Journal of Pharmacovigilance
ISSN: 2329-6887

Toklu et al., J Pharmacovigilance 2016, 4:1
http://dx.doi.org/10.4172/2329-6887.1000193

Research Article Open Access

The Knowledge and Attitude of the Healthcare Professionals towards Pharmacovigilance and Adverse Drug Reaction Reporting in Northern Cyprus

Hale Zerrin Toklu[1,2*], Mertdoğan Soyalan[2,3], Onur Gültekin[3], Mehmet Özpolat[3], Meryem Deniz Aydın[3], Ahmet Çayhan Günay[3], Dudu Özkum Yavuz[3], Ahmet Akici[4] and Rümeysa Demirdamar[3]

[1]University of Florida Department of Pharmacology and Therapeutics, USA
[2]Ministry of Health, Nicosia, Turkish Republic of Northern Cyprus
[3]Near East University School of Pharmacy, Nicosia, Turkish Republic of Northern Cyprus
[4]Marmara University School of Medicine, Istanbul, Turkey

Abstract

Background: Adverse drug reaction (ADR) is a response to a medicinal product which is noxious and unintended. Spontaneous reporting of ADRs has remained the cornerstone of pharmacovigilance and is important in maintaining patient safety. Therefore, we aimed to assess knowledge and attitude of the health professionals towards pharmacovigilance and ADR reporting.

Method: A face to face questionnaire was conducted with 90 community pharmacists, 98 nurses and 71 physicians in Turkish Republic of Northern Cyprus (TRNC), who consented to participate in the study.

Results: Of those that did respond, only 13% of the pharmacists, 2% of the nurses and 20% of the physicians had knowledge about 'pharmacovigilance'. Respectively 32%, 12% and 54% of participants stated that their patients reported them an ADR within the recent year, but only 10% of the pharmacists and 3% of nurses and physicians stated that they sent an ADR report to the concerned organization. The common reasons for under-reporting was stated as lack of knowledge of where/how to report, lack of time, ADR reporting being not mandatory, belief that it was not their responsibility, hesitation about their clinical knowledge, avoiding the professional liability.

Conclusion: The results show that the healthcare professionals in Northern Cyprus have insufficient knowledge about pharmacovigilance. Therefore, it seems there is an extensive need for a training program about pharmacovigilance and ADR reporting.

Keywords: Adverse drug reaction reporting; Nurse; Pharmacist; Doctor; Prescriber; Pharmacovigilance; Healthcare professionals; Pharmaceutical care; Rational drug use; Rational pharmacotherapy; Medicine; Medication; Patient; Drug safety; Cyprus

Introduction

The World Health Organization (WHO) defines pharmacovigilance as "the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other possible drug-related problems" [1]. A new medicine licensing application is based on controlled and regulated clinical trials. This approval process has important difficulties regarding safety in post-marketing period. Although phase IV studies provide additional information including some risks of the drug, they do not guarantee completely about drug safety. Once a licensed medicine is placed on the market, it leaves the controlled scientific environment of clinical trials. At this point, most medicines will only have been tested for short-term safety and efficacy on a limited number of carefully selected individuals. Moreover, almost always the patients are selected from specific groups of relatively homogeneous people that they have only one disease being used with limited medicines in clinical trials. This licensed medicine is not used only selected patients who have one disease but also it is likely used in many patients whose are treated by different agents for their concomitant diseases. Therefore, it is important that the use of these medicines is monitored for their ongoing effectiveness and safety [2,3]. Effective and safe pharmacological treatment process requires a team work of the patient and healthcare professionals. Pharmaceutical care includes considering these risks on a patient-oriented basis by "identifying and solving (or avoiding)" drug therapy problems. Although the prescription is written by medical doctors in most countries, pharmacists and nurses have a crucial role in monitoring the treatment and determining the drug related problems and maintaining the safety of medicines.

Pharmacovigilance is the science dedicated to the safety of drugs as used in the clinical practice, based on experiences from the clinical practice, thus generating knowledge on the harmful effects of drugs, both at the individual and the population level, that will eventually be applied in the clinical practice and thus lead to a safer use of drugs [4]. The implementations of pharmacovigilance need enough relevant knowledge about safety of drugs. Satisfactory reporting of suspected adverse drug reactions (ADR) reported by healthcare professionals is all important in this issue. Other than the number of reports, the quality of the reports and assessment of these reports should be conducted in order to alert drug safety professionals to new and potentially important information concerning drug associated adverse reactions. Especially pharmacists, physicians and nurses can play an

***Corresponding author:** Hale Zerrin Toklu, University of Florida, Department of Pharmacology and Therapeutics, 1200 Newell Dr PO:100267, 32608 FL, United States, Tel: +1352-392-3395; E-mail: haletoklu@yahoo.com

