



## Original Article

# The Effect of Drug Information Provision on Level of Patient Compliance in Consuming Antibiotic for Patients in Dental Polyclinic

Morita Sari\* , Kurnia Rani Wibowo

Faculty of Dentistry, University of Muhammadiyah Surakarta, Indonesia

### ARTICLE INFO

#### Article history

Received: 2021-11-21

Received in revised: 2021-12-05

Accepted: 2021-12-16

Manuscript ID: JMCS-2111-1345

Checked for Plagiarism: **Yes**

Language Editor:

[Ermia Aghaie](#)

Editor who approved publication:

[Dr. Asghar Mesbahi](#)

DOI:10.26655/JMCS-2022.4.4

### KEYWORDS

Antibiotic resistance

Drug information

Medicine

Sampling method

Surakarta hospital

### ABSTRACT

Antibiotics are substances produced by microorganisms that can be used as a solution to kill or inhibit the development of other microorganisms. Antibiotics are often misused, which can lead to resistance due to the lack of information obtained by patients, causing non-compliance in taking antibiotics. One of the right ways to overcome non-compliance in taking drugs is by providing proper education or information about using them. To determine the effect of providing drug information on patient compliance in taking antibiotics in dental clinic patients at Dr. Moewardi Surakarta Hospital. This study used a cross-sectional method with 100 subjects in the dental clinic of Dr. Moewardi Surakarta. Data collection was done by assessing the completeness of the information provided by the officer and questionnaires filled out by the patients. Data analysis was performed by chi-square test. Patients with the obedient category were 72 (72%) respondents. The chi-square test showed the Contingency Coefficient value of 0.553 ( $P = 0.003$ ). There was an effect between providing drug information on compliance to taking antibiotics in dental polyclinic patients at Dr. Moewardi Surakarta Hospital.

### GRAPHICAL ABSTRACT

The Effect of Drug Information Provision  
on The Level of Patient Compliance in  
Consuming Antibiotic



# DRUG INFORMATION



\* Corresponding author: Morita Sari

✉ E-mail: Email: [morita.sari@ums.ac.id](mailto:morita.sari@ums.ac.id)

© 2022 by SPC (Sami Publishing Company)

## Introduction

Antibiotics are substances produced by microorganisms or semi-synthetic substances that can be used as solutions to kill or inhibit the development of other microorganisms [1–3]. The term antibiotic was initially used only limited to substances produced by microorganisms. However, synthetic and semi-synthetic substances currently have the same chemical activity, including antibiotics [4-10].

In addition to having benefits in reducing morbidity, antibiotics also have dangerous side effects [11–14]. Therefore, antibiotics must pay attention to the time, frequency, and duration of administration based on the therapeutic regimen and consider the patient's condition [15]. Currently, the use of antibiotics has begun to experience deviations from year to year. Antibiotics are considered quite fast in treating infections, so it is common for people to use them without a prescription from health workers. People often use antibiotics excessively, spend antibiotics without adhering to the rules, use antibiotics for unnecessary treatment, and buy antibiotics without a prescription [16]. The high intensity and inappropriate use of antibiotics will cause unwanted side effects, one of which is the increased health costs and resistance to bacteria [17].

Antibiotic resistance is the ability of bacteria to neutralize and weaken the action of antibiotics [18–20]. Inaccuracy in using antibiotics that result in patient non-compliance in taking drugs is one of the causes of resistance and will lead to therapy failure [21]. According to [22], essential determinants in the use of antibiotics are prescribing, providing drug information, and patient knowledge about antibiotics and socioeconomic conditions. The research results conducted by [23] also showed that providing education by health workers could improve patient compliance in taking antibiotics. Drug

information can be given verbally, namely by including the name of the drug, the dose, the duration of treatment, side effects of treatment, time to take the drug, the way how the drug is consumed (drink, chew, etc.), and how to store the drug [24]. Based on this, the researchers ought to research providing information about antibiotics on compliance to taking antibiotics, which is one of the factors for increasing knowledge and compliance to taking antibiotics.

