Knowledge, awareness and attitude of an Iraqi college undergraduate students towards patient safety Particularly HIV

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Abstract

Background: Inadequate dedication has been given to patient safety education of health care professionals, resulting in limited understanding of the nature of risk in health care.

Objectives: The aim of this study was to evaluate the personal knowledge, awareness and attitudes toward patient safety among the health professional students of Kut University College.

Material and Methods: This was a cross-sectional analysis using a validated WHO (World Health Organization) questionnaire and the results were analyzed using IBM SPSS software.

Results: Our data showed that the majority of our participants had a medium level of knowledge and awareness about health care errors and patient safety. Nevertheless, our participant's attitude was positive regarding reporting the error and learning from their mistakes.

Conclusions: Reducing patient maltreatment will require long-term continuous efforts to build a good education that can addresses the local difficulties and improves patient safety towards HIV.

Keywords: Patient safety, health care professionals, knowledge, education and awareness , HIV

Introduction

Patient safety is crucial in providing quality healthcare and the need for patient safety regulation is acknowledged on a global level (1). The WHO (World Health Organization) has been the world leader in observing patient safety in the healthcare profession learning systems (2). The WHO define the patient safety: "the absence of preventable harm to a patient during the process of healthcare together with the reduction of risk of unnecessary harm associated with health care to an acceptable minimum". To ensure substantial and effective improvements in the safety of healthcare, we need strong policies and skillful healthcare professionals to successfully integrating patient safety science into the training programs of the world educational institutions (3).

The viewpoints of healthcare profession students on patient safety courses in the clinical location and the classroom are key elements for understanding the success in which patient safety concepts are represented and incorporated in medical education (1). The WMA (World Medical Association) has established the declaration of Helsinki in which it recognized education to play a dynamic role in improving patient safety and the WMA entirely support the development, publishing and provision of patient safety education (4).

In the developing countries, many hospitals with \

insufficient funds are using medical equipment with outdated technology and lack of trained personals, it is estimated that up to 18% of hospital admissions were associated with adverse events due to healthcare team mistakes (5). Most of these hospitals use paper files for recording the patient and it is associated with missed follow-up on investigation reports or poor writing of medical records is common errors done by the healthcare team. The occurrence of medical errors is around 10% of in these hospital admissions. Such inaccuracies, when they do occur, can cause severe maltreatment or even death (6). While, the weight of hazardous care is indeterminate in developing countries where old technology, unfitting infrastructure, and inadequate or even incompetent human resources have caused greater possible risk of harm to the patient in hospitals and in primary care clinics compared with their counterparts in developed countries (7). Furthermore, the lack of a well-developed system of medical error reporting in these countries has increased the uncertainty of the real numbers of medical blunders (8). Many interventions have been exploited to address health system errors and improve patient safety over the past decade, but the principal organizational culture in health care environment has been one of the main difficulties (9). A proper patient safety education is recommended as the best strategy to improve suitable attitude toward patient

safety in health professional undergraduate educational programs. Many studies suggested that facilitating education for those programs in hospitals and primary care clinics is a necessity to advance patient safety (10).

Our goal was to collect answers, through an established WHO questionnaire, from students of Alkut university college three health profession disciplines (dentistry, pharmacy and medical lab technology) about their ability to identify patient safety issues, their confidence in meeting the relevant competencies and personal attitudes toward patient safety in healthcare.

Study Aim

The objective of the study was to study the personal knowledge, awareness, and attitudes toward patient safety measures that is used Iraq among Kut University College three health profession disciplines (dentistry, pharmacy and medical lab technology) before carrying out of the patient safety topics in the curriculum.

Research Methodology

3.1 Ethical considerations
The study was approved by the human research ethics committee at Kut University College.

3.2 Study Sample
3.2.1 Inclusion criteria
Year 1 and year 2 students of Alkut university college three health profession disciplines (dentistry, pharmacy and medical lab technology) who didn't take training on patient safety measures that is in use in Iraq.