Received: January 25, 2016; **Accepted** February 03, 2016; **Published** February 08, 2016

Citation: Toklu HZ, Soyalan M, Gültekin O, Özpolat M, Aydın MD, et al. (2016) The Knowledge and Attitude of the Healthcare Professionals towards Pharmacovigilance and Adverse Drug Reaction Reporting in Northern Cyprus. J Pharmacovigilance 4: 193. doi:10.4172/2329-6887.1000193

important role in the detection and reporting of suspected ADR. For instance greater participation by pharmacists in ADR reporting could be an important tool to counter under-reporting of ADRs. It is crucial to encourage pharmacists and other health care providers around the world to report ADR [1]. Therefore, the community pharmacists should understand their pivotal role in the surveillance of the safe use of medicines in especially outpatients whereas the role of nurses is more apparent for inpatients. Actually, all healthcare professionals need to be actively involved in the surveillance of drug safety issues within the context of their practices. Although their role in pharmacovigilance may vary from country to country, the professional responsibility is the same, regardless of jurisdiction [2,5,6].

Generally, many underdeveloped countries utilize information obtained from the pharmacovigilance systems already established in developed countries. When cultural, genetic and local factors are taken into consideration, this may not be appropriate. Therefore, countries should develop their own pharmacovigilance systems and all professionals need to be involved in the care of patients, including physicians, dentists, nurses and pharmacists, should report ADR related to the treatment [1]. It is clear that many general factors affect ADR reporting from severity of reactions to the pharmacovigilance regulations of the country [7].

National ADR Reporting System in Turkish Republic of Northern Cyprus

The Turkish Republic of Northern Cyprus (TRNC) Ministry of Health signed a protocol in 2008 with Near East University Faculty of Pharmacy (NEUFP) to establish and run the national pharmacovigilance center. According to protocol NEUFP collects the data after the first evaluation, it is sent to TÜFAM (National Pharmacovigilance Center of Turkey) to be shared with the WHO/Upsala Monitoring Center (UMC) [8]. However, the center does not work efficiently because of limited number of reported cases. Therefore the following study aimed to investigate the knowledge, perceptions and attitudes of health professionals in TRNC towards of pharmacovigilance and ADR reporting.

Method

Study population

Cyprus is the third biggest island (following Sicily and Sardinia) in the Mediterranean Sea. The study was conducted in Northern Cyprus. The population of the TRNC is 294.906 according to 2012 data and there are 158 community pharmacists, 1050 nurses and 568 physicians in the country. The average person per health professional is as follows: 1404 per pharmacist, 281 per nurse and 519 per physician [9]. Community pharmacies are private enterprises and pharmacists are allowed to run and/or own a single pharmacy, work in hospitals, in public institutions or for government, but cannot practice any of the two at the same time. There is no concept as chain pharmacies in TRNC. As in many developing countries, in TRNC pharmacists have a distinct role in pharmaceutical care and patient education since many patients apply to pharmacies as a primary care in the health system. Nurses and pharmacists only dispense the drugs. Like many other countries only medical doctors/dentists/vets can legally prescribe in TRNC.

A face to face questionnaire was conducted with 90 community pharmacists (61% of the country total), 98 nurses (10% of the country total) and 71 physicians (13% of the country total) in TRNC, who consented to participate in the study. Legal permissions were taken from the local health authorities before the surveys.

Questionnaire

The questionnaire consisted of open-ended and structured questions about the socio-demographic characteristics of the pharmacists, nurses and physicians, their knowledge of pharmacovigilance and their attitudes towards ADR reporting. Answers of some questions that reflected healthcare professionals' perceptions had scale. This scale was as strongly agree (5), agree (4), Undecided (3), disagree (2), strongly disagree (1). The questionnaire was examined in linguistic and interpretive terms and validated by the expert from the Department of Public Health. For the validation of the questionnaire, a pilot study was done with 10 healthcare professionals from each group.

Statistical analysis

The data were subjected to frequency analysis by Statistical Package for Social Sciences® (SPSS) software version 13.0 for Windows.

Results

Ninety pharmacists, 98 nurses and 71 physicians participated in the study. The socio-demographical characteristics of the pharmacists, nurses and physicians are presented in Table 1. The majority of the pharmacists were older than 45 years (63.4%). In the nurse and physician groups they were mainly younger age groups (25-45 years groups were 98% and 71.8% respectively).

The majority of the health professionals failed to define "pharmacovigilance" correctly. On the other hand, many of pharmacists (77.8%) and physicians (97.2%) could define ADR correctly while many of nurses (85.7%) could not (Table 2).

As seen in Table 2, the previous ADR experience during the last year showed that physicians were more frequently received from patients an ADR (53.5%) than pharmacists (32.2%) and nurses (11.5%). On the other hand, physicians had reported these ADRs less (2.7%) than pharmacists (10.3%) and nurses (3.3%). None of the interviewed professionals knew how to reach the ADR reporting forms.

