How to Cite:
Mohammed, H. K., Maatook, M. A., & Mahmoud, R. A. (2022). The prevalence and causes behind self-medication with antibiotics in Basrah: A community-based study. *International Journal of Health Sciences*, *6*(S3), 10657–10664.
https://doi.org/10.53730/ijhs.v6nS3.8372

The prevalence and causes behind self-medication with antibiotics in Basrah: A community-based study

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***Abstract*---**Despite the global crisis of antibiotic resistance, the problem is aggravated in developing nations and regions where antibiotics can be given or obtained without a prescription. In Iraq, the prevalence and motivations for self-medication using antibiotics have not been well investigated from a community perspective. The purpose of the study is to determine the prevalence and causes of antibiotic self-medication in the community of Basrah, Iraq. Methodology: It is a cross-sectional household survey done between November 2021 and March 2022 using a structured questionnaire with a total sample of 470 participants. Result: Antibiotics were found to be utilized without a prescription by 74% of the respondents. "Disease regarded not serious for consultation" was found to be the most common reason for obtaining antibiotics without a prescription (35.1 % of the respondents) followed by "financial restrictions": (30%) and "previous experience in the use of these antibiotics": (25.0%). Conclusion: Given the significant prevalence of antibiotic self-medication, health authorities must take strong steps to enforce the rule prohibiting selling antibiotics without a prescription.

***Keywords*---**prevalence, self-medication, antibiotics, Basrah, Iraq.

Introduction

A new era in medicine began in 1928 with the discovery of penicillin by Alexander Fleming (Shama, 2017). Antibiotics have been the backbone of infectious illnesses therapy after the first generation became clinically accessible in the 1940s, saving millions of lives. However, when Abraham and Chain discovered a chemical (penicillinase) that could turn penicillin inactive (Nadeem et al., 2020), Fleming warned that antibiotic misuse can lead to a reduction in efficacy to cure life-threatening infections (Antoñanzas & Goossens, 2019). It may result in the incorrect selection of antibiotics, the use of inadequate dosages, or the administration of unneeded treatment. This incorrect use raises the likelihood of resistant bacteria and may lead to resistance to antibiotics. Other issues associated with antibiotic self-medication include side effects, drug interactions, disguised diagnosis, and superinfection (L Grigoryan, 2007).

Self-medication using antibiotics is a serious problem in both developed countries and developing countries, and is even more prevalent than prescription medicine usage. Thus, Antibiotic self-medication is a global problem. Recent advancements in pharmaceutical organizations' aggressive marketing techniques have led to the widespread availability of over-the-counter medications (Parise et al., 2016). Therefore, the global increase in antibiotic non-prescription usage was considered a major risk factor for antibiotic resistance. As a result, the law in the majority of nations prohibits patients from purchasing antimicrobials over the counter, as it is viewed as "fueling the development of resistant microorganisms." (Alhomoud et al., 2017).

In Iraq and despite the fact that it is not permitted by law, it is a usual practice to prescribe antibiotics without the need for a prescription. In addition, the majority of public pharmacies are run by pharmacy personnel who also routinely prescribe antibiotics without prescription. Therefore, documenting daily prescribed medicines need to be strictly enforced to avoid illogical prescribing of antibiotics especially in the private sectors (Ali A Al-Jumaili et al., 2017; Ali Azeez Al-Jumaili et al., 2013). Furthermore, people in Iraq frequently take antibiotics for any respiratory infections, even those caused by viruses like influenza. In spite of considering antibiotics as prescription-only medications, they remain commonly available without a prescription. Several private pharmacies at the community level ignore standard legal limits for antibiotic prescriptions leading to their availability over the counter (Alkadhimi et al., 2020).

Methodology

The study is a cross-sectional community-based study conducted between November 2021 and March 2022 using a structured questionnaire with people living in Basrah, Iraq. The questions in the questionnaire include asking about: (1) basic demographic information such as gender, age, occupation, and educational level; (2) using antibiotics without prescription (3) reasons for antibiotic self-medication. Those under 18 years old and those who were not residents of Basrah governorate and those who were not willing to participate in the study, were excluded. The questionnaire was created based on an exhaustive literature assessment of studies that were undertaken in this area. To examine

the questionnaire's validity, a group of local experts in the subject was contacted to remark separately on the suitability of the questions. Following the validation and assessment of the remarks, a pilot study was done to confirm that the questions were understood linguistically and conceptually. The data collected by the questionnaire were analyzed using SPSS. Consideration was given to statistical significance whenever the P-value was less than 0.05.