3.2.2 Exclusion criteria
All students who did previous training on patient safety measures.

3.3 Study design

This was a cross sectional analysis using a validated WHO questionnaire, on patient given online (using a Google form) to Year 1 and year 2 students of the Kut university college three health profession disciplines (dentistry, pharmacy and medical lab technology) and was distributed to all students in the classroom, and then collected for analysis (WHO questionnaire Appendix 1a) (3).

The questionnaire was in two parts. The first part included students' information including age, gender, year of study and health profession discipline. For part two, we used the validated WHO questionnaire survey. The WHO student questionnaire was developed to explore reflections of their experience of the implementation and delivery of patient safety teaching overall. Consent was taken from each student before the study. The results from the questionnaire were analyzed to ascertain the level of knowledge, awareness, and attitudes.

This questionnaire is structured into five domains:
1. Error and patient safety
2. Safety of the health-care system
3. Personal influence over safety
4. Personal attitudes toward patient safety
5. Safety at the workplace.

Domains 1 and 2 are to do with knowledge and awareness and domains 3-5 address personal attitudes toward patient safety, including actions that can be taken and the confidence to do so. The responses for domain 1 were stated on a five-point Likert's scale (very low, low, medium, high, and very high). One point was awarded for each "very low," two points for "low," three points for "medium," four points for "high," and five points for "very high" answer. Relevant item scores were summed to give a total score and average.

The responses for domains 2-5 were stated on a five-point Likert's scale (strongly disagree, disagree, neutral, agree, and strongly agree). One point was awarded for each "strongly disagree," two points for "disagree," three points for "neutral," four points for "agree," and five points for "strongly agree" answer. Relevant item scores were summed to give a total score and average.

1.4 Data analysis

The results were analyzed regarding student knowledge, awareness and attitudes in all the five domains mentioned above. The normality of the variables was checked using the Shapiro-Wilk test. Simple descriptive methods, median for continuous variables, frequencies, and percentage were evaluated using parametric tests according to the normally distributed nature of the data.

Reverse scoring was done on questions number 10, 15, 24 and 26. The results for each domain were computed in to one variable. The differences between males and females were assessed using independent t test and the differences between the dentistry, pharmacy and medical lab technologies students were assessed using one-way analysis of variance (ANOVA) test. The result was interpreted using $p < 0.05$ as a measure of the statistical significance. SPSS version 23 (IBM SPSS, Armonk, NY) was used for data analysis.

Results

Overall 491 undergraduate students from Kut university college three health profession disciplines (120 students from dentistry, 74 students from pharmacy and 297 students from medical lab technology). Our study showed that about 59.3% of participants were females and 40.7% were males. The median age of study participants was 21 years (IQR = 1), the minimum age was 18 years, and the maximum was 30 years.

Regarding domain 1 (error and patient safety), the

majority of participants had a medium level of knowledge. Of all the different aspects of errors in health care, most students high level of knowledge on how to report the error but what should happen if the error is made as shown in [Table 1].

