

HEALTH PROMOTION IN EFFORTS TO INCREASE MEDICATION COMPLIANCE IN HYPERTENSIVE PATIENTS: A LITERATURE REVIEW

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Abstract

Compliance to taking medication is one of the problems in disease control efforts, especially non-communicable diseases such as hypertension. Taking medication regularly is one of the keys to control hypertension. One of the efforts to improve medication adherence is health promotion. The purpose of this study is to determine the methods used in health promotion to increase medication adherence in hypertensive patients. This research is a literature review. Sources of research articles were taken from the PubMed, Science Direct, and the Cochrane Library database, with the keywords "medication compliance on hypertensive patient" and "health promotion on hypertension patient". A total of 3,466 articles were obtained from the initial search and from all these articles 8 articles were found that met criteria to be analyzed. The results of the article review show several health promotion models that can affect medication compliance in hypertensive patients, namely family support, Pender's health promotion model, and mHealth-based health promotion. The methods used in health promotion to increase medication compliance in hypertensive patients are family support, Pender's health promotion model and mHealth-based health promotion.

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1. Introduction

Non-communicable diseases (NCDs), especially cardiovascular diseases, hypertension and diabetes mellitus (DM) are found to be the main causes of death worldwide. Morbidity, mortality, and disability caused by NCDs account for nearly 60% of all deaths and 47% of the global burden of disease. The majority of deaths occur among low- and middle-income countries, such as Indonesia. Data from the World Health Organization (WHO) in 2015 showed that globally it was found that 1 in 3 people suffer from hypertension with a prevalence of 1.13 billion. The prevalence of hypertension is predicted to continue to increase every year and it is estimated that as many as 1.5 billion will suffer from hypertension of which 9.4 million people die from this disease and its complications (Kemenkes RI, 2019).

The main factor of the increasing burden of morbidity and mortality due to hypertension is the status of poor patient control. Many factors contribute

to the status of poor condition of patients, such as lack of integrated care at the health system level, low compliance to self-care recommendations, and compliance to medication. Among these factors, non-compliance to medication is one of the most dominant factors (Yuvaraj *et al*, 2019).

Several studies have shown that there is patient non-compliance, especially patients suffering from chronic diseases, to take medication, especially outpatients. Research on hypertensive sufferers showed that 26-36% comply to take medication (Rahasasti and Laeliah 2020; Pramana *et al* 2019). The research result showed that only 7.2% of the Indonesian population knew they had hypertension and only 0.4% of cases were obedient to taking hypertensive medication, so 76% of the people did not know they had hypertension and 99.6% did not comply with taking medication (Evadewi and Suarya , 2013; Ministry of Health of the Republic of Indonesia, 2019)

Several studies have found factors that determine patient medication compliance. Research from Wulandari *et al* (2020) found that knowledge, family support, self-stigma, and efficacy are factors that determine patient medication compliance. Hestiana (2017) found that gender, knowledge and family role factors determine patient medication compliance. The results of the studies above indicated that there is a problem of non-compliance in outpatients in taking medication. This problem is influenced by several factors, such as the patient, therapy, environment, socioeconomic and health system factors, especially the ministry of health through health promotion activities.

Several studies recommend the implementation of health promotion efforts in reducing the level of non-compliance to taking medication in Indonesia, especially patients with non-communicable diseases or chronic diseases. Several previous studies have shown various methods of health promotion in increasing patient medication compliance. Research from Hannan *et al* (2018) on the effect of health promotion with fellow models (health promotion carried out by fellow sufferers of certain diseases) on patient compliance showed the effect of health promotion efforts. Faradila and Widodo (2019) found that health promotion by involving health cadres and community leaders corresponds with patient medication compliance. Berwulo *et al* (2020) showed that health promotion with telenursing method corresponds to patient medication adherence. This study recommended research on the use of information technology, such as text messages, telephone and social media for health promotion efforts for medication compliance.

Research from Dewi (2020) found that providing health education with online media can increase patient compliance in taking medication and can increase knowledge in hypertensive patients (Mitasari *et al* 2019). Social media-based health promotion is an effective strategy in health promotion efforts (Kaplan *et al* 2010). Research conducted by Ekadinata *et al* (2017) and Leonita and Jalinus (2018) stated that social media is an effective strategy in health promotion efforts and can increase knowledge and attitude (Nuryati and Yanti, 2017; Indrawati *et al* 2016). The purpose of this study is to determine the methods used in health promotion to increase medication compliance in hypertensive patients.

2. Method

This research is a literature study. This research is a literature study that summarizes several literature which are relevant to the theme. The search of literature used 3 databases, which are PubMed, Science Direct, and Cochrane Library.