Results and discussion:

Our findings show that 74 % of Basra residents self-medicate with antibiotics (Figure 1), which is remarkably high. This finding is not unique to Basra, since it is consistent with several other research across the region that found similar, if not greater prevalence rates. A research in the United Arab Emirates by (Al Rasheed et al., 2016) found that 68.4% of people self-prescribe antibiotics, while two studies in Sudan and Yemen found that 79.5 % and 78.0 % of respondents self-medicate antibiotics, respectively (Al Akhali et al., 2013; Shehnaz et al., 2014). Antibiotic use is also common in Saudi Arabia (Aslam et al., 2020), Who showed in their study that 787% of respondents using antibiotics without a prescription. This high rate may not be unexpected given that most antibiotics throughout Iraq can be accessed without a doctor's prescription from private pharmacies. The easiness by which antibiotics can be bought from community pharmacies, which reflects the absence of stringent disciplinary regulations.

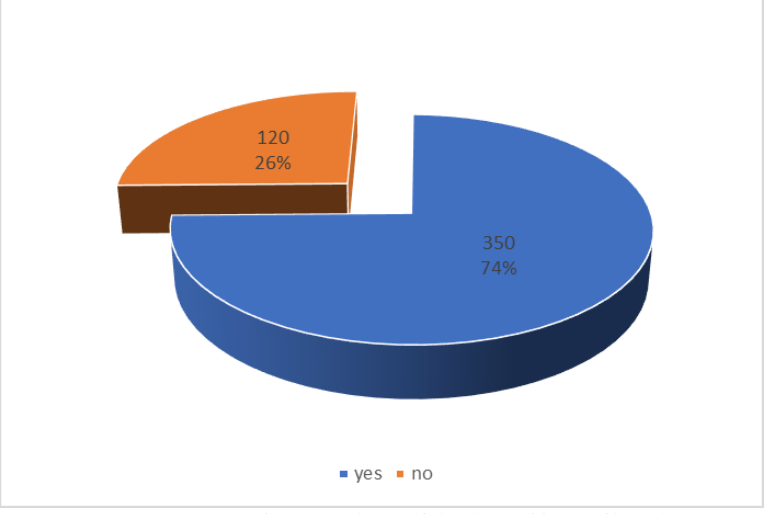

Figure 1. prevalence of antibiotic self-medication

In table 1 age group (25-34 year) appear to have the largest percentage which represent 31.7 % from the sample, followed by the age group (35-44 year) that represent 25.1% of the age of participants. While the age group more than 54 year represent only 13 % from the sample which at the same time have the largest rate of self-medication in which 82 % of them had self-medicated using antibiotics followed by the age group (45-54 year) in which 78 % of them had self-medicated with antibiotics. The result found that the age have a significant relationship with self-medication using antibiotics (p-value 0.003). The majority

of earlier studies have found differences in the rate of self-medication prevalence among different age groups (Awad et al., 2005; Dyar et al., 2014; Fernandes et al., 2014). However, the majority of these studies found that being younger was significantly connected with rising antibiotic use in self-medication, and only a few studies found that being middle age was a risk factor for self-medication (Awad et al., 2005; Ramalhinho et al., 2014). Additionally (Minimum 18 Maximum 75 Mean 39.13 Std. Deviation 13.040)

Of 470 participants, 366 (77.9%) were male. The rate for antibiotic self-medication is 76.2 % in the male population and 68.3 % in the female population. (Larissa Grigoryan et al., 2007) and (Widayati et al., 2011) both agreed with these results. They established that men are more likely than women to self-medicate with antibiotics. We also observed that gender has a significant impact on self-medication (p = 0.001).These findings are consistent with those of earlier research conducted in Sudan and Iran and Egypt demonstrating that self-medication is linked to gender (El-Hawy et al., 2017; Elmahi et al., 2020; Mousavi et al., 2020).