Table 1: Level of knowledge in regards to error and patient safety

Domain 1 Error and Patient Safety	Discipline	Frequency and percentage n (%)				
		V. low	low	medium	high	V. high
Different types of human error?	Dentistry Pharmacy M Lab tech.	12 (10%) 8 (10.8%) 31 (10.4%)	25 (20.8%) 13 (17.6%) 44 (14.8%)	52 (43.3%) 40 (54.1%) 127 (42.8 %)	23 (19.2%) 8 (10.8%) 45 (15.2 %)	8 (6.7%) 5 (6.8%) 50 (16.8%)
Factors contributing to human error?	Dentistry Pharmacy M Lab tech.	8 (6.6%) 7 (9.5%) 21 (7.1%)	21 (17.5%) 17 (23%) 55 (18.5%)	53 (44.2%) 29 (39.2%) 111 (37.4%)	23 (19.2%) 12 (16.2%) 61 (20.5%)	15 (12.5) 9 (12.2%) 49 (16.5%)
Factors influencing patient safety?	Dentistry Pharmacy M Lab tech.	5 (4.2%) 3 (4.1%) 12 (4.0%)	10 (8.3%) 3 (4.1%) 14 (4.7%)	34 (28.3%) 21 (28.4%) 73 (24.6%)	45 (37.5%) 30 (40.5%) 91 (30.6%)	26 (21.7%) 17 (23%) 107 (36.0%)
Ways of speaking up about error?	Dentistry Pharmacy M Lab tech.	8 (6.7%) 12 (16.2%) 21 (7.1%)	25 (20.8%) 19 (25.7%) 41 (13.8%)	36 (30%) 20 (27%) 95 (32%)	33 (27.5%) 14 (18.9%) 64 (21.5%)	18 (15%) 9 (12.2%) 76 (25.6%)
What should happen if an error is made?	Dentistry Pharmacy M Lab tech.	9 (7.6%) 5 (6.8%) 17 (5.7%)	18 (15%) 16 (21.6%) 44 (14.8%)	37 (30.8%) 26 (35.1%) 68 (22.9%)	31 (25.8%) 16 (21.6) 79 (26.6%)	25 (20.8%) 11 (14.9%) 89 (30%)
How to report an error?	Dentistry Pharmacy M Lab tech.	8 (6.7%) 6 (8.1%) 16 (5.2%)	18 (15%) 15 (20.3%) 45 (15.2%)	37 (30.8%) 28 (37.9%) 69 (23%)	32 (26.7%) 15 (20.3%) 78 (26.2%)	25 (20.8%) 12 (16.4%) 91 (30.4%)
The role of healthcare organizations (e.g. hospitals, General practitioners) in error reporting?	Dentistry Pharmacy M Lab tech.	12 (10%) 10 (13.5%) 26 (8.8%)	19 (15.8%) 16 (21.6%) 52 (17.5%)	32 (26.7%) 29 (39.2%) 84 (28.3%)	30 (15%) 11 (14.9%) 56 (18.9%)	27 (22.5%) 8 (10.8%) 79 (26.6%)

Regarding domain 2 (safety of the health-care system), majority of the participants agreed that most healthcare workers make errors, the health system in the country is not safe and medical errors are very common. On the other hand, Most of the participants agreed on that the healthcare staff receives training in patient safety as shown in [Table 2].

Table 2: Level of agreement on the safety of the health-care system.

Domain 2 Safety of the health-care system	Discipline	Frequency and percentage n (%)				
		strongly disagree	disagree	neutral	agree	strongly agree
Most healthcare workers make errors.	Dentistry Pharmacy M Lab tech.	2 (1.7%) 0 (0%) 9 (3%)	12 (10%) 7 (9.5%) 32 (10.8%)	42 (35%) 26 (25.1%) 77 (25.9%)	32 (15%) 19 (25.7%) 71 23.9%)	32 (22.5%) 22 (29.7%) 108 (36.4%)
In my country there is a safe system of healthcare for patients.	Dentistry Pharmacy M Lab tech.	51 (42.5%) 38 (51.4%) 142 (47.8%)	41 (34.2%) 23 (31.1%) 73 (24.6%)	21 (17.5%) 11 (14.9%) 48 16.2%)	3 (2.5%) 1 (1.4%) 13 (4.4%)	4 (3.3%) 1 (1.4%) 21 (7.1%)
Medical error is very common.	Dentistry Pharmacy M Lab tech.	2 (1.7%) 3 (4.1%) 13 (4.4%)	17 (14.2%0 10 (13.5%) 39 (13.1%)	26 (21.7%) 24 (32.4%) 76 (25.6%)	41 (34.2%) 24 (32.4%) 63 21.2%)	34 (28.3%) 13 (17.6%) 106 (35.7%)
It is very unusual for	Dentistry	11 (9.2%)	25 (20.8%)	39 (32.5%)	31 (25.8%)	14 (11.7%)

