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Medication Safety Knowledge, Attitudes, And Practices Among Community Pharmacists

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Abstract

Background: *Community pharmacists (CPs) are seen as essential participants in the reporting of adverse drug reactions (ADRs) and pharmacovigilance (PV) processes. PV was developed as a means of enhancing both patient safety and the standard of care delivered.* ***Aim:*** *The study aimed to assess the knowledge, attitudes, and practices (KAP) among community pharma[1]cists in King Saudia Arabia (KSA).* ***Research Design:*** *A cross-sectional descriptive survey design.* ***Subject:*** *participants in the study included a convenience sample of CPs (n=200) who worked in the KSA community.* ***Tool:*** *KAP questionnaire to assess the CPs' knowledge, attitudes, and practices regarding medication safety. It was modified based on research done by Hallit et al., (2018).* ***Results:*** *the majority of the participants (65.5%) have average knowledge; while the majority of the participants have high attitudes and practices (73%, 61.5%) respectively. Regarding patient safety and response to mistakes, the majority of the participants have a high percentage (61%).* ***Recommendations:*** *Encourage CPs to attend training programs about medication safety that enhance reporting of ADRs and PV processes.*

Keywords: *Medication Safety, Knowledge, Attitudes, Practices, Community Pharmacists, Adverse Drug Reactions (ADRs) and pharmacovigilance (PV)*

Introduction

Globally, there is public concern about patient safety in healthcare systems. Numerous researches conducted over the past few decades have shown that drug-related mortality and morbidity is one of the primary health issues that the public and healthcare professionals (HCPs) are starting to realize [1, 2]. According to the United States (US) Institute of Medicine (IOM), an adverse drug event (ADE) is defined as "an injury resulting from medical

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intervention related to a drug, including medication errors, adverse drug reactions, allergic reactions, and overdoses" [3, 4].

Adverse drug reactions (ADRs) are defined as "a response to a medicine which is noxious and unintended, and which occurs at doses normally used in man." According to estimates, based on a meta-analysis done in the US, ADRs account for the fourth to sixth leading cause of death [5]. ADRs represent a serious public health concern. The World Health Organization (WHO) defines ADRs as "any noxious and unintended response to a drug that occurs at doses used in humans for prophylaxis, diagnosis, or therapy, excluding failure to accomplish the intended purpose." [6, 7]

Any incident that can happen throughout the prescription, transcribing, dispensing, administering, and monitoring phases of the drug procedure is considered a medication error, whether or not the patient is harmed [8]. According to an Iranian study, 11.8% of patients have experienced at least one adverse drug reaction [9]. Based on a different Iranian study, 2.9% of ADRs were fatal, and 16.8% of patients had at least one ADR [10]. Moreover, according to a South Indian study, there was a 9.8% incidence of adverse drug reactions (ADRs); 3.4% of these led to hospital admission, and 3.7% occurred while the patient was in the hospital [11]. Additionally, based on retrospective research in 2008 conducted in Saudi Arabia, 54% of ADRs were avoidable. The annual incidence ranged from 0.07% in 1993 to 0.003% in 1999 [12].

A recent study in 2020 conducted in KSA predicted that 28% of the population experienced an ADR over one year in KSA. Risk factors for ADR included certain chronic disease groups and the use of certain classes of medications. Also observed that low health literacy and low medical literacy in KSA may lead to measurement and reporting challenges. And recommend conducting more research and deploying educational interventions to reduce ADR rates in KSA [4].

The roles that pharmacists play in community pharmacy (CP) services have evolved dramatically in recent years [13, 14]. Historically, the only duties available to pharmacists were compounding and dispensing [15]. The Pharmaceutical Care (PhC) concept is the recognized and operational pharmacy practice philosophy that is currently in use worldwide [16]. It is imperative that Saudi Arabia redesign CP practice in response to the PhC paradigm, and that pharmacists' perspectives align with the new pharmaceutical services philosophy. When PhC services were introduced in community pharmacies (CPs), they had great results and raised patients' quality of life in a few different nations [17].

