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Prospective Study

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Defining the Awareness and Attitude of the Clinicians Through Pharmacovigilance in Turkey

Clinicians and Pharmacovigilance

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Abstract

BACKGROUND

Pharmacovigilance (PV) is the activities and scientific studies conducted to detect, evaluate, understand or prevent adverse reactions and other drug-related problems.

AIM

The aim of the study is to define the awareness and experiences of the clinicians on PV and adverse drug reactions (ADR) in Turkey.

METHODS

The study is cross-sectional and analytical. Data was obtained through a questionnaire. The questionnaire was sent *via* e-mail. The survey was sent to 2030 physicians and 670 of them were participated.

RESULTS

The most appropriate definition of PV has been correctly defined by 53.9% of the participants. The most important goal of pharmacovigilance has been correctly defined

by 54.9% of the participants. 27.3% of the participants are aware of TUFAM. Nonsurgeon physicians have better pharmacovigilance knowledge than surgical physicians. 80.9% of the physicians who encountered adverse drug reaction, filled the ADR notification form. 8.8% of the participants received training on how to fill the form. It was observed that the pharmacovigilance knowledge level of the clinicians was not sufficient. Although half of the physicians encountered ADR, the rates of seeing the ADR form and filling the ADR form are very low.

CONCLUSION

It is seen that very few of the physicians follow the current information about pharmacovigilance. The results of this study provide more comprehensive data on pharmacovigilance practices and ADR reporting at national level.

Key Words: Pharmacovigilance; Physicians; Knowledge Level; Attitude; Behavior; Advers Drug Reaction

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Core Tip: Pharmacovigilance(PV) is the activities and scientific studies conducted to detect, evaluate, understand or prevent adverse reactions and other drug-related problems. This study ¹define the awareness and experiences of the clinicians on PV and adverse drug reactions (ADR) in Turkey. ¹It was observed that the pharmacovigilance knowledge level of the physicians was not sufficient. The results of this study provide more comprehensive data on pharmacovigilance practices and ADR reporting at national level.

INTRODUCTION

Pharmacovigilance (PV) is the activities and scientific studies conducted to detect, evaluate, understand or prevent adverse reactions and other drug-related problems (1, 2). Before a drug is licenced, its safety and efficacy are assessed in a small number of people. Hence, the drug's safety profile is better established with extended use in a wider population following registration. It is also possible for previously unidentified adverse medication reactions to occur throughout this process (3). After the dramatic withdrawal of numerous medications from the market as a result of adverse reactions observed after registration, PV systems were implemented globally (4).

In Turkey, the Turkish Pharmacovigilance Center (TUFAM) is responsible for collecting, recording, analysing, and reporting adverse drug reports to the World Health Organization National Monitoring database. Adverse effect reporting forms are used by healthcare professionals to report suspected adverse reactions to TUFAM. Healthcare professionals can report directly to TUFAM or through pharmacovigilance contact points responsible for hospitals (5).

Each healthcare professional must carefully examine PV because to their shared responsibility for PV applications. The knowledge, attitudes, and behaviors of healthcare personnel regarding PV can have a direct impact on patient safety. There are research analysing the PV knowledge of healthcare workers in Turkey and around the world, according to the available literature. In a research comparing physicians' knowledge and attitudes on rational drug use and PV at a Turkish hospital, 60.6% of physicians did not report adverse effects, 44% were aware of PV, and 70.3% were unaware of TUFAM. In this study, it was determined that there was not enough sensitivity among physicians regarding adverse effect reporting and PV. However, the fact that it was a study conducted in a single province and in a single hospital was shown as one of the limitations of the study (6). In a comparable study including physicians and nurses working in a tertiary hospital in Turkey, it was determined that neither group had sufficient expertise to fulfil their PV responsibilities. In addition, it was noted that neither group sufficiently documented adverse medication reactions (7).

Within the purpose of this study, it was intended to administer a questionnaire designed to assess the knowledge, experience, and perspectives of clinicians on the reporting of PV and adverse drug reactions (ADR) to as many physicians from as many institutions as feasible. The acquired data will be used to identify the flaws of physicians in the field of PV, improve the current situation, and provide a base for future research in this area.