The keywords used in the literature search included: “medication compliance on hypertension patient” and “health promotion on hypertension patient”. The entire literature was then re-selected using inclusion and exclusion criteria. The article search found 3,466 articles showing relevance to the topic being reviewed. After duplication of articles, as many as 138 articles were removed, then 3,298 articles were screened for titles and abstracts and as many as 3,273 articles were removed, so 25 articles were studied in full text based on inclusion requirements, which are research articles with observational and experimental research types, involving patients suffering from hypertension in hospitals/health clinic, written in Indonesian and/or English, obtained in full text and free of charge and published in 2016-2021 and the exclusion conditions are research articles whose types of research are qualitative and meta-analytical and the location of the research is unknown. Based on those, 8 articles were synthesized.

3. Results

The results of the article review showed several models of health promotion that can affect medication compliance in hypertensive patients, which are family support, Pender's health promotion model and mHealth-based health promotion (health promotion using cellular technology, such as mobile phones, PCs, tablets, and so on).

4. Discussion

There are several models of health promotion that can affect medication compliance in hypertensive patients, which are family support, Pender's health promotion model and mHealth-based health promotion.

1. Family support-based health promotion

The results of this study found that family support in patient education has an effect of increasing medication compliance. Patient education with family members present will promote the adoption of a healthier lifestyle and better management. Family support is an effort given to family members both morally and materially in the form of motivation, advice, information, and real assistance. Family support can be obtained from family members (husband, wife, children and relatives), close friends or relations (Karunia, 2016). According to Yani (2019), family support is a process that occurs throughout human life; support is given at every cycle of life development. The support provided by the family can make family members able to function with various intelligences and senses, so as to improve family health and adaptation. According to Yani

(2019), there are four types of family support, which are:

- a. Emotional Support. Family as a safe and peaceful place for rest and recovery and helps emotional mastery. This form of support makes individuals feel comfortable, confident, accepted by family members in the form of expressions of empathy, care, attention, love, trust, security, and always accompanying patients in treatment. This support is very important in dealing with situations that are considered uncontrolled.
- b. Appreciation Support. The family acts as feedback, guiding and mediating the solving of the identity validators of family members. This dimension occurs through the expression of a positive reception with the people around him, an encouragement or a statement of agreement with the ideas or feelings of the individual. This support makes a person feel valuable, competent, and valued. Appreciation support is also a form of effective family function that can improve psychosocial status in sick families. Through this support, individuals will receive recognition for their abilities and expertise.
- c. Instrumental Support. Instrumental support (equipment or facilities) that can be received by sick family members involves providing facilities to help patients carry out appropriate treatment which includes direct assistance (money, opportunities, time, etc.). This form of support can reduce stress because individuals can directly solve problems related to material.
- d. Information Support. Information support is a form of support that includes providing information, facilities or feedback about individual situations and conditions. This support is in the form of providing advice by reminding individuals to carry out treatment or care that has been recommended by health workers (about daily diet, physical activity or physical exercise, taking medication, and control), reminding about behavior that worsen the individual's illness as well as providing explanations regarding the examination and treatment from the doctor or explaining things that are not clear about the disease suffered by the individual.
- e. Pender's and case-based health promotion model

The results of this study found that the Pender's and case-based health promotion model are recommended to increase medication compliance in hypertensive patients. Several studies have

shown that the Pender's health promotion model has an effect on medication compliance in several types of diseases (Utami, 2017; Berwulo *et al* 2020; Koa 2019; Heatubun *et al* 2019).

The Pender's health promotion model is often referred to as the Health Promotion Model (HPM). HPM is a nursing theory that explains the interaction of environmental factors and individual perceptions that can affect health behavior. HPM theory consists of three components, namely individual's experience and characteristics, behavior based on health promotion attitude and cognitive and behavior. The three components contained in the HPM theory can influence individual health behavior (Pender, 2011).

