

A Digital Therapeutic Communication Model to Improve Treatment Compliance of Hypertension Patients at Ubud Health Center 1 Gianyar District, Bali Province

I Nyoman Purnawan¹, Nyoman Suarjana², Ni Made Kurniati³

^{1,2,3} School of Public Health, Dhyana Pura University, Badung, Bali, Indonesia

ARTICLE INFO

Keywords:
*Medication adherence;
hypertensive patients;
digital therapeutic
communication models;
Ubud Health Center 1;
Bali*

ABSTRACT

The main problem in controlling hypertension in Indonesia is low adherence to treatment hypertension patient. An important effort that is currently being done is to change patient behavior to be more compliant with treatment. Factors that influence medication adherence. It is important that it is studied in full, compiled on a strong theoretical basis and proven scientifically empirical. One of the factors that play an important role in increasing success. Treatment is therapeutic communication between health workers and patients. However, during the syndemy (synergy and pandemic) period of covid-19 with restrictions on interaction hinder the process of therapeutic communication so that there is a need for digital transformation. For Therefore, this study aims to assess the factors of medication adherence, compile and prove digital therapeutic communication models can improve adherence to treatment of hypertensive patients at Ubud Health Center 1, Gianyar Regency, Bali Province. Research implementation consists of 3 stages, namely: 1) Research cross-sectional study with a sample size of 390 hypertensive patients selected by simple random sampling. Data collected by interview using structured questionnaires in selected patient homes; 2) Modeling digital therapeutic communication and 3) Proof of models with quasi-experimental designs using a cluster randomized controlled trial design. Structural equation modelling (SEM) was used for factor analysis of medication adherence and the Poisson regression test was used to test and assess the capabilities of digital therapeutic communication models for improve adherence to treatment of hypertensive patients. Factors that are proven to improve adherence to treatment is a type of communicator ($\beta=0.297$), content of the message conveyed ($\beta=0.237$) and the type of digital media (whatsapp) used ($\beta=0.443$). Therapeutic communication model. Digital is proven to increase medication adherence by 4.1 times (95% CI: 0.845-11.557). It can be concluded that therapeutic communication with WhatsApp media is very effective carried out supported by the ability of the communicator and the content of the message conveyed.

Email :
purnawankomink@undhirabali.ac.id

Copyright © 2022 Jurnal Eduhealth.
All rights reserved.

is Licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License \(CC BY-NC 4.0\)](https://creativecommons.org/licenses/by-nc/4.0/)

1. INTRODUCTION

In the world, as many as 26% or around 972 million adults suffer from hypertension. This figure is increasing sharply, it is estimated that by 2025, around 29% of people adults worldwide who suffer from hypertension, where sufferers are women (30%) more than men (29%). It is also estimated that around 80% an increase in cases of hypertension occurs mainly in developing countries (WHO, 2013). In Indonesia, hypertension is still a public health problem even though it has there are handling guidelines and research results on a national scale (Ministry of Health RI, 2018). The average hypertension rate covers 17% - 21% of the entire population adults, meaning that 1 in 5 adults suffers from hypertension. In Bali Province cases of hypertension continue to increase from year to year,

A Digital Therapeutic Communication Model to Improve Treatment Compliance of Hypertension Patients at Ubud Health Center 1 Gianyar District, Bali Province . I Nyoman Purnawan, et al

where the proportion of hypertension based on the comparison of the number of cases with the number of patients who get it the highest treatment in 2020 was in Gianyar Regency (11%) (Bali Provincial Health Office, 2020). Most patients with hypertension reported undergoing treatment at the Center The Basic Health Center (Puskesmas) for each region in Gianyar Regency is wrong the other one is at the Ubud Health Center 1 (District Health Office of Gianyar, 2020).

For hypertensive patients, adherence to treatment is one of the factors determining the success of therapy. However, adherence to treatment often low. Previous survey in Gianyar Regency on medication adherence hypertension in 242 hypertensive patients, showing 41% adherent patients and 59% patients non-adherence to treatment. It is very important to ensure a correct diagnosis, drug selection and proper administration by health workers in treatment hypertension. However, this does not guarantee the success of treatment if the patient is not adhere to treatment procedures, so there must be a good relationship between patients and health workers through a therapeutic communication (WHO, 2013). In Century syndemic (synergy and pandemic) at this time where there are many variants of new infectious diseases that have sprung up, including Covid-19, have restricted some human interactions. Matter This becomes an obstacle in the implementation of therapeutic communication activities, however began to develop several new models in communication through digital transformation for still exist in practice. With digital therapeutic communication expected changes in the behavior of hypertensive patients to be more obedient to treatment (Ministry of Health RI, 2018). The purpose of this research is to construct and prove a communication model digital therapeutics can improve adherence to treatment of hypertensive patients.