The highly rated reasons for under-reporting were ignorance of reaching ADR reporting forms, "ADR reporting not being mandatory", "unknown where/how to report ADR", "lack of time", "lack of clinical knowledge" and "refraining the legal liability" (Table 3).

When they were asked about the way that would increase ADR reporting rates, almost all of them claimed that training on ADR reporting would improve it and additionally they told that they would prefer to get a feedback about the reports (Table 4).

		Pharmacist	Nurse	Physician
		N (%)	N (%)	N (%)
Age	25-35	24 (26.6)	39 (39.8)	28 (39.4)
	36-45	9 (10.0)	57 (58.2)	23 (32.4)
	46-55	22 (24.5)	2 (2.0)	15 (21.2)
	55+	35 (38.9)	-	5 (7.0)
Sex	Male	26 (28.9)	12 (12.2)	51 (71.8)
	Female	64 (71.1)	86 (87.8)	20 (28.2)
Experience (years)	<10	18 (20.0)	24 (24.5)	17 (23.9)
	10-20	25 (27.8)	63 (64.3)	28 (39.5)
	>20	47 (52.2)	11 (11.2)	26 (36.6)

Table 1: Socio-demographical characteristics of healthcare professionals.

		Pharmacist N (%)	Nurse N (%)	Physician N (%)
Knowledge about pharmacovigilance	Correct	12 (13.3%)	2 (2.0%)	14 (19.7%)
	Uncorrect/no idea	78 (86.7%)	96 (98.0%)	57 (80.3%)
	Total	90 (100.0%)	98 (100.0%)	71 (100.0%)
Knowledge about ADR	Correct	70 (77.8%)	14 (14.3%)	69 (97.2%)
	Incorrect/no idea	20 (22.2%)	84 (85.7%)	2 (2.8%)
	Total	90 (100.0%)	98 (100.0%)	71(100.0%)
Have the patients reported you any ADR during the last year?	Yes	29 (32.2%)	11 (11.5%)	38 (53.5%)
	No	61 (67.8%)	85 (88.5%)	33 (46.5%)
	Total	90 (100.0%)	96 (100.0%)	71 (100.0%)
How often do the patients report you ADRs?	More than once a week	1 (3.5%)	0 (-)	5 (12.8%)
	Once in 15 days	9 (31.0%)	0 (-)	6 (15.4%)
	Once a month	12 (41.4%)	9 (9.6%)	18 (46.2%)
	A few times a year	7 (24.1%)	85 (90.4%)	10 (25.6%)
	Total	29 (100.0%)	94 (100.0%)	39 (100.0%)
Do you exactly know how/where can you get the ADR reporting form?	Yes	0 (-)	0 (-)	0 (-)
	No	90 (100.0%)	98 (100.0%)	71 (100.0%)
	Total	90 (100.0%)	98 (100.0%)	71 (100.0%)
Do you report ADRs?	Yes	3 (10.3%)	3 (3.3%)	1 (2.7%)
	No	26 (89.7%)	88 (96.7%)	38 (97.4%)
	Total	29 (100.0%)	91(100.0%)	39 (100.0%)

Table 2: The healthcare professionals' knowledge about pharmacovigilance and adverse drug reaction (ADR) and their annual experience regarding ADR reporting.

		Pharmacist N (%)	Nurse N (%)	Physician N (%)
ADR reporting is not necessary	Agree/strongly agree	6 (7.5%)	8 (8.2%)	6 (24.0%)
	Disagree/strongly disagree	60 (75.0%)	78 (79.6%)	14 (56.0%)
	Undecided	14 (17.5%)	12 (12.2%)	5 (20.0%)
ADR reporting is not mandatory	Agree/strongly agree	27 (33.7%)	26 (26.5%)	17 (34.7%)
	Disagree/strongly disagree	37 (46.3%)	53 (54.1%)	26 (53.1%)
	Undecided	16 (20.0%)	19 (19.4%)	6 (12.2%)
I don't know where/how to report ADR	Agree/strongly agree	37 (45.7%)	89 (90.8%)	21 (84.0%)
	Disagree/strongly disagree	10 (12.3%)	6 (6.1%)	1 (4.0%)
	Undecided	34 (42.0%)	3 (3.1%)	3 (12.0%)
ADR reporting forms are too complicated	Agree/strongly agree	4 (5.0%)	11 (11.2%)	3 (12.0%)
	Disagree/strongly disagree	26 (32.5%)	54 (55.1%)	3 (12.0%)
	Undecided	50 (62.5%)	33 (33.7%)	19 (76.0%)
I don't have enough time to report	Agree/strongly agree	7 (8.7%)	41 (41.8%)	9 (34.6%)
	Disagree/strongly disagree	53 (66.3%)	54 (55.1%)	11 (42.3%)
	Undecided	20 (25.0%)	3 (3.1%)	6 (23.1%)
I don't have enough clinical knowledge about it	Agree/strongly agree	3 (3.7%)	58 (59.2%)	3 (11.5%)
	Disagree/strongly disagree	64 (80.0%)	34 (34.7%)	22 (84.6%)
	Undecided	13 (16.3%)	6 (6.1%)	1 (3.9%)
ADR reporting is the responsibility of the prescriber	Agree/strongly agree	35 (43.7%)	95 (96.9%)	8 (30.8%)
	Disagree/strongly disagree	34 (42.5%)	0 (-)	10 (38.4%)
	Undecided	11 (13.8%)	3 (3.1%)	8 (30.8%)
I avoid the professional liability	Agree/strongly agree	2 (2.5%)	21 (21.4%)	2 (7.7%)
	Disagree/strongly disagree	72 (90.0%)	62 (63.3%)	23 (88.5%)
	Undecided	6 (7.5%)	15 (15.3%)	1 (3.8%)