Community pharmacists are front-line healthcare workers who are considered experts in patient education and counseling. This includes obtaining the patient's medical and prescription history, assessing the number and type of lesions, selecting the most effective treatment strategy, providing the patient with counseling, and, if required, directing the patient to a physician [18, 19, 20]. The goals of the treatment, realistic expectations, duration of therapy, proper product use, and the importance of adhering to the regimen to get the best results must all be explained to patients. Community pharmacists are well-positioned to recommend the appropriate course of treatment for patients with mild-to-moderate illnesses and to send patients with more serious conditions for further assessment [18, 21, 22].

Pharmacovigilance (PV) is crucial to ensuring the safe use of medications in any healthcare context since ADRs can occur in any setting [23]. According to the World Health Organization, PV is defined as "the science and activities relating to the detection, assessment, understanding, and prevention of adverse effects or any other possible drug-related problems" [24, 25]. Furthermore, just when someone knows about a health practice that is thought to be advantageous, it does not guarantee that this practice will be adopted [25]. The survey's assessment of knowledge level helps in identifying areas that still require information and education efforts [26]. Knowledge: "Knowledge is a collection of scientific facts,

understandings, and information." It also refers to a person's ability to imagine and perceive things [26, 27].

In addition, attitude functions as a mediator between the external environment and the individual's reaction to it. Attitude: An attitude is a position or manner of being, but it can also include proclivities or "tendencies." It aids in the explanation of why a subject may choose to adopt one practice over another when presented with a stimulus. Since attitudes are not always readily visible in action, it is a good idea to measure them. It's interesting to note that a lot of research has frequently indicated a weak or absent relationship between attitudes and behaviors [26, 27]. Moreover, practice: A person's observable activities in response to a stimulus are known as their practices or behaviors. This is something that uses activities to address the tangible. Regarding health-related practices, data is gathered on alcohol and tobacco use, screening procedures, immunization schedules, sports participation, sexual orientation, etc [26, 27].

There is a need to enhance ADR reporting and understanding of the occurrence of ADRs in KSA, according to the findings of a recent qualitative study conducted by Aljadhey et al., (2015) [28] including 27 healthcare professionals. The authors suggested that KSA conduct research and enhance the consistency of ADR reporting as two ways to enhance pharmacovigilance. The authors also enumerated persistent obstacles to passive surveillance, such as patients' and some healthcare providers' lack of health and drug literacy. Furthermore, completing reports of adverse drug reactions (ADRs) on behalf of patients presents challenges related to workload for healthcare providers [28]. Ideally, this can happen in a global setting that encourages the community's standardization of ADE and ADR measurement. Therefore, this study aims to assess the knowledge, attitudes, and practices (KAP) among community pharmacists in KSA for potential pharmacovigilance and adverse-drug-reaction reports in KSA.

Subjects and Methods

Research design: A cross-sectional descriptive study was utilized to fulfill the aim of this study.

Setting: The study was conducted in the Kingdom of Saudi Arabia. **Subjects Sample:** The study involved health professionals who worked as CPs. A convenience sample of CPs was selected from the population (200 CPs) during the data collection period.

Data Collection Tool: a validated KAP survey among community pharmacists. The purpose of this KAP survey was to gather data regarding medication safety, which is a component of pharmacovigilance, in terms of "what is known," "what is thought," and "what is done." From October 2023 to December 2023, the survey was conducted among CPs in the Kingdom of Saudi Arabia.

The study employed a KAP questionnaire to assess the CPs' knowledge, attitudes, and practices regarding medication safety. It was modified based on research done by Hallit et al., (2019) [29]. The author was permitted to use the questionnaire. The original language of these questions was English, and they were later translated into KSA-Arabic. To make sure the intended meaning was retained, linguistic validation was done. The validity of the face and content were examined by a jury of five experts in the field and necessary modifications were made. The information was pertinent to the main queries that needed to be addressed. The local language questions were designed to avoid prejudice and accurately reflect practices, attitudes, and knowledge.

Reliability of the tools was performed to confirm the consistency of the tool. Internal consistency is measured to identify the extent to which the items of the tools measure the same concept and correlate with each other. The internal consistency of the tool was assessed with Cronbach's alpha coefficient. Cronbach's alpha coefficient of 0.00 indicates no reliability and a coefficient of 1.00 indicates perfect reliability. However, a reliability coefficient of 0.83 is acceptable.