patients to be given the wrong drug.	Pharmacy	6 (8.1%)	14 (18.9%)	23 (31.1%)	20 (27%)	11 (14.9%)
	M Lab tech.	24 (8.1%)	46 (15.5%)	88 (29.6%)	61 (20.5%)	78 (26.3%)
Health-care staff receives training in patient safety.	Dentistry	3 (2.5%)	12 (10%)	33 (27.5%)	27 (22.5)	45 (37.5%)
	Pharmacy	6 (8.1%)	9 (12.2%)	20 (27%)	19 (25.7%)	20 (27%)
	M Lab tech.	10 (3.4%)	28 (9.4%)	55 (18.5%)	63 (21.2%)	141 (47.5%)
About one in ten hospital patients across the world will experience some kind of adverse event.	Dentistry	12 (10%)	18 (15%)	27 (22.5%)	35 (29.2%)	28 (23.3%)
	Pharmacy	6 (8.1%)	6 (8.1%)	30 (40.5%)	15 (20.3%)	17 (23%)
	M Lab tech.	25 (8.4%)	36 (12.1%)	82 (27.6%)	54 (18.2%)	100 (33.7%)

Regarding domain 3 (personal influence over safety) most of participants felt they could easily tell others about an error they made and that they could easily speak to someone showing little regard for a patient's safety. A majority of the students also strongly agreed that they are able to make sure that patient safety will not put in risk and they also agreed that written reports will help in patient safety as shown in [Table 3].

Table 3: Personal influence over safety among study participants

Domain 3 Personal influence over safety	Discipline	Frequency and percentage n (%)				
		strongly disagree	disagree	neutral	agree	strongly agree
Telling others about an error I made would be easy.	Dentistry	19 (15.8%)	23 (19.2%)	31 (25.8%)	24 (20%)	23 (19.2%)
	Pharmacy	9 (12.2%)	14 (18.9%)	30 (40.5%)	13 (17.6%)	8 (10.8%)
	M Lab tech.	42 (14.1%)	53 (17.8%)	82 (27.6%)	51 (17.2%)	69 (23.2%)
It is easier to find someone to blame rather than focus on the causes of error.	Dentistry	58 (48.3%)	29 (24.2%)	14 (11.7%)	14 (11.7%)	5 (4.2%)
	Pharmacy	32 (43.2%)	18 (24.3%)	9 (12.2%)	9 (12.2%)	6 (8.1%)
	M Lab tech.	145 (48.8%)	44 (14.8%)	49 (16.5%)	26 (8/8%)	33 (11.1%)
I am confident about speaking to someone who is showing a lack of concern for a patient's safety.	Dentistry	2 (1.7%)	8 (6.7%)	19 (15.8%)	28 (23.3%)	63 (52.5%)
	Pharmacy	1 (1.4%)	3 (4.1%)	14 (18.9%)	17 (23%)	39 (52.7%)
	M Lab tech.	8 (2.7%)	6 (2%)	45 (15.2%)	42 (14.1%)	196 (66%)
I know how to talk to people who have made an error.	Dentistry	0 (0%)	7 (5.8%)	22 (18.3%)	41 (34.2%)	50 (41.7%)
	Pharmacy	2 (2.7%)	5 (6.8%)	18 (24.3%)	16 (21.6%)	33 (44.6%)
	M Lab tech.	6 (2%)	18 (6.1%)	57 (19.2%)	53 (17.8%)	163 (54.9%)
I am always able to ensure that patient safety is not compromised.	Dentistry	1 (0.8%)	1 (0.8%)	10 (8.3%)	18 (15%)	90 (75%)
	Pharmacy	0 (0%)	3 (4.1%)	3 (4.1%)	9 (12.2%)	59 (79.9%)
	M Lab tech.	4 (1.3%)	9 (3%)	23 (7.7%)	31 (10.4%)	230 (77.4%)
I believe that filling in reporting forms will help to improve patient safety.	Dentistry	1 (0.8%)	2 (1.7%)	12 (10%)	35 (29.2%)	70 (58.3%)
	Pharmacy	0 (0%)	3 (4.1%)	10 (13.5%)	12 (16.2%)	49 (66.2%)
	M Lab tech.	4 (1.3%)	11 (3.7%)	35 (11.8%)	49 (16.5%)	198 (66.7%)
I am able to talk about my own errors.	Dentistry	2 (1.7%0	6 (5%)	21 (17.5%)	40 (33.3%)	51 (4.5%)
	Pharmacy	0 (0%)	2 (2.7%)	22 (29.7%)	15 (20.3%)	35 (47.3%)
	M Lab tech.	6 (2%)	13 (4.4%)	58 (19.5%)	60 (20.2%)	160 (53.9%)

