



Evaluation of Irrational use of Antibiotics among the Local Population of District Shaheed Benazir Abad, Sindh, Pakistan

**Durr-e-Shahwar Malik¹, Mirza Tasawar Baig², Ayaz Ali Unar³,
Faraz Qurban Rajper¹, Khalida Unar⁴, Tahseen Ahmed^{1*}, Waqar Ahmed⁵
and Syed Shafqat Ali Shah Rizvi⁶**

¹*Institute of Pharmaceutical Sciences, Peoples University of Medical and Health Sciences, Shaheed Benazir Abad Sindh, Pakistan.*

²*Faculty of Pharmacy, Ziauddin University, Karachi, Sindh, Pakistan.*

³*Institute of Pharmacy, Shaheed Mohtarma Benazir Bhutto Medical University Larkana, Sindh, Pakistan.*

⁴*Department of Microbiology, Shah Abdul Latif University, Khairpur Mirs, Sindh, Pakistan.*

⁵*Department of Pharmaceutics, Faculty of Pharmacy, University of Sindh, Jamshoro, Pakistan.*

⁶*College of Pharmacy, Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan.*

Authors' contributions

This work was carried out in collaboration among all authors. Authors DSM and MTB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AAU, FQR and KU managed the analyses of the study. Authors TA, WA and SSASR managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i27A31495

Editor(s):

(1) Dr. Francisco Cruz-Sosa, Metropolitan Autonomous University, México.

Reviewers:

(1) Cindra Tri Yuniar, Institut Teknologi Bandung, Indonesia.

(2) Abu-Saeed Kamaldeen, Nigeria.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/67508>

Original Research Article

Received 10 February 2021

Accepted 17 April 2021

Published 30 April 2021

ABSTRACT

The aim of study was to assess the irrational use of antibiotics among the local population of Shaheed Benazir Abad, Sindh, Pakistan. Rational or proper medication means patients consume proper medicines for said diagnostic disease and after its consumption, the symptoms disappear. For rational use, selection of medicines is very important along with its proper dosing and it is also necessary to check the adequate time for proper treatment. Cross-sectional study was conducted

*Corresponding author: E-mail: tahseen.channa89@gmail.com;

at various out-patient settings located in Peoples University of Medical & Health Sciences, District Shaheed Benazir Abad for the period of 06 months. Total 374 study samples were collected by using simple random sampling technique. From the total study subjects, 209 were males and 165 females. 129 people had only primary qualification. 188 study subjects were married and 149 were unmarried, people use to take antibiotics due to less knowledge and trust on the medical prescriber and take as self diagnosis found among 48 and they didn't have proper time to visit health care facility so the shortage of time was observed among 151 people. Ciprofloxacin and co-trimaxazole were frequently used by the participants due to different causes. Health Care professional should take proper action against the pharmacies and medical stores as they sale the drugs without any prescription and proper counseling session should be conducted, in order to educate the community regarding rational and irrational use of medicaments.

Keywords: Antibiotics; prescription; irrational; antibiotics.

1. INTRODUCTION

Rational or proper medication means patients consume proper medicines for said diagnostic disease and after its consumption, the symptoms disappear [1,2]. For rational use, selection of medicines is very important along with its proper dosing and it is also necessary to check the adequate time for proper treatment [3]. Rational drug therapy is needed in order to evaluate the proper medical conditions and socio-economic level of patients [4,5]. Globally, it is estimated that approximately 55% of medicines are prescribed and consumed irrationally. Almost 48% of population fails to get their desired results and 34% of patients were not facilitated with essential medicines globally, that is actually alarming sign that essential medicines and other medicines are being consumed irrationally [6,7]. In order to reduce such type of situation, health care providers should take serious actions and take care whether proper medicines are prescribed and medicines are being used rationally [8,9]. Irrational consumption of medicines can be defined in numerous ways such as patients are taking any medicines that are not prescribed to them, Taking contra indicated medicines, consuming the medicines with narrow therapeutic index, consumption of drugs without having information about its efficacy and risk factor, prescribing trends of less effective drugs, improper dosing, selection of improper dosage form and route of administration [10,11]. From numerous literatures, it was concluded that globally, consumption of antibiotics irrationally is considered as serious issue. Numbers of factors are involved for this purpose including poly pharmacy, selection of improper antibiotic, lack of proper knowledge of mechanism of action, expensive drugs, and self-medication practice; reduce the dose without medical advices, long