MATERIALS AND METHODS

This cross-sectional analytical investigation was approved by the local ethics committee. 600 participants were determined to be necessary for a meaningful analysis based on a power analysis with a rate of 0.05 for type 1 error and 0.8 for type 2 with a 95% confidence interval. There was no time limit for completing the questionnaire.

The study included everyone who agreed to participate in the survey and who could get the survey. The questionnaire was distributed to a total of 2030 physicians, 670 of them responded, and 43 of whom were excluded since they did not complete the questionnaire. Finally the study population consisted of 627 participants.

The questionnaire employed in the study consists of four sections that inquire about sociodemographic variables, level of PV knowledge, attitudes towards PV, and PV-related behaviours. Appendix 1 provides the questionnaire form. The questionnaire was distributed to the physicians using e-mails gathered from the websites of the institutions.

Statistical analysis: Statistical Package for the Social Sciences (SPSS), for Windows 20 (IBM SPSS Inc., Chicago, IL) program was used to evaluate the data. The normal distribution of the data was analyzed with the Kolmogorov Smirnov test. Numerical variables are expressed as percentages. Since the majority of variables lacked a normal distribution, nonparametric tests were utilised in the study. The Kruskal-Wallis test was utilised to compare various independent groups, while the Mann-Whitney U test served as the post hoc analysis. The p value to be used for posthoc analysis was

calculated *via* Bonferroni correction. The chi-square test was used to analyse the variation of categorical data between groups.

$P < 0,05$ was established to be the threshold value for statistical significance.

RESULTS

The questionnaire was distributed to a total of 2030 physicians, 670 of them responded, and 43 of whom were excluded since they did not complete the questionnaire. Finally the study population consisted of 627 participants from 38 different cities. The participation percentage for the survey is 30.8% (627/2030). Based on the collected data, it was determined that the average time required to complete the questionnaire was 7.6 minutes (min-max 6-9).

359 (57.3%) of the respondents are female and 268 (47.7%) are male. The distribution of the participants by age groups is presented in Table 1 in detail. The largest number of participants is from internal medicine: 85 (13.6%). 449 of the participants are physicians of non-surgical branches meanwhile, 178 of them are of surgical branches. The distribution of the participants according to their branches is presented in detail in Table 2. Professional experience of 245 (39.1%) participants is between 5-9 years. The professional experience levels of the participants are presented in Table 3.

The best definition of PV was known correctly by 338 (53.9%) of the participants. 344 (54.9%) of the participants correctly identified the most significant objective of the PV. 171 individuals (27.3%) indicated that they were aware of TUFAM. The institution responsible for monitoring ADRs in Turkey was correctly known as TUFAM by 330 (52.6%) of the participants. The correct response rate was significantly higher in nonsurgical physicians than in surgery physicians (255/449, 56.7% vs. 75/176, 42.6%: $P = 0.01$). 77.7% (133/171) of the physicians who previously stated that they were familiar with TUFAM were able to identify TUFAM correctly, when they were questioned about the institution responsible for monitoring ADRs in Turkey. When the physicians' awareness of the pharmacovigilance contact points (PCP) in the hospitals they work is

questioned, 88 (14%) of the participants are aware of PCP, while 395 (63%) are not. In addition, 144 physicians (23%) reported that they had no idea about PCP. Awareness of PCP is significantly higher in nonsurgical physicians than in surgical branches (74/449, 16.4% vs. 14/178, 9.5%; $P = 0.005$). 546 (87.1%) of the physicians who participated in the survey think that ADR notifications are necessary. According to the regulation published in Turkey on PV, the healthcare professionals responsible for reporting ADRs in a healthcare institution were known to be correct (doctor, nurse, pharmacist, dentist, midwife) by 109 (17.4%) of the participants. The number of physicians who knew the criteria for severe ADR was 335 (53.4%). The rate of knowing the criteria of severe ADR is significantly higher in nonsurgical physicians compared to physicians in surgeons (263/449, 58.5% vs. 72/178, 40.4%; $P = 0.001$). 67 (10.6%) of the participating physicians correctly answered the number of days within which ADRs must be notified (15 days). Compared to surgeons, this percentage was found to be greater among nonsurgical physicians (9/178, 5% vs. 55/449, 12.2%; $P = 0.007$). The minimum data required for proper reporting of suspected adverse events were accurate for 323 participants (51.5%). The level of knowledge about pharmacovigilance is generally better in nonsurgical physicians.