## Material and Methods

The type of research used in this study was analytic observational with a cross-sectional approach. It used the MMAS-8 (Modified Morisky Adherence Scale) and DAI-30 (Drug Attitude Inventory) questionnaires which were modified as research instruments belonging to [25, 26]. In addition, a checklist was also used, which contained what information must be provided by health workers, which was adjusted to WHO [27]. This research was conducted at Dr. Moewardi Surakarta Hospital in January – March 2018. Based on the sample size estimation formula calculation, the estimated number of respondents was 84 people. The subjects of this study were dental polyclinic patients at Dr. Moewardi Surakarta Hospital. The sampling method used was non-probability sampling with the purposive sampling method.

The data obtained from the examination were then analyzed with SPSS 24 for Windows using the chi-square test to see the effect of giving drug information on the patient's compliance to antibiotics.

## Results and Discussion

### *Characteristic of Participants*

Table 1 reveals that the distribution of dental polyclinic patients at Dr. Moewardi Hospital Surakarta who were prescribed antibiotics was 100 respondents, which was dominated by women (57%).

**Table 1:** Frequency Distribution of Respondents by Sex

Sex	Frequency	Percentage
Male	43	43%
Female	57	57%

**Table 2:** Frequency Distribution of Respondents by Age

Age	Frequency	Percentage
<35 years	38	38%
>35 years	62	62%

The distribution of patients in the dental clinic at Dr. Moewardi Surakarta who became the respondent was dominated by patients aged over 35 years (62%).

#### Variables of Giving Drug Information

Table 3 shows that all respondents (100%) were given information about the type and name of the drug, drug dose, treatment time, duration of

treatment, how to take the drug, and the way of taking medication. The provision of information in the form of side effects of drugs was only given to 37 respondents (37%), while the information in the form of the dangers of drugs if not consumed regularly was only informed to 11 respondents (11%).

**Table 3:** Giving drug information

Information	Frequency	Percentage
Inform the patient about the type and name of the drug	100	100%
Inform the patient about the dosage of the drug	100	100%
Inform the patient about the time of treatment	100	100%
Inform the patient about the duration of treatment	100	100%
Inform the patient about the side effects of using the drug	37	37%
Inform the patient about the dangers of the drug if it is not taken regularly	11	11%
Tell the patient how to take the medicine	100	100%
Tell the patient how to store medicine	100	100%

#### Compliance Variable

The respondents who were obedient in taking medication were 72 people (72%). The

respondents who did not comply in taking drugs were 28 respondents (28%) (Table 4).

**Table 4:** Compliance of Taking Antibiotics

Compliance	Frequency	Percentage
Obey	72	72%
Disobey	28	28%

The frequency of compliance to taking medication was relatively higher for male respondents (74.4%) from a total of 43

respondents compared to female respondents (70.1%) from a total of 57 respondents (Table 5).

**Table 5:** Distribution of Compliance Frequency by Sex

Sex	Compliance Frequency	Frequency of Non-compliance
Male	32 (74,4%)	11 (25,6%)
Female	40 (70,1%)	17 (29,9%)

The number of respondents with an age range under 35 years who were obedient in taking drugs was 32 people out of 38 respondents

(84.2%). This was higher than respondents with an age range above 35 years, namely 40 people out of 62 respondents (64.4%) (Table 6).

**Table 6:** Distribution of Compliance Frequency by Age

Age	Compliance Frequency	Frequency of Non-compliance
< 35 years	32 (84,2%)	6 (15,8%)
>35 years	40 (64,4%)	22 (35,6%)

#### Relationship Analysis Test

The results of data analysis using the Chi-Square test showed the value of  $p = 0.003$  ( $p < 0.05$ ),

which means that there is a significant effect of providing drug information on compliance to taking antibiotics in dental clinic patients at Dr. Moewardi Hospital Surakarta. The strength of the relationship (Contingency Coefficient) obtained

was 0.553, which means there is a strong relationship. This result showed that drug information could affect compliance in taking drugs.

**Table 7:** Chi-Square Analysis Result

Variable	Contingency Coefficient	Significance
Provision of Drug Information and Compliance	0,553	0.003

Research on the effect of providing drug information on compliance to taking antibiotics in dental clinic patients at Dr. Moewardi Hospital Surakarta involved 100 respondents who were selected using non-probability sampling with the purposive sampling method. The questionnaire used in this study was a modification of the research of [26], which had been tested for validity and reliability. This study also used the list of drug information provisions written in WHO to indicate drug information provision.