duration of therapy without any serious cause [12]. There is no any proper check and balance for the maintenance of pharmacovigilance as number of medicines are being purchased and consumed without any authenticate prescription orders. Any substance, or drugs, that are being derived from micro organisms such as bacteria to kill or inhibit the growth of bacteria [13]. Chemically prepared antibiotics are more potent against bacterial infections as compared to natural antibiotic type. Microbes are capable to survive and grow in the presence of antibiotics as well because they have ability to produce resistance against antibiotics. During the process of replication, genes are being transferred from bacteria to their daughter cells [14]. Numbers of factors are involved for drug resistance including regular consumption of antibiotics, improper dosing of antibiotics, usage of low quality medications, frequently changing the medication without medical advice, prescribing trends of low standard medicines, improper dose regimen, duration and improper transportation of antibiotics [15].

2. METHODOLOGY

Cross-sectional study was conducted at various out-patient settings located in Peoples University of Medical & Health Sciences, District Shaheed Benazir Abad for the period of 06 months from September 2020 to February 2021. It is one of the major health facilities for the local population of District Shaheed Benazir Abad that provides free medical facilities to the people along with medicines. Total 374 study samples were collected by using simple random sampling technique. Informed consent form was filled from every participant and questionnaire was given to the patients that comprises of demographic data clinical data and related information regarding irrational use of antibiotics and they were guided

regarding its proper filling and data was collected and statistical analysis was done by using SPSS version 20.00.

3. RESULTS

Research was carried out on 374 patients who were visited at numerous out-patient sitting located in Peoples University of Medical & Health Sciences, District Shaheed Benazir Abad and 209 were males whereas 165 were females as mentioned in Table 1.

4. DISCUSSION

The frequency of irrational use of antibiotics was almost 74% at district Shaheed Benazir Abad, Sindh, Pakistan. It was quite different study that was being conducted among the local population of shaheed Benazir abad regarding the irrational use of numerous antibiotics and similar type of study was carried out at Karachi with prevalence rate of 48% [16]. In the urban population of Shaheed Benazir abad the frequency was quite below than the population belongs to the rural areas of same district. A research was carried out at India with the prevalence rate of 18%, people use to take various antibiotics as self-medicated medicines. Frequency of irrational use of antibiotics is too much higher than rest of the world as per reports of research Italy had 33%, Iran 51%, China 49%, Sudan 80%, Saudi Arab 75%, United Arab Emirates 58%, Jordan 28%, Spain 12%, Denmark 2%, Malta 21% and 24% observed in Lithuania [17,18]. The distinctions in the irrational use of antibiotics rates might be because of ethnic variety among the various populaces and diverse medical services frameworks in every country. We likewise checked the reasons that might have added to irrational use of medicines for self diagnosed diseases. There was no any association found between the general factors like as sex, marital status and occupation among irrational used of antibiotics among the local population of Shaheed Benazir Abad. These outcomes are compatible with those of Shah et al., [19,20] Nonetheless, Ramay et al., found that sexual orientation was identified with self-drug, with ladies more associated with these practices when contrasted with guys [21,22]. A comparative outcome was additionally accomplished in an examination did in Mexico [23,24]. Our examination found that instruction level, financial status and health care coverage were identified with self-medicine. In the examination populace, self-sedating had a low

