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Assessment of Community Knowledge and Practices Toward Rational Use of Drugs at Ilu District, South Western Shoa, Oromia, Ethiopia

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Abstract: The idea of rational drug use was defined by the WHO as "providing the appropriate drug at correct dose for appropriate period according to the clinical results and features of the individual. This study was designed with the objective of evaluation of knowledge of the society toward the rational drug usage in Ilu District between the periods of January 2018 to June 2018. Primary data was collected cross sectionally from the respondents of different age, sex and educational status. A self-developed, pre-tested, semi-structured questionnaire was prepared for the assessment and presented for 100 respondents selected from four different villages. From this study it was understood that 19% of the population participated on the study had no any academic or professional knowledge about the use of drugs, but 23% of them were buying drugs from different drug shops. On the other hand, 47%, 23%, 12% and 8% of the respondents bought drugs from health center, drug shop without prescription, from both health center and drugs shop and from neighbors respectively. Furthermore, this finding concludes that 25% of the research participants were borrowing drugs from their neighbors having academic knowledge of 7% basic education, 6% elementary school and 6% illiterate. On the other hand, 17% of respondents from which 5% were illiterate gave drugs for their neighbors when family members and/ or animals are get sick. This study finding indicated the occurrence of irrational drug use in comparison with different study villages and found that it is by far higher in almost all category in Mulosatayi followed by Kulegefersa than other villages particularly with frequency of 5/11, 4/9 and 29/96 buying injectable drugs, giving injection by themselves for their animals and buying drugs from drug shop without professional drug prescription respectively. This finding indicted the existence of knowledge gap across the societies and private pharmaceutical practitioners which needs due attention to train the drug sellers to follow treatment guidelines and the community not to use drugs without professional prescription so as to reduce adverse effects of drugs.

Key words: Adverse Effects · Assessment · Irrational/Rational Drug Use · Knowledge

INTRODUCTION

Drugs are important constituents of any healthcare system and should be used rationally [1]. The idea of rational drug usage was first defined by the World Health Organization (WHO) in 1994 as "providing the correct drug at proper dose for proper duration according to the clinical findings and characteristics of the individual" [2, 3]. It needs that "patients are given medicines suitable for their clinical requirements, in doses that encounter their own requirements, for sufficient period of times and at lowermost cost for both the patients and the community" [4, 5]. In contrary to this definition, irrational use of drugs is a serious global public health problem and can be perceived as use of too many medicines per patient; wrong use of antimicrobials (often in insufficient dosage and duration); over use of injections when oral medication would be more appropriate; failure to prescribe

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in accordance with clinical guidelines including standard treatment guidelines and prescribing policy; and inappropriate self-medication, often of prescription only medicines [4-6].

The buyers' perception of rational drug use may perhaps vary from the above definition. What is rational in a therapeutic logic may not be rational for the customer and vice versa. For the buyer, the rationality of using a drug is based on the understanding of its importance for day-to-day life, subjective of cultural views and economic situations. Individuals may purchase a few antibiotic capsules for they cannot afford more. Or they may spend money on analgesics to relieve their misery [7].

The irrational use of drugs is a major challenge worldwide. The WHO estimated that more than half of all drugs are prescribed, dispensed or sold incorrectly and that half of all patients fail to take them correctly [3]. For instance, in USA and Europe around 30-50% of patients fail to take clinical interventions that are reasonable according to the best scientific evidence [8-10] and in United Kingdom (UK) only around 40% of patients received care that adhered to guideline [10,11]. The overuse, underuse, or misuse of drugs results in waste of limited resources and extensive health hazards [3]. Diverse factors have been blamed in the cause of irrational prescriptions. Because of ignorance or self-medication, patients may come to the doctors with irrational prescription requests. Furthermore, lack of medical knowledge of rational medication uses and lack of medical devices for diagnosis are some reasons behind irrational drug prescription [2, 3, 6].

