Knowledge, Attitude and Practice Regarding Antibiotics Misuse among attendants of Primary Health Care Centers: Descriptive Cross Section Study in Basra Center

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Abstract

Background: Antibiotics are the communal drugs used in developing countries. The irrational use of antibiotics (Abs) is a huge problem in the national health care system which lead to development of antimicrobial resistance (AMR). This study assessed the knowledge, attitude and practice regarding the misuse of antibiotics by attendants of primary health care centers (PHCCs) in Basra center and studying the factors contributing to this problem.

Method: A descriptive cross-sectional study was conducted in 20 out of 40 PHCCs in 1st, 2nd and 3rd sectors of PHC in Basra city center in the Iraq between 1st of February and the 31st of July 2023.The target population was attendants of PHCCs.

Results: Data of the study showed a relatively good knowledge score 77.71% regarding the proper use of Abs and AMR for the participants. 90% of the participants knew about side effects of Abs. 76.29% of the participants in the study showed a good attitude about the problem of AMR and the risk factors leading to it, however 2.29% of the participants had good practice which was a very low percentage and these results were caused by many factors related to the persons themselves, sociodemographic features, doctors-patients and pharmacists-patients relationships. The results of current study showed that 25.7% of participants using self-prescription strategy in using of Abs.

Conclusions: The final results of the statistical analysis of data collected in this study showed a relatively good knowledge about the uses of Abs and good attitude regarding misuse of Abs and risk of AMR, but despite of that there was a higher percent of bad behaviors and improper usage of these medications. Age and educational level had strongest effects on the degree of knowledge, believes and behaviors. Despite of high percent of information sources was from educational programs in health care institutes, but some of them need to increase works on the methods of health education strategies.

Keywords: knowledge, attitude, practice, antibiotics, misuse, primary health care, Basra, Iraq
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Introduction

Antibiotics are the reciprocal and most common medications use in clinical practice in developing countries and had saved numberless patients from life threatening bacterial infections [1]. It can be used to treat many infections caused by bacterial strains such as: Streptococcal throat infections, Whooping cough, urinary tract infection, and bacterial pneumonia [2]. It can also use as a prophylaxis against infections following some surgeries or medical interventions to prevent serious complications [3]. Antibiotics can also prevent the spread of disease and reduce serious disease complications [2]. They were medicines that fight infections caused by bacteria in human and animals by either killing the bacteria or making it difficult for the bacteria to grew and multiplied [1]. There were several ways of classifying antibiotics, but the most common classification schemes were based on their molecular structures, mode of action and spectrum of activities so it can be classified to Beta-lactams, Penicillin, Cephalosporin, Monobactams [4]. Some

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antibiotics that used to be typical treatments for bacterial infections now a days didn't work not for all bacteria, when an antibiotic no longer works against some strains of bacteria, those bacteria are said to be antibiotic resistant which was one of the world's most urgent health problems, and in the last decade of 21st and 22nd century we saw the spread of antibiotics resistance of many types of bacteria worldwide [5].

Misuse means taking of antibiotics for treatment of infections other than that of bacterial causes, poor coherence with treatment in a specific dosage and time, taking antibiotics in too short or too long duration, taking or prescribing antibiotic randomly without proper diagnosis of specific bacterial causes of infections [6]. Antimicrobial resistance is a global public health challenge, which had facilitated by the overuse of antibiotics worldwide. Increased antimicrobial resistance is the cause of severe infections, complications, longer hospital stays and increased mortality [4,7]. Antimicrobial resistance is one of the major urgent threats to public health causing serious issues to successful prevention and treatment of serious infections. It happens when germs like bacteria developed the ability to defeat the drugs designed to killed them that is to say the microbes evolved the mechanism that protected them from the effects of antibiotics [8].

The causes of antimicrobial resistance in developing countries are complex and may be rooted in practices of health care professionals because of the pressures of patients or poor information of some of them about the risk of over prescription of antibiotics. Also, patients' behavior towards the use of antimicrobials supplies chains of antimicrobials in the population. Some of these effects, more frequent re-attendance and increased medicalization of self-limiting conditions [9]. Antibiotics overprescribing is a particular problem in primary health care, where viruses caused most infections [10]. About 90% of all antibiotic prescriptions are issued by general practitioners, and respiratory tract infections are the leading reason for prescribing these medications [9].