2. METHOD

In this study there were three stages of the method carried out, namely: 1) observational study with analytic cross-sectional research design, 2) preparation of a communication model digital therapeutics and 3) experimental study with a quasi-experimental design using a cluster randomized controlled trial design. The purpose of the research method. Stage 1 was to analyze predictors of medication adherence in hypertension patients. Results research in phase 1 used the basis for compiling a digital therapeutic communication model. The objective of the second phase of the research method is to develop a digital therapeutic communication model which was compiled based on a literature review and the results of phase 1 research in the form workshops with relevant stakeholders. The purpose of the research method stage 3 is proving digital therapeutic communication models can improve adherence treat hypertension patients (Hidayat et al, 2017).

This research was conducted at the Ubud 1 Public Health Center, Gianyar Regency, Bali Province. This location was chosen because the most reported patients with hypertension underwent treatment at the Basic Health Center (Puskesmas), has long experience in hypertension case management and the highest proportion of hypertension based on Comparison of the number of cases with the number of patients receiving treatment in a year 2020. In addition, according to data from the Bali Province Central Statistics Agency (BPS) for 2020 Gianyar Regency is the district with the second most smartphone users after Denpasar City (BPS Prov. Bali, 2020). Research data collection phase 1 and Phase 3 will be carried out for 2 months each, followed by processing, data analysis and reporting of research results. While stage 2 is carried out with a 1-day workshop at the Ubud Health Center 1. The research population for stages 1 and 3 were all hypertensive patients recorded in the data medical records at the Ubud 1 Health Center, Gianyar Regency. The size of the research sample in phase 1 were 390 hypertensive patients selected by simple random sampling. Whereas for stage 3 there is a division of 2 groups of research subjects, namely groups *intervensi* dan *kelompok kontrol* dengan jumlah masing-masing 30 pasien yang dipilih secara simple random sampling (Meinema et al, 2015).

3. RESULTS AND DISCUSSION

The first stage of research begins with preparation consisting of training surveyors, testing questionnaires, repairing questionnaires, preparing sample frames and selection of research samples.

There were 390 total samples in this stage of the research. The demographic characteristics of the sample are as follows:

Table 1 Characteristics of research subjects

Characteristics	n = 390
Age	
- < 40 yo	175 (44,87%)
- ≥ 40 yo	217 (55,64%)
Sex	
- Male	198 (50,76%)
- Female	192 (49,23%)
Level of Education	
- ≤ Junior high school	102 (26,15%)
- ≥ Senior high school	288 (73,84%)
Job	
- Apply	306 (78,46%)
- No apply	84 (21,53%)
Health insurance	
- Yes	298 (76,41%)
- No	92 (23,58%)

The mean age of the 390 people interviewed was 42.3 years with a standard deviation of 12.7 years. Most of the subjects were over 40 years or older 217 people (55.64%) and the remaining 40 years less. The sex distribution of the subjects is known most or 198 people (50.76%) were men and the rest were women. Level of education categorized as junior high school level of education or less as many as 102 people (26.15%) and SMA or higher as many as 288 people (73.84%). Working subject distribution more compared to those who do not work, which is around 78.46%. Most of the or 298 (76.41%) already have health insurance. Analysis of digital therapeutic communication factors related to adherence treat hypertension patients using structural equation modeling (SEM). Analysis results SEM is shown in Table 2. Based on this analysis, the influence is assessed direct, indirect and total effect on adherence to treatment of hypertensive patients. The influence shown in Table 4.2 is the total effect that comes from influence direct, indirect influence or the sum of direct and indirect effects according to the path of relationship with medication adherence. The results of the goodness of fit test for the model finally the RMSEA value is less than 0.08 or the model is declared fit.

Table 2 Results of Structural Equation Modeling (SEM) Analysis of Compliance Factors Treating Hypertension Patients at the Ubud Health Center 1

Factors	Total influence	
	Koefisien	P value
Communicator		
- Doctor*	0,297*	0,001*
- Nurse	0,076	0,230
- Health worker	0,055	0,190
Message content:		
- Pesan perkenalan	0,089	0,000
- Pesan terkait bahaya HT	0,097	0,046
- Pesan terkait pengobatan HT*	0,237*	0,037*
- Pesan terkait tindak lanjut pengobatan	0,056	0,010
Digital media:		
- Whatsapp*	0,443*	0,000
- Instagram	0,053	0,302

Factors	Total influence	
	Koefisien	P value
- Facebook	0,007	0,455
- Telegram	0,001	0,560

From table 2 above, it can be seen that doctors as communicators have a positive and direct influence on adherence to treatment of hypertensive patients with a standardized coefficient of 0.297 and a p value = 0.001. Then seen from the contents of the message conveyed, namely messages related to hypertension treatment had a positive and direct effect on treatment adherence with a standardized coefficient of 0.237 and p = 0.037. Digital media that has a positive and direct effect on adherence to treatment of hypertensive patients is WhatsApp media with a standardized coefficient of 0.443 and p = 0.000.