417 (66.5%) of the participating physicians believe that reporting ADRs is a professional obligation. This ratio is statistically significantly higher in nonsurgical branches than the surgical ones (316/449, %70,3 vs. 101/178, %56,7; $P = 0.001$).

120 (19.1%) of the participants answered correctly when asked what should be done in the event of suspected ADR. (The drug should be discontinued and/or substituted, and adverse drug reactions should be documented.) 479 (76.3%) of the participating physicians believe that PV should be taught in depth to health care workers.

Participants were asked what prevented them from submitting an ADR notification. 35 physicians (5.5%) said that none of the identified factors would deter them from reporting. The most common reason for not reporting adverse events is that it is difficult to determine whether they have occurred (320/592, 54%). Table 4 displays other reported causes and their incidence.

315 participants (50.2%) reported having previously encountered ADR. Non-surgeon physicians are more likely to experience ADR (237/449, 52.7% vs. 78/178 43.8%: $P = 0.04$). 117 (18.7%) of the doctors were familiar with the ADR reporting form. Non-surgeon physicians are more likely than surgeons to encounter the ADR notice form (102/449, 22.7% vs. 15/178, 8.4%: $P = 0.001$). 539 (86%) of the participants have never filled out a form to report adverse effects. Its incidence is greater among surgeons (376/449, 83.7% vs. 163/178, 91.5%: $P = 0.01$).

Amongst the physicians who believed that reporting ADRs was a professional requirement and who had already experienced ADRs, 189 (77.8%) physicians submitted an ADR notification form previously.

55 (8.8%) of the participating physicians received training on how to complete the ADR notification form. The rate of education attainment among non-surgeon physicians is considerably higher than that of surgeons (49/449, %10.9 vs 6/178, %3.3; $P = 0.003$).

There is a resource that can assist physicians in completing the ADR notification form, according to 91 doctors (14.5%). 47 (7.5%) physicians stated that the relevant hospital's PV contact point notified them of the procedure for reporting ADRs. 10 physicians (1.6%) said they constantly followed the latest discoveries in PV, whereas 355 physicians (56.6%) said they never did.

DISCUSSION

This study aims to investigate the level of clinicians' knowledge, attitudes, and actions towards PV and give information on future PV research. According to the results 53.9% of the participants properly identified the best definition of PV. 54.9% of the participants correctly identified the most significant goal of PV. 27.3% of the participants are aware of TUFAM. Non-surgeons physicians are more knowledgeable about PV than surgeons. 8.8% of the participants received training on how to complete the ADR notice form.

In two prior investigations conducted in Turkey, the rate of correctly identified the most accurate definition of PV among physicians was reported to be 44% and 62.1%,

respectively, similar to this study (6, 7). Due to the fact that our study includes physicians from several hospitals, it has the potential to provide more comprehensive and accurate data than past studies. The general low incidence is attributable to the lack of education.

In one study conducted in Northern Cyprus, 19.7% of physicians correctly defined PV (8), however in another study conducted in Kuwait, 74.4% of physicians correctly defined PV (9). In an Italian study of paediatricians, 78% of the participants correctly defined PV (10). Yet, the level of professional experience of the participating physicians in this study is greater than in our study, and our study includes physicians from several specialties. This may be a contributing factor, as well as the fact that the degree of medical knowledge in Italy is higher. While national and worldwide physicians are insufficient to define PV, Europe appears to have a lower level of inadequacy. This deficiency can be remedied by increasing the number of national and hospital-level PV promotion initiatives for physicians.