Other cause of increase antibiotics resistance is related to patients and there were several factors have been proposed to explain this problem including cultural factors, behavioral factors, lack of health education, socio-economic status which have moderate effect in misuse of antibiotics because of availability of costs, schooling, patients/ parents' pressure on doctors and pharmacists, socio-demographic factors like age, sex, marital status, education, income levels and geographical locations [11]. On other hand patients' perception of the patient-physician interaction including self-medication, knowledge regarding antibiotics, and the lack of adequate polices for the restriction and control of prescribed antibiotics [12].

The general population can play an important role in reducing the un proper and excessive uses of antibiotics, that is why it is important to study the knowledge, attitude, behavior and practice regarding the use of antibiotics in general population and possibly identify any unmet educational needs, developing an effective strategy to reduce the problem of misuse of antibiotics and development of antimicrobial resistance, as AMR were interconnected to the level of consumption and misuse of Abs according to well known facts that uncontrolled uses of Abs could lead to side effects and increase prevalence of antimicrobial resistance so it was important to ask about the participants, knowledge and believes about such important information [13].

Antimicrobial resistance is a huge issue affecting the public health as it leads to the loss or decreases effects of antibiotics and leads to increased morbidity and mortality from serious bacterial infections. In our study, we wanted to determine the factors lead to misuse of antibiotics and the development of antimicrobial resistance and suggest a method to prevent this problem. A literature search identified numerous articles published worldwide on studies evaluating knowledge, attitudes, behavior and perceptions among persons regarding the use of antibiotics and antimicrobial resistance. Iraq is one of the countries in which antibiotics are prescribed and consumed in excess according to the last research review of Iraqi published studies that shown a high prevalence of antibiotics misuse among Iraqi population ranging from 45% to 92%, in addition to poor knowledge regarding misuse of antibiotics among Iraqi doctors [6]. In addition, there are similar studies in adjacent countries like Kuwait [14], Saudi Arabia [15], Qatar [16] and Egypt [17] showed misuse of antibiotics because of inadequate knowledge and irrational antibiotics consumption and deficiency of information about antimicrobial resistance where as some of participants in the studies expressed positive behavior toward non consumption of antibiotics without medical consultations [18].

Factors may include inappropriate prescription practices, over prescription of antibiotics is a major cause of development of antimicrobial resistance, associated with an increased risk of adverse [8]. So, the current study was to assess the knowledge,

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attitude and practice of people about antibiotics uses and effects, discover the factors affecting their knowledge and discover the association of knowledge, positive and negative attitude and behavior of participants toward antibiotics misuse and their sociodemographic characteristic.

Materials and Methods

Study design:

A cross-sectional descriptive study was conducted in 20 out of 40 PHCCs in the first, second and third sectors of primary health care in Basra, Iraq from 1st of February to 31st of July 2023 including a randomly selected sample of persons attending primary health care centers for variable reasons like sickness, vaccinations, referral requests and ante natal care visit to assess their knowledge, attitude and practice toward misuse of antibiotics and antimicrobial resistance. The study questionnaire was adapted to be suitable to pertain the required data and information about the study as well as to ensure its applicability to participants. The questionnaire is prepared after reviewing of previous literatures on similar studies. It was initially prepared in English then translated in to Arabic language. The questionnaire involved four sections includes section of sociodemographic factor, section of knowledge questions, section of attitude questions and section of practice questions and the detail information is mentioned in paragraph of sample method and data collection.

Pilot study

A pilot study was conducted for approximately two days duration including about 30 persons attending Al-Mohandisin and Al-Zahra PHCs in the First sector of primary health care to assess the feasibility of the questionnaire, evaluation of time required for each interview to calculate the time needed to accomplish sample collection, and if there is any difficulties, hampers and obstacles in conducting study and most of difficulties were time limitation of some attendants and response to answer the questions is low.

Study population

A randomly selected sample of 350 persons attending 20 PHCCs in 1st, 2nd and 3rd sectors of PHCs to assess their knowledge, attitude and practice regarding the misuse of antibiotics by the aid of a questionnaire form designed for the study.

Inclusion and exclusion criteria

All attendants of PHCs aged 15 years and more were included in the study and persons below 15 years old were excluded.

Sampling method and data collection

The sample size was estimated by a single population formula;

$$N = \frac{Z^2\,P(1-p)}{e^2}$$

(N) is the desired sample size, (p) is the proportion of event prevalence assumed to be (50%), (Z) is the standard deviation at 1.96 which correspond to a confidence interval of 95% and margin of error of 5%, and (e) is the margin of error [20].

