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A cross-sectional study of knowledge, attitude, and practices on over the Counter sale of antibiotics without Prescription by Pharmacists in Indore M.P

Apurv Thakur, Ritesh Upadhyay, R.R Wavare, Satyendra Yadav.

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ABSTRACT -Objectives: To study Knowledge, attitude, and practices towards Over the Counter sale of antibiotics without prescription by pharmacists in Indore.

Methods: A cross-sectional study was conducted between January to May 2017 by using a structured, validated, and pilot-tested questionnaire. A verbal consent was taken from the pharmacists, who were interviewed during the study, ensuring them about their confidentiality.

Results: Total 156 pharmacists participated in the study and 148 completed the questionnaire. More than two-thirds 111(75. %) of the pharmacists were not aware that Over the Counter sale of antibiotics without prescription is not permitted. Patients not willing to consult a physician for non-serious diseases 122(82.43%) and inability to afford the physician's fee 56 (37.8.3%) were the most common reasons. Knowledge and attitude towards selling antibiotics without prescription was found to be statistically significant (p = 0.00001).

Conclusion: In the present study pharmacists have lack of understanding of the prohibiting rule. Increased demand of antibiotics and competition explains the high rate of selling antibiotics without prescription in the rural population. Educating and improving the health care delivery facilities for the rural population will help in reducing the sale of antibiotics without prescription and its serious consequences on health of the general population.

Keywords: Pharmacist, Over the Counter sale of antibiotics without prescription,

I. INTRODUCTION

The overuse of antimicrobial agents is a global problem. Several studies have demonstrated an overall increase in the rate of antimicrobial drug consumption over time. This widespread use of antimicrobial agents has been associated with increased healthcare costs and the emergence of bacterial resistance to these drugs. [1,2] Almost one in six deaths worldwide are attributed to infectious diseases.[4] With only a handful of new antimicrobials in the developmental pipeline,[5] ever-growing antimicrobial resistance perhaps poses the greatest threat to public health globally.[6] Through rational antimicrobial use, health care costs can be reduced, and the quality of antimicrobial treatment can be improved. According to reports, 20-50% of antimicrobial use in hospitals is questionable or inappropriate.[1, 3] Antimicrobial resistance is especially of serious concern in developing countries, because most of these countries, if not all, have no comprehensive national action plan to combat Antimicrobial resistance.[7] According to the World Health Organization (WHO) report on Antimicrobial resistance, only 33 out of 133 countries surveyed had a national action plan to combat Antimicrobial resistance.[7] It has been estimated that more than 50% of the antibiotics worldwide are sold without a medical prescription (over-the-counter sales)[13] despite the fact that giving without a prescription is illegal in most of the countries. The non-prescription use of antimicrobials has been associated with shorter courses and suboptimal drug and dose choices.[8] The irrational use of antibiotics, a multidimensional phenomenon encompassing unnecessary and suboptimal use of antibiotics (incorrect dose, duration, frequency, and indication), including the overuse of broad-spectrum antibiotics, is primarily responsible for the global spread of Antimicrobial resistance.[8] The present study was conducted on pharmacist who sell over the counter antibiotics without prescription. This irrational and non-prescription use of antibiotics was associated with increased sales of antibiotics and increase competition between the pharmacist shop. Pharmacists play an important role in ensuring the safe use of antibiotics in the human health. The present study was conducted to evaluate the knowledge, attitude, and practices of pharmacists towards prescribing the antibiotics without prescription.

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II. MATERIAL AND METHODS

A cross-sectional study was done by using a structured, validated, questionnaire consisting of 32 questions. A pilot study was conducted before starting the study on 28 pharmacists in the Indore and these pharmacists were excluded from the final analysis of the study. Ethical approval was obtained from the Institutional Ethics Committee. The final version of the study tool consisted of 32 questions divided into four parts. The first part constituted of demographic data from pharmacists, including age, sex, area of their shop, years of experience, job status, number of medications given per day, and number of antibiotics sold per day. The second part consists of pharmacist knowledge about the legal aspect of selling drugs, Antimicrobial resistance and health of general population. This part consists of close ended questions, for which respondents provided an answer of either yes or no. The third part consisted for attitude towards selling antibiotics without prescription. Finally, the fourth part consisted of 10 questions related to practices towards selling antibiotic without prescription. The study was conducted during January to May 2017. A verbal consent was obtained from the pharmacists before their enrollment in the study, ensuring them that their information would be kept confidential. A total 158 pharmacists were enrolled in the study of which 148 submitted the completed questionnaire. Hence the response rate was 93.67%.

Sampling and data collection- The study was conducted in the Indore District. Using a detailed Map, the district was divided into four (4) Quadrants, after which using simple random sampling technique, 10% wards were selected from each quadrant. To gather data one complete day was provided to each selected ward and on the designated day the Investigators and the team of volunteers gathered data from the designated ward from 8:00 am to 6:00 pm. If more than one pharmacist was working at a pharmacy, both were requested to complete the questionnaire. Pharmacists either completed the questionnaire on the spot or asked the interviewer to collect the questionnaire at a time given, on the same day. Statistical analysis Data were done and analyzed using SPSS version 24.0 software (Trial version). Descriptive statistics, frequencies and percentages, were used to summarize the data. The Chi-square test or Fisher's exact test was used, as appropriate, to assess the association between demographic characteristics and practices towards giving antibiotic without prescription. A p-value of less than 0.05 was considered statistically significant.