degree of schooling, with practically 50% of them clueless, and generally having a place with the low financial class. This is like the examination led by Balbuena et al., in Mexico, in which low financial foundation and low instructive level were straightforwardly connected to self-prescription [17,18]. Then again, an investigation completed in Guatemala City tracked down no such affiliation. Age was not discovered to be connected to self-prescription which is rather than different examinations that have appointed either the youthful or grown-up populace as a danger factor for self-medicine [21,22]. We found that amoxicillin followed by metronidazol were the most ordinarily utilized antibiotics. This matches the aftereffects of a couple of studies completed in Karachi [25,26]. Be that as it may, in an investigation in Saudi Arabia, penicillin and macrolide were discovered to be the most usually utilized anti-toxins [23,24]. Another investigation in Europe expressed that cephalosporins and macrolides were the most widely recognized antibiotics utilized [23]. Anti-toxins were most usually utilized for cold, agony and fever by our examination populace. This is as per different investigations [26]. This shows the perils of such unregulated utilization of anti-infection agents since flu or cold are self-restricting and don't need antibiotics [23]. An arising issue coming about because of such utilization of anti-infection agents is that of anti-infection obstruction. This is a difficult issue and has been alluded to by a ton of studies did already [25-26]. The primary explanations behind the act of self-drug by our members were monetary reasons and simple accessibility of anti-toxins [22,24]. The high specialist's expenses and under-staffed medical care places in the country territories that can't bear the weight of the populace at last power individuals to search for options and self-drug is the most reasonable one. The examination did by Shah et al., tracked down that the most well-known reasons were to save time, evade the problem of centers and past fruitful encounters [26]. Most of our members got the antibiotics from drug stores without remedy. This has a great deal to do with the way that laws relating to offer of medications are not appropriately executed in Pakistan and the drug stores are allowed to sell meds without solutions. In the investigation completed in Guatemala City, they tracked down that a large portion of the anti-toxins were acquired from the drug stores [25]. These outcomes were reflected by an investigation completed in Greece. The greater part of our investigation populace didn't peruse the anti-infection data freebees.

Notwithstanding, this is likely connected to the way that most were ignorant or not taught enough to understand it. The examination in Guatemala City found that individuals didn't peruse the freebees got with the prescriptions and instruction level or financial class didn't influence it [24,26]. In our examination, we likewise found that our respondents look for exhortation in regards to prescription from family, drug specialists and afterward companions. Ramay et al., associated looking for counsel to financial status and found that individuals from a lower financial class look for guidance from family or companions while those from a higher class allude to drug specialists and family [23]. An examination in Northern India found that alongside the three wellsprings of data recently referenced, past solutions were likewise utilized as a kind of perspective by individuals self-sedating. Endless supply of the information on anti-toxins, we tracked down that a little level of individuals knew about the normal results brought about by these drugs. Ahmad et al., likewise found that there was low mindfulness

with respect to tranquilize cooperation and unfriendly impacts of basic meds. A past Pakistani examination tracked down that a lion's share of their members knew about the danger of antagonistic impacts brought about by antibiotics. A vital outcome that we discovered was that more than 66% (74.7%) of our investigation populace had no clue about the conceivable insufficient utilization of antibiotics prompting anti-microbial opposition. Shah et al., depicted that a minority of their members knew about the term anti-microbial obstruction and surprisingly a lesser extent realized that anti-toxin opposition was identified with deficient utilization of anti-toxins. An Italian investigation uncovered that only 9.8% of the populace knew the right meaning of anti-toxin obstruction while just 21.2% knew about the appropriate utilization of antibiotics [22,23,25]. These figures are disturbing without a doubt since they show that there is capability of the current anti-infection obstruction expanding. This may prompt illnesses later on being hard to treat because of the diminished number of drugs accessible.

Table 1. Gender wise distribution of study subjects

Gender	Number	Frequency
Male	209	55.88%
Female	165	44.117%

Table 2. Age wise distribution of study subjects

Age wise groups	Number	Frequency
18-24 years	26	6.95%
25-31 years	47	12.56%
32-38 years	99	26.47%
39-45 years	104	27.80%
46-52 years	81	21.65%
53 and Above	17	4.54%

Table 3. Qualification of study subjects

Qualification	Number	Frequency
Primary	129	34.49%
Metrication	96	25.66%
Intermediate	94	25.13%
Graduation	43	11.49%
Post Graduation	12	3.20%

Table 4. Marital status of study subjects

Marital status	Number	Frequency
Single	149	39.83%
Married	188	50.26%
Widow/ Divorced	37	9.89%

Table 5. Family Income of study subjects

Family income	Number	Frequency
Lower income (below 1 lac per month)	171	45.72%
Middle class (Above 1 lac per month)	53	14.17%
Upper Middle Class (within 5 lacs per month)	141	37.70%
ALLETE Class (6-7 lacs per month)	09	2.40%

Table 6. Occupational Status of study subjects

Occupation	Number	Frequency
House wives	109	29.14%
Government Employees	34	9.09%
Private Job Holder (Bankers, Teachers & Sales person)	153	40.90%
Independent (Self Business, Shop Keeper)	78	20.85%