The sample size was 384 and about 34 were non responders, so the final sample size was 350 participants. The sample of PHCCs is randomly selected by lottery method, the participants sample was selected by randomization and the number of participants from each center is measured according to the number of persons affiliated with centers. Data was collected by using a questionnaire filled by direct face to face interview with all randomly selected persons aged 15 years and above attending 20 PHCCs consecutively in 2 working days per week from 8:30 a.m. to 12:30 p.m. during the study period after taking verbal permission from each participant. The questionnaire consists of four parts:

The sociodemographic part which includes the following

Age in years as in previous studies (15-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years, 65 years and more), sex (male or female), marital status: includes single, married, widow and divorced, educational level include illiterate, read and write, primary school, secondary school, higher education [21]. Job included an un employee, self-employer, governmental employee, retired, monthly income as previous studies to below 500.000 ID, 500.000-1000.000 ID, and above 1000.000 ID [22], and the socioeconomic class include low, moderate and high socioeconomic class [23].

Knowledge Questions part: included some questions about participants information about antibiotics and antimicrobial resistance and sources of their information, each answer was given a degree then theses degrees were collected to measure the level of knowledge of the respondents then the answers were scored into good, moderate and low knowledge in this way:

Knowledge scores: 1-6 degrees on correct answers consider low knowledge, 7-12 degrees consider moderate and 13-18 degrees consider good knowledge, then measuring the association between the results and the sociodemographic features of the respondents to assess the effects of these features on the degree of knowledge by the aid of Chi square test in SPSS program version 26 [12].

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Attitude Questions part: included some questions about participants beliefs about causes of antimicrobial resistance by using six questions were asked to the participants regarding their beliefs about the misuse of Abs an AMR and correct answers scored poor, moderate and good attitude as in the way:

Attitude score: 1-2 degrees considered poor, 3-4 degrees considered moderate and 5-6 degrees considered good attitude. Chi square test in SPSS program version 26 had been used to assess the correlation between sociodemographic features and the level of attitude and the calculated P value below 0.05% was considered significant [17].

Practice part: included information about participants behaviors in the treatment of some infectious diseases then studying the correlation between the practice and sociodemographic features of the respondents and here two opened questions about the practice of 350 participants about uses of Abs and the percentages of answers is explain below:

Q1: Generally, how do you get Abs? the answers were: by medical prescription, prescribed by doctors and pharmacists, self-medication, according to previous medical reports, suggested by friends and others, prescribed by pharmacist and more than two ways and the correct answer was considered medical prescriptions.

Q2: What are the indications of Abs? for what illnesses do you generally take Abs? the answers were cough and cold, to treat all kinds of pain, after surgeries, injuries and wounds, for fractures, for all diarrheal cases, other reasons please mention; the correct answer was for treatment of infections of bacterial causes.

Practice score: This scoring was depended on the WHO guide lines about the proper usage of antibiotics and previous scientific researches and categorized into poor, moderate and good practice [22] (Appendix 1: questionnaire).

Official endorsement and ethical considerations
Agreement of Ministry of health and research committee of Basra Health Directorate before starting the study. Informed oral consent was obtained from all participants as it is found to be more accepted by them in the preliminary pilot test. The ethical committee agreed to this method after making sure that proper privacy procedures was followed, and the study subject did not contain socially prohibited issues or untouchable topics in Iraqi society, agreement of director health care sectors before starting of visits to primary health care centers affiliated to them, permission of director of primary health care center before

starting interviews with participants in the study; at each working day, the researcher selects random sample of participants interviewed them individually to ensure data collection were fully committed and verbal consent was obtained from each participant after full illustration of the aim and procedures related to the current study [19].

Statistical analysis
Frequencies and percentages were analyzed by using Statistical Package for Social Science (SPSS) version 26. Descriptive statistics used to demonstrate participants sociodemographic characteristics and Chi square test or Fisher exact test was used to identify the most effective and significant variables effects on the knowledge, attitude and practice score. P value less than 0.05 considered significant.