Table 1: Demographic and professional characteristics of the pharmacists

Characteristics	Number (%) 148 (100%)
Age, years	
20-30	56
31-40	48
41-50	18
>51	26
Sex	
Male	123
Female	25
Area	
Rural	27
Urban	85
semi urban	36
Graduation	
M Pharma	8
B Pharma	19
D Pharma	45
Other	76
Job status	
Owner	46
Partner	29
Staff pharmacist	73

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experience, years	
<3	21
3-5	41
>5	86
Medicines sale per day	
Less than 50	60
51-100	42
101-200	31
>200	15
Antibiotics sale per day	
15	69
16-30	47
30-60	19
More than 60	13

Table 2: Knowledge and Attitude towards giving antibiotics without prescription

Question	Yes n (%)	No n (%)
Dispensing antibiotic without prescription is illegal.	37	111 (75%)
Dispensing antibiotic without prescription is a common practice among pharmacists	84	64
Is there any problem if you give medication without prescription	16	132
Without prescription is contributing to the development of antimicrobial resistance	13	135
Antibiotic resistance has become a public health problem	14	136
Dispensing antibiotics without prescription is contributing to the inappropriate use of antibiotics by patients	13	135
Pharmacists can be penalized for giving antibiotics without prescription	28	120
Pharmacists should stop giving antibiotics without prescription	14	134
Do you encourage the patients to consult the physician	17	131
If you will not give antibiotic then do they go to another pharmacy	146	02
Refusing may affect the sales and profits	141	7

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Table 3: Practice of Dispensing antibiotics without a proper prescription.

Dispensing antibiotics without prescription	**n (%)**
Pharmacists have knowledge of antibiotic	77
Patients do not want to see a doctor unless the diseases in serious	122
Increased sales and profit is a pressure from the owner	66
Patients cannot afford fee of physician	56
can lose a client/patient	126
Lack of awareness about rules and regulations	76
Commonly used antibiotic Azithromycin	121
Cephalosporins	61
Amoxicillin	37
Ofloxacin	15
Norfloxacin	8
Common antibiotic dosage forms dispensed without prescription	
Oral	137
Eye drops	87
Ear drops	13
Topical	121
Medical conditions for which antibiotics are dispensed without prescription	
Cough and Cold	124 (68.4)
Fever	98
Loss motion	47
Wound	57
During pain	38
Other (infection, UTI)	56

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Table 4: The practice of dispensing drugs without a Proper prescription and its association with Graduation and Years of Experience.

Question	Always n (%)	Never n (%)	Sometime n (%)	Graduation P value(Chi Squarre)	Experience P value(Chi Squarre)
Before giving antibiotics I ask patients about any drug allergy	81	19	48	0.74 (3.19)	0.07 (7.29)
Before giving antibiotics without prescription, I ask patients about any kidney problem	57	9	82	**0.002 (9.82)**	**<0.0001 (23.37)**
Before giving antibiotics without prescription, I warn patients about the potential side effects of the medicines	13	6	129	0.85 (0.04)	0.36 (0.84)
Before giving antibiotics without prescription, I inform patients about the importance of completing the full course of antibiotics	65	49	34	**<0.001 (29.46)**	0.21 (1.60)
Before giving antibiotics without prescription, I ask patients whether they are taking any other medication.	32	43	73	0.33 (0.94)	0.15 (2.12)
I don't give antibiotics without prescription for children	87	40	21	0.58 (0.31)	**<0.001 (18.06)**

III. RESULTS.

The demographic and professional profile of the pharmacist is given in Table 1. A total of 158 pharmacists were enrolled in the study of which 148 completed the questionnaire (response rate 93.6%). A total of 27 (18.2%) pharmacists were from rural area, 85(57%) were from urban and 46(31%) were from Semi- Urban area. Pharmacists who had less than 3 years of practice experience were 21(14.1%), those who had 3-5 year experience were 41(27.7%) in number and 86 (58.1%) had more than 5 years' experience. Pharmacist whose sale was less than 50 medications per day were 60(40.5%) and 15 (10%) were giving more than 200 medicines per day. As seen from Table 2 more than two-third 111 (75%) of the pharmacists in the study were not aware of the fact that giving antibiotics without prescription is illegal. More than half of the pharmacists 84(56.7%) believed that giving antibiotic without prescription is a normal among pharmacists. Majority of the pharmacists 132 (89.1%) were not aware that irrational use of antibiotics can lead to resistance, and 136 (91.8%)) had no idea that antibiotic resistance has become a public health problem. A total of 110 (74.3%) pharmacists claimed that they encouraged patients to consult a physician for obtaining antibiotics and almost all pharmacists 146 (98.6%) thought that not giving antibiotic to patient will lead him/her purchasing the medicine from another pharmacy. 141(95.2%) of the pharmacists also think that refusing to sell the antibiotic can affect their future sales (table 2).

