



Drug Consultation Prototype Based WhatsApp Bot

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Abstract. Services through social media are in great demand because they are direct, convenient and effective besides that social media allows pharmacists to reach consumers quickly and more easily. Destination making WhatsApp Bot to make it easier for users and service providers to communicate, consult and obtain information quickly by utilizing the quick reply feature. The data collection method used for this research was conducted Literature Review. With the search strategy used for get source relevant information in order to question on the research could answer and get relevant references. Process in search conducted use machine Google Chrome search with site address <https://scholar.google.co.id/>. With keywords used in search that is “Chatbot AND WhatsApp AND Health service”. Selected articles have criteria inclusion that is article national and international with range 10years time lastly, a website-based application, and load design about WhatsApp Bots. WhatsApp Bot was created for the benefit of consumers and also to assist health workers in carrying out health services as content health Application is a health service application that contains and presents information about health.

Keywords: WhatsApp, Chatbot, Consulting Medicine, Medicine.

1 Introduction

There are 4.8 billion internet users where 53.2% of users use social media as the main source of information. As many as 64% of people stated that people now prefer sending messages to calling [1]. In 2022, there will be a significant increase in new users on WhatsApp social media, namely as much as 47% [1]. Consultation with WhatsApp social media can foster a sense of equality when consultations with pharmacists take place, even though there are many limitations in interacting [2]. Services through social media are in great demand because they are direct, convenient, and effective besides that social media allows pharmacists to reach consumers quickly and more easily [3].

Chatbots is a form of virtual assistant in the field of information and communication in the form of a chat system which is often used by someone to facilitate their work in the field of information services [4]. Several things must be considered in service development Chatbot based WhatsApp is providing clear and easy-to-understand information, giving patients the opportunity to submit complaints and medical history and not limiting patient consultation [3].

WhatsApp Bot as a medium for disseminating nutrition and health information aims to develop the WhatsApp Bot application as a medium for spreading news, information and news about health and nutrition [5]. The WhatsApp Bot with an automatic message reply feature is expected to make it easier for its users to reply to messages or answer questions from the public and can also make it easier for the public to obtain the information they need independently [5].

The use of WhatsApp in pharmacy services aims to explore the experience of pharmacists using WhatsApp to support the delivery of pharmacy services outside of working hours [6]. Requests or questions that do not require an urgent or prompt response are largely delayed or not responded to by practitioners [6]. Expansion and improvement of e-health services and applications can improve the quality of health service work processes [7]. E-health applications can be classified based on the types of services offered aimed at consumers, government, industry and health workers. WhatsApp Bot was created for the benefit of consumers and also to assist health workers in carrying out health services as content health Application is a health service application that contains and presents information about health [7]. WhatsApp Bot can provide access to health services which can make it easier for patients to find needed drug information services and get other options from specialists (pharmacists) remotely [7].

The purpose of this study to making WhatsApp Bot is to make it easier for users and service providers to communicate, consult and obtain information quickly by utilizing the quick reply feature.

2 Methods

The data collection method used for this research was conducted Literature Review. With the search strategy used for get source relevant information in order to question on the research could answer and get relevant references. Process in search conducted use machine Google Chrome search with site address <https://scholar.google.co.id/>. With keywords used in search that is "Chatbot AND WhatsApp AND Health service". Selected articles have criteria inclusion that is article national and international with range 10years time lastly, a website-based application, and load design about WhatsApp Bots. Based on from established criteria, and obtained 10 articles that were used as reference for make design from system information. Then for planning system information implemented with making flowchart diagrams using device draw.io software and development design user interface using Microsoft Office PowerPoint 2019 [8].

3 RESULTS

3.1 Program Design

WhatsApp system flowchart the bot starts by entering the WhatsApp application then entering the WhatsApp page Bot by scanning the barcode or via the number used as WhatsApp Bots. Then the user can send a random message to start a conversation which the system will respond to with an automated message. Users can choose the main menu

available on the Chatbot, namely drug information, consultation and drug purchases. If the user selects the drug information menu the user will be directed to select three categories in it, namely drug indications, drug side effects and how to use the drug. After selecting the drug category, the user can enter keywords related to the drug which the system will respond with information according to the selected category. If the user selects the drug consultation menu, the user can start a direct conversation with the pharmacist to submit his complaint. If the user gets drug recommendations to overcome his complaints, the user can choose the drug purchase menu. If the user selects the drug purchase menu, the user needs to enter keywords related to the drug he wants to buy or has been recommended by the pharmacist, which the system will respond with information related to the drug he is buying. After selecting the drug, the user can select a payment category which has three options, namely cash, debit and e-money payments [9].