Table 7. Affordability of study subjects regarding medical facilities

Afford medical facility	Number	Frequency
Yes	103	27.54%
No	219	58.55%
Don't Know	52	13.90%

Table 8. Numerous symptoms for those patients were using antibiotics

Symptoms for using antibiotics	Number	Frequency
Cold or Flu	49	13.10%
Body pain	34	9.09%
Fever	12	3.20%
Stomach Pain	09	2.40%
Diarrhea	18	4.81%
Allergic reaction	21	5.61%
Dry Cough	74	19.78%
Menstruation Problem	93	24.86%
Fertility Issues	34	9.09%
Concurrent Diseases (02 to 03 diseases occurs simultaneously)	30	8.02%

Table 9. Various reasons for taking antibiotics

Reasons for taking antibiotics	Number	Frequency
Shortage of time	151	40.37%
Easy access to antibiotics	36	9.62%
Diminish Consultation charges	79	21.12%
Self-Medication benefits	13	3.47%
Self-Diagnosis	48	12.83%
Lack of trust on Doctors	47	12.56%\$

Table 10. Frequencies of taking medicines (Antibiotics)

Frequencies of taking antibiotics	Number	Frequency
Single Dose per week	34	9.09%
Multiple Doses per week	93	24.86%
Single Dose only	137	36.63%
For Three days irregularly	92	24.59%
For Prolong use	18	4.81%

Table 11. Number of antibiotics used among patients

Antibiotics	Number	Frequency
Amoxicillin	11	2.94%
Azithromycin	24	6.41%
Ampicillin	03	0.80%
Moxifloxacin	12	3.20%
Cefadoxil	29	7.75%
Cefixime	18	4.81%
Ceftriaxacin	32	8.55%
Ciprofloxacin	38	10.16%
Clarithromycin	25	6.68%
Co-trimaxazole	50	13.36%
Erithromycin	33	8.82%
Levofloxacin	46	12.29%
Metronidazole	26	6.95%
Secnidazol	08	2.13%
Tetracycline	19	5.08%

Table 12. Knowledge about the side effects of antibiotics

Knowledge about side effects of antibiotics	Number	Frequency
Yes	163	43.58%
No	79	21.12%
Don't Know	132	35.29%

Table 13. Side effects of antibiotics consumption among study subjects

Side Effects after consumption of Antibiotics	Number	Frequency
Abdominal Cramps	24	6.41%
Nausea/Vomiting	62	16.57%
Allergic reactions	09	2.40%
Pale Yellowish Eyes/Body	19	5.08%
Dizziness	23	6.14%
Head ache/Migraine	44	11.76%
Fever	67	17.91%
Kidney Dysfunction	22	5.88%
Hepatitis/Liver Problem	15	4.01%
Teeth Discoloration	04	1.06%
Musculoskeletal Pain	39	10.42%
Tingling Sensation/ Numbness	34	9.09%
Insomnia	12	3.20%

5. CONCLUSION

The frequency of irrational use of antibiotics was greater among the Males than females and Qualification matters for proper knowledge as people with less qualification rates consume more medicines due to less knowledge about side effects and adverse effects of antibiotics. People didn't have trust on the prescriber trend so they were used to purchase the medicines with easy approach and economical rates. Health Care professional should take proper action against the pharmacies and medical stores as they sale the drugs without any prescription and proper counseling session should be conducted,