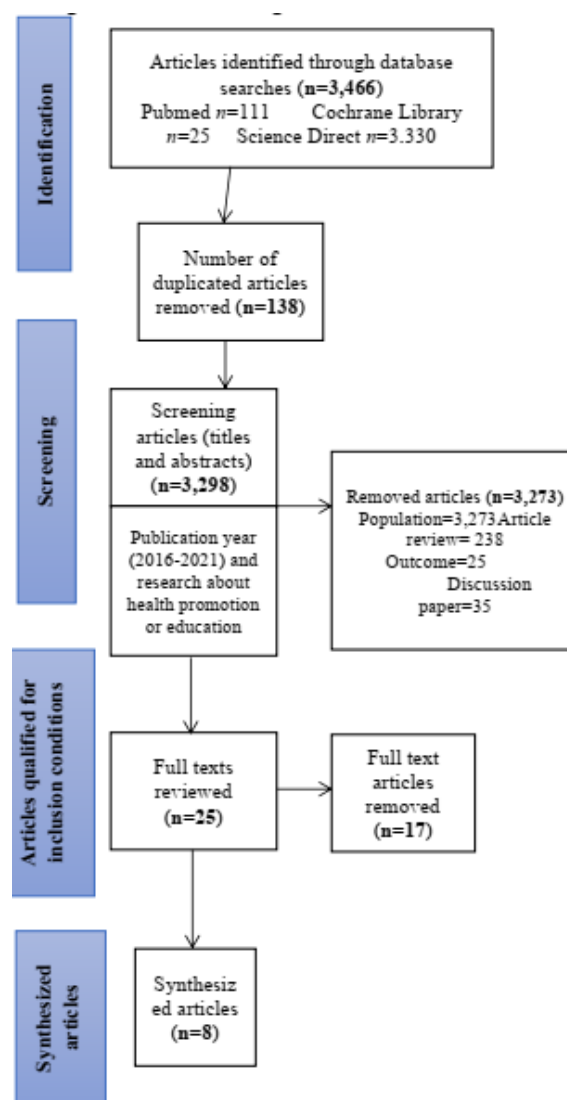


Figure 1. PRISMA Diagram

Table 1. Article review results

Author (year)	Aim	Study population	Design	Result
Miriam, A. A., Habibi, Z., Khosravi, A., Sadeghi, M., & Eghbali-Babadi, M. (2019).	To find out the effect of multifaceted intervention on blood pressure (BP) control and medication adherence (MA) in patients with uncontrolled hypertension	72 patients in emergency room of Al-Zahra Ishafan Hospital, Iran	Randomized controlled clinical trial study selected through convenience sampling method	Multifaceted intervention being studied with promoting medication compliance can reduce systolic and diastolic blood pressure
Maslakpak, M. H., Rezaei, B., & Parizad, N. (2018)	To evaluate the effectiveness of involvement in the patient's family education about hypertension management	100 patients in Sayyed-Al Shohada Urmia Hospital	Single-blind randomized, parallel group controlled trial	Family involvement in patient education has an effect of increasing medication compliance
Gorbani, F., Mahmoodi, H., Sarbakhsh, P., & Shaghaghi, A. (2020).	To find out the predictive factors of compliance to hypertension control therapy and lifestyle recommendations in samples of Iranian patients based on the construction of the Pender's health promotion model	380 hypertensive patients in Bagheralolom Hospital, and cardiologists' office in Ahar City, Northwest Iran	A cross-sectional study The questionnaire consisted of 30 items with 6 domains which are consistent with the construction of the Pender's model	The Pender's health promotion model can be applied as a theoretical framework to identify the main determinants of compliance to hypertension control recommendations
Goudarzi, H., Barati, M., Bashirian, S., & Moeini, B. (2020).	To find out the factors related to medication compliance in hypertensive patients based on the Pender's Health Promotion Model (HPM).	463 hypertensive patients in Borujerd, Lorestan, Iran	Cross-sectional study Data collection tool was in the form of a questionnaire consisting of three parts equipped with a self-report method	Educational program design using HPM is recommended to improve medication compliance in hypertensive patients

Abughosh, S. M., Wang, X., Serna, O., Henges, C., Masilami, S., James Essien, E., ... & Fleming, M. (2016).	To examine the effect of a brief telephone intervention by pharmacist in identifying barriers in compliance and increase of medication compliance	87 patients in Texas, USA	Retrospective cohort study	A brief intervention via telephone with pharmacist resulted in significantly better medication compliance 6 months after the intervention and a lower rate of drug discontinuation.
Li, T., Ding, W., Li, X., & Lin, A. (2019).	To evaluate the use of mHealth technology to improve blood pressure and self-management behavior in people with hypertension and prehypertension	492 smartphone users in Baiyun and Dadong Guangzhou districts	Cluster randomized controlled trial	Patients with hypertension, the effect of WeChat management mode is not only based on health-related knowledge but also on self-efficacy and medication compliance
Shen, Y., Wang, T., Gao, M., Zhu, X., Zhang, X., He, C., ... & Sun, X. (2019).	To evaluate the effectiveness of the combination of low-cost reminder package (LCRP) and health education to improve medication compliance in hypertensive patients	596 hypertensive patients in Shunyi district, Beijing	The first health education was given after completing the basic questionnaire at the start of the intervention	LCRP combined with case-based health education can significantly improve medication compliance in hypertensive patients
Varleta, P., Acevedo, M., Akel, C., Salinas, C., Navarrete, C., Garcia, A., ... & Romero, K. (2017).	To analyze the effect of education using mobile phone text messaging on compliance to taking antihypertensive drugs	314 hypertensive patients at a primary care center in Santiago, Chili	Patients randomly received or did not receive text messages related to ADA and healthy lifestyle. Compliance was assessed using a four-item questionnaire on the Morisky-Green-Levine scale	This approach can be an effective tool to address drug non-compliance in the community

