

Epidemiologic Study of use of Antibiotics: A Health Survey and Awareness Exercise conducted in Different Areas of jaipur

Poonam Mahendra*, Saleha Rehman, Ritu Gilhotra
School of Pharmacy, SGVU

Abstract

Objective

Antibiotics are the most frequent prescribed drugs and its inappropriate use results in drug resistance and health problems. The present study is designed to evaluate commonly prescribed antibiotic, to analyze the habit of self prescribing antibiotic and to aware people about the antibiotics.

Methods

This cross sectional health survey was carried out with a self designed standard questionnaire by manual data collection over a three months period at thirteen cities of jaipur. The data were collected from the patient's prescription and by directly interviewing the patients who were prescribed at least one antibiotic or taking antibiotics without prescription during the study period. Descriptive statistics were applied to the collected data and analyzed using Microsoft Excel software. Modified Wald method was applied to calculate 95% CI.

Results

Survey was done on 650 population and 473 prescriptions was collected. It was found that males were prescribed 39 % more antibiotics than females. Antibiotics prescription rate was higher in the pediatric (0-15 years) and geriatric (≥ 60 years) populations. The highest prescribed antibiotics group from 13 areas of Jaipur were cephalosporins (33.78 %, 95% CI: 31.56 to 32).

Discussion and Conclusion

From this research it was observed that many people were unaware about the usage, side effects and rational use of antibiotics. People were aware about the antibiotics usage and their resistance.

Keywords: Antibiotics, Antibiotics resistance, Prescriptions

Introduction

Antibiotics are the most frequently and effective prescribed drugs. They have effectively prolonged the life expectancy and worldwide the most commonly prescribed drugs in hospitals [1]. The inappropriate use of antibiotics for treatment of patients with cold, fever and other common infections is a worldwide problem. Other problems are increase treatment costs and selection for antibiotic-resistant organisms [2]. Outpatient use of antibiotics accounts for approximately 2/3rd of antibiotic sales in the world, and therapy for respiratory tract infection results in three quarters of a billion prescriptions annually [3] The rapid emergence of antimicrobial resistance (AMR) in the community has become a major global health problem.

Irrational use of antibiotics in community is a global problem and results in an increased risk of side effects and higher rates of AMR. Irrational use of medicines can harm patients in terms of poor patient outcome, adverse reactions and wastage of resources. Irrational use of antibiotics is particularly serious because it is rapidly increasing antimicrobial resistance worldwide and is causing significant morbidity and mortality [4,5,6]. Reasons of development of antibiotic resistance are increased self prescribing, not following routine susceptibility testing and inadequate surveillance. [7, 8]. Many people prescribe antibiotics themselves without discussing to medical professional in most cases. Subsequently patients not complete the complete regiment of antibiotics dosage, if given in general fever and cold or even in other infectious diseases. The aim of this survey based research is : i) to analyze commonly prescribed antibiotics ii) to analyze the habit of self prescribing antibiotics iii) to aware people about the antibiotics in different areas of Jaipur, Rajasthan

Materials and methods

Study design, setting and study population

The present survey based research was a cross-sectional prospective study carried out in different areas of Jaipur, Rajasthan. Data were collected for over three months period August 15, 2015 to November 18, 2015.

A self-designed questionnaire was developed and randomly selected general population was interviewed with the questionnaire. Total six hundred fifty (650) individuals were surveyed and six hundred fifty (650) prescriptions were collected to assess the prescriptions pattern of antibiotics.

In this survey 'antibiotic patient' is defined as any patient of age '0' years to over 60 years whom one or more antibiotics is prescribed. The term 'antibiotic' is used for 'anti-infective for systemic use' as classified by World Health Organization [9, 10, 11]

Data collection

This health survey was carried out with a self-designed standard questionnaire by interviewing the 650 patients directly, approximately 50 from each area. One student of the Department of Pharmacy, Suresh Gyan Vihar University was assigned and instructions were given by the investigator for conduction of this health and awareness survey. During this study written consent was taken from each patient. Data were collected from the randomly selected patients who came to buy the drugs from the pharmacies[12].