In numerous nations, 60-80% of health problems are self-medication that frequently results in incorrect drug use [12-15]. Like non-adherence, self-medication is also swayed by numerous sociocultural factors, such as people own opinions and favorites for some pharmaceuticals [16, 17]. Unreasonable use of drugs is increasing due to factors such as confusing/false beliefs, poor knowledge on part of the customers and prescribing pressures, profit motivated approach of prescribers, beneficial promotional actions by pharmaceutical industry and absence of implementation of regulations by governing authorities. Subsequently, it leads to amplified cost of treatment, waste of assets, undesirable effects such as adverse effects and growth of anti-microbial resistance [2, 4, 18].

There are essential actions to be taken to advance rational medicine prescribing. These are: Critical assessment and evaluation of benefits and risk of drug used; safety and cost of the drug with existing drugs for some indication[3]; Identification of the patient's problem based on symptoms and recognize the need for action [19]; diagnosis of the disease, detecting fundamental cause and contributing factors that may be specific as in infectious disease or non-specific; use of likely intervention which may be non-drug treatment or drug treatment by selecting from different options based on efficacy, suitability and safety of drugs including drug interactions and high risk group of patients; start the treatment by writing an precise and complete prescription. For example: name of drugs with dosage forms and schedule and total duration of the treatment [3, 20, 21].

To advance the quality and efficacy of medication, it is essential to have a comprehensive understanding of the current patterns of remedies, the degree of the methods in which it departs from best practice and the factors that trigger these patterns [20, 22]. Worldwide, it is possible that less than 50% all patients are treated in agreement with guidelines and more than 50% of all patients fail to take their medicines as prescribed or dispensed. Such inappropriate use is wasteful of resources and causes patient harm in terms of lack of satisfactory outcome, serious adverse events and increased antimicrobial resistance [21, 23]. Progresses in the way in which medications are used are very vital in reducing the morbidity and mortality related with irrational drug use [1, 24].

Hence, this research is targeted to assess the knowledge of the communities of the study area toward the use of drugs (both veterinary and human medication) and so as to sensitize drug users (professionals and communities at large) to the veracity of drug misapplication in the unindustrialized world, drawing on present examples as well as unsuitable rational drug use patterns. Some interventional surveys have tried to evaluate knowledge of different professionals like medical students and pharmacists in different countries, but there are very few published studies that have evaluated the Rational Use of Medicines at the level of community. Therefore, this survey was directed to assess the knowledge and practice toward Rational Use of Drugs in society living in different villages of Ilu District, Southwestern Shoa zone of Oromia, Ethiopia.

MATERIAL AND METHODS

Study Area and Period: The study was conducted in Ilu District, from January 2018 to June 2018. Ilu is located in South West Shoa Zone of the Oromia Regional Administration, 55km south west of Finfinne (Addis Ababa), the capital of the country. Geographically, Ilu District is located at 8°44'N latitude, 38°20'E longitude

