

1                   **Irrational use of antibiotics among doctors in Port Sudan**  
2                   **hospitals**

3                   **Abstract**

4                   **Introduction:** Resistant of antibiotics represent serious medical problem  
5                   that face all world and going to make many difficulties in treating infectious  
6                   disease and result in an obvious reflect on morbidity and mortality in addition  
7                   to an economic burden. In developing countries like Sudan where poverty play  
8                   a main role in use of antibiotics this problem became more obvious, here over  
9                   counter drugs include all antibiotics even the parenteral one; this practice  
10                  going despite governmental rules, this beside several other factors that may be  
11                  divided on doctor's factors, hospital and governmental factors and community  
12                  factors play a real role in emergence of antibiotics resistant. This study  
13                  concerning in doctor's role in irrational use of antibiotics.

14                  **Objectives:** In developing countries like Sudan where poverty play a main  
15                  role in use of antibiotics this problem became more obvious, here over counter  
16                  drugs include all antibiotics even the parenteral one; this practice going  
17                  despite governmental rules, this beside several other factors that may be  
18                  divided on doctor's factors, hospital and governmental factors and community  
19                  factors play a real role in emergence of antibiotics resistant.

20                  **Objectives:** This study done to assess the use of antibiotics by doctors in  
21                  Port Sudan during the study period, assess the rational use of antibiotics,  
22                  detect the causes of irrational use of antibiotics and Participate in solving the  
23                  irrational use of antibiotics.

24                  **Methodology:** This is a cross sectional analytical descriptive study,  
25                  done in Port Sudan hospital teaching hospital, Digna reference hospital and  
26                  almwani hospital in Port Sudan city; eastern Sudan from September 2023 to  
27                  December 2023.

28                  **Result:** 60 Doctors were included in this study, all of them knew deferent  
29                  international antibiotics guidelines while just 22 (36.7%) of them knew Sudan  
30                  antibiotics guideline. Despite all of study participants knew guideline just 18  
31                  doctors (30%) follow these guidelines, 12 doctors (20%) mentioned that they  
32                  have their own policy while 30 doctors (50%) didn't follow the guidelines  
33                  because of financial reasons. 16 doctors (26.7%) guided their antibiotic choice  
34                  by culture, 12 (20%) of them request culture after management failure while

35 just 4 (6.7%) send for culture at presentation. 40 (66.7%) doctors use  
36 empirical treatment. 10 doctors (16.7%) use to cover the suspected organism,  
37 32 doctors (53.3%) use combination of bactericidal and bacteriostatic while 22  
38 doctors (36.7%) use combination of two bactericidal drugs. 28 doctors  
39 continue antibiotics for proper course while 32 (53.3%) not follow proper  
40 course.

41 **Conclusion:** Despite practicing medicine in Sudan a lot of doctors doesn't  
42 follow Sudanese antibiotics guidelines and many of them follow their own  
43 unpublished policies taking in consideration patient's financial state rather  
44 than antibiotics efficacy which represent a major serious role in emergence of  
45 antibiotics resistance.

## 46 1- Introduction:

47 Resistant of antibiotics represent serious medical problem that face all  
48 communities and going to make many difficulties in treating infectious  
49 disease (1). A lot of researches in different countries raised alarming signs for  
50 this problem, in Sudan Einas A Osman et al studded antibiotic resistant and  
51 assess the knowledge and practices of healthcare workers in Khartoum and  
52 they conclude that despite adequate knowledge of antibacterial resistant,  
53 there are significant contextual technical challenges facing healthcare  
54 workers in Sudan (2), again Mohamed A Hussain, et al published their  
55 research article about prevalence and predictors of antibiotics self-  
56 medication in Sudan and they conclude that two out of three individuals in  
57 Sudan practice self- medication antibiotics (3), Babra et al in Kenya in their  
58 study concluded that irrational antibiotics prescription is high in the KNH  
59 CCUs, attributable largely to incorrect choice and wrong duration of  
60 antibiotic use (4). No doubt that the development of antibiotics resistant has  
61 an obvious reflect on morbidity and mortality in addition to an economic  
62 burden, for example in the European Union it was estimated that antibiotics  
63 resistant is responsible for an estimated 33,000 deaths per year and costs the  
64 EU EUR 1.5 billion per year in healthcare costs and productivity losses (5),  
65 therefore, WHO declare a global action plan on antimicrobial resistance in  
66 2015 (6) and at same time a great national effort should be done to solve this  
67 problem. The most effective solution for antibiotics resistant is the rational  
68 use of antibiotics, the World Health Organization (WHO) and the World  
69 Bank gave a broad definition of the rational use of medicines which is  
70 appropriate choice of an antibiotics administered at correct dose, frequency  
71 and duration using most suitable route of administration (7). In developing