The rate of participants correctly identified the most essential function of PV was 61.7% in a single hospital study conducted in Turkey (7). According to the Kuwaiti survey, this rate was 68.5% (9). Our data, previous national data and international data are mostly comparable and all of the results indicate the need for a detailed education program.

Proportion of respondents indicated that they were familiar with TUFAM was 25% and 26.6% in two distinct investigations conducted in a single hospital in Turkey (6, 7). The outcomes are comparable with this study. Nonetheless, the involvement of physicians from various hospitals and towns in our study and the size of our sample are advantageous characteristics. In addition, in a survey study involving radiologists in Turkey, 19.8% of the participants were found to be aware of TUFAM(11).

While 27.3% of the participants were aware of TUFAM, 52.6% of the participants correctly identified TUFAM as the institution responsible for monitoring ADRs in Turkey. This demonstrates that some participants accurately identified the organisation responsible for ADR monitoring based on guess rather than information. As additional

evidence supporting this conclusion, about one-third of the participants who claimed to be familiar with TUFAM were unable to identify the entity responsible for monitoring ADRs when asked about TUFAM. The results indicate that physicians are unaware of the function and purpose of TUFAM and that there is a minimal demand for training on this topic.

In two separate investigations including Turkish physicians from a same hospital, the rate of the physicians are familiar with the PV contact points was reported to be 24.4% and 31% (7, 12). In a study from a single center in Uganda, this rate was found to be 21.5% (13). This rate is really low in this study. It is observed that as the number of participants and centres grows, awareness declines. In a study involving only radiologists in Turkey, only 5.9% of the participants knew about PCPs at their institution (11). In summary, we may conclude that hospitals do not promote pharmacovigilance contact points and physicians are not well informed about this topic. The ratio of physicians who think that ADR notifications are necessary is 91% and 93% in two different studies from Turkey, similar to our results (7). In a research conducted in Northern Cyprus, 56 percent of participating physicians believed that ADR reporting is required (8). This incidence is almost 97%, according to studies conducted in Kuwait and India (14, 15). Observably, Turkey and Northern Cyprus data lag behind those of other countries. This suggests that awareness of the ADR notice notification should be improved.

According to the Turkish PV regulation, the rate of awareness among healthcare professionals responsible for reporting ADRs in a healthcare institution is low. Consistent with the literature, the most common correct answer is doctor, and the rarest is midwife. This demonstrates that physicians are aware of their requirements for ADR notification, but other healthcare workers are less aware of their obligations in this regard.

With the ADR notice form, the severity criteria of ADRs are requested. Thus, physicians should be aware of it. Although the rate of accurate identification of serious adverse drug reactions is very low, it is approximately four times greater than the rate of

physicians who previously submitted an ADR notification form. This circumstance gives rise to the notion that learning serious ADR requires both theoretical knowledge and form-filling experience. This ultimately underscores the significance of PV trainings. In a comparable study conducted in Turkey, the most frequently picked criteria for severe ADR were life-threatening and mortality, while the least frequently selected criteria were prolongation of hospitalisation and duration of stay (7). According to this research, the least-selected criterion in our study was the length of hospitalisation and length of stay. In a survey study involving radiologists in Turkey, 85.1% of participants were able to define serious ADR(11).

In this study, 10.6% of physicians accurately estimated the number of days within which ADRs should be reported. According to a Turkish study, this incidence is 15% (7). The disparity in rates may be attributable to the difference in sample size and the participation of physicians from various hospitals in our study.

The most important criterion in the correct reporting of an ADR is knowing the minimum requirements for reporting. For this reason, the mentioned data is vital for a healthy reporting process. There was no study among physicians that questioned the minimum data required for proper reporting of suspected adverse reactions, and a study among nurses yielded results comparable to ours.