Table 3: Distribution of reasons for under-reporting of adverse drug reaction (ADR).

Consistently majority of the pharmacists, nurses and physicians had a perception that "serious" and "unexpected" effects should be reported, especially regarding "the newly marketed drugs" (Table 5).

Table 6 demonstrates the thoughts of health professionals about the importance of ADR reporting.

None of the respondents had a formal training on ADR reporting or pharmacovigilance but almost all (pharmacists: 97%, doctors: 95%; nurses: 92%) stated that they would be willing to participate in training.

Discussion

This is the first study from TRNC which evaluates the perception, attitudes and behaviors of the community pharmacists, nurses and physicians towards pharmacovigilance. Also there were high representation rates of health professionals especially in pharmacist group that represented 61% of the country total. This broad representation may reflect the impact of our study.

One of our most striking findings was the low pharmacovigilance knowledge of the majority of health professionals who participated

in the study. Although they were not familiar with the term 'pharmacovigilance', almost all of the physicians and most of the pharmacists defined the ADR correctly while less than 20% of the nurses did (Table 2). Knowledge about a principal safety term may provide a good performance in this professional area. In the study, limited knowledge of health professionals about pharmacovigilance seems to lead their poor performance in drug safety issues. Although there was a weak knowledge about pharmacovigilance concept among all participants, the term 'ADR' was more recognized than the term 'pharmacovigilance'; especially among pharmacists and doctors than nurses. This may be due to the fact that pharmacists and doctors have an intense drug focused education. They have more pharmacology classes than nurses do. Their less knowledge about ADR may be related to their relatively less knowledge about medications (Table 2). Moreover, doctors and pharmacists claimed to be reported more ADR (54% and 32%) than the nurses (11%). This may be due to their recognition of ADR. On the other hand, their low reporting rate (10.3% among pharmacists and 2.7% among physicians) of these ADR is possibly due to their poor knowledge about pharmacovigilance practice. They also lack the knowledge how to reach the reporting forms.

Pharmacists seem to have reported more ADRs than nurses and physicians (Table 2). A significant number of the respondents were not aware of the existence of a national pharmacovigilance center in TRNC. None of the healthcare professionals knew where/how to reach the ADR forms and this was the main reason for not reporting ADR (Table 3). This may be a result that the national pharmacovigilance system in TRNC was founded less than 10 years ago [8]. On the other hand, even though they did not know how to access the forms, they claimed to report the ADR, but they did not clarify where they had reported. Probably, this was one of the questions with the high missing rate. In a previous study that is conducted in Turkey, 65% of pharmacists claimed to report ADR, but only 21% of reporting was actually done to the concerned organizations [10]. Under reporting of ADR is not only problems of Turkey and TRNC, this is the global safety issues at all over the world. For instance a systematic review provided from 37 published studies in 12 different countries (United States, United Kingdom, France, Germany, Holland, Spain, Denmark, Italy, Norway, Sweden, Canada, Hong Kong) revealed of significant and widespread under-reporting of ADRs to spontaneous reporting systems. The rate of under-reporting ranged from 6% to 100% (median rate was 94%) has been presented in this review [11].