Out of all of 470 participants 183 (38.9%) had ended Secondary school, 145 (30.9%) had University/institute education, 112 (23.8%) with Primary school education, 28 (6%) were Illiterate and those with Postgraduate education were 2 (4%). All postgraduate (100%) and (82.1%) from the illiterate self-medicate with antibiotics followed by those who have university or institute education 116 (80%). this study found a significant relationship between self-medication with antibiotics and level of education (p-value 0.001) which agree a studies conducted in Jordan and Greek respectively (Al-Azzam et al., 2007; Mitsi et al., 2005).

The respondents' marital status was categorized as married 358 (76.2%), and the single are those who have never been married 101 (21.5%), divorced 6 (1.3%) and widowed 5(1.1%). The results of the study revealed that self-medication was affected by marital status (p-value 0.001) which disagree other studies in Yemen and Saudi Arabia respectively (Al Rasheed et al., 2016; Albawani et al., 2016). 104 (22.1%) of the participants were employed (governmental), only 27 (5.7%) were students and the same percent for retired. Our research show a significant association between occupation and antibiotics self-medication (p-value 0.001).a study conducted in Erbil agree with this result (Muhammed et al., 2021).

Table 1
Participant's distribution according to demographic factors

variables		Frequency	Percent	Self-medication with antibiotics		P-value *
				Yes Freq. (%)	No Freq. (%)	
Age groups	(18-24) years	69	14.7%	42 (60.9%)	27 (39.1%)	0.003
	(25-34) years	149	31.7%	106 (71.1%)	43 (28.9%)	
	(35-44) years	118	25.1%	95 (80.5%)	23 (19.5%)	
	(45-54) years	73	15.5%	57 (78%)	16 (22%)	
	More than 54 years	61	13%	50 (82%)	11 (18%)	
Gender	Male	366	77.9%	279 (76.2%)	87 (23.8%)	0.004
	Female	104	22.1%	71 (68.2%)	33 (31.8%)	
Level of education	Illiterate	28	6.0%	23 (82.1%)	5 (17.8%)	0.002
	Primary school	112	23.8%	75 (67%)	37 (33%)	
	Secondary school	183	38.9%	134 (73.2%)	49 (26.8%)	
	University/institute	145	30.9%	116 (80%)	29 (20%)	
	Postgraduate	2	0.4%	2 (100%)	0 (0%)	
Marital status	Single	101	21.5%	68 (67.3%)	33 (32.7%)	0.001
	Married	358	76.2%	276 (77%)	82 (23%)	
	Divorced	6	1.3%	2 (33.3%)	4 (66.7%)	
	Widow/widower	5	1.1%	4 (80%)	1 (20%)	
Occupation	Employed (governmental)	104	22.1%	85 (81.7%)	19 (18.3%)	0.001
	Unemployed	39	8.3%	35 (89.7%)	4 (10.3%)	
	Student	27	5.7%	16 (59.2%)	11 (40.8%)	
	Self-employed	97	20.6%	70 (72.2%)	27 (27.8%)	
	Retired	27	5.7%	22 (81.5%)	5 (18.5%)	
	Employed by other	100	21.3%	68 (68%)	32 (32%)	
	House wife	76	16.2%	54 (71%)	22 (29%)	

Table 2 shows that 35.1% of the study group were found to be considering diseases as not serious for medical consultation in addition to 30% of them reported financial restrictions as the main cause for self-medication. Similar findings were reported by (Jasim et al., 2014) among Iraqi Patients in Baghdad

city this can be due to the weak economic situation of the community. Another study of self-medication and correlated factors among Wuhan residents in china found that the main reasons being that it was not severe enough yet to visit a doctor (45 %), there was no need to see a doctor (12 %), and there was no need to spend high medical costs (15 %). Other factors found by the present study include previous experience with these antibiotic 104 (25.0%), a lack of time 25 (6.0%), and a lack of a trustworthy physician 16 (3.8%).

Table 2
Reasons for self-medication with Antibiotics

Reason	Responses	
	N	Percent
Disease considered not serious for consultation	146	35.1%
Lack of time	25	6.0%
Previous experience in the use of these antibiotics	104	25.0%
Financial restriction	125	30.0%
Lack of trustful physician	16	3.8%
Total	416	100.0%

Conclusion

Our study findings shows a relatively high prevalence rate of self-medication with antibiotics in Basrah. This important and noteworthy alarm necessitate a rapid and aggressive interaction from the local health authorities with the pharmacies in the private sector to initiate a joint methodology for stopping this problem at the community level in addition to raising the public awareness about the danger side of such behavior.