In a research conducted in Turkey, 95.3% of physicians believed that it is their responsibility to report ADR(7). In a comparable study conducted on Turkish nurses, this rate was determined to be 81.7% (16). In a research done in Northern Cyprus, 30.8% of participating physicians reported that it is their responsibility to report AIR (8). In a Pakistani research, 73% of physicians reported that reporting ADR is their responsibility (17). Compared to previous research, the rate obtained in this study was notably low. Nonetheless, the rate is greater than in Northern Cyprus. The population sizes of the cited studies are significantly less than those of this study. In addition, the participants' professional experience ranges are more restricted than in this study. They are believed to be the primary causes of the aforementioned disparity.

When questioning what to do in case of suspected ADR, the most frequently stated reasons in the literature, similar to our study, are that ADRs should be reported and the drug discontinued (7). It is seen that the general approach of the physicians is similar. According to a survey conducted in Turkey, rate of belief that PV should be taught in depth to healthcare practitioners was 87.6% among nurses(16). Our study included physicians. The greater rate among nurses may be attributable to the fact that the aforementioned study was conducted in a single institution, or to the fact that nurses were more aware of this issue.

The rate of the participating physicians reported prior exposure to an ADR is higher in non-surgeon physicians than the surgeons. Since that non-surgeon physicians prescribe more medications to patients, it is expected that the rate will be greater. In a research performed in Turkey, 51% of physicians reported weekly encounters with 1-5 ADR (7). According to a Turkish study, 59.9% of physicians previously saw the adverse effect reporting form (6). The rate determined by our research is relatively low. This may be due to the fact that it contains physicians from various cities and hospitals.

The percentage of completing the adverse effect reporting form was 8% and 13.3% in two Turkish investigations involving physicians from the same institution (6, 7). In our study, this rate is very similar with the second one. However in light of the fact that 50.2% of physicians participated in our study had previously encountered ADRs, the rate is fairly low. There are numerous reasons why clinicians do not report ADRs. In our survey, the most frequent response to the issue of what will discourage you from reporting ADR was because it is difficult to determine whether or not ADRs occur. In another study conducted in Turkey, lack of knowledge of the national PV system was cited as the leading cause (18). We might have cited "complexity of the ADR notification form" as one of the reasons for abandoning ADR reporting. This could also be a reason for physicians. In an upcoming study of a comparable nature, it would be prudent to investigate this explanation. When the data are considered, it is evident that physicians should be encouraged to report ADR and that their knowledge should be improved.

According to a study conducted in Germany, 10.8% of physicians did not report any ADRs (19). According to a study conducted in Cyprus, 47.6% of physicians did not disclose the ADRs they observed (20). Compared to Turkey, the reporting rates are considerably higher. This suggests that physicians in Germany and Cyprus are more aware of PV and underreport adverse drug reactions at a lesser incidence.

To the question of which one would discourage you from reporting ADR, German physicians cited the most common reason for not reporting previously known adverse drug reactions and not having enough time to report (21). In Saudi Arabia, the most common reasons are not knowing how to report ADR (43.8%) and not believing that ADR is important (17.5%)(18). In a Kuwaiti study, the most common reason for physicians was not knowing how to report ADRs (9).

Some suggestions can be made to increase ADR reporting rates. New regulations regarding the reasons for underreporting ADRs by physicians are required, as are modifications to make reporting simpler and more attractive for physicians. Increasing physicians' access to forms can be accomplished by making forms widely available in outpatient clinics and clinical departments of hospitals. By integrating a simple program into the hospital's system, it is possible to ensure that the physician reports patient-related information to the pharmacovigilance contact point or directly to TUFAM. The rate of completion by physicians can be increased by making the adverse reaction reporting form as simple as feasible and highlighting the minimum criteria. Consequently, the quality of the documents to be evaluated will improve. TUFAM can provide direct feedback to the reporting physicians. Again, a document comparable to a letter of appreciation can be presented to the physicians who notified the hospital. Thus, the significance of informing physicians will become apparent. Moreover, presentations and sessions can be organized to raise physicians' awareness of pharmacovigilance and adverse drug reaction reporting at scientific conferences and meetings.