Appropriate ADR reporting is an essential role of healthcare professionals and this is an important component of drug safety. Poor

		Pharmacist N (%)	Nurse N (%)	Physician N (%)
ADR reporting training	Agree/strongly agree	80 (90.9%)	98 (100.0%)	69 (97.2%)
	Disagree/strongly disagree	3 (3.4%)	0 (-)	0 (-)
	Undecided	5 (5.7%)	0 (-)	2 (2.8%)
Make ADR executively mandatory	Agree/strongly agree	72 (80.0%)	91 (92.9%)	50 (70.4%)
	Disagree/strongly disagree	2 (2.2%)	0 (-)	7 (9.9%)
	Undecided	16 (17.8%)	7 (7.1%)	14 (19.7%)
Improve communication	Agree/strongly agree	80 (89.9%)	98 (100.0%)	59 (83.1%)
	Disagree/strongly disagree	1 (1.1%)	0 (-)	1 (1.4%)
	Undecided	8 (9.0%)	0 (-)	11 (15.5%)
Giving feedback to ADR reports	Agree/strongly agree	71 (80.7%)	94 (95.9%)	64 (90.1%)
	Disagree/strongly disagree	1 (1.1%)	0 (-)	1 (1.4%)
	Undecided	16 (18.2%)	4 (4.1%)	6 (8.5%)
ADR reporting should be promoted	Agree/strongly agree	68 (79.1%)	94 (95.9%)	59 (83.0%)
	Disagree/strongly disagree	4 (4.7%)	0 (-)	6 (8.5%)
	Undecided	14 (16.2%)	4 (4.1%)	6 (8.5%)

Table 4: How should the adverse drug reaction (ADR) reporting rate be increased?

		Pharmacist N (%)	Nurse N (%)	Physician N (%)
Any problems related to newly marketed drugs	Agree/strongly agree	76 (87.4%)	90 (91.8%)	61 (86.0%)
	Disagree/strongly disagree	3 (4.4%)	2 (2.0%)	5 (7.0%)
	Undecided	8 (9.2%)	6 (6.2%)	5 (7.0%)
Any problems related to generic drugs	Agree/strongly agree	77 (85.6%)	87 (88.8%)	59 (83.1%)
	Disagree/strongly disagree	5 (5.5%)	1 (1.0%)	8 (11.3%)
	Undecided	8 (8.9%)	10 (10.2%)	4 (5.6%)
Any problems related to OTC drugs	Agree/strongly agree	57 (66.3%)	79 (80.6%)	57 (80.3%)
	Disagree/strongly disagree	8 (9.3%)	1 (1.0%)	3 (4.2%)
	Undecided	21 (24.4%)	18 (18.4%)	11 (15.5%)
Only serious problems (death, hospitalization, disability)	Agree/strongly agree	75 (84.3%)	95 (97.0%)	64 (90.2%)
	Disagree/strongly disagree	3 (3.3%)	2 (2.0%)	4 (5.6%)
	Undecided	11 (12.4%)	1 (1.0%)	3 (4.2%)
Only unexpected adverse effects	Agree/strongly agree	76 (85.4%)	94 (95.9%)	64 (90.1%)
	Disagree/strongly disagree	1 (1.1%)	1 (1.0%)	1 (1.4 %)
	Undecided	12 (13.5%)	3 (3.1%)	6 (8.5%)
Expected adverse effects	Agree/strongly agree	49 (59.8%)	89 (90.8%)	31 (43.6%)
	Disagree/strongly disagree	21 (25.6%)	6 (6.1%)	28 (39.5%)
	Undecided	12 (14.6%)	3 (3.1%)	12 (16.9%)

Table 5: What should be reported as adverse drug reaction (ADR)?

		Pharmacist N (%)	Nurse N(%)	Physician N (%)
To determine the side effects of newly marketed drugs	Agree/strongly agree	72 (87.8%)	93 (94.9%)	48 (94.1%)
	Disagree/strongly disagree	2 (2.4%)	4 (4.1%)	1 (2.0%)
	Undecided	8 (9.8%)	1 (1.0%)	2 (3.9%)
To determine the incidence of any adverse effect in the population	Agree/strongly agree	69 (84.2%)	85 (86.7%)	47 (92.2%)
	Disagree/strongly disagree	3 (3.6%)	1 (1.0%)	4 (7.8%)
	Undecided	10 (12.2%)	12 (12.3%)	0 (-)
To determine the incidence of adverse expected effects	Agree/strongly agree	67 (81.7%)	85 (86.7%)	47 (92.2%)
	Disagree/strongly disagree	2 (2.4%)	0 (-)	1 (2.0%)
	Undecided	13 (15.9%)	13 (13.3%)	3 (5.8%)
To determine the incidence of adverse unexpected effects	Agree/strongly agree	70 (85.4%)	96 (98.0%)	64 (90.1%)
	Disagree/strongly disagree	4 (4.9%)	1 (1.0%)	1 (1.4%)
	Undecided	8 (9.7%)	1 (1.0%)	6 (8.5%)
To determine the differences between generics	Agree/strongly agree	68 (82.9%)	75 (76.5)	36 (70.6%)
	Disagree/strongly disagree	3 (3.7%)	1 (1.0%)	8 (15.7%)
	Undecided	11 (13.4%)	22 (22.4%)	7 (13.7%)

Table 6: Why is adverse drug reaction (ADR) reporting important?