References

Al-Azzam, S. I., Al-Husein, B. A., Alzoubi, F., Masadeh, M. M., & Al-Horani, S. (2007). Self-medication with antibiotics in Jordanian population. *International Journal of Occupational Medicine and Environmental Health*, *20*(4), 373.

Al-Jumaili, Ali A, Hussein, A. H., Al-Rekabi, M. D., Raheem, S. A., & Ernst, E. J. (2017). Antimicrobial utilization in an Iraqi province: a comprehensive evaluation of antibiotic source and cost. *International Journal of Pharmacy Practice*, *25*(1), 81–88.

Al-Jumaili, Ali Azeez, Hussain, S. A., & Sorofman, B. (2013). Pharmacy in Iraq: history, current status, and future directions. *American Journal of Health-System Pharmacy*, *70*(4), 368–372.

Al Akhali, K. M., Alzomar, A. K., Khan, N. A., & Alavudeen, S. S. (2013). Misuse of antibiotics and awareness of antibiotic hazard among the public and medical professionals in Thamar province, in republic of Yemen. *Pharmacie Globale*, *4*(1), 1.

Al Rasheed, A., Yagoub, U., Alkhashan, H., Abdelhay, O., Alawwad, A., Al Aboud, A., & Al Battal, S. (2016). Prevalence and predictors of self-medication with

antibiotics in Al Wazarat Health Center, Riyadh City, KSA. *BioMed Research International*, *2016*.

Albawani, S., Gnanasan, S., Abd, A. N., & Hassan, Y. (2016). Self-medication with antibiotics in sana'a city. *Value in Health*, *19*(7), A814.

Alhomoud, F., Aljamea, Z., Almahasnah, R., Alkhalifah, K., Basalelah, L., & Alhomoud, F. K. (2017). Self-medication and self-prescription with antibiotics in the Middle East—do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. In *International Journal of Infectious Diseases* (Vol. 57, pp. 3–12). https://doi.org/10.1016/j.ijid.2017.01.014

Alkadhimi, A., Dawood, O. T., & Hassali, M. A. A. (2020). Dispensing of antibiotics in community pharmacy in Iraq: A qualitative study. *Pharmacy Practice*, *18*(4), 1–9. https://doi.org/10.18549/PharmPract.2020.4.2095

Antoñanzas, F., & Goossens, H. (2019). *The economics of antibiotic resistance: a claim for personalised treatments*. Springer.

Aslam, A., Gajdács, M., Zin, C. S., Ab Rahman, N. S., Ahmed, S. I., Zafar, M. Z., & Jamshed, S. (2020). Evidence of the practice of self-medication with antibiotics among the lay public in low-and middle-income countries: a scoping review. *Antibiotics*, *9*(9), 597.

Awad, A., Eltayeb, I., Thalib, L., & Matowe, L. (2005). *Self-medication with antibiotics and antimalarials in the community of Khartoum State, Sudan*.

Dyar, O. J., Pulcini, C., Howard, P., Nathwani, D., Esgap, Policies), E. S. G. for A., Nathwani, D., Beovic, B., Pulcini, C., & Harbarth, S. (2014). European medical students: a first multicentre study of knowledge, attitudes and perceptions of antibiotic prescribing and antibiotic resistance. *Journal of Antimicrobial Chemotherapy*, *69*(3), 842–846.

El-Hawy, R. M., Ashmawy, M. I., Kamal, M. M., Khamis, H. A., El-Hamed, N. M. A., Eladely, G. I., Abdo, M. H., Hashem, Y., Ramadan, M., & Hamdy, D. A. (2017). Studying the knowledge, attitude and practice of antibiotic misuse among Alexandria population. *European Journal of Hospital Pharmacy*, *24*(6), 349–354.

Elmahi, O. K. O., Balla, S. A., & Khalil, H. A. (2020). *Self-medication with antibiotics and its predictors among the population in Khartoum Locality, Khartoum State, Sudan in 2018*.