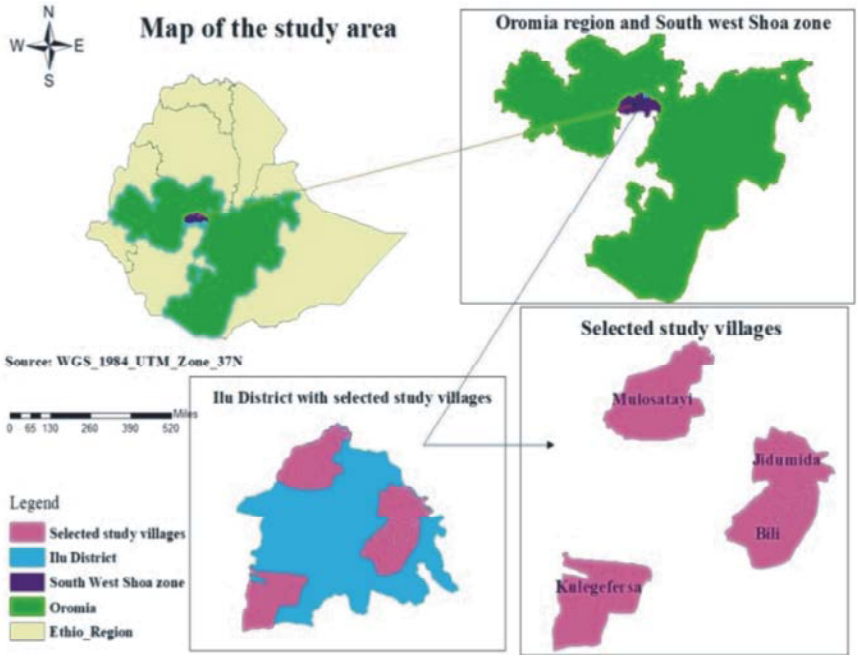

Fig. 1: Map of the study area

and an elevation of 1950 meter above sea level (Figure 1). The climatic condition of this study area is characterized by warm and temperate. The study area receives a mean annual rainfall of about 21 mm which comes from the long and short rainy seasons. The district has total population of 61985, from which 31484 are men and 30501are females [25]. The study was conducted for a period of 6 months, from January to June, 2018.

Study Design and Study Population: Cross sectional study design was used to collect primary data from the respondents during the study period. The study populations were people of different age, educational status and sex categories. The average age of respondents was categorized as 18-25, 26-40 and 41-65 years old while the educational status was categorized as illiterate, basic education, elementary school, high school, diploma and higher educations (degree and above). Basic education is a form of learning activities given primarily for adult people in half days once or twice per week for those who did not get regular learning opportunity because of, may be poverty, political and social impact. Elementary school includes regular from grade 1-8, high school from grade 9-10, diploma was taken as class after high school but not to the level of degree program. Many other parameters were also considered for the study.

Sampling Method and Sample Size Determination: During the investigation, simple random sampling technique was used to select study villages and a respondents were selected first purposively depending on the livestock possession and then simple random sampling was employed among livestock owners to assess their knowledge toward rational use of drugs (both for animal and human medication). A self-developed, pre-tested, semi-structured questionnaire consisting of both open-ended and closed-ended items was used. Questionnaire was designed to obtain information about various issues concerned with rational uses of medicine. The questionnaire was framed in very simple words to avoid any mental burden on the participant. The Sample size required for this study was determined based on the expected proportion (50%) of awareness of the community, 5% desired absolute precision and 95% confidence interval (CI) according to Lutz [26]. Likewise, 100 respondents were selected from four different villages (peasant association) namely Mulosatayi, Kulegefersa, Jidumida and Bili. In this study, peoples of less than 18 years old and greater than 65 years old were excluded. Likewise, peoples who do not rear livestock were also excluded from this study to evaluate and compare their awareness toward both veterinary and human medication.

Data Analysis: All raw data from this study were coded and entered in to Microsoft Excel spread sheet and analyzed using statistical package for social sciences currently known as statistical product for service solutions (SPSS) version-20 statistical software. Descriptive statistics were carried out to summarize the awareness of the community toward rational use of drugs and chi square test was used to determine the association between different variables. In all cases, a 95% confidence interval and P-value < 5% was set to detect the significance level [27].

Significances of the Study: Result from this finding would be made to policy makers, health managers and health workers within the district's health Services in particular and the whole country in general to design interventions which would improve rational drug usage at the country. From the result of this research, a lot of animal owners, NGOs, Scientists, Researchers, Veterinarians and human health professionals will get information so as to minimize risks associated to irrational use of medicines in animal and human health and also publication of the research will benefit several professionals.

RESULTS

From the total of respondents participated in this study, 75 (75.0%) was male and 25 (25.0%) was female. From this, majority of them were found between the age of 41-65 years, out of which 33 (33%) were attended elementary school (grade 1-8). From overall respondents, 47 (47%) used drugs prescribed from health centers; whereas 23 (23.0%) were using drugs buying from drug shops without professional prescription (Table 1).