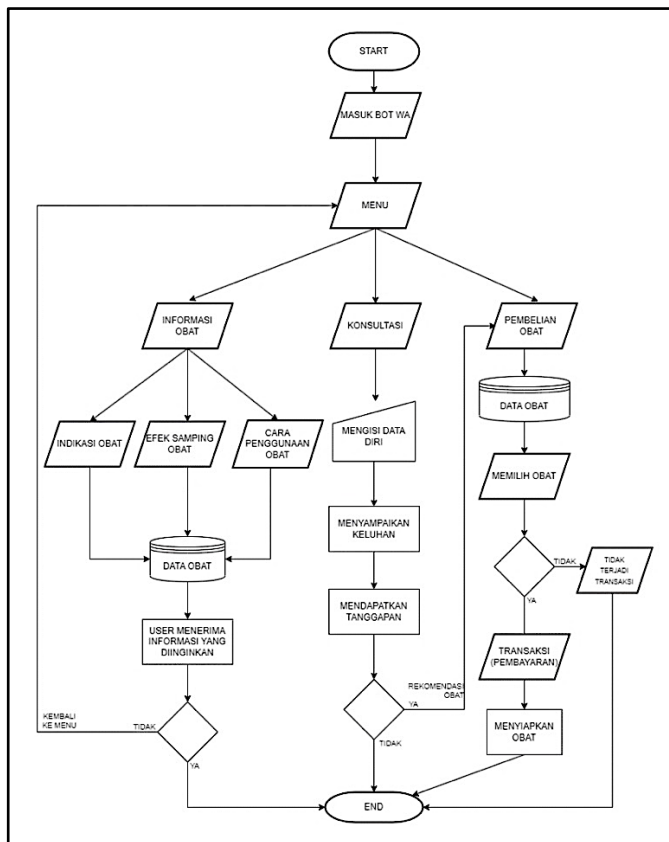
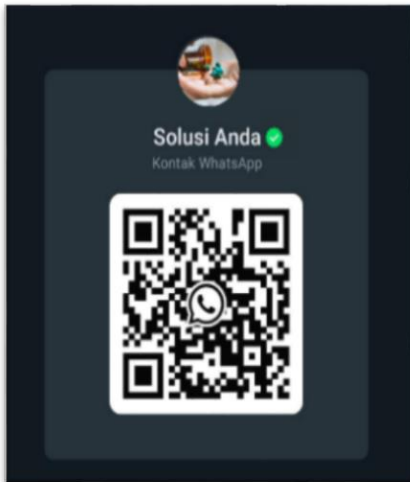
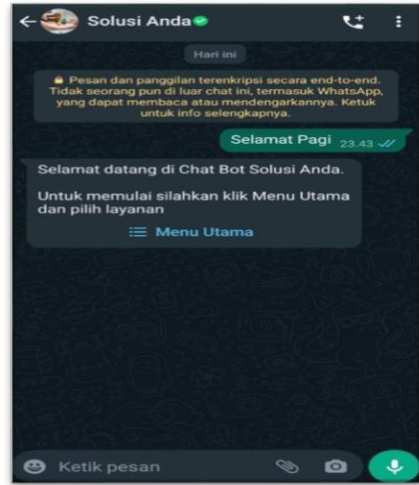


Fig. 1. Flowcharts Chatbots WhatsApp

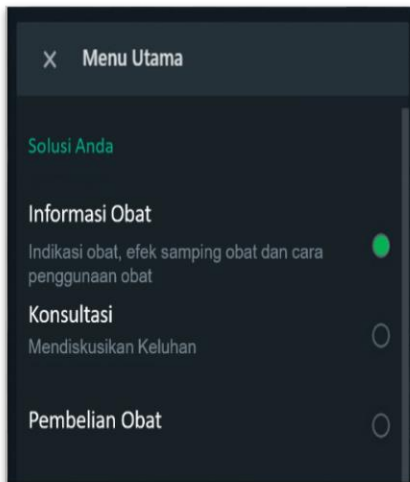
Users interface on drug consultation prototype based whatsapp bot is presented in Fig 2-6.



a



b



c



d

Fig. 2. User Interface: (a) Barcode to Start Chatbot, (b) WhatsApp Page Bots, (c) Main Course, (d) Category Selection

- a. Barcode to start Chatbot. The QR code is used to enter the main menu of WhatsApp the bot is done by the user scanning the WhatsApp QR code Available bots.