in order to educate the community regarding rational and irrational use of medicaments.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Buke C, Hosgor-Limoncu M, Ermertcan S, Cicekioglu M, Tuncel M, Köse T, Eren S. Irrational use of antibiotics among university students. *Journal of Infection*. 2005;51(2):135-9.
2. Machowska A, Stålsby Lundborg C. Drivers of irrational use of antibiotics in Europe. *International journal of environmental research and public health*. 2019;16(1):27.
3. Kotwani A, Wattal C, Joshi PC, Holloway K. Irrational use of antibiotics and role of the pharmacist: an insight from a qualitative study in New Delhi, India. *Journal of Clinical Pharmacy and Therapeutics*. 2012;37(3):308-12.
4. Ibeawuchi R, Mbata IT. Rational and irrational use of antibiotics. *Africa Health*. 2002;24(2):16-9.
5. Akinyandenu O, Akinyandenu A. Irrational use and non-prescription sale of antibiotics in Nigeria, a need for change. *J Sci Innov Res*. 2014;3(2):251-7.
6. Chandy SJ. Consequences of irrational use of antibiotics. *Indian J Med Ethics*. 2008;5(4):174-5.
7. Mboya EA, Sanga LA, Ngocho JS. Irrational use of antibiotics in the Moshi Municipality Northern Tanzania: A cross sectional study. *The Pan African Medical Journal*. 2018;31.
8. Sutradhar KB, Saha A, Huda NH, Uddin R. Irrational use of antibiotics and antibiotic resistance in southern rural Bangladesh: perspectives from both the physicians and patients. *Annual Research & Review in Biology*. 2014;15:1421-30.
9. Achong MR, Hauser BA, Krusky JL. Rational and irrational use of antibiotics in a Canadian teaching hospital. *Canadian Medical Association Journal*. 1977; 116(3):256.
10. Holloway KA. Promoting the rational use of antibiotics. In regional health forum. World Health Organization Regional Office for South-East Asia. 2011;15(1):122-130.
11. Emeka PM, Al-Omar MJ, Khan TM. A qualitative study exploring role of community pharmacy in the irrational use and purchase of nonprescription antibiotics in Al Ahsa. *Eur J Gen Med*. 2012;9(4):230-4.
12. Sebsibie G, Gultie T. Retrospective assessment of irrational use of antibiotics to children attending in Mekelle general hospital. *Sci J Clin Med*. 2014;3(3):46-51.
13. Liu S, Yongsheng MO, Huiping MO, Desheng LU, Pan Q, Tan L, Zhijian LI. Drug-resistance of Commonly Encountered Pathogens and Irrational Use of Antibiotics. *Chinese Journal of Nosocomiology*. 1994;(01).
14. Otoom SA, Sequeira RP. Health care providers' perceptions of the problems and causes of irrational use of drugs in two Middle East countries. *International Journal of Clinical Practice*. 2006; 60(5):565-70.
15. Askarian M, Maharlouie N. Irrational antibiotic use among secondary school teachers and university faculty members in Shiraz, Iran. *International Journal of Preventive Medicine*. 2012;3(12):839.
16. Mao W, Vu H, Xie Z, Chen W, Tang S. Systematic review on irrational use of medicines in China and Vietnam. *PLoS one*. 2015;10(3):e0117710.
17. Mensah KB, Ansah C. Irrational use of antibiotics and the risk of diabetes in Ghana. *Ghana Medical Journal*. 2016;50(2):107-14.
18. Nausheen S, Hammad R, Khan A. Rational use of antibiotics--a quality improvement initiative in hospital setting. *Journal Pakistan Medical Association*. 2013;63(1):60.
19. Elsiddi HA. Irrational use of antibiotics among people residing in Almamoura. *Sudanese Journal of Public Health*. 2010;5(1):50-3.
20. Ofori-Asenso R, Agyeman AA. Irrational use of medicines: A summary of key concepts. *Pharmacy*. 2016;4(4):35.
21. Odonkor ST, Addo KK. Bacteria resistance to antibiotics: recent trends and challenges. *Int J Biol Med Res*. 2011;2(4):1204-10.
22. Xiao Y, Zhang J, Zheng B, Zhao L, Li S, Li L. Changes in Chinese policies to promote the rational use of antibiotics. *PLoS Med*. 2013;10(11):e1001556.
23. Tünger Ö, Dinç G, Özbakkaloglu B, Atman ÜC, Algün Ü. Evaluation of rational antibiotic use. *International journal of antimicrobial agents*. 2000;15(2):131-5.
24. Sharif SI, Sharif RS. Antibiotics use with and without a prescription in healthcare

- students. Am J Pharmacol Sci. 2013; 1(5):96-9.
25. Maraghy DA, Younis AM, Abbas N. Survey on the irrational use of antibiotics among adults in Egyptian community. Int J Pharmacol Pharm Sci. 2016;3:6-9.
26. Murni IK, Duke T, Kinney S, Daley AJ, Soenarto Y. Reducing hospital-acquired infections and improving the rational use of antibiotics in a developing country: An effectiveness study. Archives of disease in childhood. 2015;100(5):454-9.

© 2021 Malik et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/67508>