According to a research conducted with nurses in Turkey, 31% of nurses received training on this topic (16). In a similar survey conducted in West Africa, 27.4% of physicians were found to have had training (22). This rate in our study is quite low;

hospitals should provide group trainings on this issue to enhance it. This percentage was found to be substantially higher among nonsurgeon physicians. Given that nonsurgeon physicians have greater PV expertise, it can be concluded that they are more interested in PV.

In another study conducted in Turkey, 9.5% of physicians reported that the PV contact point informed them about the procedure for reporting ADRs, similar to our study(7). Likewise, this percentage is 26.1% for nurses in a research from Turkey (16). When the literature and the results of this study are analysed together, it can be stated that the PV contact point officers' informative efforts produce better outcomes in nurses than in physicians, or that these activities are conducted more intensely for nurses.

For the PV and ADR notification applications to reach the desired level of success, healthcare practitioners' knowledge of this topic must be current. This criteria can be fulfilled by observing current trends. The low rate implies that awareness of these topics is inadequate.

Our research has a few limitations. Raising the number of participants could produce a more accurate reflection of the issue. Face-to-face administration of the survey would have resulted in a greater response rate. In addition, it was not possible to reach a sufficient number of specialists from each clinical specialty. In order to compare the outcomes, internal and surgical branches were separated. If a significant number of physicians from each clinical branch were to be recruited, comparisons between branches would be conceivable. Since only the physicians were included in the study, results for other healthcare professionals could not be obtained, nor could a comparison be performed with physicians and the other healthcare professionals.

Future publications can be derived from the findings of this study that are of great value. Using a questionnaire administered before and after an online or face-to-face training program, the contribution of the training to physicians' pharmacovigilance knowledge and attitudes can be determined.

CONCLUSION

It has been observed that physicians' PV expertise is insufficient. Nongurgeon physicians have a higher PV knowledge level than surgeons. The rate of participants having a positive attitude towards PV is higher than the rate of their knowledge level. The majority of physicians view the reporting of ADRs as a professional obligation and believe that PV education should be comprehensively provided to healthcare professional. Despite this, physicians are unsure of what to do in the event of ADR. Although fifty percent of physicians have encountered an ADR, the rate of seeing the ADR form and completing it is extremely low. The rate of individuals obtaining training on how to complete the ADR form is relatively low.

ARTICLE HIGHLIGHTS

Research background

The activities and scientific studies conducted to detect, evaluate, understand, or prevent adverse reactions and other drug-related problems constitute pharmacovigilance. There are studies analyzing the pharmacovigilance knowledge of healthcare professionals in Turkey and around worldwide. More extensive research is required on this topic.

Research motivation

Due to their shared responsibility for pharmacovigilance applications, each healthcare professional must investigate pharmacovigilance with care. The knowledge, attitudes, and actions of healthcare personnel regarding pharmacovigilance can have an immediate effect on patient safety.

Research objectives

In order to assess the knowledge, experience, and perspectives of clinicians regarding the reporting of pharmacovigilance and adverse drug reactions, this study intended to administer a questionnaire to as many physicians from as many institutions as possible.

Research methods

The study is analytical and cross-sectional. Using a questionnaire, data were collected. The questionnaire was emailed out. The survey was sent to 2030 physicians and 670 of them were participated.

Research results

53.9% of participants have correctly defined pharmacovigilance according to the most accurate definition. 54.9% of participants have correctly identified the most significant objective of pharmacovigilance. The pharmacovigilance knowledge of non-surgeon physicians is superior to that of surgeons. 80.9% of physicians who encountered adverse drug reactions filled out the adverse drug reaction reporting form.

Research conclusions

Insufficient pharmacovigilance knowledge has been observed among physicians. The percentage of participants with a favorable attitude toward pharmacovigilance exceeds the percentage of those with a high level of knowledge. Although fifty percent of physicians have encountered adverse drug reactions, the rate of observing the adverse drug reactions form and filling it out is exceedingly low. The proportion of individuals who receive training on how to complete the adverse drug reaction form is relatively low.

Research perspectives

The acquired data will be used to identify the problems of physicians in the field of pharmacovigilance, to enhance the current situation, and to serve as a basis for future research in this area.

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