- b. WhatsApp page Bots. User starts the conversation with a random message which the system will respond with a preset auto response message. The user is directed to select an available menu.
- c. Main course. Displays the menu options available in WhatsApp Bot your solution. Drug information displays information related to drug indications, drug side effects and how to use drugs. Consultation provides a space for discussion between the patient and the pharmacist. Purchase of drugs to carry out drug purchase transactions.
- d. Category selection. In the select category menu section, the user selects the category of drug information needed. Then the system will display a menu of options. For example, selecting a category of drug indication menu.

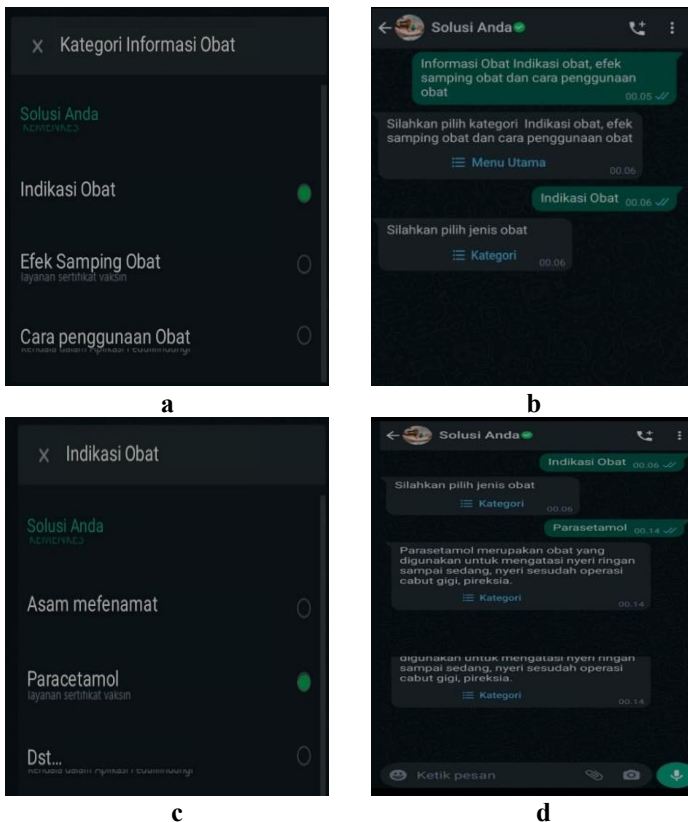
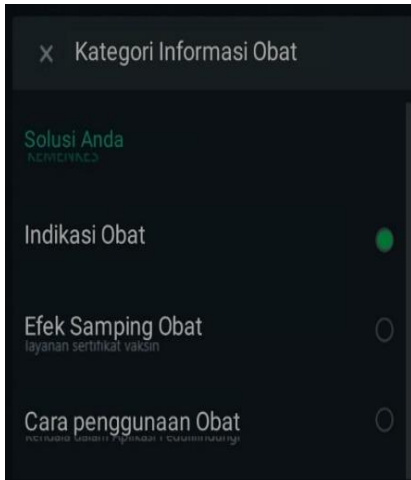


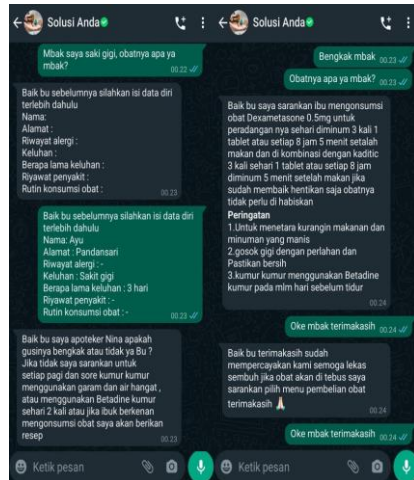
Fig. 3. User Interface: (a) Drug information categories (b) Drug selection, (c) Selection menu, (d) Medication selection menu

- a. Drug information categories. In the drug information category menu, the user selects the required drug category.
- b. Drug selection. In this menu, the user selects the types of drugs available in the database. Then the system will respond with the data in the database.