Ethical considerations

Principles declaration of Helsinki were followed during the conduction of this survey based research. This survey-based research is supported by the Department of Pharmacy, Suresh Gyan Vihar University. The individuals involved in this study did not use any toxic agents and no samples were collected during interview. As data was collected through interview only, this survey-based research didn't take approval from institutional ethics committee.

Statistical analysis

Using Microsoft Excel software statistics were applied to the collected data. Results are expressed graphically in percentages, standard deviation (SD) and 95% CI. Modified Wald method was applied to calculate 95% CI.

Result

From this health survey it was found that 69.53 % were male and 30.47 % were female. In this study male were prescribed 39.06 % more antibiotics than female (fig 1). The highest percentage of males (78%) was found in Sodala and Jhalana area of Jaipur whereas the highest percentage of females (44 %) was found in Malviya Nagar

area. Children aged from '0' years to 15 years old took the highest percentage of antibiotics (35.09%) followed by older peoples aged 60 years or over 60 years (21.35%) whereas young people took the least percentage (11.83%) of antibiotics, Figure 2. Reasons for visiting doctors for which doctors prescribed antibiotics are cold and fever (11.83 %), diarrhoea (16.49 %), abdominal pain (28.32 %), burning micturations (32.55 %) superficial abscess (5.9 %) and other disease (4.8 %) Figure 3. In this study it was found that 64% of patient were taking antibiotics by doctors prescription while 36 % were taking without prescription (OTC). The highest patients (88 %) getting antibiotics through prescription were found in city area whereas the highest percentage (64%) of patients getting antibiotics without prescription was found in Jhalana area of Jaipur. Disease for which patient were getting antibiotics without prescription cold and fever (64.55 %), diarrhea (72.64 %), abdominal pain (84.31%), burning micturition (22.34 %) and superficial abscess (67.87 %). Highest percentage of patients were taking antibiotics without prescription for abdominal pain (84.31%) and least for burning micturition (22.34 %)

The highest prescribed antibiotics group from 13 areas of Jaipur were cephalosporins (33.78 %, 95% CI: 31.56-32), macrolides (27.33, 95% CI: 25.75-28.90), quinolones (16.11, 95% CI: 15.28-17.34), penicillins (7.33, 95% CI: 6.72-7.52) and metronidazoles (6.78, 95% CI: 6.57- 6.98) respectively (table 1).

Discussion

Males were prescribed 39 % more antibiotics than females. Previous studies conducted in various developing country also show higher prevalence of antibiotics in males. These findings can't explain the higher difference as we know decisions in medical are biased by the male because in India male characters are dominance.

Antibiotics prescription rates in this study was found to be higher in the pediatric (0-15 years) and geriatric (\geq 60 years) populations perhaps because it is found in previous studies that these populations are more prone to infections (13). Guidelines suggest that antibiotic should be used only if positive infection was seen [14] but it was found in the present study that 83% prescriptions has no clinical test for positive microbial test although the medical professionals are prescribing antibiotics. Furthermore, established guidelines also suggest that antibiotics should not be the choice of drug in most diarrhea cases [15].

In present study it was found that cephalosporins accounted 33.78% of total antibiotic

prescriptions. Highest use of cefixime, cefuroxime and ceftriaxone suggest that why ceftriaxone and cefixime have abnormally high resistances [16, 17]. Among quinolones highest quinolones were sparfloxacin, levofloxacin and ciprofloxacin [18,19].

In Jaipur many patient are not taking antibiotics by following the prescription of antibiotics. As a result, sometimes antibiotics are using irrationally to give quick relief and to decrease cost of doctor visit. This is because antibiotics are the most commonly used and misused drugs by patients. Highest percentage (64%) of patients getting antibiotics without prescription was found in Jhalana area of Jaipur. Reason for taking antibiotics without prescription in this area are illiteracy, non availability of doctors and financial problem (to save doctors fees). In city highest number of patient were found to take antibiotics through doctor's prescriptions and reasons are Asia largest hospital SMS Jaipur is located in city and Rajasthan Government free medicine supply facility.