This study indicated that high number of respondents 47 (47%) were using drugs that prescribed from health center. However, 23(23) respondents bought drugs from drug shops without any prescription among them 10 (10%) and 4 (4%) were attended basic education and secondary school and 5 (5%) were illiterate respectively. From the total of 100 respondents, 25 (25%) were not aware about the adverse effects of drugs even though 11(11%) were buying injectable drugs used for livestock (P=0.043) and 9 (9%) injecting the drugs by themselves. There is statistically significant association between knowledge about adverse effects of irrational drug use and buying injectable drugs with educational level of the respondents (P =0.039; Table 2).

From the total respondents, 11 of them were buying injectable drugs from drug shop without any prescription (P =0.016) out of which 6 of them had no any knowledge about adverse effects of drugs from which 9 (9%) of them inject the drug to the animals by themselves. On the other hand, 72/96 respondents bought drugs without any prescription having the knowledge of adverse drug reactions. There is statistically high significant association between buying drugs without prescription and knowledge of adverse effects of irrational drug use (P <0.001; Table 3).

Table 1: Frequency of respondents in respective of demographic features and sources of drugs.

Category		Frequency	Percent
Sex	Male	75	75.0
	Female	25	25.0
Age in years	18-25	11	11.0
	26-40	38	38.0
	41-65	51	51.0
Educational status	Illiterate	19	19.0
	BE	23	23.0
	Elementary (1-8)	33	33.0
	High school	10	10.0
	Diploma	10	10.0
	Degree	5	5.0
Study village	Mulosatayi	29	29.0
	Kulegefersa	28	28.0
	Jidumida	23	23.0
	Bili	20	20.0
Sources of drugs	Health center	47	47.0
	Drug shop without prescription	23	23.0
	From both	12	12.0
	From neighbors	8	8.0
	From all	10	10.0

BE= basic education

Table 2: Assessment of educational status of respondents with different drug use approaches (N=100)

		Educational status							
Category		Illiterate N (%)	BE N (%)	Elementary N (%)	HS N (%)	Diploma N (%)	Degree N (%)	Total N (%)	P-value
Sources of drugs	HC	5(5)	8(8)	21(21)	7(7)	5(5)	1(1)	47(47.0)	0.163
	Drug shop WP	5(5)	10(10)	4(1)	1(1)	2(2)	1(1)	23(23)	
	Both	4(4)	2(2)	3(3)	0	0	1(1)	12(12)	
	Neighbors	2(2)	3(3)	2(2)	1(1)	1(1)	1(1)	8(8)	
	All	3(3)	0	3(3)	1(1)	1(1)	1(1)	10(10)	
Buying injectable drugs (yes)		4(4)	2(2)	3(3)	2(2)	0	0	11(11)	0.043*
Who inject	Other NP	3(3)	1(1)	1(1)	0	0	0	2(2)	0.072
	Self	3(3)	3(3)	2(2)	1(1)	0	0	9(9)	
Borrowing drugs (yes)		6(6)	7(7)	6(6)	2(2)	2(2)	2(2)	25(25)	0.779
Lending drugs (yes)		5(5)	4(4)	4(4)	0	2(2)	2(2)	17(17)	0.335
Knowledge of AED No		5(5)	5(5.0)	9(9.0)	3(3)	2(2.0)	1(1.0)	25(25)	0.039*

*= statistically significant, AED= Adverse effects of drugs, BE= Basic education, HC= Health Center, HS= High school, NP=nonprofessionals, N=frequency, WP= without prescription

Table 3: Assessment of knowledge of adverse drug effects in drug users (N=100)

