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Rational Use of Medication and Health Literacy of Employees in Two Public Institutions

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Abstract

Background: Rational Use of medication is the ability of people to provide the appropriate medication according to their clinical findings and individual characteristics with appropriate time and dosage, at the most appropriate cost and easily. Health literacy is defined as the capacity of the cognitive and social skills required for individuals to reach, understand and use health-related information in order to maintain and improve their good health. Therefore, rational medication use is thought to be related to health literacy. The aim of this study is to determine rational medication use and health literacy in the employees of two public institutions in Istanbul.

Methods: This study is a cross-sectional study conducted to determine health literacy levels and rational medication use of the employees of Istanbul University Rectorate and Silivri Municipality who have not received vocational health education. The questionnaire forms prepared in advance in October-December 2016 were applied under observation method to 297 persons who volunteered to participate in the study. In order to determine health literacy, the Turkish Version of the European Health Literacy Scale (ASOY-TR) was used. The dependent variables of the study are ASOY-TR score and rational medication use, independent variables are gender, age, marital status, educational status and the presence of chronic disease.

Results: According to the results of health literacy index, 21.8% of women were assessed as insufficient, 42.0% as problematic- limited health literacy, 36.1% were adequate health literacy; 21.3% of men were considered inadequate, 40.4% as problematic - limited health literacy, and 38.3% were evaluated as having adequate health literacy. It was found that the rate of irrational medication use was close to this rate and rational medication use was approximately 50% or less according to different variables.

Conclusions: Raising the health literacy of the community can promote rational medication use.

Introduction

The World Health Organization (WHO) defines the medication as the substance or product used or stipulated to be used for the purpose of changing or examining the physiological systems or pathological conditions for the benefit of the person who uses the medication. Medicaments in medicine are primarily used in the treatment of diseases, but it is also used for the prevention and diagnosis of diseases and for other medical purposes [1].

Health literacy is described as the degree to which individuals have the capacity to obtain, process, and understand basic health information use health information systems services needed to make appropriate health decisions. An individual's health literacy capacity is mediated by education, and its adequacy is affected by culture and the characteristics of health-related settings. There are many different alternatives in relation to health literacy linking to health outcomes. The importance of health literacy has been rising from studies with positive results.

The drug is an important product for human health; it reaches these properties at the end of a long and costly process. The drugs are tested in a large number of experiments performed in laboratories before they are used in humans. The promising and reassuring of the drugs is carried out in clinical trials in healthy and voluntary patients who volunteer in very strict conditions. This successful result found in investigations authorized by the Turkey Pharmaceuticals and Medical Devices in Turkey. In other countries, institutions that license drugs have been identified.

Drugs are produced and used to contribute to health, not to damage health. The only requirement for this is to be consciously used under certain rules. It is his rational use which removes the drug from poison.

According to the WHO definition, Rational Medication Use is the ability of persons to provide the appropriate medication according to the clinical findings and the individual characteristics, with appropriate time and dosage, at the most appropriate cost and easily. Rational drug use covers the entire process from drug production to disposal [2].

Measures of rational drug use are selection of drugs target the needs of public, determining drug logistics, prescription writing process, recipe response process, drug information support, drug management (Establishment of a National Drug Policy).

Prescription writing process is a process that starts with the physician diagnosing the patient and prescribing the medication and involving the patient to acquire and continuing with the use of the

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medication and following the treatment. Pharmacists are engaged in the process of responding to the prescription. This process starts with the correct interpretation of the prescription, includes the prescription (delivery / preparation of medicaments), establishing the necessary communication with the physician, training the patient and monitoring the treatment. For the rational use of medication process to function correctly; the pharmaceutical industry, doctors, pharmacists, other health professionals, and the community should adopt rational medication use. In this respect, it is important to decrease the frequency of unconscious medication use by raising the awareness of the society and to provide healthier information to the physician in the diagnosis process and to increase the compliance with the treatment given. In order to make the interventions to be more effective and appropriate in the society, it should be known how the level of consciousness and approaches of the patients are [3]. The principles of rational drug use can be summarized as correct diagnosis, correct medication, correct dose, duration and route of administration, patient information, monitoring and assessment.

Responsibility for rational drug use belongs to all health care providers, health authorities, all health institutions, reimbursement institutions and pharmaceutical industry. Apart from these, the most important responsibility belongs to the people who use the drug.