Results

The age group 35-44 years were had the highest percent of participants in the study which was 27.4% followed by 24.3% for ages of 25-34 years, 19.1% for ages of 15-24 years, 18.6% for an age of 45-54 years, 8.3% for ages of 55-64 years and 2.3% for those were aging 65 years and above. They are all were aged more than 15 years old and the highest responders were female about 236 (67.4%). Most of them were married about 294 (84.0%), 49 (14.0%) were single and 7 (2.0%) were divorced and widows. The majority of participants (161; 46.0%) completed secondary school and 134 (38.3%) of them were completed higher education. The P value less than 0.05 considered significant in 6 (1.7%) of participants, 8 (2.3%) of them read and write, and 41(11.7%) of them were complete primary school. Jobs of the respondents the majority of them were unemployed including housewives and students with a frequency and percentages of 180 (51.45). The 121(34.6%) of participants were governmental employers, 41(11.7%) were self-employer and 8(2.3%) were retired. According to monthly income the majority of participants getting monthly income of (500,000-1000,000 ID) (237; 67.7%), 92(26.3%) were getting monthly income below (500,000 ID) and 21(6.0%) were getting more than (1000,000 ID) per month. Finally, according to the socioeconomic status, classified the areas according to the classification of previous studies was into the high, intermediate and low socioeconomic class. The distribution of 237(78.0%) were living in intermediate socioeconomic class, 76(21.7%) were living in low socioeconomic class and 1(0.3%) was living in high socioeconomic class (Table1).

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Table 1. Sociodemographic characteristics of the participant in the study.

Variable	Category	Frequency	Percent
Age	15-24 years	67	19.1
	25-34 years	85	24.3
	35-44 years	96	27.4
	45-54 years	65	18.6
	55-64 years	29	8.3
	65 years and above	8	2.3
Sex	Male	114	32.6
	Female	236	67.4
Marital status	Single	49	14.0
	Married	294	84.0
	divorced &widow	7	2.0
Education level	Illiterate	6	1.7
	read &write	8	2.3
	primary school	41	11.7
	secondary school	161	46.0
	high school	134	38.3
Job	unemployed and student	180	51.4
	self-employer	41	11.7
	governmental employer	121	34.6
	Retired	8	2.3
Income	below 500,000 ID	92	26.3
	500,000-1000,000 ID	237	67.7
	Above 1000,000 ID	21	6.0
Address	low socioeconomic status	76	21.7
	intermediate socioeconomic status	273	78.0
	high socioeconomic status	1	0.3
Total		350	100

The knowledge
The knowledge of the participant in the study about the proper usage of antibiotics:
After analysis of collected data, we found that there was a relatively good knowledge score which was 77.71% followed by moderate which was 12.86%, Figure 1 showed the percentage of knowledge score among the participants.
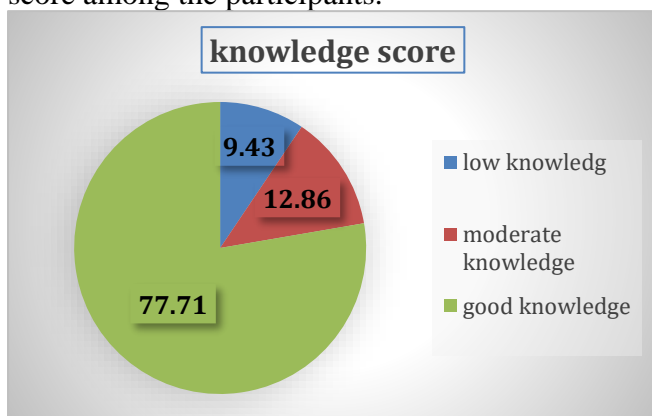
Figure 1. The percentage of knowledge scores of participants regarding uses of Abs and AMR

The association between the sociodemographic features and the degree of knowledge:

When comparing the score of knowledge with socio demographic characteristics we found that age, marital status, job, educational level and socioeconomic class had significant effects on the degree of knowledge, the highest percent of them was aging 35-44 years which was (80.2%) represent the percentage of good knowledge among these age groups and least was 65 years and above which was 50%, most of them were married, governmental employee (34.6%).

The highest percent of them were high school educated (38.3%) and least of them were illiterate 1.7% and most of them were at intermediate socioeconomic status. The table shows that educational level and job have the strongest effect on the degree of knowledge of participants and give a P value ranging from 0.000 for both this mean that there is a significant correlation between these variables with the degree of knowledge and these findings was explained in Table 2.

The attitude:
The attitude of the participants toward misuse of antibiotics and antimicrobial resistance was presented in Table 3 that described the attitude of participant toward Abs misuse and AMR. The percentage of believers that AMR is increasing in Basra city was 170(48.6%), proper consumption of Abs will decrease AMR in 344(98.3%). Government should create more awareness about AMR 344(98.3%). Enough knowledge about proper uses of Abs will decrease AMR and development of side effects 344(98.3%). The manufacture and trading industries of Abs should be strictly monitored 344(98.3%) and some doctors prescribe Abs unnecessarily and increase AMR 313(89.4%).

