



Adverse Drug Reactions: Knowledge, Attitude and Practice of Pharmacy Students

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ABSTRACT

Background: Adverse Drug Reactions (ADRs) are one of the leading causes of morbidity and mortality and contribute to excessive health care costs. Detection and reporting of ADRs could decrease these consequences. The present study was designed to assess the Knowledge, Attitude and Practice (KAP) of pharmacy students towards ADRs monitoring and reporting.

Methods: A questionnaire was prepared to investigate the Knowledge, Attitude and Practice (KAP) of pharmacy students regarding ADR reporting. The questionnaire consisting of 17 questions (7 questions on knowledge, 5 on attitudes and 5 on practice) were given to pharmacy students randomly.

Results: A total of 71 respondents participated in the study. 70% of participants had favorable general knowledge about ADRs but more than 60% of their professional knowledge was not satisfying. 60% of respondent believed that educational intervention will improve participating of health care professional in ADRs reporting. 63% of respondent observed ADRs cases but about 95% of them had never reported an ADR.

Conclusion: In overall, pharmacy students have poor knowledge, attitude and practice towards ADRs reporting and pharmacovigilance. This suggests the need of suitable changes in the undergraduate teaching curriculum and additional training among the students regarding ADRs.

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Introduction

According to the definition providing by World Health Organization (WHO), Adverse Drug Reaction (ADR) is “any noxious, unintended and undesired effect of a drug which occurs at doses used in humans for prophylaxis, diagnosis or therapy” (1). Current studies reveal that

ADRs occur in 2.9-5.6% of all hospital admission and as many as 35% of hospitalized patients experience an ADR during their hospitalization (2). The socioeconomic and health consequence of ADRs have been highlighted in several studies (3-5).

The important point about ADRs is pharmacovigilance or the methods used for their recording, evaluation and prevention (6). Underreporting of ADRs is a common problem in pharmacovigilance program (7, 8). Unfortunately in Iran not enough attention has been paid to this matter. The Adverse Drug Reaction Monitoring

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Table 1. Student's knowledge about Adverse Drug Reactions.

Questions	Responses (%)		
	Right	Wrong	Not sure
Do you know the definition of ADR?	59.15	8.45	32.4
Are you aware of national pharmacovigilance center and programs?	30.98	11.27	57.75
Pharmacovigilance means detection and evaluation of ADRs in humans and prevention of them.	38.03	8.45	53.52
We use "blue card" for reporting ADR	9.86	60.56	29.58
Reports of national ADR center is available for all people.	32.39	33.8	33.8
ADRs should be reported only when they are serious and life threatening.	16.9	63.38	19.72
Do you believe that herbal products have no ADRs i.e. they are safe.	2.82	87.32	9.86

ADR: Adverse Drug Reaction

Center (ADRMC) in Iran started its activity as a full member of WHO International Drug Monitoring program in 1998. A total number of 17967 ADR had been collected and evaluated by this center till 2009 (9); However according to WHO indicators this rates of reporting is still under standards. Gross underreporting of ADRs is a cause of concern, the reason for which may be inadequate funds, lack of trained staff and lack of awareness about detection, communication and spontaneous monitoring of ADRs (10, 11).

Pharmacists as a health care professional could have a great role in ADR reporting both in community and hospital. Intrinsic factors such as knowledge, attitude and practice can help in understanding the importance of pharmacovigilance. This study was conducted to assess the knowledge, attitude and practice of pharmacy students in Ahvaz Jundishapur University of Medical Sciences towards ADRs monitoring and reporting.

Methods

A Cross-Sectional observational questionnaire-based study was carried out to evaluate knowledge, attitude and practice (KAP) in pharmacy student at Ahvaz Jundishapur University of Medical Sciences toward ADRs. The questionnaire consisted of questions included in previous studies that examined the KAP of health care professionals about ADR monitoring (12, 13). It was modified to take into account the national basis of the current investigation. The questionnaire comprised of 17 questions. The questions were distributed as follows: 7 items were related to knowledge, 5 to attitude and the remaining 5 items were related to the practice aspects. The participant selected randomly from pharmacy students.

Knowledge questions mainly centered on general concept of pharmacovigilance, adverse drug reaction reporting system and general knowledge about ADRs. Attitude questions focused mostly on student's general point of view regarding the different aspects of ADRs reporting.

Knowledge and practice related questions were

designed as multiple choices. Attitudes related questions were developed in 5-point likert scale. Four questions were included at the beginning of the survey to collect demographic data like age, gender and their semester. Formal and content validity of the questionnaire was evaluated by clinical pharmacists. The initial draft was circulated to the members of the research team and modifications were carried out. Internal consistency (reliability) of questionnaire was assessed by Cronbach's alpha coefficient using a sample consisted of 20 randomly selected students. Test-related reliability was tested using intra-cluster correlation on the same sample after a week. After this modification, the finalized questionnaire was employed to collect data from the main sample.