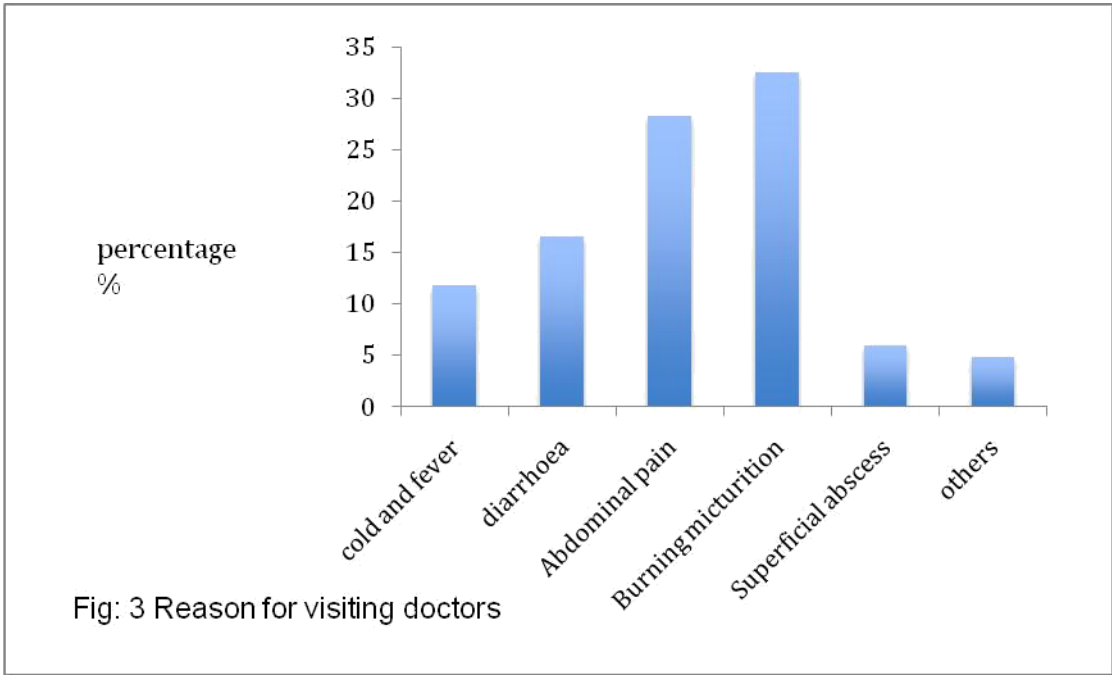
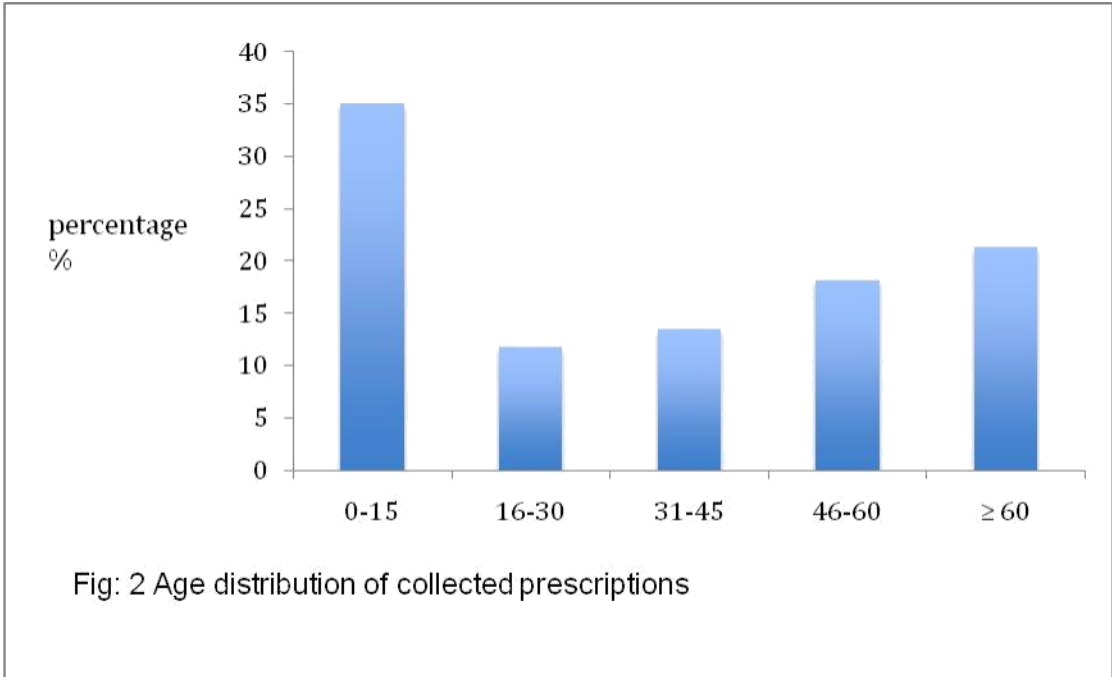
Present study has few limitations. The findings obtained from this small sample size (650 only) cannot be generalized to the whole population of Jaipur. To better study this issue, future research should focus on all the areas of Jaipur and should involve the patients as much as possible. Furthermore, seasonal variations in illnesses should also be consider, because they affectuse of antibiotic and pattern of disease.