Regarding domain 4 (personal attitudes to patient safety), our results showed that most students strongly agreed that they will be able to learn from their mistakes and deal with their errors well as shown in [Table 4].

Table 4: Personal attitudes toward patient safety.

Domain 4 Personal Attitudes to Patient Safety	Discipline	Frequency and percentage n (%)				
		strongly disagree	disagree	neutral	agree	strongly agree
By concentrating on the causes of incidents I can contribute to patient safety	Dentistry	2 (1.7%)	0 (0%)	29 (42.2%)	40 (33.3%)	49 (40.8%)
	Pharmacy	0 (0%)	1 (1.4%)	15 (20.3%)	27 (36.5%)	31 (41.9%)
	M Lab tech.	3 (1%)	13 (4.4%)	64 (21.5%)	83 (27.9%)	134 (45.1%)
If I keep learning from my mistakes, I can prevent incidents	Dentistry	1 (0.8%)	0 (0%)	10 (8.3%)	27 (22.5%)	82 (68.3%)
	Pharmacy	1 (1.4%)	3 (4.1%)	5 (6.8%)	15 (20.3%)	50 (67.6%)
	M Lab tech.	2 (0.7%)	7 (2.4%)	24 (8.1%)	53 (17.8%)	211 (71%)
Acknowledging and dealing with my errors will be an important part of my job	Dentistry	0 (0%)	0 (0%)	4 (3.3%)	22 (18.3%)	94 (78.3%)
	Pharmacy	0 (0%)	1 (1.4%)	5 (6.8%)	13 (17.6%)	55 (74.3%)
	M Lab tech.	0 (0%)	6 (2%)	18 (6.1%)	38 (12.8%)	235 (79.1%)
It is important for me to learn how best to acknowledge and deal with my errors by the end of my school.	Dentistry	0 (0%)	0 (0%)	5 (4.2%)	32 (26.7%)	83 (69.2%)
	Pharmacy	1 (1.4%)	2 (2.7%)	6 (8.1%)	11 (14.9%)	54 (73%)
	M Lab tech.	3 (1%)	7 (2.4%)	27 (9.1%)	44 (14.8%)	216 (72.7%)

Regarding domain 5 (safety at the workplace), most of participants agreed on that the nurses, doctors and managers will make sure of the patient safety, that any medical errors will be dealt with professionally and being open and honest about the mistakes they will make be acceptable and they will still receive fair treatment by management as shown in [Table 5].

Table 5: Level of agreement on safety at the workplace.