The use of rational antibiotics was emphasized in these years because initially the use of these drugs significantly reduced the number of diseases and deaths related to infections. However, with the excess use and wrong use of antibiotics, the resistance of the bacteria to these drugs has started. If this resistance is not prevented, antibiotics will be completely ineffective in the treatment of infectious diseases in the future and even simple infections can result in death. Non-rational drug use leads reduction in treatment effects and increases drug resistance development, increases in mortality and morbidity rates and decreases treatment quality, increases drug side effects, decreases drug stocks and it causes an increase of the share of the drug expenditures within the overall.

In Turkey, active training methods have been applied since 1996 to teach the Rational Medication Use in medical education, then it has been moved to other health areas [4]. Health literacy is a concept defined in the late 1980s in the context of health promotion. The World Health Organization defines health literacy as the capacity of cognitive and social skills required for individuals to access, understand and use health-related information in order to maintain and improve their health [5].

When evaluating the participation of people in health system in societies, the ability to have a voice and take responsibility in terms of their health and their motivation, first of all, it is necessary to know the health literacy levels of the people [6].

The aim of this study is to evaluate the medication use characteristics of health professionals working in 2 public institutions in Silivri and Beyazit, in the education and research regions of the researchers, to determine the health literacy and to increase the awareness of rational use of medicines.

Materials and Methods

This study is a cross-sectional study conducted to determine health literacy levels and rational medication use of the employees of Istanbul University Rectorate and Silivri Municipality who have not received vocational health education. The questionnaire forms prepared in advance in October-December 2016 were applied under observation method to 297 persons who volunteered to participate in the study among the 443 employees of the two public institutions. Demographic features, medications in the house and those who recommended the medications were questioned in the questionnaire forms. Those who were volunteers and those who were not on leave, on duty somewhere else or those who were not sick at the time of the study were included in the study after verbal their consent was taken.

In order to determine health literacy, the Turkish Version of the European Health Literacy Scale (ASOY-TR) was used. The reliability and validity study of this Scale was performed by Okyay P. and Abacıgil F. in 2016; General health literacy Cronbach's alpha value was found 0,95, treatment-service health literacy Cronbach's alpha value was found 0,86, disease prevention health literacy Cronbach's alpha value was found 0,87, health improvement health literacy Cronbach's alpha value was found 0,91 [7].

In the evaluation of the data obtained from the scale, the index determined by the formula was used (arithmetic mean-1X50/3). In the assessment, (0-25) points were insufficient, (> 25-33) was problematic - limited health literacy, (> 33-42) was adequate health literacy, and (> 42-50) was considered as excellent health literacy. The dependent variables of the study are ASOY-TR score and rational medication use; independent variables are gender, age, marital status, educational status and the presence of chronic disease [7].

Results and Discussion

Of the participants, 119 were female (40.1%), 178 were male (59.9%), 207 were married (69.7%), 90 (30.3%) were single (30.3%). In terms of educational levels, 34 of them are primary school graduates (11.5%), 90 of them are high school graduates (30.4%) and 172 of them are graduates of higher education (58.1%). The youngest age of the participants was 17 years, the oldest age was 63 years and the mean age was 37.42 ± 9.29. The lowest age of the women is 17, and the oldest age of them is 61, and the mean value is 36.64 ± 8.95. The lowest age of the males is 17, the oldest age is 63, and the mean value is 37.94 ± 9.49. 107 of the participants (36.3%) did not have any chronic disease.

According to the results of health literacy index, 21.8% of women were assessed as insufficient, 42.0% as problematic limited health literacy, 36.1% were adequate health literacy; 21.3% of men were considered inadequate, 40.4% as problematic - limited health literacy, and 38.3% were evaluated as having adequate health literacy.

Distribution by gender of processing information (access, comprehension, evaluation and application) and health processes (treatment and health service, preventi on from disease and health improvement), which are sections of health literacy scale is shown in Table 1.

The relationship between health literacy and gender, educational status and other demographic characteristics is shown in Table 2. The detailed relationship between health literacy and index stages according to gender is shown in Table 3.