The attitude score percent
The study showed that there was a good attitude scores for the participants toward the misuse of antibiotics and the problem of antimicrobial resistance which was 76.29% followed by 22% for those who exhibited moderate attitude and this was considered a good result. These results were illustrated in Figure 2.

Association between sociodemographic features and attitude:
When comparing the attitude score percents with sociodemographic characteristics we found that there was a significant effect of age and educational level on the degree of attitude. Regarding the age we found the highest percent of participants were aging 35-44 years (27.4%) from all respondents

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(82.3%) of the expressed good attitude and the least were aging 65 years and above (2.3%) of the respondents only (62.5%) of them expressed good attitude. Most of them were at secondary school education (46 %) and the least were illiterate

(1.7%), which gave a P value of 0.000 for both. Table 3 showed the association of sociodemographic characteristics with the attitude score.

Table 2. Association of sociodemographic features with knowledge score of participants regarding uses of Abs and AMR.

Socio-demographic character			Knowledge Score			Total	P-value
			Low Knowledge	Moderate Knowledge	Good Knowledge		
Age	15-24 years	Count	9	5	53	67	0.037*
		%	13.4%	7.5%	79.1%	100%	
Age	25-34 Years	Count	5	14	66	85	
		%	5.9%	16.5%	77.6%	100%	
	35-44 Years	Count	5	14	77	96	
		%	5.2%	14.6%	80.2%	100%	
	45-54 Years	Count	5	7	53	65	
		%	7.7%	10.8%	81.5%	100%	
	55-64 Years	Count	6	4	19	29	
		%	20.7%	13.8%	65.5%	100%	
	65 Years & Above	Count	3	1	4	8	
		%	37.5%	12.5%	50.0%	100%	
Sex	Male	Count	11	16	87	114	0.919
		%	9.6%	14.0%	76.3%	100%	
	Female	Count	22	29	185	236	
		%	9.3%	12.3%	78.4%	100%	
Marital status	Single	Count	4	1	44	49	0.023*
		%	8.2%	2.0%	89.8%	100%	
	Married	Count	27	44	223	294	
		%	9.2%	15.0%	75.9%	100%	
	Divorced &widow	Count	2	0	5	7	
		%	28.6%	0.0%	71.4%	100%	
Job	Unemployed& student	Count	20	25	135	180	0.000*
		%	11.1%	13.9%	75.0%	100%	
	Self-employer	Count	9	7	25	41	
		%	22.0%	17.1%	61.0%	100%	
	Governmental employer	Count	2	13	106	121	
		%	1.7%	10.7%	87.6%	100%	
	Retired	Count	2	0	6	8	
		%	25.0%	0.0%	75.0%	100%	
Education level	Illiterate	Count	3	1	2	6	0.000*
		%	50.0%	16.7%	33.3%	100%	
	Read &write	Count	4	3	1	8	
		%	50.0%	37.5%	12.5%	100%	
	Primary school	Count	15	10	16	41	
		%	36.6%	24.4%	39.0%	100%	
	Secondary school	Count	9	18	134	161	
		%	5.6%	11.2%	83.2%	100%	
	High school	Count	2	13	119	134	
		%	1.5%	9.7%	88.8%	100%	
Income	Below 500,000 ID	Count	14	11	67	92	0.063
		%	15.2%	12.0%	72.8%	100%	
	500,000-1000,000 ID	Count	18	34	185	237	
		%	7.6%	14.3%	78.1%	100%	
	Above 1000,000 ID	Count	1	0	20	21	
		%	4.8%	0.0%	95.2%	100%	
Socioeconomic status	Low socioeconomic status	Count	8	14	54	76	0.394
		%	10.5%	18.4%	71.1%	100%	
	Intermediate socioeconomic status	Count	25	31	217	273	
		%	9.2%	11.4%	79.5%	100%	
	High socioeconomic status	Count	0	0	1	1	
		%	0.0%	0.0%	100%	100%	
Total		Count	33	45	272	350	
		%	9.4%	12.9%	77.7%	100%	

(*) refer to the significant P value by using Fisher exact test

Table 3. The association of sociodemographic features with attitude of participants toward misuse of Abs and AMR.