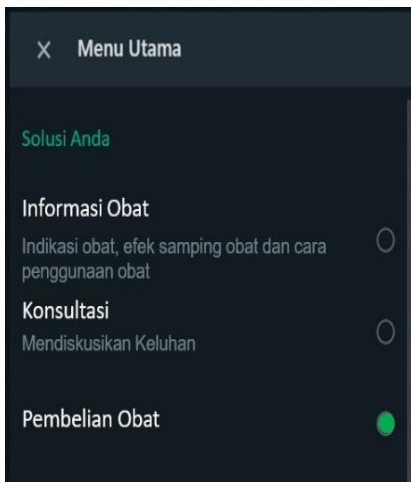
- c. Selection menu. In this menu, the user selects the types of drugs available in the data base. For example, the user chooses the indication of paracetamol.
- d. Medication selection menu. User selects the type of drug available in the data base. Then the system will respond with the data in the database.



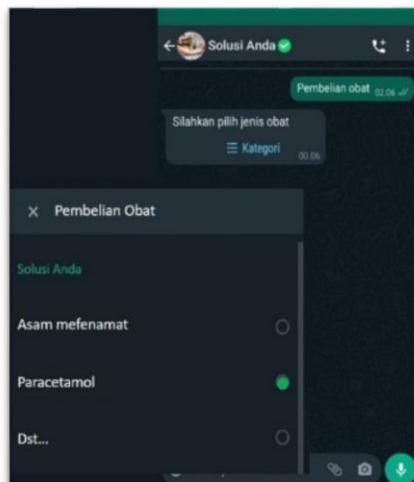
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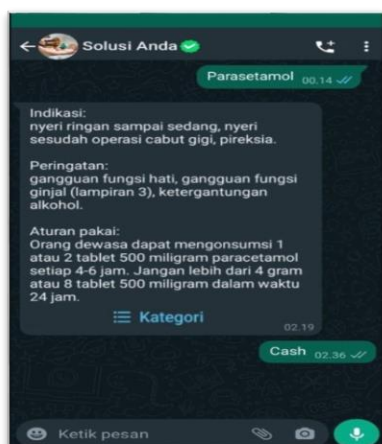
d

Fig. 4. User Interface: (a) Consultation menu, (b) Display Menu Second consultation, (c) Purchase Drug Menu, (d) Drug selection

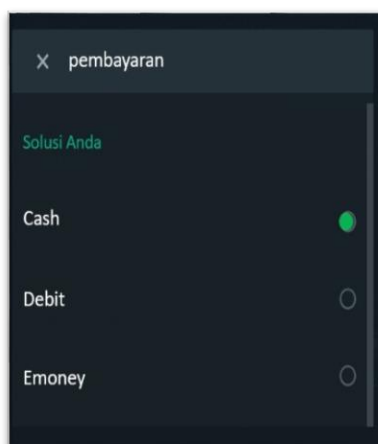
- a. Consultation menu. Displays the menu options available in WhatsApp Bot your solution. Complaint consultation that displays related complaints that the user wants to complain to the pharmacist.
- b. Display Menu Second consultation. After selecting the consultation menu, the user is free to complain about any diseases or complaints that the user feels, which will be

recapitulated by the admin and given input by the pharmacist regarding the user's complaint.

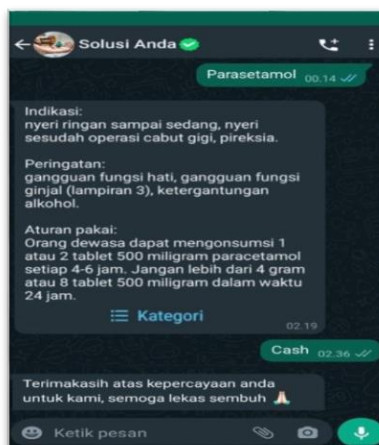
- c. Purchase Drug Menu. Displays the menu options available in WhatsApp Bot your solution. Purchase of drugs which will display information related to available drugs, and drug prices.
- d. Drug selection. The next display is that the user can freely choose what is needed and can automatically choose drugs that are cheap and according to their needs.