When the source of the medication recommendations of the participants were investigated, it was determined that both women and men got the most advice from the pharmacy (Table 4). 70-80% of the workers stated that they were in compliance with the prescribed

Health Literacy Index	Female		Male		Total	
	Average	95% Confidence Interval	Average	95%Confidence Interval	Average	95% Confidence Interval
Access to Information	22.96	21.48-24.43	22.87	21.79-23.95	22.90	22.03-23.77
Understanding Information	31.69	30.12-33.27	31.62	30.50-32.74	31.65	30.73-32.57
Evaluating Information	29.45	27.71-31.18	29.19	27.91-30.47	29.29	28.27-30.32
Applying Information	31.17	29.73-32.61	30.79	29.59-31.99	30.94	30.02-31.86
Health Improvement	30.48	28.72-32.24	30.03	28.72-31.34	30.21	29.16-31.26
Disease Prevention	29.50	27.68-31.31	29.83	28.49-31.16	29.69	28.62-30.77
Treatment - Service	31.65	30.16-33.14	31.17	30.08-32.26	31.37	30.49-32.25
General	30.90	29.51-32.30	30.13	28.97-31.29	30.44	29.55-31.33

Table 1: Health Literacy Subheadings Index Averages by Gender.

	Insufficient n(%)	Troubled-limited n(%)	Sufficient and aboven (%)	X^2	sd	p
Gender						
Female	26(40.6)	50(41.0)	43(38.7)	0.133	2	0.936
Male	38(59.4)	72(59.0)	68(61.3)			
Marital Status						
Married	45(70.3)	91(%74.6)	71 (64.0)	3.236	4	0.519
Single	18(28.1)	29 (%23.8)	37 (33.3)			
Widowed	1(1.6)	2 (%1.6)	3 (2.7)			
Education status						
Primary education and below	10 (15.6)	14(11.5)	11 (9.9)	8.628	4	0.071
High school	10 (15.6)	42(34.4)	38 (34.2)			
University and above	44 (68.8)	66 (54.1)	62 (55.9)			
Chronic disease						
Available	40(62.5)	73 (59.8)	75 (67.6)	1.518	2	0.468
None	24(37.5)	49 (40.2)	36 (32.4)			
Age						
37 years and under	39(60.9)	61(50.0)	60(55.0)	2.023	2	0.364
38 years and over	25(39.1)	61(50.0)	51 (45.0)			

Table 2: Health Literacy by Demographic Characteristics.

Health Literacy Index	Female n (%)			Male n (%)		
	Insufficient	Troubled limited	Sufficient and above	Insufficient	Troubled limited	Sufficient and above
Access to Information	66 (55.4)	39 (32.8)	14 (11.8)	96 (53.9)	70 (39.3)	12 (6.8)
Understanding Information	23 (19.3)	35 (29.4)	61 (51.3)	33 (18.5)	58 (32.6)	87 (48.9)
Evaluating Information	41 (34.4)	25 (21.0)	53 (44.6)	58 (32.6)	44 (24.7)	76 (42.7)
Applying Information	22 (18.5)	44 (37.0)	53 (44.5)	34 (19.1)	59 (33.2)	85 (47.7)
Health Improvement	21 (17.6)	44 (37.0)	54 (45.4)	40 (22.5)	57 (32.0)	81 (45.5)
Protection from Disease	33 (27.7)	34 (28.6)	52 (43.7)	44 (24.7)	53 (29.8)	81 (45.5)
Health Care Service	26 (21.8)	40 (33.6)	53 (44.6)	43 (24.2)	52 (29.2)	83 (46.6)
General	26 (21.9)	50 (42.0)	43 (36.1)	38 (21.4)	72 (40.4)	68 (38.2)

Table 3: Health Literacy Index Stages by Gender.

	Female n: 114 (%)					Male n: 174 (%)				
	Never	Rarely	Sometimes	Mostly	Always	Never	Rarely	Sometimes	Mostly	Always
I use medications without doctor's advice / without prescription	51 (44.8)	33 (28.9)	26 (22.8)	1 (0.9)	3 (2.6)	81 (46.6)	66 (37.9)	21 (12.1)	1 (0.6)	5 (2.8)
I use medications with neighbourhood's advice	84 (73.7)	20 (17.5)	9 (7.9)	0 (0)	1 (0.9)	127 (73)	37 (21.3)	7 (4)	2 (1.1)	1 (0.6)
I use medications based on my own medication knowledge	52 (45.6)	32 (28.1)	18 (15.8)	10 (8.8)	2 (1.7)	87 (50.0)	44 (25.3)	28 (16.1)	12 (6.9)	3 (1.7)
I use medications in consultation with my pharmacy	36 (31.6)	38 (33.3)	26 (22.8)	9 (7.9)	5 (4.4)	65 (37.4)	51 (29.3)	37 (21.3)	13 (7.5)	8 (4.5)
I use medications researching on the Internet	97 (85.1)	10 (8.8)	7 (6.1)	0 (0)	0 (0)	136 (78.2)	20 (11.5)	10 (5.7)	5 (2.9)	3 (1.7)