Pender's health promotion uses counseling media in the form of booklets containing various letters, the contents are concise, quite interesting, the material is limited according to the information to be conveyed. Pender's health promotion materials consist of definition, how to use, benefits, preparation for administration, terms of use, rules and types, level of taking compliance and motivation to comply. Pender's health promotion is carried out individually with questions and answers, time allocation is 30-40 minutes and is given a Comply Booklet, then respondents are encouraged to make repeat visits after 2 and 4 weeks. The implementation of the post test is as follows when the respondent makes a repeat visit after 2 and 4 weeks to take the drugs, the researcher records the remaining drugs (Utami 2017).

2. mHealth-based health promotion

The results of this study indicated that mHealth-based health promotion method, such as telephones, WeChat applications and mobile phone text messaging can increase compliance to antihypertensive medication. In recent years there has been a rapid evolution in information technology for use in health promotion and disease prevention. The use of technology allows for the spread of information in an effort to improve health services (Cormick *et al.*, 2012; Evans *et al.*, 2012).

The implementation of cellular technology in healthcare has attracted widespread attention which is commonly referred to as cellular or mobile health (m-Health). mHealth is defined as a health intervention that uses mobile technology, such as mobile phones, tablet PCs, and so on. mHealth application has been expanded from being initially used only as a support for health services (medical records, administration of health facility services) to becoming a disease prevention intervention tool, health promotion media, diagnosis, and health monitoring. According to an FDA (Food and Drug Administration) report, 50% of the more than 3.4 billion mobile device users globally downloaded mobile health apps in 2018 (Kemp S. Digital 2019; Cho *et al* 2018). The Global Observatory for eHealth defined mHealth or mobile health as medical and public health practices supported by mobile devices, such as cell phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices. The scope of this mobile health application is an application that can be used for various purposes, such as disease prevention and a healthy lifestyle, finding health workers, health diagnosis, filling prescriptions, health compliance, education and management of chronic diseases, such as

diabetes, and others (WHO, 2011; Silva *et al* 2015).

The use of mobile phones in health services is called m-Health (Lund *et al.*, 2012). M-Health is defined as remote medical and public health practice using information technology and telecommunications, including telephone, computer, video transmission, and image transmission (Federation, 2013; Lori *et al.*, 2013). mHealth applications include communicating health information, medication compliance, and visiting schedule reminders (Lau *et al.*, 2014).

Research mentioned that the use of the m-Health application resulted in increased knowledge about pregnancy care, influenced attitude and changes in behavior so as to improve health. This application is used to help find information about the complaints they feel and treatments (Parker *et al.*, 2012).

Research from Sari and Besral (2020) showed that the consistent and long-term (at least 1 year) use of mHealth as well as personalized text messages can significantly change the health behavior of individuals with non-communicable diseases. It was suggested that mHealth research based on the theory of health behavior change can be a good approach for behavioral intervention and can be applied to public health promotion. For mHealth interventions to be successful, it is necessary to consider appropriate behavioral theories and methods of delivering information relevant to the patient's condition and type of illness.

Research from Puspitasaria & Indrianingrum (2020) and Siregar (2020) showed that m-health application as an Android-based health education media to convey information can increase knowledge and behavioral change for the better.

According to Sarwono (2017), behavior and environment are influenced through health promotion programs, educational diagnosis and organizations in health promotion related to factors that influence the behavior and living conditions of people who are at risk for health problems and of people who can influence environmental conditions.

Green stated that health education has an important role in changing and strengthening the three groups of factors so that they are in line with the objectives of the activity so as to cause positive behavior from the community towards the program and towards health in general. Factors outside of behavior that can affect the achievement of individual or community health, for example difficulty of reaching health care facilities, high transportation costs, medical costs, policies and regulations and so on (Sarwono, 2017).