The FGD (Focus Group Discussion) began with preparation with an audience with the Head of the Ubud Health Center 1, making invitations, preparing the place, tools and materials. The hearing will be held on November 21, 2022. During the hearing, the objectives of the activity, application for permission to use the meeting room, inviting participants and willingness to open the event are conveyed. The FGD activity was welcomed and he was willing to facilitate the activity. The FGD with stakeholders was conducted on December 2, 2022. The FGD participants who attended were 1 health center non-communicable disease (PTM) program staff, 1 health center doctor, 1 health center nurse, 1 Head of Ubud Health Center 1, 1 disease control and prevention program staff not communicable (PTM) Gianyar District Health Office, 1 Head of Gianyar District Health Office and 3 enumerators of the first phase of the study. While the resource persons for this activity were an expert doctor and an IT (information technology) expert.

The FGD began at 08.30 WITA and was opened by the Head of the Ubud Health Center 1. The delivery of material began at 9.00 WITA which began with the presentation of the results of research on factors related to adherence to treatment by researchers for 30 minutes. The next material is effective digital therapeutic communication by Mr. dr. Nyoman Suarjana, and materials on digital media by Mrs. Ni Made Kurniati for 30 minutes each. At the end of the session, there was an opportunity for discussion for approximately 15 minutes coordinated by the students involved in this study as moderators.

Convey opinions in writing using sticky notes (post-it) and are welcome to also express them verbally after which they are pasted on the flip chart according to the problem box. All input, ideas and solutions are categorized according to their similarities. This method is expected to accommodate all existing input, generate new ideas and innovations. FGD aims to categorize similar ideas, clarify or improve ideas that arise during discussion. The FGD also aims to formulate recommendations and the roles of each stakeholder group.

The recommendation from the doctors at the puskesmas is that there is a standard operating procedure (SOP) that can be used for the treatment of hypertension at the puskesmas. In order to improve adherence to treatment of hypertensive patients, a message template was formed which would be delivered via WhatsApp media so that messages that were delivered effectively could increase treatment adherence. The end of phase 2 of this research is the preparation of a digital therapeutic communication model with doctors at the puskesmas as the communicators then the message templates to be conveyed and WhatsApp media used to convey the message.

The third phase of the study began by randomizing patients to divide them into intervention and control groups. There are 50 intervention groups and 50 control groups. The results of the poisson regression test to assess the pure effect of digital therapeutic communication interventions on medication adherence.

Table 3 Results of the poisson regression test analysis of the effect of digital therapeutic communication interventions on medication adherence at the Ubud 1 Health Center

Variabel	Medication adherence		
	ARR	96% CI	P value
Digital therapeutic communication	4,19	1,190-2,986	0,007
Therapeutic communication	1,32	0,447-4,578	0,548

The results of the Poisson regression analysis of the pure effect of the intervention on medication adherence obtained an adjusted RR of 4.19 with a 95% CI from 1.190 to 2.986. The pure effect of control on medication adherence was obtained by an adjusted RR of 1.32 with a 95% CI from 0.447 to 4.578. These results indicate that the digital therapeutic communication model has proven successful in increasing 4.1 times hypertensive patients to be more compliant with treatment. These results are supported by several previous studies regarding the effectiveness of mobile health for antihypertensive treatment entitled "Using a mobile health app to improve patients' adherence to hypertension treatment: a non-randomized clinical trial". By Volphi showed the results of the experimental group, before the intervention, 8% did not comply, 64% moderate adherence and 28% high adherence to treatment. Meanwhile, in the control group, 4.2% did not comply, 58.3% adherence was moderate, and 37.5% adherence was high. After the intervention, the experimental group experienced an increase to 92% high compliance, 8% moderate compliance, and 0% non-adherence ($p \geq 0.999$). Another study entitled "Randomized Controlled Trial of E Counseling for Hypertension" showed the same result. There were 264 patients, the mean age was 57.6 years, 58% were women, with 83% taking antihypertensive drugs. In the 12 months of the study, the effectiveness of e-counseling compared to controls showed a greater reduction in systolic blood pressure, namely 10.1 mmHg [95% CI: -12.5, -7.6] while in the control only a reduction of 6.0 mmHg [95% CI: -8.5, -3.5]; ($p=0.02$); the intervention pressure was reduced by 5.2 mmHg [95% CI: -6.9, -3.5] whereas in the control it was only reduced by 2.7 mmHg [95% CI: -4.5, -0.9]; $p=0.04$).