Pilot study: A pilot study was carried out before starting data collection for 10% of CPs. In addition, the pilot study helped the researcher experience to estimate the needed time to fill out the data collection survey. Based on the results of the pilot study, the survey did not need any modifications.

Data collection procedure: The Ethics Committee of the University Faculty of Pharmacy gave its approval for the study. Permission was obtained to collect the data after the researcher explained the importance and purpose of the study.

Statistical Analysis The data obtained from the study tools were categorized, tabulated, and analyzed and data entry was performed using the SPSS software (Statistical Package for Social Sciences version (22.0). Descriptive statistics were applied (e.g. mean, standard deviation, frequency, and percentage). Tests of significance were performed to test the study (i.e. t-test, and ANOVA test). A significant level value was considered when $p<0.05$.

Results

Table (1) Sociodemographic characteristics of the participants (n=200) show that the majority of participants (70%) are male; also, the majority of participants are (72.5%) in the age group ranging between 20-30 years and less than one-third of participants (29%) in the age group ranging between 31-40 years; likewise, more than two-thirds of participants (62%) have a bachelor degree. Regarding professional status, a large percentage of participants (74%) were staff Pharmacists; more than one-third of participants (41%) had one year to less than three years of experience as a community pharmacist. Concerning job status, the majority of participants (95%) are employees; a large percentage of participants (88%) were urban the geographic location of the practice. Regarding the number of patients seen per day in the pharmacy, approximately half percent (49%) 51 to 100 patients per day; more than half percent of participants work more than 40 hours per week.

Table (1) Sociodemographic characteristics of the participants (n=200)

	N	**%**
Gender		
Female	60	30.00
Male	140	70.00
Age (years)		
20–30	145	72.50
31–40	29	14.50
41- 50	14	7.00
51-60	12	6.00
Level of Education		
Bachelor	124	62.00
Master	7	3.50

	N	%
Pharm-D	63	31.50
PhD	6	3.00
Professional Status		
Staff Pharmacist	148	74.00
Clinical Pharmacist	25	12.50
Pharmacist Assistant	13	6.50
Senior Pharmacist	14	7.00
Your experience as a community pharmacist (duration)		
Less than 6 months	31	15.50
6 months to 1 year	33	16.50
1 year to less than 3 years	82	41.00
3 years to less than 6 years	34	17.00
6 years to less than 12 years	16	8.00
More than 12 years	4	2.00
Job-status		
Employee	190	95.00
Employer/Manager	10	5.00
Approximate number of patients seen per day in the pharmacy.		
<10	6	3.00
10-50.	71	35.50
51-100	98	49.00
> 100	25	12.50
Working hours per week		
1-16 hours per week	16	8.00
17-31 hours per week	21	10.50
32-40 hours per week	52	26.00
More than 40 hours per week	111	55.50
The geographic location of the practice		
Rural	24	12.00
Urban	176	88.00

Table (2) Knowledge of the CPs concerning PV shows that a minority of the participants (13%,10%) selected the definition of PV as the science of identifying predisposing risk factors related to ADR, and detection, assessment, understanding, and prevention respectively, while (33%) of participants selected PV is the science of understanding the safety of drugs, and (44%) of participants selected PV is the science of Adverse Drug Reaction reporting.

Regarding the purpose of PV, a minority of the participants (11%) selected to assess the benefit, harm, effectiveness, and risk of medicines in phase 4 clinical Studies while (39.5%, 49.5%) of participants selected to improve patient care and safety concerning the use of medicines, and improve public health and safety concerning the use of medicines respectively.

Concerning ADRs, a minority of the participants (4%, 11%) selected the serious side effects of a medicinal product and the product itself respectively; while (43.5%, 41.5%) selected the noxious, unintended, response to a drug and a unwanted medical error occurred to

a patient who took the medication respectively. Moreover, the question of ADR is related to OTC drugs, herbal drugs, or vaccines, or all of them, a majority (70%) of participants selected all of them.