72 countries like Sudan where poverty play a main role in use of antibiotics this  
73 problem became more obvious, here over counter drugs include all  
74 antibiotics even the parenteral one; this practice going despite governmental  
75 rules, this beside several other factors that may be divided on doctor's  
76 factors, hospital and governmental factors and community factors play a real  
77 role in emergence of antibiotics resistant. Some doctors prescribed  
78 antibiotics without microbiological base and on their own policy which is not  
79 published or agreed by authors or they described antibiotics according to  
80 patient's economic state, a gain pharmacist may have prescribed antibiotics  
81 for commercial goals. Patients their self-use self-medicine description or  
82 doesn't complete the course economic reasons but the main cause for  
83 irrational use of antibiotics remain the government as it didn't offer the  
84 medications in free base nor under insurance beside no updated antibiotics  
85 guideline, and limited microbiological diagnostic services.

86 To resolve the problem of antibiotics resistant all governmental, doctors  
87 and community effort should be integrated. Areal researches should  
88 conducted to reach to affordable and applicable antibiotics policies that take  
89 into account both country and people economic state, beside ethical  
90 commitment from both physicians and pharmacists at same time continuous  
91 community education program regarding rational use of antibiotics should be  
92 runs while the government should offer the facilities that enable the medical  
93 staff to apply the policies and guidelines in form of affordable effective drugs  
94 and in time accessible microbiological services, beside routine checkup for  
95 these system and periodically assessment for its efficacy.

96 **2- Objective:**

97 **2-1- General objectives:**

98 This study done to assess the use of antibiotics by doctors in  
99 Port Sudan during the study period.

100 **2-2- Specific objectives:**

101 The study aims to:

102 1-Assess the rational use of antibiotics.

103 2- Detect the causes of irrational use of antibiotics.

104 3- Participate in solving the irrational use of antibiotics.

105 **3- Methodology:**

106 **3-1- Study design:**

107 This is a cross sectional analytical descriptive study.

108 **3-2- Study area:**

109 The study done in Port Sudan hospital teaching hospital,Digna  
110 reference hospital in Port Sudan city; eastern Sudan.

111 3-3- Study duration:

112 This study done in period from September 2023 to December  
113 2023.

114 3-4- Study population:

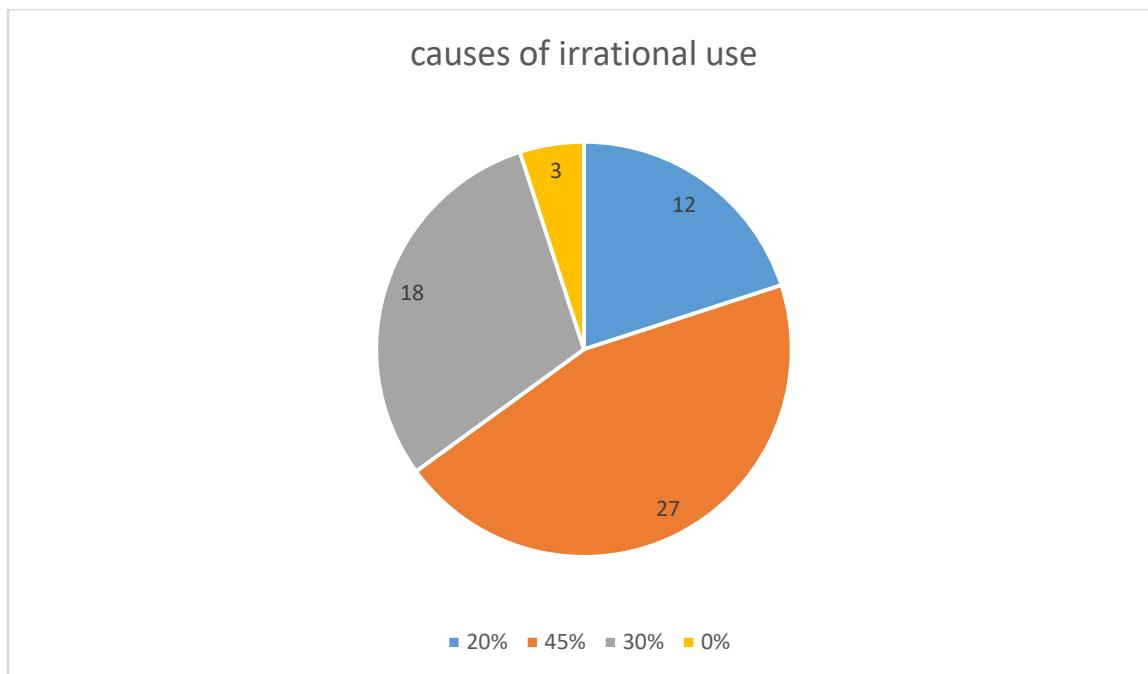
115 The study conducted in 60 doctors who were residents GP,  
116 specialists and consultants in surgical and medical units and emergency  
117 department.