professional performance in pharmacovigilance (like under-reporting ADR) can cause irrational use of medicine and other drug related problems [12]. Although the main reason for under-reporting ADR was lack of knowledge about ADR forms, other reasons were lack of time (for doctors and nurses), and ADR reporting was not being mandatory, misbelief that it was only the prescribers responsibility (97% of nurses and 44% of pharmacists) to report, also 59% of nurses believed they did not have enough clinical knowledge to decide where it was an ADR to be reported. Pharmacists and nurses did not consider ADR reporting as a natural task for their profession. This attitude indicates the lack of understanding of their responsibility and their role in the healthcare team especially in drug safety issues. Unlike other countries, avoiding professional liability was not a contributing factor. Inadequate knowledge and under-reporting of ADR is a worldwide phenomenon and this has been established from previous studies [10,11,13-28]. It was reported that knowledge and attitude exerted a strong influence on ADR reporting attitude [29]. However, attitudes are potentially modifiable variables. Hence, Granas et al. have shown that an educational program can significantly modify pharmacists' reporting-related attitudes and influence the ADR reporting behavior in a positive manner [30]. In the systematic review of Hazell and Shakir, common reasons for not reporting included lack of time, different care priorities, uncertainty about the drug causing ADR, difficulty in accessing forms, lack of awareness of requirements for reporting and lack of understanding the purpose of spontaneous reporting systems [11]. Also, in other studies, the reasons associated with ADR underreporting were reported as the heavy workload, lack of time, ignorance, legal diffidence, complacency and insecurity [10,29,31,32].

WHO's primary reason for initiating pharmacovigilance was to ensure safe and rational use of medicines after their introduction for the use among the patients [1]. To achieve future goals, all healthcare professionals should be encouraged to take responsibilities in "pharmacovigilance" activities. As part of the pharmacovigilance systems, doctors (in some countries, other healthcare professionals and patients as well) are provided with reporting forms to report authorities about the ADRs. In the United Kingdom, the 'yellow card' has been used for this purpose since 1964. Similar forms are provided in the FP10 prescriptions pads, the British National Formulary and other sources. In the United States, the MedWatch form is used and is made broadly available to healthcare professionals to encourage reporting [3]. Also patient self-reporting may have a complimentary role in increasing ADR reports in developing countries.

In TRNC, only medical doctors have a prescribing right. However, although it is required by law that medicine needs to be dispensed by prescription, this is not strictly obeyed [33]. Even prescription-only drugs are being dispensed without prescriptions. Also a recent report has shown that herbal medicine use was common among diabetic patients and some of the herbs may have potential drug interactions with their concurrently used drugs [34]. Another social fact is that people seek treatment in pharmacies and drug stores even for severe conditions because of low income and lack of healthcare coverage. Pharmacists serve as free health consultants, and patients can easily access them. Therefore, the community pharmacists have become one of the main health providers in Turkey and other developing countries. For this purpose, we propose a countrywide training in TRNC for pharmacists especially and determine regional representatives who would serve as contact points for ADR reporting follow up.

Although the role of the pharmacist is more important for the outpatients, nurses may have an extensive role regarding the medicines of inpatients. They may assist doctors about drug reactions and determination of suspected drugs. Their reports constitute a potentially valuable source for spontaneous reports in hospitals. Thus they need to be involved and encouraged in ADR reporting system [13,35]. Given their unique position in drug administration and preparing patient reports, nurses are well placed to monitor the patients' response to drugs. They are often the source in alerting the responsible physician about possible ADR.

In the present study, almost all the participants agreed that training on ADR reporting would increase the overall reporting rates. They further suggested that making ADR reporting mandatory, promoting ADR reports, providing feedback about it and improving communication between healthcare professionals would improve the number and quality of reporting.

On the other hand, the study has some limitations. It would be desirable to include all participants answer full questions in survey. The main limitation of the study was the poor response rate to some questions in survey. Other limitation was that the participant groups were not standardized regarding their age and professional experiences. The majority of the pharmacists were older than nurses and physicians (Table 1). This could have influenced some answers of the survey. On the other this was not a problem due to the selection of the study population. It showed the actual situation that 63% of the community pharmacists were over the age 45 in country total [9].

Conclusion

The present study showed that the healthcare professionals in Northern Cyprus have insufficient knowledge about pharmacovigilance. The findings of the study become more important when it is taken into consideration that, even though the number of participants seems to be small, they actually represent a significant portion of the healthcare professionals in the whole country. All the members of the health team should understand their role and responsibility for pharmacovigilance practice. Therefore, it seems specific pharmacovigilance education is the cornerstone for solution of the great lack of knowledge and attitude of the healthcare professionals regarding both under-reporting of ADRs and other drug safety issues. A mutual understanding of each other's functions, collaboration and use of each other's competence should be developed with these trainings [36-40]. As evidenced in the developed countries, training will definitely help to increase the quality of reports besides the quantity of reports. As pharmacovigilance system works successfully and achieves its goals, this will contribute better patient safety and also help pharmacovigilance related other problems.