Table (2) Knowledge of the CPs concerning PV

	N	%
PV is		
The detection, assessment, understanding, and prevention	20	10.00
The science of Adverse Drug Reaction reporting	88	44.00
The science of identifying predisposing risk factors related to ADR	26	13.00
The science of understanding the safety of drugs	66	33.00
The purpose of PV is/are to		
Assess the benefit, harm, effectiveness, and risk of medicines in Phase 4 Clinical Studies	22	11.00
Improve patient care and safety concerning the use of medicines	79	39.50
Improve public health and safety concerning the use of medicines	99	49.50
Adverse drug reaction (ADR) is		
The noxious, unintended, response to a drug	87	43.50
An unwanted medical error occurred to a patient who took the medication	83	41.50
Product	22	11.00
The serious side effect of a medicinal product	8	4.00
Do you think ADR is related to		
OTC drugs	49	24.50
Herbal drugs	10	5.00
Vaccines	1	0.50
All of the above	140	70.00

Table (3) Attitudes of the CPs regarding PV show that more than half (55.5%) of participants selected drug-drug interaction related to the reason for ADR. While (82%) of participants reported ever coming across ADR; (80.5%) of participants agreed that the pharmacist is in charge of reporting an ADR; (65%) of participants agreed that ADR reporting should be a compulsory activity; (80.5%, 91%) respectively of participants agreed that physician and pharmacist are responsible for reporting an ADR. Furthermore, (65%, 65.5%, 63.5%, and 59.5%) of participants respectively reported that the sources of information usually use internet sites, electronic references, books, and medical journals. Regarding the challenges for reporting an ADR, (76%) of participants reported time constraints/workplace pressure, and difficulty in judging the occurrence of ADR; (61%) of participants stated that the Ministry of Public Health in KSA should promote pharmacovigilance Practice.

Table (3) Attitudes of the CPs regarding PV

	N	%
Do you think that an ADR could be due to		

	N	%
drug-drug interactions	111	55.50
drug-food interactions	35	17.50
drug exercise	54	27.00
Have you ever come across an ADR?		
Yes	164	82.00
Neutral/do not know/does not apply	10	5.00
No	26	13.00
In your opinion, is the pharmacist in charge of reporting an ADR?		
Yes	161	80.50
No	39	19.50
Do you think ADR reporting should be a compulsory activity for you?		
Yes	130	65.00
Neutral/do not know/does not apply	30	15.00
No	40	20.00
Who among the listed is/are responsible for reporting an ADR?		
Physician	161	80.50
Pharmacist	182	91.00
Patient	138	69.00
Family	64	32.00
What are the sources of information that you usually use?		
Internet sites	130	65.00
Electronic reference	131	65.50
Book	127	63.50
Medical journals	119	59.50
Companies	34	17.00
Drug information centers	83	41.50
Drug information leaflets	80	40.00
What might be the challenge(s) for you to report an ADR?		
I do not know how to report an ADR	81	40.50
Time constraints/workplace pressure, Difficulty to judge about the occurrence of ADR	152	76.00
Need for training, and lectures to better define an ADR	91	45.50
In your opinion, what is/are the organizations in KSA that should promote pharmacovigilance Practice?		
Supreme Board of drug and medical appliance	5	2.50
Academic Institutions	36	18.00
Ministry of Public Health	122	61.00
Health Care Institutions	48	24.00
SFDA	169	84.50

Table (4) ADR reporting in the workplace (practice) shows that the majority of the participants (76%) observe ADR cases in the workplace and (58.5%) of them reported HOD of the institute. While (68.5%) of participants stated that the ADR reporting form is available at the workplace; (66.5%) of participants reported that the workplace provides information regarding the proceeding. Only (56%) of participants have been adequately trained in ADR reporting; (63.5%) of participants reported that the workplace encourages them to report an ADR. Regarding problems encountered while reporting ADRs in the workplace, (39%, and

38.5%) of participants reported two problems respectively: lack of information provided by the patient and the pharmacist didn't have enough time.