4. CONCLUSION

Doctors have an important role in delivering treatment messages to hypertensive patients; The contents of messages related to hypertension treatment affect adherence to treatment of hypertensive patients; WhatsApp digital media has an important role as an alternative in increasing medication adherence; A digital therapeutic communication model has been compiled for the treatment of hypertension patients at the Ubud 1 Health Center; The digital therapeutic communication model can increase adherence to treatment of hypertension patients at the Ubud Health Center 1.

REFERENCES

- [1] Asnawi, B. (2011) Faktor-faktor yang Berhubungan dengan Kepatuhan Berobat Penderita Diabetes Mellitus di Kota Jambi Tahun 2010. Tesis. Universitas Indonesia.
- [2] Anjaswarni, Tri. (2016). Komunikasi dalam Keperawatan. Jakarta: Pusat Pendidikan Sumber Daya Manusia Kesehatan Badan Pengembangan dan Pemberdayaan SDM Kesehatan
- [3] World Health Organization. (2013) A Global Brief on Hypertension, Available at: <www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en/> [Accessed: 2021, December 9].
- [4] Badan Pusat Statistik. (2020), Bali Dalam Angka 2019, Denpasar: Badan Pusat Statistik Provinsi Bali.
- [5] Dinas Kesehatan Provinsi Bali. (2020), Laporan Tahunan Penyakit Tidak Menular Provinsi Bali Tahun 2020. Denpasar: Dinas Kesehatan Provinsi Bali.
- [6] Dinas Kesehatan Kabupaten Gianyar. (2020), Laporan Tahunan Kesehatan Kabupaten Gianyar Tahun 2020. Gianyar: Dinas Kesehatan Kabupaten Gianyar.

- [7] Hidayat, A., Aziz, A., Mahmud, B. (2017) Metode Penelitian Keperawatan dan Teknik Analisis Data. Jakarta: Salemba Medika.
- [8] Jiang, B., Liu, H., Ru, X., Zhang, H., Wu, S., Wang, W. (2014) Hypertension Detection, Management, Control and Associated Factors Among Residents Accessing Community Health Services in Beijing, *Sci. Rep.*, 4845(4): 127-134.
- [9] Kementerian Kesehatan Republik Indonesia. (2020), Profil Kesehatan Indonesia 2020. Jakarta: Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan.
- [10] Kementerian Kesehatan Republik Indonesia. (2018), Profil Kesehatan Indonesia 2018 Jakarta: Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan.
- [11] Kementerian Kesehatan Republik Indonesia. (2019), Profil Kesehatan Indonesia 2019. Jakarta: Direktorat Jenderal Pengendalian Penyakit dan Penyehatan Lingkungan.
- [12] Morisky, D.E., Green, L.W., Levine, D.M. (1986) Concurrent and Predictive Validity of a Self-Reported Measure of Medication Adherence, *Med. care*, 24(5): 67-74.
- [13] Morisky, D.E., Ang, A., Krousel-Wood, M., Ward, HJ. (2008) Predictive Validity of a Medication Adherence Measure in an Outpatient Setting, *The Journal of Clinical Hypertension*, 10(5): 348-354.
- [14] Rao, C.R., Kamath, V.G., Shetty, A., Kamath, A. (2014) Treatment Compliance among Patients with Hypertension and Type 2 Diabetes Mellitus in a Coastal Population of Southern India, *Int. J. Prev. Med.*, 5(8): 992-998.
- [15] Riyanto, A. (2018) Pengolahan dan Analisis Data Kesehatan. Yogyakarta: Mulia Medika.
- [16] Saeed, K.M., Rasooly, M.H., Brown, N.J. (2012) Prevalence and Predictors of Adult Hypertension in Kabul Afghanistan, *BMC Public Health*, 10(14): 1471-1479.
- [17] Saepudin, Padmasari, S., Hidayanti, P., Endang, S., Ningsih. (2013) Kepatuhan Penggunaan Obat Pada Pasien Hipertensi di Puskesmas. *Jurnal Farmasi Indonesia*, 6(4): 246-253.
- [18] Yashar, M., Saadat, H., Babak, N.S., Rai, A., Saadat, Z., Aerab-Sheibani, H., Naghizadeh, M.M., Morisky, D.E. (2014) Validation of the Persian Version of the 8-item Morisky Medication Adherence Scale (MMAS-8) in Iranian Hypertensive Patients, *Global Journal of Health Science*, 7(4): 173-183.