a



b



c

Fig. 5. User Interface: (a) Consultation menu, b) Payment, (c) Transaction completed

1. System response. Information regarding the drug to be purchased. If the user is going to buy medicine, then choose a payment category with one click.
2. Payment. Users can choose the type of payment they want. For example cash payment.
3. Transaction completed

The Drug purchasing matrix is presented in Fig. 6

INPUT	OUTPUT
Parasetamol Indikasi Parasetamol Fungsi Parasetamol	nyeri, demam, pusing, antiinflamasi
Amlodipin Indikasi Amlodipin Fungsi Amlodipine	hipertensi, profilaksis angina.
Omeprazole Indikasi Omeprazole Fungsi Omeprazole	tukak lambung dan tukak duodenum, tukak lambung dan duodenum yang terkait dengan AINS, lesi lambung dan duodenum, regimen eradikasi H. pylori pada tukak peptik, refluks esofagitis, Sindrom Zollinger Ellison

(a)

INPUT	OUTPUT
Parasetamol Cara Pengunan Parasetamol Aturan Pakai Parasetamol	Dosis dewasa 500 mg 3 diminum kali sehari Dosis anak 125 mg diminum 3 kali sehari
Amlodipin Cara Penggunaan Amlodipin Aturan Pakai Amlodipine	5 mg dan 10 mg Diminum 1 hari sekali di malam hari
Omeprazole Cara Penggunaan Omeprazole Aturan Pakai Omeprazole	20 mg 3 kali sehari sebelum makan

(b)

INPUT	OUTPUT
Parasetamol Harga Parasetamol Harga Paracetamol	Rp 2.500,00
Amlodipin Harga Amlodipin	Rp 5.000,00
Omeprazole Harga omeprazole	Rp 5.500,00

(c)

Fig. 6. (a) (b) (c) Drug purchasing matrix

3.2 Discussion

Chatbots are made with the aim of providing information quickly and easily. There are several systems that have a similar concept on WhatsApp Bots, namely the Telegram

Bot as a media for socializing driving safety and the Facebook Messenger Chatbot for restaurant reservations. The Telegram bot is a system created to provide education to the public in an effective and easy way [10]. The advantages of the Telegram Bot are that this application is a messaging service application that is quite widely used, easy to use, flexible and has the lowest data usage [10]. However, the Telegram Bot has to be reset several times to avoid errors and many people have not used or are familiar with Telegram bots [10]. In 2022, there will be a significant increase in new users on WhatsApp social media, namely as much as 47% [1]. WhatsApp Bot was chosen because the majority of Indonesian people use the application as a daily communication tool. This proven with there is a significant increase in new users on WhatsApp social media in 2022 that is as much as 47% [1]. In addition, services through social media are in great demand because they are direct, convenient, and effective. In addition, social media allows pharmacists to reach consumers quickly and more easily [3].

Facebook is an application that is very familiar in all circles of society which also has a Chatbot feature. Masanger's Facebook chatbot is made to make it easier to carry out promotions, services and orders. The Masanger Facebook chatbot has limitations because it can only reply to consumer messages if the answers have been prearranged [11]. The instant messaging service on WhatsApp Bot utilizes keywords to make it easier for both users and pharmacists. Reitz (2012) states that keywords are made in matrix form to estimate the probability of keywords entered by users. Making keywords can use synonyms, acronyms, other languages, general terms, spelling variations and Latin (Reitz, 2012).

Other considerations in making WhatsApp Bot are functional requirements including the system being able to work 24 hours, fast service that will make it easier for users to get information, the system reaches a wider range of users, the system is able to make users save on expenses and the system does not need to be installed because it is already integrated into WhatsApp [4]. However, the WhatsApp Bot service requires an internet network that must always be connected and the WhatsApp used must be online so that the system can run properly. [4]. The benefit of the WhatsApp Bot for patients is reliable information because it provides pharmacists who have an active license. WhatsApp Bot got make it easy Pharmacist for knowing condition patient in a manner distance far. Besides that, WhatsApp Bot can store patient data and can recap with easy.