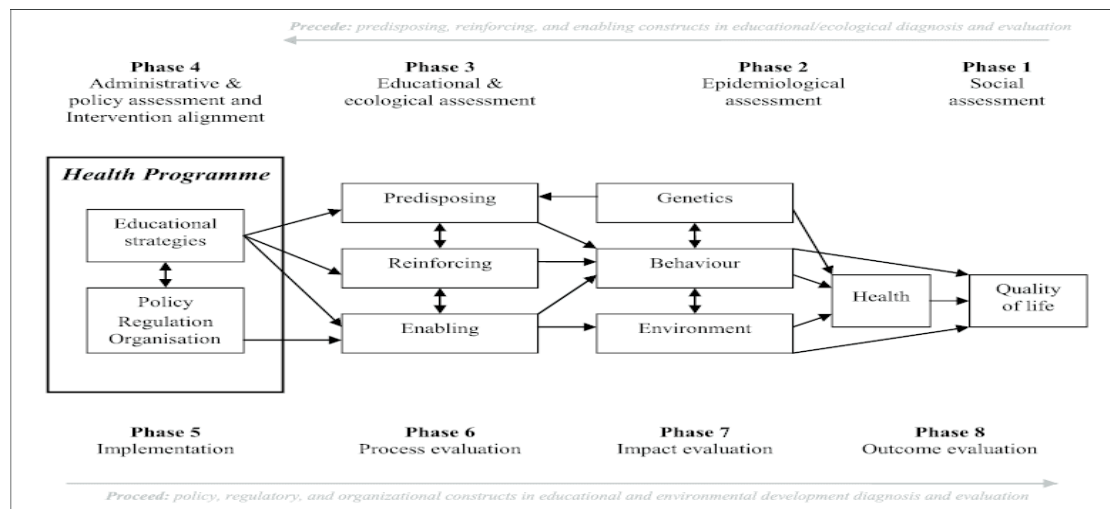


Figure 2. Precede-Proceed Theory

According to the theory of Lawrence Green (1980), human behavior in terms of health is influenced by two main factors, namely behavioral factors (behavior causes) and factors outside of behavior (non-behavior causes). The behavior itself is determined or formed by three factors: (Harahap 2017):

1. Predisposing factors, which are manifested in knowledge, attitude, beliefs, faith and values.
2. Enabling factors, which are manifested in physical environment, availability or unavailability of health facilities, for example, community health centers, medicine, contraceptives, toilets and so on.
3. Reinforcing factors, which are manifested in the attitude and behavior of health workers or other officers who are a reference group of community behavior.

From the description above, it can be concluded that the behavior of a person or community regarding health is determined by the knowledge, attitude, beliefs, traditions, and so on of the person or society concerned. In addition, the availability of facilities, attitude and behavior of health workers also support and strengthen the formation of behavior.

A person who does not want to immunize his child at the *posyandu* (Integrated Service Post) can be caused by that person does not or does not know the benefits of immunization for his child (predisposing factors). It could also be because his house is far from the *posyandu* or the community health centers for his child to be immunized (enabling factors). Another reason, perhaps because health workers or other community leaders around him have never immunized their children (reinforcing factors) (Harahap 2017).

The form of behavioral change varies greatly, according to the concepts used by experts in their understanding of behavior. According to WHO in Notoatmodjo (2007), behavioral changes are grouped into three (Harahap 2017):

1. Natural Change. Human behavior is always changing. Some of these changes are due to natural events. If in the surrounding community there is a change in the physical or socio-cultural and economic environment, the members of the community in it will also experience changes.
2. Planned Change. This happened because it was planned by the subject himself. For example, Pak Anwar was a heavy smoker. Because at one point he had a very annoying cough, so he decided to reduce smoking little by little, and finally he stopped smoking.
3. Readiness to Change. When an innovation or development program occurs in the community, what often happens is that some people are very quick to accept the innovation or change (behavioral change), and some people are very slow to accept the innovation or change. This is because everyone has a different readiness to change. Everyone in society has a different readiness to change even though the conditions are the same.

The above factors are influenced by counseling factors and policy, regulatory as well as organizational factors. These factors fall into the scope of health promotion. Environmental factors are physical, biological and socio-cultural factors that can directly or indirectly affect health status. The behavior of a person or community regarding health is determined by the knowledge, attitude, beliefs, traditions and so on of the person or community concerned. In addition, the availability

of facilities, attitude and behavior of health workers will also support the formation of behavior (Green, 2015).

5. Conclusions and suggestions

The conclusion in this study is health promotion models that can affect medication compliance in hypertensive patients are family support, Pender's and case-based health promotion model as well as health promotion based on mHealth. Based on the results of this study, it is recommended that health promotion efforts should be carried out in order to improve medication compliance in hypertensive patients, such as family support, health education and utilizing mhealth, such as telephone, text messages, whatsapp and others.

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