Table (4) ADR reporting in the workplace (practice)

	N	%
Did you observe any ADR cases in your practice?		
Yes	152	76.00
Neutral/do not know/does not apply	18	9.00
No	30	15.00
If yes, then to whom have you reported		
HOD of your institute	89	58.55
Drug manufacture	9	5.92
Government of KSA	39	25.66
Other	15	9.87
Is the ADR reporting form available at your workplace?		
Yes	137	68.50
Neutral/do not know/does not apply	16	8.00
No	47	23.50
Does your workplace provide information regarding the procedure?		
Yes	133	66.50
Neutral/do not know/does not apply	19	9.50
No	48	24.00
Do you feel that you are adequately trained in ADR reporting?		
Yes	112	56.00
Neutral/do not know/does not apply	26	13.00
No	62	31.00
Does your workplace encourage you to report an ADR?		
Yes	127	63.50
Neutral/do not know/does not apply	23	11.50
No	50	25.00
Which of the problems do you encounter while reporting ADRs in your workplace?		
Lack of information provided by the patient	78	39.00
Pharmacist doesn't have enough time	77	38.50
Unaware of the existence of a national ADR reporting system	10	5.00
Unaware of the need to report an ADR	2	1.00
Fear of facing legal problems	12	6.00
ADR reporting in KSA is not widely promoted by relevant authorities	5	2.50
Others	16	8.00

Table (5) Patient safety and response to mistakes display that the majority of the participants (81.5%, 81%, 76%, 73%, 71%, 70%) respectively try to figure out what problems

in the work process led to the mistake, change the way we do, reflects a strong focus on patient safety, positive changes in this pharmacy, help staff learn from their mistakes.

Table (5) Patient safety and response to mistakes

Patient safety and response to mistakes	**Yes**		**No**	
	N	**%**	**N**	**%**
When a mistake happens, we try to figure out what problems in the work process led to the mistake.	163	81.50	37	18.50
This pharmacy helps staff learn from their mistakes rather than punishing them.	142	71.00	58	29.00
When the same mistake keeps happening, we change the way we do it.	162	81.00	38	19.00
The way we do things in this pharmacy reflects a strong focus on patient safety.	153	76.50	47	23.50
Mistakes have led to positive changes in this pharmacy.	146	73.00	54	27.00
Staff feel like their mistakes are held against them.	94	47.00	106	53.00
We look at staff actions and the way we do things to understand why mistakes happen in this pharmacy	140	70.00	60	30.00

Table (6) Percentage distribution of studied participants regarding their KAP and the patient safety and response to mistakes show that the majority of the participants (65.5%) have average knowledge with Mean±SD (13.295±2.234); while the majority of the participants have high attitudes and practice (73%, 61.5%) with Mean±SD (7.255±1.553, 7.120±3.302) respectively. Regarding patient safety and response to mistakes, the majority of the participants have high percent (61%) with Mean±SD (5.000±2.374)

Table (6) Percentage distribution of studied participants regarding their KAP and the patient safety and response to mistakes

	Weak		**Average**		**High**		**Score**	
	N	**%**	**N**	**%**	**N**	**%**	**Range**	**Mean±SD**
Knowledge	4	2.00	131	65.50	65	32.50	8-18.	13.295±2.234
Attitudes	13	6.50	41	20.50	146	73.00	2-10.	7.255±1.553
Practice	52	26.00	25	12.50	123	61.50	0-10.	7.120±3.302
Patient safety and response to mistakes	40	20.00	38	19.00	122	61.00	0-7.	5.000±2.374

Table (7) Relation between socio-demographic characteristics and participants' knowledge reveals that there was a statistically significant difference between the age of participants and their knowledge with p-value < 0.001*; there was a statistically significant difference between the level of education of participants and their knowledge with p-value < 0.027*. Moreover, there was a statistically significant difference between the experience as a community pharmacist participant and their knowledge with a p-value < 0.006*; there was a statistically significant difference between working hours per week and their knowledge with a p-value < 0.011*.

