of MBBS and BDS were not subjected to adequate postings in hospital and lack of trainings and educational interventions related to practice of pharmacovigilance.

In the current study, respondents had good attitude towards pharmacovigilance but their knowledge and practice were not adequate which are consistent with the findings of other study.¹⁴ In another study carried out Gupta A et al.²⁰ KAP scoring was average for knowledge, good for attitude and poor for practice. The reason for poor knowledge and practice corresponds to the lack of separate chapters in the medical undergraduate curricula regarding pharmacovigilance and lack of adequate trainings and workshops in pharmacovigilance activities. There was statistically significant difference between practice scores of MBBS and BDS respondents in this study. This may be due to more hospital postings during first two years of study in MBBS than in BDS.

Lack of knowledge and practice about pharmacovigilance were the major factors for under-reporting. These can be overcome by sensitization through interventions such as continuous medical education (CME), regular workshops, periodic awareness programs and incorporating pharmacovigilance activities in undergraduate teaching curriculum.

CONCLUSION

Positive attitude was noted among undergraduate medical and dental students towards pharmacovigilance, but knowledge and practice were not adequate. Thus, the study indicates the need for integrating interventions and education related to pharmacovigilance in undergraduate medical curricula to prepare them for future practice.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

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