Domain 5 Safety at the workplace	Discipline	Frequency and percentage n (%)				
		strongly disagree	disagree	neutral	agree	strongly agree
The nurses will be committed to identifying and addressing patient safety risks.	Dentistry	2 (1.7%)	10 (8.3%)	33 (27.5%)	47 (39.2%)	28 (23.3%)
	Pharmacy	3 (4.1%)	7 (9.5%)	27 (36.5%)	27 (36.5%)	10 (13.5%)
	M Lab tech.	14 (4.7%)	24 (8.1%)	77 (25.9%)	78 (26.3%)	104 (35%)
The nurses will not criticize me for making mistakes.	Dentistry	24 (20%)	26 (21.7%)	35 (29.2%)	12 (10%)	23 (19.2%)
	Pharmacy	18 (24.3%)	16 (21.6%)	24 (32.4%)	6 (8.1%)	10 (13.5%)
	M Lab tech.	84 (28.3%)	53 (17.8%)	83 (27.9%)	34 (11.4%)	43 (14.5%)
The doctors will be committed to identifying and addressing patient safety risks.	Dentistry	0 (0%)	6 (5%)	21 (17.2%)	40 (33.3%)	53 (44.2%)
	Pharmacy	1 (1.4%)	4 (5.4%)	25 (33.8%)	25 (33.8%)	19 (25.7%)
	M Lab tech.	5 (1.7%)	19 (6.4%)	64 (21.5%)	84 (28.3%)	125 (42.1%)
The doctors will not criticize me for making mistakes	Dentistry	38 (31.7%)	35 (29.2%)	21 (17.5%)	15 (12.5%)	11 (9.2%)
	Pharmacy	25 (33.8%)	18 (24.3%)	17 (23%)	8 (10.8%)	6 (8.1%)
	M Lab tech.	120 (40.4%)	55 (18.5%)	71 (23.9%)	24 (8.1%)	27 (9.1%)
Managers in the health-care system will make it easy to report errors.	Dentistry	11 (9.2%)	12 (10%)	45 (37.5%)	33 (27.5%)	19 (15.8%)
	Pharmacy	18 (24.3%)	9 (12.2%)	29 (39.2%)	13 (17.6%)	5 (6.8%)
	M Lab tech.	25 (8.4%)	40 (13.5%)	105 (35.4%)	54 (18.2%)	73 (24.6%)
Managers in the health-care system will be more interested in meeting performance targets than in patient safety	Dentistry	8 (6.7%)	18 (15%)	24 (20%)	37 (30.8%)	33 (27.5%)
	Pharmacy	7 (9.5%)	7 (9.5%)	25 (33.8%)	26 (35.1%)	9 (12.2%)
	M Lab tech.	20 (6.7%)	25 (8.4%)	90 (30.3%)	64 (21.5%)	98 (33%)
Managers in the health-care system will expect us to focus on patient safety.	Dentistry	3 (2.5%)	6 (5%)	11 (9.2%)	35 (29.2%)	65 (54.2%)
	Pharmacy	0 (0%)	7 (9.5%)	14 (18.9%)	18 (24.3%)	35 (47.3%)
	M Lab tech.	8 (2.7%)	13 (4.4%)	48 (16.2%)	78 (26.3%)	150 (50.5%)
Being open and honest about the mistakes I make will be acceptable at my place of work.	Dentistry	3 (2.5%)	9 (7.5%)	25 (20.8%)	29 (24.2%)	54 (45%)
	Pharmacy	6 (8.1%)	5 (6.8%)	20 (27%)	27 (36.5%)	16 (21.6%)
	M Lab tech.	26 (8.8%)	20 (6.7%)	49 (16.5%)	66 (22.2%)	136 (45.8%)

Admitting an error I had made would lead to just and fair treatment by management.	Dentistry	6 (5%)	9 (7.5%)	18 (15%)	35 (29.2%)	52 (43.3%)
	Pharmacy	7 (9.5%)	8 (10.8%)	19 (25.7%)	13 (17.6%)	27 (36.5%)
	M Lab tech.	24 (8.1%)	29 (9.8%)	58 (19.5%)	45 (15.2)	141 (47.5%)

In regarding to differences between male and female participants. Independent t test showed female had significantly (p<0.05) more knowledge and awareness (domains 3 and domain 5) compared to male participants. On the other hand, the scores of domain 1, 2 and 4 showed no significance (p>0.05) difference between male and female participants as shown in [Table 6].

Table 6: Independent t test comparing scores in relation to gender.

| Domains | MEAN ± SD | | p Value | 95% Confidence interval |
	Female	Male		
Error and Patient Safety.	19.9 ± 5.2	20.3 ± 5.1	0.405	-1.332 - 0.538
Safety of the health-care system.	18.6 ± 3.2	18.7 ± 3.1	0.745	-0.672 - 0.481
Personal influence over safety.	29.1 ± 4.1	27.8 ± 4.2	0.001*	0.513 - 2.023
Personal Attitudes to Patient Safety.	18.1 ± 2.3	17.7 ± 2.5	0.097	-0.066 - 0.800
Safety at the workplace.	33.9 ± 5.3	32.7 ± 5.5	0.020*	0.180 - 2.139

The medical lab technology and dentistry students scored significantly higher (p<0.05) than pharmacy students in domain 1 and domain 5. And medical lab technology scored significantly higher (p<0.05) as compared to both dentistry and pharmacy students in domain 2. On the other hand, the scores of domain 1, 3 and 4 showed no significance (p>0.05) difference between the three health disciplines as shown in [Table 7].