Table (7) Relation between socio-demographic characteristics and participants knowledge

Demographic variables		N	Knowledge	F or T	ANOVA or T-test	
			Mean ± SD		Test value	P-value
Gender	**Female**	60	13.017 ± 2.411	T	-1.154	0.250
	Male	140	13.414 ± 2.152			
Age (years)	**20–30**	145	12.841 ± 2.219	F	8.346	<0.001*
	31–40	29	14.241 ± 1.994			
	41- 50	14	14.857 ± 1.512			
	51-60	12	14.667 ± 1.670			
Level of Education	**Bachelor**	124	13.194 ± 2.240	F	3.132	0.027*
	Master	7	13.143 ± 1.069			
	Pharm-D	63	13.254 ± 2.272			
	PhD	6	16.000 ± 0.894			
Professional Status	**Staff Pharmacist**	148	13.297 ± 2.269	F	2.235	0.085
	Clinical Pharmacist	25	13.960 ± 2.282			
	Pharmacist Assistant	13	12.000 ± 2.000			
	Senior Pharmacist	14	13.286 ± 1.541			
Your experience as a community pharmacist (duration)	**Less than 6 months**	31	13.129 ± 2.655	F	3.391	0.006*
	6 months to 1 year	33	13.545 ± 2.265			
	1 year to less than 3 years	82	12.768 ± 2.014			
	3 years to less than 6 years	34	13.529 ± 2.259			
	6 years to less than 12 years	16	15.000 ± 1.633			
	More than 12 years	4	14.500 ± 0.577			
Job-status	**Employee**	190	13.242 ± 2.207	T	-1.463	0.145

Demographic variables		N	Knowledge	F or T	ANOVA or T-test	
			Mean ± SD		Test value	P-value
	Employer/Manager	10	14.300 ± 2.627			
Approximate number of patients seen per day in the pharmacy.	**<10**	6	12.333 ± 3.615	F	0.927	0.429
	10-50	71	13.577 ± 2.054			
	51-100	98	13.133 ± 2.237			
	> 100	25	13.360 ± 2.361			
Working hours per week	**1-16 hours per week**	16	14.375 ± 2.825	F	3.840	0.011*
	17-31 hours per week	21	13.381 ± 2.202			
	32-40 hours per week	52	13.846 ± 2.052			
	More than 40 hours per week	111	12.865 ± 2.147			
The geographic location of the practice	**Rural**	24	13.625 ± 2.281	T	0.770	0.442
	Urban	176	13.250 ± 2.231			

Table (8) Relation between socio-demographic characteristics and participants' attitudes reveals that there was a statistically significant difference between the professional status of participants and their attitudes with p-value < 0.041*. Moreover, there was a statistically significant difference between the experience as community pharmacists of participants and their attitudes with p-value < 0.048*; there was a statistically significant difference between **the** approximate number of patients seen per day in the pharmacy and their attitudes with p-value < 0.009*.

Table (8) Relation between socio-demographic characteristics and participants attitudes

Demographic variables		N	Attitudes	F or T	ANOVA or T-test	
			Mean ± SD		Test value	P-value
Gender	**Female**	60	7.150 ± 1.645	T	-0.625	0.533
	Male	140	7.300 ± 1.516			
Age (years)	**20–30**	145	7.090 ± 1.670	F	2.087	0.103
	31–40	29	7.690 ± 1.039			
	41- 50	14	7.571 ± 1.222			
	51-60	12	7.833 ± 1.115			
	Bachelor	124	7.113 ± 1.521	F	1.289	0.279

Demographic variables		N	Attitudes			F or T	ANOVA or T-test	
			Mean	±	SD		Test value	P-value
Level of Education	**Master**	7	7.143	±	2.410			
	Pharm-D	63	7.571	±	1.542			
	PhD	6	7.000	±	0.894			
Professional Status	**Staff Pharmacist**	148	7.324	±	1.371	F	2.798	0.041*
	Clinical Pharmacist	25	7.560	±	1.805			
	Pharmacist Assistant	13	6.154	±	2.478			
	Senior Pharmacist	14	7.000	±	1.569			
Your experience as a community pharmacist (duration)	**Less than 6 months**	31	6.484	±	2.064	F	2.284	0.048*
	6 months to 1 year	33	7.545	±	1.227			
	1 year to less than 3 years	82	7.256	±	1.578			
	3 years to less than 6 years	34	7.647	±	1.300			
	6 years to less than 12 years	16	7.250	±	1.125			
	More than 12 years	4	7.500	±	0.577			
Job-status	**Employee**	190	7.295	±	1.461	T	1.583	0.115
	Employer/Manager	10	6.500	±	2.799			
Approximate number of patients seen per day in the pharmacy.	**<10**	6	5.333	±	2.875	F	3.959	0.009*
	10-50	71	7.127	±	1.780			
	51-100	98	7.459	±	1.302			
	> 100	25	7.280	±	1.021			
Working hours per week	**1-16 hours per week**	16	7.000	±	2.000	F	1.092	0.354
	17-31 hours per week	21	6.905	±	1.136			
	32-40 hours per week	52	7.538	±	1.461			
	More than 40 hours per week	111	7.225	±	1.588			
The geographic location of the practice	**Rural**	24	7.042	±	2.312	T	-0.716	0.475
	Urban	176	7.284	±	1.426			