Table 4: Medication use habits according to the recommendation.

	Female n:114 (%)					Male n: 174 (%)				
	Never	Rarely	Sometimes	Often	Always	Never	Rarely	Often	Mostly	Always
I pay attention to the expiration date of medications at home	11 (9.6)	1 (0.9)	2 (1.8)	14 (12.3)	86 (75.4)	15 (8.6)	5 (2.9)	2 (1.1)	18 (10.3)	134 (77.1)
I use my medications in the amount recommended by my doctor	3 (2.6)	0 (0)	1 (0.9)	17 (14.9)	93 (81.6)	6 (3.4)	3 (1.7)	2 (1.1)	28 (16.1)	135 (77.7)
I use my medications according to my doctor's recommended time	3 (2.6)	1 (0.9)	2 (1.7)	27 (23.7)	81 (71.1)	9 (5.2)	3 (1.7)	0 (0)	30 (17.2)	132 (75.9)

Table 5: Proper medication use habits.

	I do not use a medication without a prescription		I use a medication without a prescription		X²	sd	p
	n	%	n	%			
Gender (n:288)							
Female	51	38.6	63	40.4	0.091	1	0.763
Male	81	61.4	93	59.6			
Marital status (n:288)							
Married	94	71.2	105	67.3	2.266	2	0.322
Single	37	28.0	46	29.5			
Widowed	1	0.8	5	3.2			
Education status (n:288)							
Primary education and below	23	17.53	10	6.4	20.221	2	0.001>
High school	51	8.643	38	24.4			
University and above	58	9	108	69.2			
Age (n:288)							
37 years and under	67	48.1	94	61.4	4.057	1	0.044
38 years and over	68	51.9	59	38.6			

Table 6: Distribution of the medication use without prescription by gender, marital status and age.

time and amount of medication and they also paid attention to the expiration date of the medication while taking the medication (Table 5). Whereas there is no statistical relationship between age, age and sex with non-prescription medication, the use of non-prescription medication increases as the education level increases (P: 0,001>) (Table 6). (In Table 4, 5, 6, 114 female and 174 male participants were evaluated. Because some of the participants in the questions in these tables gave an incomplete answer).

When the employees were questioned about which medications they had in their homes, 259 people said they had (89.9%) painkillers, 226 people said they had (78.5%) cold medicine, 148 people said they had (51.4%) skin cream, 109 people said they had (37.8%) antibiotics, 107 people said they had (37.3%) stomach medicine, 105 people said they had (36.6%) vitamins, 60 people said they had (20.8%) allergy medication, 21 people said they had (7.3%) antidepressant, 14 people said they had (4.9%) sleeping pills, 23 people said (8.0%) other.

WHO stated that more than 50% of medications worldwide are improperly prescribed, prepared or sold; and more than half of the patients reported that they were using their medications in a wrong way [8-9]. In the studies conducted, the main problems identified in the Rational Medication Use involved the problems related to the use of many unnecessary medications, unnecessary use of high-cost medications, unnecessary use of antibiotics, use of medications in wrong indications and in inappropriate doses, inability to provide clear and comprehensible information to the patient in terms of the patient's medication/treatment, inadequate communication with the patient in the treatment of the patient as well as inadequate implementation of the Rational Medication Use approach among the problems observed [4,10]. As it is all over the World, the non-rational use of medications is a major problem in Turkey, as well [3].

Health literacy is of concern to everyone involved in health promotion and protection, disease prevention and early screening, health care and maintenance, and policy making [11]. Health literacy is a multidimensional concept and consists of different components. The distinction between medical and public health literacy is reflected in the identification of different dimensions. The concept of health literacy has expanded in meaning to include information-seeking, decision-making, problem-solving, critical thinking, and communication, along with a multitude of social, personal, and cognitive skills that are imperative to function in the health-system.