Table 7: One-Way ANOVA test comparing scores in relation to health profession discipline.

| Domains | MEAN ± SD | | | F | p Value |
	Dentistry	Pharmacy	Medical lab technology		
Error and Patient Safety.	19.8 ± 5.1	18.4 ± 5.1	20.6 ± 5.2	5.92	0.003*
Safety of the health-care system.	18.2 ± 3.2	18.2 ± 2.8	19.1 ± 3.2	4.68	0.010*
Personal influence over safety.	28.5 ± 3.6	28.2 ± 4.1	28.7 ± 4.4	0.54	0.580
Personal Attitudes to Patient Safety.	18.1 ± 1.8	17.8 ± 2.5	17.9 ± 2.5	0.24	0.781
Safety at the workplace.	33.8 ± 4.8	31.5 ± 5.3	33.8 ± 5.5	5.76	0.003*

Discussion

To our knowledge, this is the first study in Iraq to examine patient safety knowledge in health care professional education from the perspective of undergraduate students. Today's health care environment is very complex. With the increasing recognition of the importance of safer care in today's health care environment comes the need for undergraduate health profession students to be familiar with the adverse events occurring to patients [11]. The implementation of education of patient safety to health care professional undergraduate students will provide the cornerstone for building the foundation of necessary skills and knowledge that will better prepare students for medical practice [12]. This will help to create workforce capable of meeting the demands of today's complex health system environment [13]. The WHO (world health organization) multi-professional patient safety curriculum guide is the first product that addresses this on a global scale and it is a significant step in the quest to improve the safety of health care around the world [14].

Our Data showed that more than half of our students felt that they have medium level of knowledge on types of human errors and the factors contributing to these errors. On the other hand, most students showed above average knowledge on how to report errors and the role of health organization in this process. These findings suggests that our education methodology must focus on improving knowledge by using the recommended WHO (world health organization) patient safety curriculum [12].

The majority of our agreed that most health workers make errors and that our country doesn't have safe health care system. On the other hand, the majority of participants agreed that health care workers receive patient safety training and it is rare for the patients to receive the wrong medication. These data indicate that the clinical instructors need to highlight relevant patient safety measures

during bedside and small group teaching rather than depending on lectures alone (15).

Our data showed that student attitudes to safety were very encouraging. Majority of students felt they will learn from their mistakes and they were confident about speaking to someone who is showing a lack of concern for a patient's safety and the majority of participants felt they could easily tell others about an error they made. On the other hand, student strongly disagreed on blaming others rather than focusing on the cause of error which is consistent with the literature (15).

Furthermore, there was significant difference in the knowledge of error and patient safety and the safety at the workplace and the attitude between the three health care profession disciplines which require further attention by the teaching staff to do extra sessions in patient safety training. Using the old approach after error incidence indicates lack of understanding of the complexity of the system and the processes of treatment and care. About half of our respondents were neutral about medicine culture that reflects their misperception and lack of proper training of the error management. These findings findings provide important insights for refocusing curricula in the future.

Conclusion

Health care professional undergraduate students in Iraq were familiar with medical errors. However, there was little knowledge about the multi-factorial mechanisms underlying occurrence of errors. The main identified knowledge gaps were in the role of healthcare organization in error reporting and the ways of how to report errors. Establishing formal curriculum on patient safety and maintaining this change in health care culture is essential. Also, it is recommended to formulate better policies for patient safety. These will expectantly reduce all types of errors in complex environments such as clinical centers and hospitals which will make quality improvement in health care practice.

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