Table (9) Relation between socio-demographic characteristics and participants' practice reveals that there was a statistically significant difference between the age of

participants and their practice with p-value < 0.001*; there was a statistically significant difference between the professional status of participants and their practice with p-value < 0.022*. Moreover, there was a statistically significant difference between the experience as a community pharmacist of participants and their practice with a p-value < 0.001*; there was a statistically significant difference between working hours per week and their practice with a p-value < 0.001*.

Table (9) Relation between socio-demographic characteristics and participants practice

Demographic variables		**N**	**Practice**	**F or T**	**ANOVA or T-test**	
			Mean ± SD		**Test value**	**P-value**
Gender	**Female**	60	7.667 ± 2.844	T	1.538	0.126
	Male	140	6.886 ± 3.462			
Age (years)	**20–30**	145	6.414 ± 3.471	F	9.646	<0.001*
	31–40	29	8.552 ± 2.245			
	41- 50	14	9.857 ± 0.363			
	51-60	12	9.000 ± 1.044			
Level of Education	**Bachelor**	124	7.137 ± 3.299	F	1.808	0.147
	Master	7	8.714 ± 1.890			
	Pharm-D	63	6.698 ± 3.467			
	PhD	6	9.333 ± 1.033			
Professional Status	**Staff Pharmacist**	148	6.791 ± 3.529	F	3.279	0.022*
	Clinical Pharmacist	25	8.400 ± 2.309			
	Pharmacist Assistant	13	6.538 ± 2.470			
	Senior Pharmacist	14	8.857 ± 1.610			
Your experience as a community pharmacist (duration)	**Less than 6 months**	31	7.548 ± 2.321	F	8.252	<0.001*
	6 months to 1 year	33	8.061 ± 2.850			
	1 year to less than 3 years	82	5.610 ± 3.829			
	3 years to less than 6 years	34	7.941 ± 2.295			
	6 years to less than 12 years	16	9.875 ± 0.342			
	More than 12 years	4	9.000 ± 1.155			
	<10	6	6.667 ± 2.066	F	1.546	0.204

Demographic variables		N	Practice	F or T	ANOVA or T-test	
			Mean ± SD		Test value	P-value
Approximate number of patients seen per day in the pharmacy.	**10-50**	71	7.169 ± 3.014			
	51-100	98	6.796 ± 3.678			
	> 100	25	8.360 ± 2.498			
Working hours per week	**1-16 hours per week**	16	7.625 ± 1.784	F	13.297	<0.001*
	17-31 hours per week	21	8.381 ± 2.636			
	32-40 hours per week	52	8.962 ± 1.970			
	More than 40 hours per week	111	5.946 ± 3.590			
The geographic location of the practice	**Rural**	24	8.042 ± 2.493	T	1.462	0.145
	Urban	176	6.994 ± 3.383			

Discussion

Medication safety has recently become the center of international attention in the healthcare system [30, 31]. Even though healthcare systems prioritize providing safe pharmaceuticals, adverse drug events (ADEs) and medication errors (ME) unintentionally cause harm to patients [32]. As a result, pharmacovigilance and pharmaceutical safety are crucial to the healthcare systems' ability to protect patients, and they continue to be the highest priority for all parties involved, including patients and healthcare professionals like pharmacists [33]. This study was carried out to assess the KAP of CPs, which has been suggested to be a crucial first step in raising knowledge of drug safety, the risk of prescribing illegal medications, the necessity of reporting adverse drug reactions, and the significance of PV.