The responses to the questionnaire were analyzed performing descriptive statistics. Data were analyzed using SPSS version 11.0.

Results

Of the total of 71 subjects, 32 were males and 39 were females. The students answering the questionnaire were 3th, 4th and 5th academic year of pharmacy with no significant difference in their knowledge towards ADRs.

There were 7 questions assessing knowledge. Among the 71 respondents, 70% had favorable general knowledge about ADRs but more than 60% of their professional knowledge was not satisfying. The results are shown in Table 1. Only 31% of respondents were aware of the national ADR center in Iran. 63% of students knew which types of ADRs should be reported. 87% of students believed that herbal drugs also have ADRs and it should be reported.

To explore student's attitude to ADRs reporting and pharmacovigilance, 5 questions were designed. The results are presented in Table 2. In general, the respondents had a good attitude towards ADRs. Nearly 50% of students were agreed that ADR reporting will be decreased health system costs and 77% of them believed that all health care professionals should be actively report ADRs. 60% of students have positive opinion about educational

Table 2. Student's attitude towards Adverse Drug Reactions.

Questions	Completely Positive (%)	Positive (%)	No idea (%)	Negative (%)	Completely Negative (%)
ADRs reporting will be increased health system costs	8.45	14.08	4.22	23.94	49.29
ADRs reporting is a duty of all health care professionals	77.46	11.22	7.04	2.82	1.41
ADRs reporting may have legal consequence for the reporter	9.88	18.31	16.19	22.53	32.39
ADRs are most common in pediatrics and geriatrics population	57.75	30.98	5.63	2.82	2.82
Educational programs have positive effects on ADRs reporting	60.56	22.53	12.68	2.82	1.41

ADR: Adverse Drug Reaction

intervention and training in ADRs reporting.

There were 5 pharmacovigilance practice related questions. About 63% of students had experienced ADRs in their practice but only 4% of them report an ADR. The details about the responses are listed in Table 3.

Discussion

Pharmacists could play an important role in ADRs reporting, because they are close to patient both in communities and hospitals and have good knowledge about side effects of drugs, so it is logical to involve them more in ADRs reporting. Our findings shows that pharmacy students have favorable knowledge and attitudes about ADRs but the practice of detecting and reporting ADRs were at the lowest level. Results of a similar KAP study in India shows that undergraduate pharmacy students had good knowledge but poor attitude and practice compare to prescribers ($p < 0.001$) regard to ADRs monitoring and reporting. Authors emphasized about the need for changes in undergraduate curriculum (14). It seems that pharmacy curriculum in Iran also need changes because most courses are didactic and drug-oriented but are poor about ADRs monitoring and reporting.

Only 31% of our respondents were aware of ADRMC in Iran and 95% of students never report an ADR. Ahmad et

al., (15) evaluated the KAP of 400 pharmacists regarding ADRs, among them 47.5% had observed ADRs in their practice but only 37% of them had reported it, despite a positive attitude and knowledge about ADR reporting. Similar studies in the developing countries confirm the poor practice about ADR monitoring and reporting (16-19). Inman (20) has stated some of the reasons for underreporting ADRs including lack of financial incentives, fear that reporter may face legal consequence, complacency, i.e. holding the impression that the drug was introduced in the market accompanied by disclosure of all ADRs, diffidence, i.e. holding the belief that reporting should be backed by an assurance that an ADR is associated with that particular drug, showing indifference towards reporting assuming that a single ADR is not serious enough to be reported, being ignorant about the seriousness of ADR reporting and coming up with excuses for not reporting due to lethargy and laziness. Sometimes if the ADR was not serious or severe enough may be not reported. Fortunately more than 63% of our respondents agreed to that all of the observed ADR should be reported regarding the severity.

Rajesh et al., (21) shows that educational intervention significantly increased ($p < 0.001$) knowledge, attitude and practice of pharmacovigilance among health care providers. Therefore, both changing in undergraduate teaching curriculum and continuous education program after graduation will be improved the KAP of ADRs. This will help the early detection and quantification of ADRs and reporting them.

In conclusion, it is imperative to imply educational intervention both in undergraduate and post graduate programs to update knowledge about drug safety and encourage health care professionals to report ADRs spontaneously and intensively.

In addition, since there was no difference between knowledge of the students, courses on importance of ADRs should be added to their curriculum.

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Table 3. Student's attitude about the practice.

Questions	Yes (%)	No (%)
Do you attend in any ADR workshop or training course?	30.98	69.01
Do you study any ADR report from national ADR center?	25.33	74.64
Do you observed ADR cases in your practice?	63.38	36.61
Have you done any intervention to prevent ADRs?	32.39	67.6
Do you report any ADRs?	4.28	95.77

ADR: Adverse Drug Reaction

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