In this study, it is seen that the majority of the group is inadequate or problematic-limited in terms of health literacy. Only one third of the group has adequate health literacy. When we look at the rational medication use and irrational medication use rates of individuals, we can detect the similar rates. Rational medication use has been identified in one-third of the group in most substances, half in some substances, and two-thirds in the best rate in some substances, as discussed in the examples below. Therefore, the use of irrational medication is common in more than one third of the group.

In this study 44,8 % of female, and 46,6 % of male never use medication without doctor's advice, and never use medications with neighborhood's advice 73,7% of female and 73% of male. But 45,6 % of female and 50,0 % of male use medications based on their knowledge, or 85,1 % of female, and 78,2% of male use medications researching on the internet, and 31,6 % of female and 37,4 % of male use medicaments according to their pharmacy.

In a study conducted by Özkan et al., when the participants were asked what they were paying attention to when they were taking medication, 53.3% of their responses were doctor's advice, 15.4% pharmacist's advice, 15.1% neighbor's recommendation, 10.4% written / visual press and 5.4% internet [12]. In the study conducted by Yapıcı et al., 26% of the participants stated that they were using medication without the advice of a physician, 17.0% were using medicine with the recommendation of the environment (family/friend/neighbor) and 31.3% of them reported that they were buying the medication from the pharmacy without prescription [13].

In the studies of Özkan and Yapıcı, it is noteworthy that the frequency of the Rational Medication Use habits is in quite high rates, as it is in this study. Especially individuals pay attention to the expiration date of drugs. In the proposition 'I would pay attention to the expiration date of medications in the house' in our study, 76.3% of the participants gave the answer 'always', 11.1% 'mostly', 1.4% 'sometimes', 4.2% 'rarely or never'. In the study conducted by Ilhan et al.,

the proposition ''I would pay attention to the expiration date of medications at home' 76.43% of the participants gave the answer 'always' [14]. In a study conducted by Göçgeldi et al. in Ankara, too, 88,4% of the participants stated that they were sensitive in terms of the expiration date of the medications [15]. Although a high rate of correct use has been reported in all three studies, including this study on the expiration dates of medications, the 12-25% rates of misuse are also significant percentages when considering the problems that will be caused by misuse.

In our study, when the participants were questioned about which medications they had in their homes, 89.9% of them gave the answer painkillers, 78.5% cold medicine, 51.4% skin cream, 37.8% antibiotics, 37.3% stomach medicine, 105 people said they had (36.6%) vitamins, 60 people said they had (20.8%) allergy medication, 21 people said they had (7.3%) antidepressant, 4.9 % sleeping pills, and 8.0% said other. In a study performed by Özkan et al., 78.6% of the participants stated that they had medicines at home, and when they were asked what kind of medications they had, among the answers given, 40.3% were painkillers, 19.2% were common cold medications, 15.6% were stomach medicines, and 14.5% were antibiotics [12]. Having high rates of painkillers, cold medications and antibiotics in homes also indicate the prevalence of Irrational Medication Use.

The limitations of the study were that the study was conducted in two selected public institutions, it did not represent the society, and that the results represented only the study group.

Conclusions

As a result, according to this study conducted in two public institutions, it has been determined that the employees behave incorrectly in terms of rational medication use. Although some of the participants (45.8%) stated that they never used medications without the prescription of the doctor, a larger part of them used medication based on their own medication information, on the recommendation of their neighborhood, in consultation with the pharmacy or by searching on the internet.

Who pay attention to the expiration date of medications at home, which use medications in the amount recommended by doctor, and use medications according to the doctor recommended time varies to 71-81%. Proper use of drugs should be increased. Non-prescription drug use decreases as education level increases. Education is important in rational drug use, but raising the health literacy of the community can promote rational medication use even more.

Whereas 58% of the employees are graduates of higher education, 37% have adequate health literacy. Gender is not a determinant factor in the level of health literacy. The level of education alone may not be sufficient to improve health, to protect against diseases and to refer to the right service unit in case of illness; therefore, it is necessary to increase public health literacy in order to improve and maintain health in the first place.

Acknowledgements

Competing Interests

The authors declare that they have no competing interests.

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