		Knowledge of AED				
Variables		Yes	No	Total N	χ^2	p-value
Buying injectable drugs	yes	5	6	11	5.754	0.016*
Who inject it?	Self	3	6	9	2.933	0.087
	Other NP	2	0	2		
Buying drugs without prescription (yes)		72	24	96	8.651	<0.001**
Borrowing drugs	yes	19	6	25	0.018	0.894
If yes, Which drugs	I don't know	4	2	6	6.635	0.084
Paracetamol		6	1	7		
Ampicillin		0	2	2		
Albendazole		6	1	7		
Giving drugs for neighbors	yes	10	7	17	2.858	0.091
If yes, Which drugs	I don't know	2	2	4	1.862	0.602
Paracetamol		4	2	6		
Ampicillin		0	1	3		
Albendazole		4	2	6		

*= statistically significant, **= highly significant, AED= Adverse effects of drugs, N= frequency, NP= Nonprofessional, χ^2=chi square.

Table 4: Association between drug use pattern and peasant association (N=100)

		Village level						
Drug use pattern		M/s	Bili	K/g	J/m	Total N	χ^2	p-value
Borrowing drugs	yes	8	4	8	5	25	4.663	0.198
Buying injectable drugs	yes	5	1	3	2	11	0.134	0.988
Giving injection	themselves	4	1	3	1	9	3.157	0.368
Other NP		1	0	1	0	2		
Professional		0	0	0	0	0		
Sources of drugs	HC	12	11	16	8	47	11.538	0.003**
	Drug shop	8	2	7	6	23		
	Both	3	3	3	3	12		
	From neighbor	3	0	2	3	8		
	All sources	3	4	0	3	10		
Buying drugs WP	yes	29	19	27	21	96	2.594	<0.001**
Lending drugs for neighbors	yes	4	4	6	3	17	2.983	0.085
Knowledge of AED	No	7	4	9	5	25	1.171	0.003**

**=highly significant, AED=Adverse effects of drugs, HC=Heath center, J/m=Jidumida, K/g=Kulegefersa, M/s=Mulosatayi, N= frequency, NP= Nonprofessional, WP= without prescription, χ^2=chi square.

The occurrence of irrational drug use was by far higher in almost all categories in Mulosatayi than other villages. However, when compared to the other villages, Mulosatayi had more awareness about the adverse effects of drug use even though they did not implement their knowledge. The association between study villages with the sources from which the respondents got drugs, buying drugs without professional prescription and knowledge of adverse effects of drugs were found statistically significant (P <0.05) (Table 4).

DISCUSSION

This study, probably the first of its kind to be reported in Ethiopia aiming at community level to evaluate their knowledge and practice toward the use of drugs (both for human and animal diseases treatment). Cross sectional study conducted at this study site indicated that the total respondents participated in the study for assessment of knowledge of rational drug uses including veterinary drugs and human medication was 100. From the total respondents, 33% were attended elementary school and 23% basic education where as 19% were illiterate. Even though nearly one fifth of the population participated on the study had no any academic or professional knowledge about the use of drugs, 23% of them were buying drugs from different drug shop at least once in their life times without any prescription (Table 1). This may be due to knowledge gap across the societies which needs due attention to train the drug sellers to follow treatment guidelines and community to use drugs rationally.

Out of the total participants of this study, 47%, 23%, 12% and 8% of the respondents bought drugs from health centers (including both private and government medical centers), drug shops without prescription, from both health centers and drugs shops and from neighbors respectively. However, 10% of them had got drugs from all the above sources whenever available (Table 1). This result may be due to the existence of irrational drugs dispensing practices by professionals working in pharmaceutical centers targeting their own business only. Even though the resulting number varies, this result agrees with the work of Hogerzeil [19] that concluded as 70% of drugs in private facilities were prescribed and vended improperly in unindustrialized countries, which leads to the decrease in safety and quality of health care as well as huge waste of health resources.