Table 3 shows Practices towards giving antibiotics without prescription. It can be noted that

122 (82.4%) pharmacists prescribed medications because the patient was unwilling to consult a physician unless the disease is serious. Fear of losing client is seen in 126 (85.1%) pharmacists (Table 3). Azithromycin 121 (81.7%), followed by cephalosporins 61(41.2%) and amoxicillin 37 (25%), were the most common antibiotics given without prescription. Cough and cold 124(83.7%), fever 98 (66.2%), and wound 57 (38.5%) were the common conditions in which antibiotics were given without prescription. Similarly oral dosage form was most common antibiotic form giving without prescription 137(92.5%). Pharmacists claimed that they always asked the patient about drug allergies 81 (54.7%) and kidney function 57(38.5%) before giving antibiotics. A total of 65(43.9%) pharmacists in study claimed that they always inform patients about the importance of completion of the antibiotic course and 32 (21.6%) asked them if they were taking any other medication before giving antibiotics. Table 3 Show a significant association between the level of graduation and whether the Pharmacists advise the patient to complete the antibiotic course (p= <0.001) and also whether the Pharmacist inquires about the Kidney problems (0.002). This table also depicts the Significant association between years of Experience as a Pharmacist and whether the Pharmacist inquires about Kidney problems and also whether the Pharmacist asks for Childrens' prescription.

IV. DISCUSSION

In the present study knowledge, attitude, and practices towards giving antibiotics pharmacists were evaluated. The study shows the high incidence of dispensing of antibiotics without a proper prescription, as reported in earlier studies, [12,13] it is important to understand the pharmacists' perception so that appropriate step and policies changes can be implemented to address this public health issue. One fourth of the pharmacists in this study were aware that giving antibiotics is illegal and that pharmacists can be punish for this type of malpractice in India. The study could also explain the competition for sales and profit obtained by the sale of antibiotics. Educational qualification reflects the knowledge, attitude and good practices of pharmacy, as was evident in this study as well. Given that many of the pharmacists in the present study were not aware of the negative implications of giving antibiotic in term of development and spread of antibiotics resistance, it stands to reason that widespread training and creation of awareness is required. The present findings indicate that azithyromicin is the most commonly dispensed antibiotic without prescription, consistent with the findings of Mohit Nair et al., [13] who reported that amoxicillin/clavulanate was the most commonly used antibiotic. The role of dispensing antibiotics without prescription in the development and spread of antibiotic resistance is well known.[27] In this study, more than two-thirds of the pharmacists claimed that they asked patients about drug allergies and explained the side effects before dispensing antibiotics, in contrast to the findings of Mohit Nair et al., who conducted a study in the west Bengal [13] and Muhammad Abdul Hadia et al. [12] similarly reported that none of the pharmacists interviewed asked about drug allergies, side effects, or drug interactions.

Dispensing and consumption of antibiotics without a proper prescription in India is one of the most common practices, which may partially explain the overuse of antibiotics which has been reported in different studies. A high prevalence of dispensing of antibiotics for minor ailments was seen this study. The rational use of antibiotics is crucial to effectively treat the infection and curtail the global spread of AMR [12]. Dispensing antibiotics without prescription remains a barrier in ensuring the appropriate use of antibiotics, as the non-prescription use of antimicrobials has been associated with shorter courses and irrational drug use and incorrect dosing. [8–12] In addition to focusing on infection control strategies, increasing awareness about antibiotic dispensing and use, and training pharmacists in the treatment of minor ailments could be effective methods to reduce self-medication and the non-prescription use of antibiotics [12]. Furthermore, it can be argued that since attitudes are potentially modifiable, educational strategies targeted at changing attitudes could markedly improve compliance with antibiotic dispensing regulations, which may be similarly seen in the study conducted by Roque F et al[16]. Finally, improving access to healthcare for the general public and increasing awareness in regard to antibiotic misuse could also reduce non-prescription sales of antibiotics.

V. LIMITATIONS

The study was conducted in Indore region and can't be generalized i.e. the findings may not represent the knowledge, attitude, and practices of pharmacists practicing in other parts of the country. There is a slight potential for selection bias in the study. A larger sample size should be targeted to get a better picture of the Knowledge, Attitude and

Practices of Pharmacists. Self-reported data always comes with limitations.

VI. CONCLUSIONS-

Pharmacists are generally not aware of the rules and regulation of antibiotics without prescription. This lack of awareness is potentially contributing to high rates of antibiotic resistance in India. However, many of the pharmacists are well aware of the negative impact on health due to antibiotic if not given in proper way. Approach consisting of educational interventions targeting both pharmacists and the public, strict implementation of regulations, and improving access and affordability of healthcare can potentially reduce the incidence of antibiotic resistance and the self-use of antibiotics in India. The study addresses the gaps between the doctor, pharmacists and patient and misuse of antibiotics which lead to develop resistance, should be taken as important step for the policy making.

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