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How Far Are Pharmacists and Customers Involved in the Misuse of Antibiotics in Tripoli City-Libya

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ABSTRACT

This study was carried out in an attempt to answer the everlasting question. Are antibiotics being misused? In this context, the term "misuse" generally means that, the drug is inappropriately-prescribed by physicians and/or dispensed by pharmacists and/or used by customers. The outline of the work included a field interviews involving 500 customers and 100 community pharmacists across Tripoli city.

The study revealed definitive antibiotics misuse and abuse by both groups as manifested by the fact that 65% of the interviewed customers use this group of drugs without prescription, almost all of them for conditions and symptoms that are either not affected by these drugs or require special screening for a particular or specific types of antibiotics. Moreover, 50% of the interviewed pharmacists dispense antibiotics upon consumer requests and preferences and 26% recommend certain types of these drugs when customers fail to specify the type they want.

Keywords - *Antibiotics; Misuse; Drug resistance; Pharmacist.*

INTRODUCTION

Antibiotics were once and still are considered as wonder drugs. They have been used for decades to effectively treat a variety of microbial infections, namely bacterial infections.[1] Many types of antibiotics are available; each works a little differently and acts on different bacteria, this is why patients must use these drugs only by prescriptions.[2] Because of worldwide overuse, and misuse of antibiotics; common bacteria are becoming resistant to treatment with these drugs[3], with the consequence that bacterial infections are becoming increasingly difficult and expensive to treat.[3,4] The term misuse is generally used to mean that the drug is inappropriately prescribed by physicians, and/or dispensed by pharmacists, and/or used by customers. Treatment with antibiotics involves a triangular relationship of physicians as prescribers, pharmacist as dispensers and patients as users or customers.

This study was carried out as an attempt to determine and evaluate how far pharmacists and customers the city of Tripoli are involved in the phenomenon of antibiotics misuse and overuse.

MATERIALS AND METHODS

To evaluate the public's and pharmacist's roles in rational or irrational use of antibiotics across Tripoli, field visits to 50 pharmacies and interviews were carried out involving 100 randomly selected, male and female (50 each) pharmacy graduates; working in private pharmacies (community pharmacists) with experience ranging from 2 to 15 years. 500 randomly selected pharmacies customers were also interviewed. Details of age, gender and education levels are given in the table 1.

Table 1: General detail of the interviewed pharmacies customers

Gender	**Gender**	**Number**		**Percentage**
	Female	270		54%
	Male	230		46%
	Total	500		
Age groups	**Age (years)**	**No. of Females**	**No. of Males**	**Percentage**
	15-18	10	20	6%
	18-45	250	175	85%
	45-60	10	35	9%
Educational levels	**Educational level**	**No. of Females**	**No. of Males**	**Percentage**
	Elementary	40	20	12%
	Secondary	100	60	32%
	University graduates	95	150	49%
	Not stated	35	0	7%

RESULTS

The answers of the interviewed pharmacists and customers (Questionnaire) summarized as follows

The summery of the Questionnaire for the current study

1- Dispensing of antibiotics in pharmacies:

Is according to	Percentage
Order from physician only (all of the pharmacists)	100%
Order from physician and request from patient (56 pharmacists)	56%
Order from physician and recommendation from the pharmacist (26 pharmacists)	26%

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2- Most commonly dispensed antibiotics by the pharmacists without prescription:

Antibiotic	Percentage
Ampicillin only.	95%
Ampicillin and/or Amoxycillin.	54%
Ampicillin and/or Cloxacillin.	7%
Ampicillin and/ or Co-trimoxazole.	5%
Ampicillin and/ or Cephalexin	5%

3- Conditions for which antibiotics are dispensed by pharmacists without prescription:

Conditions	Percentage
Common cold	34%
Tonsil problems	37%
Influenza	14%
Dental problems	10%
Urinary tract infections	5%

4- Ways of obtaining antibiotics by customers:

Way	Percentage
with prescription	36%
without prescription	64%

5- Bases of customer's choice of a particular antibiotic

Base	Percentage
Preference of customers	33%
Recommendation from pharmacist	67%

6- Do you suggest to others to use same antibiotic you previously used for similar symptoms?

Answer	Percentage
Yes	69%
No	31%

7- Customer's action toward using antibiotics:

Action	Percentage
Completes the full course	35%
Stops when symptoms are relieved	65%

8- Actions taken for symptoms similar to a previous infection:

Action	Percentage
Will use same antibiotic taken before, without consulting the physician	64%
Will not use the same antibiotics (refers to physician or pharmacist)	36%

9- Physician's consultation when symptoms similar to previous infection reoccur:

The customer	Percentage
Will indicate to the physician last antibiotics used (provide package, prescription or name)	63%
Will not provide the physician with any information related to previous antibiotics treatment	37%

10- Conditions for which customers use antibiotics without prescription:

Condition	Percentage
Influenza	55%
Common cold	40%
Tonsil conditions	36%
Fever	25%
Headache, sore throat	23%
Urinary tract symptoms	19%
Cough, dental problems	13%
Chest symptoms	6%
Myalgia or fatigue	5%
Diarrhea, wounds and skin conditions and G.I.T symptoms	3%

11- Adherence of customers to physician's /pharmacist's instructions:

I) ***Dosage management***

The customer	Percentage
Adheres to the dosage timing instructions	82%
Will replace dose(s) if missed	42%

II) ***On reconstitution of antibiotic (liquid form)***

The customer	Percentage
Adheres to pharmacist instructions	86%
Reads all labeled information on or with the package	83%
Fills the container to the marked point	89%
Shakes the container after reconstitution	92%
Discards the remaining reconstituted product at the end of the treatment course	53%