People may be in the habit of obtaining their therapies from other drug distribution channels than health centers. Not only do people receive drugs from these outlets, but also information that may or may not be appropriate. In order to enhance appropriate drug use policy makers and health administrators programs need to gain insight into the functioning of the other drug distribution centers, recommendation for actions will need to be directed to the people involved [28]. WHO recommended that drugs use should be formalized, standardized and governed by regulatory as well as educational interventions [29].

Majority of the matters addressed in this study are about the notions dominant in the general public which is the major user of drugs. From the result it was concluded that 25% of the research participants were borrowing drugs from their neighbors having academic knowledge of 7% basic education, 6% elementary school and 5% illiterate. On the other hand, 17% of respondents from which 5% were illiterate gave drugs for their neighbors when family members and/ or animals are get sick (Table 2). This indicates that peoples are exchanging drugs like other commodities without sufficient knowledge of the dose, frequency, duration, withdrawal period and expiration date of the drugs. Such practices may probably result in undesirable effects of drugs and initiates drug resistance development because they may interchange expired drugs since it cannot give any significant response against the diseases. Standardization of drugs use is a vital element of national medicine policies [29] and up-to-date healthcare delivery; since misuse, overuse or under use of medicines can enforce a silent but serious danger to public health and, as a result, wastes the scarce national resources [30, 31].Therefore, human health and veterinarians should be integrated to aware the societies when and how to use drugs to protect health condition of the communities and sustain responsive capacity of drugs.

This cross sectional study included all the people that were using drugs which prescribed from the health center and/or buying from drug shops to treat their family members and/or livestock. Out of total respondents encountered in this study, 11% of respondents were buying injectable drugs having health facilities like needles and syringes at home (p-value = 0.043) from which 9% were giving injection by themselves out of this proportion 6% do not know any adverse effects resulted from irrational drug use and 2% of them called for other non-professionals those experienced in the activities for injection particularly for treatment of animal diseases (Table 2). This result agrees with work of Hardon *et al*. [30] which stated that self-medication is the most frequent form of therapy choice and people often depend on informal drug distribution channels as much as on

pharmacies. This may lead to unnecessary health risks because injections may be administered in unhygienic conditions, in inappropriate dosage, wrong duration or syringes and needles may be re-used without being sanitized [28, 32]. This result gives direction toward awareness creation both for drug dispensers and drug users without prescription from certified professionals in general and injectable drugs in particular since people do not have the knowledge about use of drugs and are not conscious about the benefits and effects of drug use specially injectable drugs [2]. On the other side, 25% of respondents did not know about adverse effects resulted from irrational drug use (p-value =0.039). This result exhibited that there is statistically significant variation across the knowledge of drug use pattern in the community which needs immediate intervention by awareness creation.

Due to lack of knowledge of adverse effects of drugs, people may use drugs irrationally [6]. However, sometimes people may use drugs intentionally even having the awareness of the side effects of irrational drug use. From this study, 96% of the respondents bought drugs from drug shop without prescription (Table 3) even if 75% of them knew that inappropriate use of drugs may result in significant heath and economic consequences, but 25% of respondents had no any knowledge about adverse effects of drugs but bought drugs without any prescription which is statistically highly significant (p-value <0.001) (Table 3). Similar to this result, Toklu *et al*. [33] reported that nurses in Turkish Republic of Northern Cyprus Near East University Hospital did not have enough information about rational drug use and Lansang *et al*. [34, 35] reported that 67% of antibiotic trades were through without prescriptions. This indicates that the problem of rational drug use is very serious among the society including health professionals that requires intervention of the concerned bodies to improve the attitude of the drug users and prescribers toward the use of drugs.