Socio-demographic character			Attitude score			Total	P value
			Poor attitude	Moderate attitude	Good attitude		
Age	15-24 years	Count	3	16	48	67	0.000*
		%	4.5%	23.9%	71.6%	100%	
	25-34 years	Count	1	18	66	85	
		%	1.2%	21.2%	77.6%	100%	
	35-44 years	Count	0	17	79	96	
		%	0.0%	17.7%	82.3%	100%	
	45-54 years	Count	0	18	47	65	
		%	0.0%	27.7%	72.3%	100%	
	55-64 years	Count	0	7	22	29	
		%	0.0%	24.1%	75.9%	100%	
	65 years and above	Count	2	1	5	8	
		%	25.0%	12.5%	62.5%	100%	
Sex	Male	Count	1	27	86	114	0.744
		%	0.9%	23.7%	75.4%	100%	
	Female	Count	5	50	181	236	
		%	2.1%	21.2%	76.7%	100%	
Marital status	Single	Count	1	9	39	49	0.227
		%	2.0%	18.4%	79.6%	100%	
	Married	Count	4	67	223	294	
		%	1.4%	22.8%	75.9%	100%	
	Divorced& widow	Count	1	1	5	7	
		%	14.3%	14.3%	71.4%	100%	
Job	Unemployed and student	Count	5	45	130	180	0.415
		%	2.8%	25.0%	72.2%	100%	
	Self-employer	Count	0	10	31	41	
		%	0.0%	24.4%	75.6%	100%	
	Governmental employer	Count	1	20	100	121	
		%	0.8%	16.5%	82.6%	100%	
	Retired	Count	0	2	6	8	
		%	0.0%	25.0%	75.0%	100%	
Education level	Illiterate	Count	1	1	4	6	0.000*
		%	16.7%	16.7%	66.7%	100%	
	Read &write	Count	1	1	6	8	
		%	12.5%	12.5%	75.0%	100%	
	Primary school	Count	3	8	30	41	
		%	7.3%	19.5%	73.2%	100%	
	Secondary school	Count	1	48	112	161	
		%	0.6%	29.8%	69.6%	100%	
	High school	Count	0	19	115	134	
		%	0.0%	14.2%	85.8%	100%	
Income	Below 500,000 ID	Count	4	22	66	92	0.139
		%	4.3%	23.9%	71.7%	100%	
	500,000-1000,000 ID	Count	2	53	182	237	
		%	0.8%	22.4%	76.8%	100%	
	Above 1000,000 ID	Count	0	2	19	21	
		%	0.0%	9.5%	90.5%	100%	
Socioeconomic status	Low socioeconomic status	Count	1	21	54	76	0.537
		%	1.3%	27.6%	71.1%	100%	
	Intermediate socioeconomic status	Count	5	56	212	273	
		%	1.8%	20.5%	77.7%	100%	
	High socioeconomic status	Count	0	0	1	1	
		%	0.0%	0.0%	100%	100%	
Total		Count	6	77	267	350	
		%	1.7%	22.0%	76.3%	100%	

(*) refer to the significant P value assessed by Fisher exact test
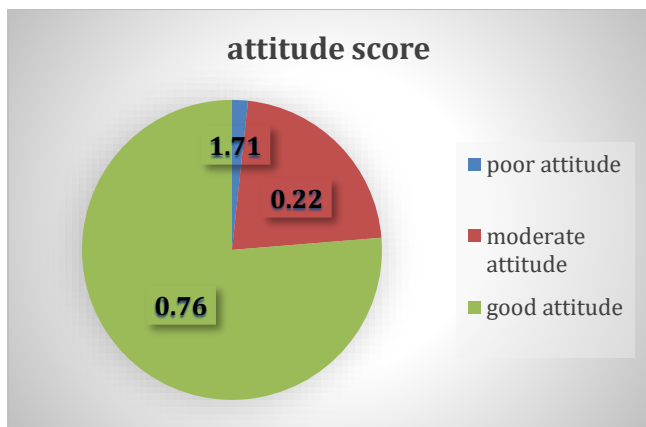
Figure 2. The percentages of attitude for the participants toward misuses of Abs and AMR

The practice:
We found that the highest percent of the participants were using antibiotics by medical prescription. It was 113(32.3%) followed by self-medication was 90(25.7%) which considered a relatively high percent.

The participants behaviors toward the indications of Abs: The percentage of correct uses was 152(43.4%), for diagnosed diseases of bacterial causes 98(28.0%), for all diarrheal diseases 16(4.6%), for treating fever 25(7.1%), for cough and cold 20(5.7%), following surgeries and wounds 20(5.7%), for treating any pain 2(0.6%), and about 17(4.9%) take the antibiotics in a randomized manner.

The percentage of practice scores for the participants regarding the proper usage of Abs:
The data collected showed that there were moderate to poor practice scores which were 70.86% and 26.86% consecutively, where the percentage of good practice was 2.29%. Theses finding were illustrated in Figure 3.