In this study, all respondents were given six to eight information items. This proves that the provider of drug information delivered information following the golden standard from [27], stating that verbal drug information included the name of the drug, the dose, the duration of treatment, side effects of treatment, the way how to take medication, how to take the drug (drinking, chewing, etc.), and how to store drugs.

The results of this study indicated that most of the respondents (72%) complied with the information provided by the drug information provider. Direct observation methods could measure compliance, questionnaires for patients, checking drug levels in the blood, counting tablets, measuring patient clinical responses, patient diaries, questionnaires for patient administrators, and using electronic medication monitors [28]. According to [22], essential determinants in the use of antibiotics were prescribed, providing drug information, patient knowledge about antibiotics, and socioeconomic conditions. Drug information itself played an important role in increasing patient compliance, as in the study of [25], which showed that educating health workers could improve patient compliance in taking antibiotics.

The distribution of respondents' compliance based on gender found that men were more obedient than women. 40 of 57 respondents (70.1%) were declared compliant in women. This result is in accordance with research from [29] which stated that men were more obedient than women. This could be because women spent less time and energy taking care of themselves because of their role as the primary caregiver in the household.

The distribution of compliance by age showed that younger patients had a higher adherence rate (84.2%) than the elderly (64.4%). This is different from some previous studies. Research belonging to [15] stated that elderly patients were more compliant in undergoing treatment [30]. The forgetting factor can cause this. According to [17], memory declined in middle adulthood (35-59 years) [31].

### Conclusions

The Chi-Square test revealed a value of  $p = 0.003$  ( $p < 0.05$ ), which means that there is a significant effect between providing drug information on adherence to antibiotics in dental clinic patients at Dr. Moewardi Hospital Surakarta. The strength of the relationship (Contingency Coefficient) was 0.553, which means a strong relationship. This coefficient figure indicated that the direction of the positive correlation or the relationship was unidirectional.

### Financial Support:

This research received no grant from any funding agency in the public, commercial, or not-for-profit sectors. The content is solely the responsibility of the authors.

### Ethical Approval

Not applicable.

**Conflict of Interest**

There is no conflict of interest to declare.

**ORCID**

Morita Sari:

<https://www.orcid.org/0000-0003-0350-6552>

**References**

- [1]. Williams-Nguyen J., Brett Sallach J., Bartelt-Hunt S., Boxall A.B., Durso L.M., McLain J.E., Singer R.S., Snow D.D., Zilles J.L., *J. Environ. Qual.*, 2016, **45**:394 [[Crossref](#)], [[Publisher](#)]
- [2]. Hutchings M.I., Truman A.W., Wilkinson B., *Curr. Opin. Microbiol.*, 2019, **51**:72 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [3]. Ribeiro da Cunha B., Fonseca L.P., Calado C.R.C., *Antibiotics*, 2019, **8**:45 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [4]. Gosling P., *Australas. Chiropr. Osteopat.*, 2003, **11**:7 [[Google Scholar](#)], [[Publisher](#)]
- [5]. Zharif N., Santosh F., Kiran C.N., Fadli A., Ibrahim A., Nizam G., *Int. J. Med. Toxicol. Legal Med.*, 2018, **21**:167 [[Google Scholar](#)]
- [6]. Teo B.S.X., Gan, R.Y., Abdul Aziz S., Sirirak T., Mohd Asmani M.F., Yusuf E., *J. Cosmet. Ddermatol.*, 2021, **20**:993 [[Google Scholar](#)]
- [7]. Wan A.E., Khan M.S.B., Teo B.S.X., Khan J., Abdullah I., Kaleemullah M., Asmani F., Suofeiya M., Al-Dhalli S., Kasim Z., Fattepur S., *Int. J. Med. Toxicol. Legal Med.*, 2020, **23**:169 [[Google Scholar](#)]
- [8]. Khan J., Norfarhani S., Sahu R.K., Ruhi S., Kaleemullah M., Al-Dhalli S., Rasny M., Budiasih S., Baber S., Ng C.H., Shamiha, N.N., *Res. J. Pharm. Technol.*, 2020, **13**:6300 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [9]. Ruszymah B.H.I., Nabishah B.M., Aminuddin S., Khalid B.A.K., *Clin. Exp. Pharmacol. Physiol.*, 1995, **22**: 35 [[Google Scholar](#)]
- [10]. Nabishah B. M., Merican Z., Morat P.B., Alias A.K., Khalid B.A., *Gen. Pharmacol.*, 1990, **21**:935 [[Google Scholar](#)]
- [11]. Lodi G., Azzi L., Varoni E.M., Pentenero M., Fabbro M.D., Carrassi A., Sardella A., Manfredi M., *Cochrane Database Syst. Rev.*, 2021 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [12]. Usman M., Farooq M., Hanna K., *Sci. Total Environ.*, 2020, **745**:141053 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [13]. Li P., Hayat K., Shi L., Lambojon K., Saeed A., Majid Aziz M., Liu T., Ji S., Gong Y., Feng Z., Jiang M., Ji W., Yang C., Chang J., Fang Y., *Antibiotics*, 2020, **9**:184 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [14]. Torres-Barceló C., *Emerg. Microbes Infect.*, 2018, **7**:1 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [15]. Prasetio E., Utami W., Othman Z., Wardani A., Rahem A., Hermansyah A., *J. Basic Clin. Physiol. Pharmacol.*, 2020, **30** [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [16]. Bbosa G.S., Mwebaza N., Odda J., Kyegombe D.B., Ntale M., *Health (N. Y.)*, 2014 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [17]. Hadi U., Keuter M., Van Asten H., Van Den Broek P., *Trop. Med. Int. Health*, 2008, **13**:888 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [18]. Lubis F.I., Zulfendri, Jumirah, *Br. Int. Exact Sci. BloEx J.*, 2020, **2**:19 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [19]. Asif M., *J. Med. Chem. Sci.*, 2019, **2**:172 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [20]. Dioukhane K., Touijer H., Alami A., Bekkari H., Benchemsi N., *J. Med. Chem. Sci.*, 2018, **1**:18 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [21]. Fernandes M., Leite A., Basto M., Nobre M.A., Vieira N., Fernandes R., Nogueira P., Jorge P., *Int. J. Clin. Pharm.*, 2014, **36**:86 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [22]. Soleiman-Beigi M., Arzehgar Z., *J. Ilam Uni. Med. Sci.*, 2013, **21**:1 [[Google Scholar](#)], [[Publisher](#)]
- [23]. Roque F., Herdeiro M.T., Soares S., Teixeira Rodrigues A., Breitenfeld L., Figueiras A., *BMC Public Health*, 2014, **14**:1276 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [24]. Muñoz E.B., Dorado M.F., Guerrero J.E., Martínez F.M., *Aten. Primaria*, 2014, **46**:367 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [25]. Hogan T.P., Awad A.G., Eastwood R., *Psychol. Med.*, 1983, **13**:177 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [26]. Morisky D.E., Ang A., Krousel-Wood M., Ward H.J., *J. Clin. Hypertens.*, 2008, **10**:348 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [27]. Gudeta T., Mechal D., *J. Prim. Care Community Health*, 2019, **10**:2150132719876522 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

- [28]. Osterberg L., Blaschke T., *N. Engl. J. Med.*, 2005, **353**:487 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [29]. Chen S.L., Lee W.L., Liang T., Liao I.C., *J. Adv. Nurs.*, 2014, **70**:2031 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [30]. Rolnick S.J., Pawloski P.A., Hedblom B.D., Asche S.E., Bruzek R.J., *Clin. Med. Res.*, 2013, **11**:54 [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [31]. Prull M.W., Gabrieli J.D.E., Bunge S.A., in *Handb. Aging Cogn. 2nd Ed*, Lawrence Erlbaum Associates Publishers, 2000 [[Google Scholar](#)], [[Publisher](#)]

#### HOW TO CITE THIS ARTICLE

Morita Sari, Shafira Kurnia Rani Wibowo. The Effect of Drug Information Provision on Level of Patient Compliance in Consuming Antibiotic for Patients in Dental Polyclinic, *J. Med. Chem. Sci.*, 2022, 5(4) 477-482

DOI: 10.26655/JMCHMSCI.2022.4.4

URL: [http://www.jmchemsci.com/article\\_143392.html](http://www.jmchemsci.com/article_143392.html)