According to the current study, the majority of participants are male and fall into the 20–30 age range. Less than one-third of participants are in the 31–40 age range, and over two-thirds of participants hold a bachelor's degree. In terms of their occupation, a significant portion of participants worked as staff pharmacists, and over one-third of them had one to three years of experience as community pharmacists. In terms of employment status, the bulk of participants are employees, and a sizable portion of them reside in urban areas where the practice is located. About fifty percent of the patients seen in the pharmacy each day are between fifty and one hundred.

The CPs' age, work status, degree, experience, and other profile information showed that their education and experience levels were acceptable. As a result, it is assumed that they may possess expertise appropriate for this investigation. The survey also showed that the majority of CPs had some knowledge about the definition of ADRs, their purpose, and the medicinal products that might be the primary source of ADRs.

This study result was in the same line with the study conducted in Aden-Yemen by Alshakka et al., (2021) [34] found that the majority of study participants were young males,

young age, an employee working in an independent pharmacy, having a working experience in a community pharmacy between one to six years and acquired a bachelor degree in pharmacy.

The current study revealed that the majority of the participants have average knowledge; while the majority of the participants have high attitudes and practice. Regarding patient safety and response to mistakes, the majority of the participants have a high percentage. Pharmacists should be key players in the identification, detection, prevention, and management of ADRs; they are thought to be the medical experts with the most thorough understanding of the pharmacological elements of the medications. Pharmacists should participate in ongoing awareness programs to establish, improve, and expand their knowledge.

These results are consistent with the study conducted by AL-Mutairi et al., (2021) [8] showed a narrow knowledge of the PV field with surveyed pharmacists from Riyadh hospitals. However, a positive attitude and satisfactory practice were observed among pharmacists. These findings warrant the need for educational programs and an encouraging environment for ADR reporting to increase ADR reporting rates and support PV activities in Saudi Arabia.

Furthermore, the results of this study in the same line with the study conducted by Kopciuch et al., (2019) [35] show that Polish pharmacists have poor knowledge of pharmacovigilance or ADR reporting. Educational programs in this respect are urgently needed. Monitoring the safety of pharmacotherapy and knowledge of risks associated with ADRs should be included in the curricula of academic pharmaceutical courses, and pharmacists should be fully aware of the fact that participation in the processes of pharmacovigilance and ADRs reporting is one of their primary duties.

According to Hallit et al. (2019) [29], the majority of the participants also demonstrated a good understanding of adverse drug reactions, including how to report them, the significance of reporting adverse events, what constitutes an adverse event, and PV. The majority of CPs reported feeling positive about their involvement in reporting ADRs, and some even considered it to be one of their primary responsibilities when it came to their attitudes and practices about PV.

However, these findings were inconsistent with Alshakka et al., (2021) [34] reported that regarding PV's goals and perspective, as well as ADRs, most CPs were well-informed. Of the participants, approximately forty percent were aware of PV's role as a crucial drug-use safety and public health system. Furthermore, the Yemeni pharmacists viewed the reporting system well. A substantial portion of respondents acknowledged that pharmacists are in charge of PV. Most interviewees stated that their place of employment does not have a reporting form available. Nearly half of the participants, according to CPs, stated that ADR reporting in Yemen is not extensively encouraged by pertinent authorities, and over half of them responded that a barrier to the reporting system is the patient's failure to provide adequate information. Most CPs thought that reporting adverse drug reactions (ADRs) would enhance patient safety. concluded that the CPs have a reasonable level of expertise and a positive attitude regarding PV. However, the practice level should be raised.

Conclusion

It can be concluded from the current study that: the majority of the participants have average knowledge; while the majority of the participants have high attitudes and practice. Regarding patient safety and response to mistakes, the majority of the participants have a high percentage. Pharmacists should be key players in the identification, detection, prevention, and management of ADRs; they are thought to be the medical experts with the most thorough understanding of the pharmacological elements of the medications. Pharmacists should participate in ongoing awareness programs to establish, improve, and expand their knowledge.

Recommendations: will be recommended to:

- Encourage CPs to attend training programs about medication safety that enhance reporting of ADRs and PV processes.
- Increase the awareness of the importance of compliance toward medication safety.
- Provide ongoing evaluation for PCs' compliance toward reporting of ADRs and PV processes.

Recommendations for further research studies: A study to investigate factors that affect PCs' compliance toward reporting of ADRs and PV processes.

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