Fernandes, M., Leite, A., Basto, M., Nobre, M. A., Vieira, N., Fernandes, R., Nogueira, P., & Jorge, P. (2014). Non-adherence to antibiotic therapy in patients visiting community pharmacies. *International Journal of Clinical Pharmacy*, *36*(1), 86–91.

Grigoryan, L. (2007). *Self-Medication with Antibiotics in Europe and Medication with Antibiotics in Europe and its Determinants its Determinants*. 10–12.

Grigoryan, Larissa, Burgerhof, J. G. M., Degener, J. E., Deschepper, R., Lundborg, C. S., Monnet, D. L., Scicluna, E. A., Birkin, J., Haaijer-Ruskamp, F. M., & consortium, S. A. R. (2007). Attitudes, beliefs and knowledge concerning antibiotic use and self-medication: a comparative European study. *Pharmacoepidemiology and Drug Safety*, *16*(11), 1234–1243.

Jasim, A. L., Fadhil, T. A., & Taher, S. S. (2014). Self medication practice among Iraqi patients in Baghdad City. *Am J Pharmacol Sci*, *2*(1), 18–23.

Mitsi, G., Jelastopulu, E., Basiaris, H., Skoutelis, A., & Gogos, C. (2005). Patterns of antibiotic use among adults and parents in the community: a questionnaire-based survey in a Greek urban population. *International Journal of*

Antimicrobial Agents, *25*(5), 439–443.
Mousavi, F., Shojaei, P., Nazemi, A., & Dadashi, A. (2020). A Cross-Sectional Study of Antibiotic Self-Medication. *Thrita*, *9*(1).
Muhammed, R. A., Al-Ani, A. H. H. D. A., & Yassen, A. O. (2021). Self-Medication with Antibiotic among Public Population in Erbil City. In *Journal of Pharmaceutical Research International* (Issue September). https://doi.org/10.9734/jpri/2021/v33i44b32649
Nadeem, S. F., Gohar, U. F., Tahir, S. F., Mukhtar, H., Pornpukdeewattana, S., Nukthamna, P., Moula Ali, A. M., Bavisetty, S. C. B., & Massa, S. (2020). Antimicrobial resistance: more than 70 years of war between humans and bacteria. *Critical Reviews in Microbiology*, *46*(5), 578–599.
Parise, C. K., Pinto, F., Aravéquia, J. A., Ribeiro, B. Z., Dutra, L. M. M., Loureiro, R. N. A., Abreu, E. X. de, Silva, M. V. da, Reboita, M. S., Teodoro, T. A., Assunção, V., Fecilcam, D. G., Uem, F., Estadual, U., Silveira, L., & Cruz, A. P. S. (2016). No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析Title. *Revista Brasileira de Geografia Física*, *11*(9), 141–156. http://biblioteca.ibge.gov.br/visualizacao/monografias/GEBIS - RJ/RBG/RBG 1995 v57_n1.pdf%0Ahttps://periodicos.ufpe.br/revistas/rbgfe/article/view/234295
Ramalhinho, I., Cordeiro, C., Cavaco, A., & Cabrita, J. (2014). Assessing determinants of self-medication with antibiotics among Portuguese people in the Algarve Region. *International Journal of Clinical Pharmacy*, *36*(5), 1039–1047.
Shama, G. (2017). No new thing under the sun (?): on claims to the discovery of Penicillin prior to 1928. *J Pharm Microbiol*, *3*(1), 5.
Shehnaz, S. I., Agarwal, A. K., & Khan, N. (2014). A systematic review of self-medication practices among adolescents. *Journal of Adolescent Health*, *55*(4), 467–483.
Widayati, A., Suryawati, S., de Crespigny, C., & Hiller, J. E. (2011). Self medication with antibiotics in Yogyakarta City Indonesia: a cross sectional population-based survey. *BMC Research Notes*, *4*(1), 1–8.
Nyandra, M., Suryasa, W. (2018). Holistic approach to help sexual dysfunction. *Eurasian Journal of Analytical Chemistry*, *13*(3), pp. 207–212.
Rinartha, K., & Suryasa, W. (2017). Comparative study for better result on query suggestion of article searching with MySQL pattern matching and Jaccard similarity. In *2017 5th International Conference on Cyber and IT Service Management (CITSM)* (pp. 1-4). IEEE.