12- Dose measuring tools for liquid antibiotics:

Tool used	Percentage
Teaspoon	39%
Syringe	11%
Measuring cup	25%
Spoon accompanying the package	25%

13- Levels of knowledge on rational use of antibiotics:

Level of knowledge	No. of Customers
Think they may have little knowledge about the consequences of antibiotics irrational use	110
Have incorrect information about antibiotics irrational use	90 (out of the 110)
Have correct information on antibiotics irrational use	20 (out of the 110)
Heard that there are consequences of antibiotics irrational use	220
Have no idea about antibiotics irrational use	170

DISCUSSION

Generally, drugs are classified into: Prescription only medications (POM) that can only be obtained by the general public upon a valid prescription, and the non-prescription drugs, also known as over the counter (OTC) drugs, which are available to customers without prescription.[6,7] However, in addition to the fact that all interviewed pharmacists dispense antibiotics according to orders from physicians (Questionnaire), 56% of the pharmacists, dispense these drugs upon patient's requests, and 26% recommend certain types of antibiotics when the patient fails to specify the type of antibiotics he/she wants. In other words, 82% of the interviewed pharmacists dispense antibiotics without prescriptions; this gives an indication on the extent of the pharmacists' involvement in the problem of irrational use of antibiotics.

Ampicillin is the most commonly dispensed antibiotic without prescription. Followed by amoxycillin, this is because they are always available. Most of these antibiotics belong to the same family (Penicillins), which means that, pharmacists were ignoring the fact that, the excessive use of particular antibiotics or classes of antibiotics provides the selective incentive that favors the arising and proliferation of resistant bacteria.[8]

Upper respiratory tract symptoms are the most common type of conditions (85% in total) for which antibiotics are dispensed without prescription despite the fact that they are caused mostly by viruses which are not affected by antibiotics.[8] Moreover, this might lead to the failure of subsequent bacterial infections treatment, because some of the normal microbial flora might become resistant to these antibiotics, such resistance also might result in another secondary infection (super infection).

The pharmacists stated that (see the Questionnaire), about 75% of antibiotics dispensed without prescription are in children and infants dosage forms (syrups and suspensions). This reflects the percentage of infants and children taking antibiotics without physician's orders. Imagine these children growing up on antibiotics, there will be a time to come when they become resistant to most of these antibiotics, if not all of them. What will they do when they are exposed to life threatening bacterial infections?

While 64% of the interviewed customers use antibiotics for themselves or their children without prescriptions, only 36% of customers obtain antibiotics by prescriptions.

Moreover, asking those customers who use antibiotics without prescription, on what bases they choose a particular type of antibiotic, 33% ask for a specific type of antibiotic according to their preference (usually previously used), and 67% on recommendation of the pharmacist.

Moreover, 69% of the customers suggest to others the use of the same antibiotics they used previously for similar symptoms.

Only 35% of the interviewed customers complete the prescribed course of antibiotics therapy, in contrast, 65% end the course when symptoms are relieved. Asking customers on actions they would take, when they suffer from symptoms similar to previous infections revealed that 64% of them will again use the same antibiotic, while 36% will not (refer to a physician or pharmacist). 63% of the customers will provide the physician with information about last antibiotics used (provide him with a package, prescription or name of antibiotic), while, 37% will not (see the Questionnaire).

A look at the Questionnaire indicates that antibiotics are clearly being misused by customers. Patients wrongfully think they can cure illness by themselves without referring to physicians. Contribuing to the arising self-treatment problem, this is because, most patients do not know the hazards arising from irrational use of antibiotics which leads to the emergence of a resistant organism, other than the organism for which therapy was originally intended.[9-12]

The majority of customers adhere to therapy instructions, whether from physicians or pharmacists. Therefore, this should be regarded as a good sign for the keenness of the public to accept and follow public health protocol and medical advice when given to them properly and clearly. That is to say, educating and informing the public on the proper dealings with antibiotics will certainly find its way.

Because special tools are needed for measuring accurate doses of liquid dosage forms of antibiotics, especially for children and infants, 39% of customers use ordinary home teaspoons, these tools vary considerably in the measuring capacity[13] from 2.5 ml to 7.5 ml and even 10 ml, as we found out by calibrating various types of ordinary household teaspoons.

96% of the customers either have no idea, or have an incorrect idea on the drawback hazards of irrational use of antibiotics (regardless of the education level) as indicated in the Questionnaire. This brings us to the basic fact, we as health professionals should encourage the public to learn more about the medications they are taking in general, and antibiotics in particular.

CONCLUSION AND RECOMMENDATIONS

Because pharmacists are customarily dispensing antibiotics as OTC medications, they play significant role in the irrational use and misuse.

Infants and children are wrongfully and extensively exposed to antibiotics by their parents as a part of self treatment practice by the public. This makes them more vulnerable to infections by resistant microorganisms.

Pharmacists make antibiotics easily accessible to the public, self- medication with these drugs by customers is becoming one of the causes in the development of bacterial resistance to them.

It is necessary to formulate antibiotics policies, to prevent their misuse, or overuse by pharmacists and to assist pharmacists in their rational dispensing.

The faculty of pharmacy with other health authorities should be involved in this matter through:

a- Adequate education and training of pharmacists as part of continuous education programs, directed to pharmacy graduates for better pharmacy profession practice.

b- Educating and informing the public on proper drug-use, and the drawbacks of the self-medication phenomena.

c- Establishing Drug Information Centers (DIC) both in hospitals and within communities is necessary for educating and counseling both, the public and the medical professionals; including pharmacists about rational use of antibiotics, as well as, other drugs.

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