Acknowledgement

The authors would like to thank to Pharmacists Eylem Korcegez (MSc), Tahir Kıpçak, Ismet Okan Bıçak for their contributions in the study. The authors would also like to thank to Assoc. Prof. Seyhan Hidiroglu for her contribution on the preparation and validation of the questionnaires.

Presentation at a Meeting

The findings were presented at the International Summit on Clinical Pharmacy and Dispensing. November 18-20, 2013 Hilton San Antonio Airport, TX, USA as a presentation with interim findings. The abstract was published in Clinic Pharmacol Biopharmaceut 2013, 2:3 http://dx.doi.org/10.4172/2167-065X.S1.004. The actual paper, however, has never been published.

References

1. World Health Organization Collaborating Center for International Drug Monitoring (2002) The importance of pharmacovigilance. Safety monitoring of medicinal products, World Health Organization, Geneva, Switzerland.
2. FIP (International Pharmaceutical Federation) (2006) Statement of Policy: the role of the pharmacist in pharmacovigilance, Brazil.
3. Mann R, Andrews E (2007) Introduction. Pharmacovigilance. Mann R, Andrews E. (Eds.) John Wilesy & Sons Ltd. West Sussex England. 2nd Ed. 3-11.
4. Van Grootheest AC, Richesson RL (2012) Pharmacovigilance. Clinical Research Informatics Health Informatics 367-387.
5. Aagaard L, Strandell J, Melskens L, Petersen PS, Holme Hansen E (2012) Global patterns of adverse drug reactions over a decade: analyses of spontaneous reports to VigiBase. Drug Saf 35: 1171-1182.
6. Bandekar MS, Anwikar SR, Kshirsagar NA (2010) Quality check of spontaneous adverse drug reaction reporting forms of different countries. Pharmacoepidemiol Drug Saf 19: 1181-1185.
7. Stephens MDB (2004) Stephens' Detection of New Adverse Drug Reactions. Ed.Talbot J, Patrick W. West Sussex, John Wiley & Sons Ltd, 5.Ed. 1-88.
8. Soyalan M, Demirdamar R, Toklu HZ, Gümüsel B (2012) Kuzey Kibris Türk Cumhuriyeti'nde ulusal farmakovijilans sistemi ve mevcut uygulamalar [National pharmacovigilance system and current practice in the Turkish Republic of Northern Cyprus]. Marmara Pharm J 16: 159-163.
9. Soyalan M, Azgin F, Demirdamar R, Toklu HZ (2013) Kuzey Kibris Türk Cumhuriyeti'nde Eczacilik ve Eczaci Profili [The pharmacist and pharmaceutical profile in the Turkish Republic of Northern Cyprus]. (1st Edn), Near East University Press, Lefkosa, KKTC.
10. Toklu HZ, Uysal MK (2008) The knowledge and attitude of the Turkish community pharmacists toward pharmacovigilance in the Kadikoy district of Istanbul. Pharm World Sci 30: 556-562.
11. Hazell L, Shakir SA (2006) Under-reporting of adverse drug reactions : a systematic review. Drug Saf 29: 385-396.
12. Akici A, Oktay S (2007) Rational pharmacotherapy and pharmacovigilance. Curr Drug Saf 2: 65-69.
13. Suyagh M, Farah D, Abu Farha R (2015) Pharmacist's knowledge, practice and attitudes toward pharmacovigilance and adverse drug reactions reporting process. Saudi Pharm J 23: 147-153.
14. Hanafi S, Torkamandi H, Hayatshahi A, Gholami K, Javadi M (2012) Knowledge, attitudes and practice of nurse regarding adverse drug reaction reporting. Iran J Nurs Midwifery Res 17: 21-25.
15. Ruud KW, Srinivas SC, Toverud EL (2010) Addressing gaps in pharmacovigilance practices in the antiretroviral therapy program in the Eastern Cape Province, South Africa. Res Social Adm Pharm 6: 345-353.
16. Vessal G, Mardani Z, Mollai M (2009) Knowledge, attitudes, and perceptions of pharmacists to adverse drug reaction reporting in Iran. Pharm World Sci 31: 183-187.
17. Lopez-Gonzalez E, Herdeiro MT, Figueiras A (2009) Determinants of under-reporting of adverse drug reactions: a systematic review. Drug Saf 32: 19-31.
18. Pedros C, Vallano A, Cereza G, Mendoza-Aran G, Agusti´ A, et al. (2009) An Intervention to improve spontaneous adverse drug reaction reporting by hospital physicians: a time series analysis in Spain. Drug Saf 32: 77-83.
19. Oshikoya KA, Awobusuyi JO (2009) Perceptions of doctors to adverse drug reaction reporting in a teaching hospital in Lagos, Nigeria. BMC Clin Pharmacol 9: 14.
20. Okezie EO, Olufunmilayo F (2008) Adverse drug reactions reporting by physicians in Ibadan, Nigeria. Pharmacoepidemiol Drug Saf 17: 517-522.
21. Li Q, Zhang SM, Chen HT, Fang SP, Yu X, et al. (2004) Awareness and attitudes of healthcare professionals in Wuhan, China to the reporting of adverse drug reactions. Chin Med J 117: 856-861.
22. Rehan HS, Vasudev K, Tripathi CD (2002) Adverse drug reaction monitoring: knowledge, attitude and practices of medical students and prescribers. Natl Med J India 15: 24-26.
23. Williams D, Feely J (1999) Underreporting of adverse drug reactions: attitudes of Irish doctors. Ir J Med Sci 168: 257-261.
24. McGettigan P, Golden J, Conroy RM, Arthur N, Feely J (1997) Reporting of adverse drug reactions by hospital doctors and the response to intervention. Br J Clin Pharmacol 44: 98-100.
25. Belton KJ, Lewis SC, Payne S, Rawlins MD, Wood SM (1995) Attitudinal survey of adverse drug reaction reporting by medical practitioners in the United Kingdom. Br J Clin Pharmacol 39: 223-226.
26. Pouget-Zago P, Lapeyre-Mestre M, Bagheri H, Montastruc JL (1995) [Pharmacovigilance seen by a selected group of general practitioners and of residents in the Midi-Pyrénées region]. Therapies 50: 459-462.
27. Rogers AS, Israel E, Smith CR, Levine D, McBean AM, et al. (1988) Physician knowledge, attitudes, and behavior related to reporting adverse drug events. Arch Intern Med 148: 1596-1600.
28. Alomar MJ (2014) Factors affecting the development of adverse drug reactions. Saudi Pharm J 22: 83-94.
29. Herdeiro MT, Figueiras A, Polónia J, Gestal-Otero JJ (2006) Influence of pharmacist's attitudes on adverse drug reaction reporting: a case-control study in Portugal. Drug Saf 29: 331-340.
30. Granas AG, Buajordet M, Stenberg-Nilsen H, Harg P, Horn AM (2007) Pharmacist's attitudes towards the reporting of suspected adverse drug reactions in Norway. Pharmacoepidemiol Drug Saf 16: 429-434.
31. Sweis D, Wong IC (2000) A survey on factors that could affect adverse drug reaction reporting according to hospital pharmacists in Great Britain. Drug Saf 23: 165-172.
32. Sencan N, Altinkaynak M, Ferah I, Özyildirim A, Ceylan E, Clark P (2010) The Knowledge and attitudes of physicians and nurses towards adverse event reporting and the effect of pharmacovigilance training: a hospital experience. Hacettepe University Journal of the Faculty of Pharmacy 30: 25-40.
33. Gökçekus L, Toklu HZ, Gümüsel B, Demirdamar R (2012) Dispensing practice in the community pharmacies in the Turkish Republic of Northern Cyprus. Int J Clin Pharm 34: 312-324.