In feature WhatsApp this bot provides feature counseling medicine that can accessed by users with the way it has been provided the tutorial. According to one study say that counseling online can be one Street for somebody To do counseling without known by his family and with possible costs say without there is costs incurred [12].

4 Conclusion

Many service innovations and information technology-based drug consultations have been created in accordance with the information society era that are tailored to the needs of today's society. From the results of this study, it can be concluded that WhatsApp bots can help services in pharmacies and patients benefit from using WhatsApp as a media for consultation and services in pharmacies can simplify and also speed up the service of

community needs. The applications provide fast replies are not only WhatsApp, for example Instagram and Facebook, but still very few people familiar with the application WhatsApp as a daily social media.

References

1. Hootsuite Social Trends 2022. *Hootsuite.Com* **2022**, 1–54.
2. Candrasari, S. Komunikasi Interpersonal Melalui Penggunaan Media Sosial Antara Dokter Dan Pasien Di Klinik Medika Lestari Jakarta. *Prof. J. Komun. Dan Adm. Publik* **2019**, 6, Doi:10.37676/Professional.V6i1.836.
3. Evert, D.P. Buana Komunikasi. *Komun. Interpers. Dalam Konsult. Dr. Estet. Dengan Pasien Melalui Media Sos. Whatsapp* **2020**, 1, 127–136.
4. Bariyah, S.H.; Imania, K.A.N. Pengembangan Virtual Assistant Chatbot Berbasis Whatsapp Pada Pusat Layanan Informasi Mahasiswa Institut Pendidikan Indonesia - Garut. *J. Petik* **2022**, 8, 66–79, Doi:10.31980/Jpetik.V8i1.1575.
5. Kushargina, R.; Syafitri, A.N.; Evani, A.; Fitriyani, S.L. Whatsapp Bot “Kita Sehati (Kabar, Informasi, Dan Berita Seputar Kesehatan Dan Gizi)”: Media Penyebaran Informasi Gizi Dan Kesehatan Berbasis Teknologi 4.0. *J. Gizi Prima (Prime Nutr. Journal)* **2021**, 6, 110, Doi:10.32807/Jgp.V6i2.300.
6. Rathbone, A.P.; Norris, R.; Parker, P.; Lindsley, A.; Robinson, A.; Baqir, W.; Campbell, D.; Husband, A. Exploring The Use Of Whatsapp In Out-Of-Hours Pharmacy Services: A Multi-Site Qualitative Study. *Res. Soc. Adm. Pharm.* **2020**, 16, 503–510, Doi:10.1016/J.Sapharm.2019.06.019.
7. Keputusan Menteri Kesehatan *Permenkes Ri Nomor 46 Tahun 2017*; 2017;
8. Wahyudi, T. Pengembangan Aplikasi Berbasis Web Dan Android Sebagai Penunjang Kerja Di Indonesia: Systematic Literature Review. *Indones. J. Comput. Sci.* **2022**, 1, 96–102, Doi:10.31294/Ijcs.V1i2.1428.
9. Verma, P.; Saxena, A.; Sharma, A.; Thies, B.; Mehta, D. Demo: A Whatsapp Bot For Citizen Journalism In Rural India. *Proc. 2021 4th Acm Sigcas Conf. Comput. Sustain. Soc. Compass 2021* **2021**, 423–427, Doi:10.1145/3460112.3471981.
10. Reynaldi, M.; Al Khairi, S.; Hendarman, N.G.; Nugroho, F.I. Sistem Informasi Berbasis Bot Telegram Sebagai Media Sosialisasi Keselamatan Berkendara. *J. Softw. Eng. Inf. Commun. Technol.* **2020**, 1, 27–32.
11. Haq, M.S.; Waspodo, B.; Nuryasin, N. Chatbot: Reservasi Restoran Online Pada Facebook Messenger. *Appl. Inf. Syst. Manag.* **2021**, 4, 23–30, Doi:10.15408/Aism.V4i1.19765.
12. Trisna, D.V.; Indriyanti, R.; Claramita, M. Starting Online Services At University Clinics At The Beginning Of The Covid-19 Pandemic. *Rev. Prim. Care Pract. Educ. (Kajian Prakt. Dan Pendidik. Layanan Prim.* **2021**, 3, 2, Doi:10.22146/Rpcepe.62772.

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