Conclusion

Increasing bacterial resistance to antibiotics and other health related problems out study have important implications for public awareness and enforcement of regulations regarding the use of antibiotics. Populations awareness was also done and reasons were told why antibiotics should use through prescription only.

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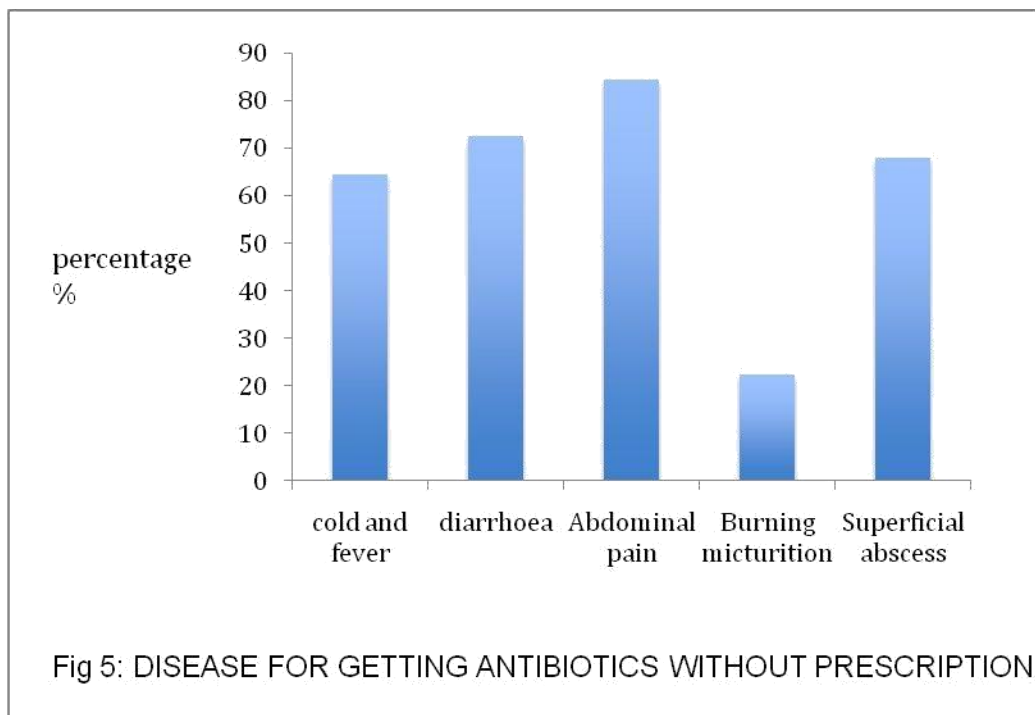
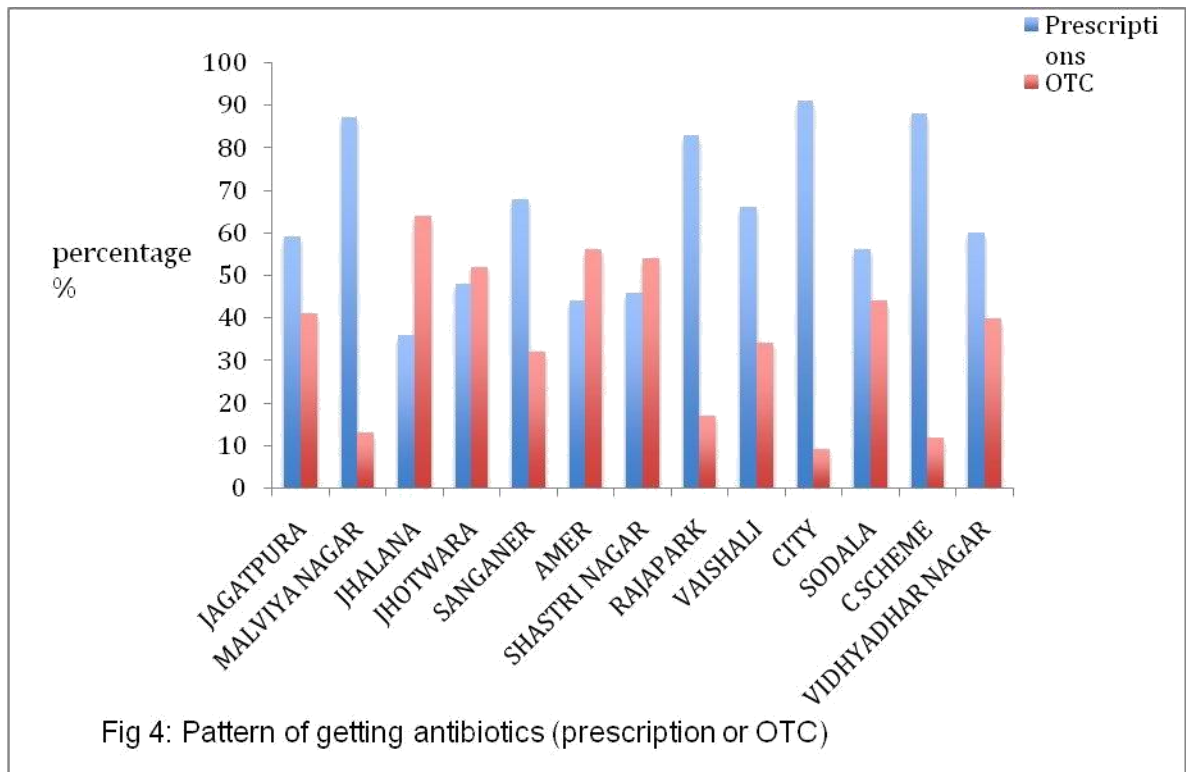


Table: 1 Usage pattern of antibiotics in different areas of Jaipur

Antibiotics	Percentage	Standard deviation	95% confidence interval
Cephalosporins	33.78	3.93	31.56 to 32
Quinolins	16.11	9.19	15.28 to 17.34
Macrolides	27.33	13	25.75 to 28.90
Aminoglycosides	1.33	86	1.29 to 1.36
Penicillins	7.33	0.27	6.71 to 7.51
Tetracyclins	2.00	3.55	1.94 to 2.06
Metronidazole	6.78	0.54	6.56 to 6.99
Antifungals	2.78	1.91	2.70 to 2.86
Other antibiotics	2.56	0.68	1.89 to 2.11

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