34. Ozkum D, Aki O, Toklu HZ (2013) Herbal medicine use among diabetes mellitus patients in Northern Cyprus. J Med Plant Res 7: 1652-1664.

35. Bäckström M, Mjörndal T, Dahlqvist R (2002) Spontaneous reporting of adverse drug reactions by nurses. Pharmacoepidemiol Drug Saf 11: 647-650.

36. Toklu HZ (2015) Promoting evidence-based practice in pharmacies. Integrated Pharmacy Research and Practice 4: 127–131.

37. Toklu HZ (2015) Pharmaceutical Education vs. Pharmacy Practice: Do We Really Teach What They Need For Practicing? J Pharma Care Health Sys S3: e001.

38. Toklu HZ, Demirdamar R (2013) The evaluation of prescription dispensing scores of the pharmacy students before and after the problem-based "rational drug use" course: Results of the two years' experience. Marmara Pharm J 17: 175-180.

39. Toklu HZ (2013) Problem based pharmacotherapy teaching for pharmacy students and pharmacists. Curr Drug Deliv 10: 67-70.

40. Toklu HZ, Hussain A (2013) The changing face of pharmacy practice and the need for a new model of pharmacy education. J Young Pharm 5: 38-40.

Citation: Toklu HZ, Soyalan M, Gültekin O, Özpolat M, Aydın MD, et al. (2016) The Knowledge and Attitude of the Healthcare Professionals towards Pharmacovigilance and Adverse Drug Reaction Reporting in Northern Cyprus. J Pharmacovigilance 4: 193. doi:10.4172/2329-6887.1000193