Association between sociodemographic features and practice:

We found that there is significant association between the age and educational level of responders and their practice regarding the usage of Abs. It was found that the highest percent of poor practice was among those who were read and write which was (50%) of the respondents. So the educational level strongly associated with level of practice which was gave P value about 0.005 followed by age group of 65 years and above giving a percentage of 62.5% were having poor practice and P value about 0.045. There was no significant association between other sociodemographic features and practice of the responders (Table 4).
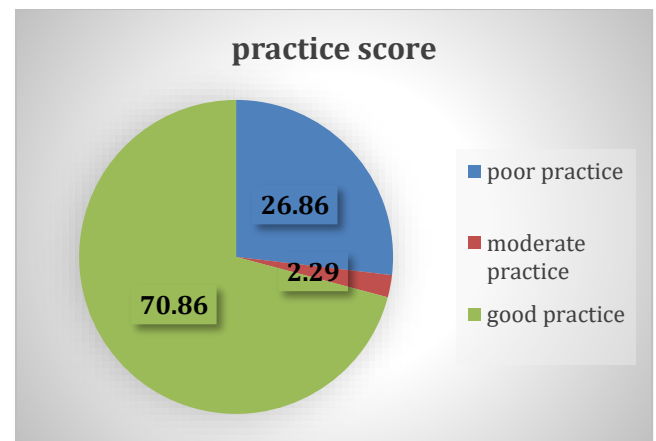
Figure 3. Percentage of practice of participants regarding the uses of Abs and AMR

Discussion

Awareness, beliefs and practice about Abs usage among the populations of numerous countries have been considered inadequate [15]. Therefore, this was the first known medical study in Basra city in Iraq to assess the knowledge, attitude and practice regarding the uses of Abs in the community. The presented data would be used as a baseline quantitative data of a pattern of awareness, beliefs and practice about Abs uses in Basra general population, which will help in valuation of suitability of presented community educational campaigns on Abs, and provide focusing on designing many future interventions targeting more specific areas in Basra and Iraq to promote rational usage of Abs and fulfill the knowledge, attitude gaps as an effort against Abs misuse and development of antimicrobial resistance [5]. The current study showed a relatively good knowledge score 77.71% regarding the proper use of Abs and risk factors of AMR from the overall participants. The results is unlike what was reported in Baghdad city in 2014 [6, 14] which had lower knowledge score (62%) and also relatively similar to the results were reported in Baghdad, but among pharmacy students in 2019 which represented that the percentage of knowledge was 74.7% [24].

Also similar results were reported in Erbil in 2016 which showed a good knowledge score [25] and good knowledge score 62.6% and good positive attitude were reported in Arar city, KSA [15].

In our study we found that knowledge, attitude and practice regarding antibiotics usage and AMR was found to be statistically and significantly different with age, educational level, sex and other sociodemographic characteristics and similar to study conducted in Baghdad in 2019 [24], and similar to the study conducted in Libya in 2021 [26].

Table 4. The association of sociodemographic features with practice of participants regarding uses of Abs