In spite of the fact that several participants had some knowledge of adverse effects of irrational drug use, 19% and 10% of them took and gave drugs for their neighbors respectively (Table 3). Similar to this finding, Hardon *et al*. [30] reported that Individuals keep leftover of drugs in their homes and re-use or provide them to neighbors or relatives who demand the drugs. Such practices also take place in nations where distribution of drugs is controlled more strictly. In addition to public health concerns, incorrect medicine use might have a far reaching influence on household and general health resources [8]. On the other hand, there is statistically significant association between knowledge of adverse effects of irrational use of drugs and buying injectable drugs to use it at home whenever required (p-value=0.016) (Table 3). Such kind of intentional practice should be reduced and avoided if possible by providing awareness to society to give attention for their health condition and economic wastage due to irrational drug usage.

This study finding indicated the occurrence of irrational drug use in comparison with different study villages and found that it was by far higher in almost all category in Mulosatayi village followed by Kulegefersa than other villages particularly with frequency of 5/11, 4/9 and 29/96 buying injectable drugs, giving injection by themselves for their animals and buying drugs from drug shop without professional drug prescription respectively. However, the village had more awareness about the adverse effects of drug use when compared with others even though they did not implement their knowledge of drug use to fight against the adverse effects of drugs and possible occurrence of drug resistance development (Table 4).

From the view of buying drugs from drug shops without prescription, the problem is high in Mulosatayi (29/96) followed by Kulegefersa (27/96), Jidumida (21/96) and Bili 19/96). In this regard there is statistically high significant association (p-value<0.001) among the study villages and use of drugs without professional prescription. Furthermore, there is statistically high significant association between the village and sources from which the community got the drugs and knowledge of adverse effects of drugs use (P =0.003) (Table 4) that gives clue to interfere by providing knowledge and professional based education and community mobilization to create generation that pay attention for their live and use drugs rationally. Although, there is few number of community education interferences on rational drug use, several descriptive studies of medication use focus and recommend the need for training of the people in the right use of drugs and the hazards related with their wrong use [36].

On the other hand, next to Mulosatayi respondents from village Bili had more knowledge of rational drug use and the finding showed that the village was found better regarding rational use of drugs (Table 4) which should be encouraged and continued so as to increase efficiency and safety of drugs and decreases their adverse effects and possible occurrence of drug resistance due to irrational uses of drugs. In general, four kinds of intervention approaches to advance medication use can

be renowned [37]: Theses are educational, administrative, financial and supervisory intervention tools. Educational intervention is the best usually used, both for prescribers and consumers [7].

CONCLUSION

The results of this study indicated the occurrence of irrational drug use in the study area. The finding concluded that most drugs were freely purchased over the drug shops without any professional prescription even including injectable drugs. The community had been practicing administering drugs for their animals that may probably results in irreversible health problems and economic wastages. One fourth of the part of community participated in this study had no any knowledge of the adverse effects of drugs use which indicates presence of knowledge gap among the community and lack of attention as well as carelessness of their own and animal health that may probably resulted in unnecessary health problems as well as uncontrollable drug resistance development so that effective and rational drug use should be practiced across the community. Since effective use of currently available drugs is by far better than the discovery of novel drugs, the need for society and private pharmaceutical professional's education campaign is best mechanism of reducing and gradual elimination of such pharmaceutical practices. Therefore, government and other concerned bodies should provide aggressive promotion of rational use of drugs for the community, business persons participating in both human and veterinary pharmaceutical marketing, as well as pharmaceutical professionals. Additionally, standard drug use and drugs market guidelines should be adopted and included in the national drug use policy as well as regular monitoring of its implementation should be programed. Furthermore, Establishment of mandated multidisciplinary national body to formulate and coordinate drug use policies in both public and private health sectors would be necessary to improve rational drug usage.

Declarations

Ethical Consideration: All methods were carried out in accordance with relevant guidelines and regulations. All respondents participated in this study were verbally informed the objective of the study before completing the questionnaire and they were informed that answering the questions was voluntary as well as not giving a response whenever they are not interested to complete the question was also possible. Confidentiality of the participants was respected so that the response of the respondents is not shared publically for any purpose and used only for evaluation of their knowledge and practice toward drug use pattern.

Data Availability: Datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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