118 3-5-Data collection and analysis:

119 Data was collected through questionnaire and analyzed using SPSS  
120 version 23.

121 4- Result:

122 60 Doctors were included in this study, 32 (53.33%) are ER resident  
123 doctors, 20 of them (33.33%) are consultant and 8 (13.33%) are house  
124 officers. All of them knew deferent international antibiotics guidelines  
125 while just 22 (36.7%) of them knew Sudan antibiotics guideline. Despite  
126 all of study participants knew guideline just 18 doctors (30%) follow  
127 these guidelines, 12 doctors (20%) mentioned that they have their own  
128 policy while 27 doctors (45%) didn't follow the guidelines because of  
129 financial reasons and 3 doctors (5%) didn't follow guidliner with no  
130 specific reason. 16 doctors (26.7%) guided their antibiotic choice by  
131 culture, 12 (20%) of them request culture after management failure  
132 while just 4 (6.7%) send for culture at presentation. 40 (66.7%) doctors  
133 use empirical treatment. 10 doctors (16.7%) use to cover the suspected  
134 organism, 32 doctors (53.3%) use combination of bactericidal and  
135 bacteriostatic while 22 doctors (36.7%) use combination of two  
136 bactericidal drugs. 28 doctors continue antibiotics for proper course  
137 while 32 (53.3%) not follow proper course. All participants will follow  
138 guideline if its facilities affordable.



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## 5- Discussion:

142 Antibiotics resistance is a global health problem, which is soon  
 143 became a major cause of death in 2019 it contributed in 4.95 million  
 144 global deaths (8); therefore a great effort should be done to avoid or  
 145 minimize the emergence of antimicrobial resistance. Rational use of  
 146 antibiotics which implies correct choice of antibiotic in correct dose  
 147 and duration through a suitable route taking in consideration drugs  
 148 interaction and comorbidities represent the first line against antibiotics  
 149 resistance. Fighting against antibiotics resistance is an integrated  
 150 process but doctors play the key role and therefore this study  
 151 conducted among doctors. Unfortunately, despite they practicing  
 152 medicine in Sudan most of study participant didn't know the Sudanese  
 153 antibiotics guideline, and a lot of them didn't follow the global  
 154 guidelines which they know the thing that represent a risk factor for  
 155 antimicrobial resistance. Financial reasons play a role in doctor's choice  
 156 of antibiotics which increase the risk of antibiotics resistance and at  
 157 same time increase the economic burden on both country and individual  
 158 through emergence of antimicrobial resistant and increasing absence  
 159 work days. About 20% of participants follow their own policies which  
 160 again has a role in emergence of antibiotics resistance, therefore  
 161 hospital policy should be followed. A lot of participant didn't prescribed

162 a proper course of antibiotics and culture play a minor role in doctors  
163 choice of antibiotics in this study even after failure of first choice

164 **6- Conclusion:**

165 Doctors plays a major role in anappropriate use of antibiotics and therefore the  
166 should follow one agreed hospital policy or national guideline. The governmental  
167 role in making national antibiotics guideline and offer its facilitiesin affordable  
168 and accessible manner is an important factor that minimize antimicrobial  
169 resistance. Doctors commitment is an essential step to ensure an appropriate use  
170 of antibiotics

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