Socio-demographic character			Practice Score			Total	P-value
			Low practice	Moderate practice	Good practice		
Age	15-24 years	Count	14	51	2	67	0.045*
		%	20.9%	76.1%	3.0%	100%	
	25-34 Years	Count	18	63	4	85	
		%	21.2%	74.1%	4.7%	100%	
	35-44 Years	Count	30	64	2	96	
		%	31.3%	66.7%	2.1%	100 %	
	45-54 Years	Count	14	51	0	65	
		%	21.5%	78.5%	0.0%	100%	
	55-64 Years	Count	13	16	0	29	
		%	44.8%	55.2%	0.0%	100%	
	65 Years &Above	Count	5	3	0	8	
		%	62.5%	37.5%	0.0%	100%	
Sex	Male	Count	39	74	1	114	
		%	34.2%	64.9%	0.9%	100%	0.057
	Female	Count	55	174	7	236	
		%	23.3%	73.7%	3.0%	100%	
Marital status	Single	Count	10	39	0	49	0.480
		%	20.4%	79.6%	0.0%	100%	
	Married	Count	81	205	8	294	
		%	27.6%	69.7%	2.7%	100%	
	Divorced &widow	Count	3	4	0	7	
		%	42.9%	57.1%	0.0%	100%	
Job	Unemployed& student	Count	44	130	6	180	0.246
		%	24.4%	72.2%	3.3%	100%	
	Self-employer	Count	12	28	1	41	
		%	29.3%	68.3%	2.4%	100%	
	Governmental employer	Count	33	87	1	121	
		%	27.3%	71.9%	0.8%	100%	
	Retired	Count	5	3	0	8	
		%	62.5%	37.5%	0.0%	100%	
Education level	Illiterate	Count	5	1	0	6	0.005*
		%	83.3%	16.7%	0.0%	100%	
	Read &write	Count	4	4	0	8	
		%	50.0%	50.0%	0.0%	100%	
	Primary school	Count	18	22	1	41	
		%	43.9%	53.7%	2.4%	100%	
	Secondary school	Count	34	124	3	161	
		%	21.1%	77.0%	1.9%	100%	
	High school	Count	33	97	4	134	
		%	24.6%	72.4%	3.0%	100%	
Income	Below 500,000 ID	Count	26	65	1	92	0.526
		%	28.3%	70.7%	1.1%	100%	
	500,000-1,000,000 ID	Count	60	170	7	237	
		%	25.3%	71.7%	3.0%	100%	
	Above 1000,000 ID	Count	8	13	0	21	
		%	38.1%	61.9%	0.0%	100%	
Socioeconomic status	Low socioeconomic status	Count	16	57	3	76	0.352
		%	21.1%	75.0%	3.9%	100%	
	Intermediate socioeconomic status	Count	78	190	5	273	
		%	28.6%	69.6%	1.8%	100%	
	High socioeconomic status	Count	0	1	0	1	
		%	0.0%	100%	0.0%	100%	
Total		Count	94	248	8	350	
		%	26.9%	70.9%	2.3%	100%	

(*) refer to the significant P value assessed by Fisher exact test

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It was obvious that the participants had good knowledge about the proper usage and indications of Abs and good information about the side effects, but about 9.43% of the whole participants still did not know about harmful effects including anaphylactic reaction and even death from Abs consumption. Moreover they had good awareness about abstain from Abs if allergic reactions happened which was about 90.6% and regarding the source of information, despite that higher percentage was from educational programs in health care institutes, but internet and social media have approximately similar percent and this was similar to other studies in Qatar [16], United Arab Emirate [27] and Romania [7].

About 79% of participants in our study have information about AMR which considered a good result. Good attitude among participants was 76.29%, but this result unlike what was reported in in United Arabian Emirate which showed moderate attitude regarding Abs misuse and AMR about 55% [27]. The bad attitude was reported in Libya about 68.7% [26].

Regarding the practice the current study expressed moderate to poor practice regarding the safe usage and sources of obtaining antibiotics. This was similar to the study conducted in Erbil [25], and in Qatar the population used self-medication strategies [16].

Despite good knowledge and attitude score among the responders; still there is bad practice in the usage of Abs. many of participants had bad and moderate practice score percentage which considered a high percent, which may be due to lack of regular contact with doctors, gaining of Abs from pharmacists without asking about the way of usage and side effects. Poor benefit from educational programs in health care institutes and lack of antimicrobial stewardship programs.

The current study revealed that the source of Abs by medical prescription, doctor and pharmacists, according to previous medical reports, but also there was a high percentage of participants used self-medication way. Similar results were reported in United Arabian Emirate [27], Egypt [17], Palestine [28] and Qatar [16].

Limitations of the study

The most important limitation was the short time period. So not all population was included in the study. Also, some of persons refuse to answer questions despite explaining the aim of the study and maintaining of confidentiality of the information.

Conclusions

Final results of the statistical analysis of data collected in this study showed an information about antibiotic uses among the participants. Good attitude regarding misuse of antibiotics and risk of antimicrobial resistance considered a good result despite of good knowledge and attitude of the participants there were a high percentage of bad behaviors in unsafe, improper usage of antibiotics. Age and educational level have strongest effect on the degree of knowledge, beliefs and behaviors, even that high percent of information source was from educational programs in health care institutes. However, some of the institutes need to increase work on methods of health educational strategies. According to these findings we recommended an increase in awareness of patients and health care providers about the problem of misuse of antibiotics and harmful effects of antimicrobial resistance on general population, diversifying health educational methods to suit the educational levels of population like using visual, audios and printed media to explain the indications and proper usage of antibiotics, encourage seminars and health educational meetings in health care institutions especially PHCCs, foundation of antibiotics stewardship programs including trading and dispense strategies of antibiotics. Further studies are also needed to identify the knowledge, attitude and practice about antibiotics uses in another places of Basra and Iraq to overcome the problem of antimicrobial resistance which increase worldwide.

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