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Модель здорового поведения, основанная на транскультурной теории по оказанию сестринской медицинской помощи для профилактики сердечно-сосудистых осложнений у пациентов с артериальной гипертензией

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Резюме

Актуальность. Артериальная гипертензия (АГ) — «молчаливый убийца», и в отсутствие должного лечения может приводить к сердечно-сосудистыми осложнениям (ССО) вплоть до летального исхода. Несмотря на развитие превентивных подходов, поведение пациентов с АГ в отношении профилактики ССО остается неоптимальным. **Цель исследования** — разработать модель здорового поведения на основании транскультурной теории по оказанию сестринской медицинской помощи для профилактики ССО у пациентов с АГ. **Материалы и методы.** Данное исследование является кросс-секционным. Всего было включено 130 участников, соответствовавших критериям включения/исключения. Предлагаемая модель включает 7 переменных, а именно: факторы, связанные с пациентом; культурные факторы, факторы, связанные со службой оказания медицинской помощи; сопровождение, переговоры, реструктурирование и профилактика ССО. Данные были собраны с помощью опросника, который ранее был валидирован и продемонстрировал надежные результаты. Анализ результатов был проведен с использованием метода моделирования, «метода частичных наименьших квадратов» (the Structural Equation Modeling — Partial Least Square, SEM-PLS). **Результаты.** По результатам критерия R-квадрата, вклад факторов, связанных с пациентом, культурных факторов и факторов, связанных со службой оказания медицинской помощи, составил 50,4 % в сопровождение, 34,7 % — в переговоры, и 23,3 % — в реструктурирование. Более того, вклад сопровождения, переговоров и реструктурирования в профилактику ССО у пациентов с АГ составил 58,7 %. Согласно результатам Q2 теста прогностической значимости показатель составил > 0. **Выводы.** Факторы, связанные с пациентом, культурные факторы, факторы, связанные со службой оказания медицинской помощи, влияют на показатели сопровождения, переговоров и реструктурирования при применении мер по профилактике ССО у пациентов с АГ. Модель здорового поведения, разработанная

в этом исследовании, обладает хорошей прогностической значимостью, что свидетельствует о том, что эта модель является перспективной с точки зрения преодоления бремени АГ и внедрения мер по профилактике ССО.

Ключевые слова: здоровое поведение, артериальная гипертензия, транскультурная теория по оказанию сестринской медицинской помощи, сердечно-сосудистые заболевания

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Health behavior model based on transcultural nursing for preventing cardiovascular complications in hypertension patients in the community

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Abstract

Background. Hypertension is a silent killer which, if not treated properly, can result in cardiovascular complications, including lethal events. Many efforts have been made, but the behavior of hypertensive patients to prevent cardiovascular complications in society continues to be a challenge. **Objective.** This study aims to develop a health behavior framework model based on transcultural nursing for preventing cardiovascular complications in hypertensive patients in the community. **Method.** This is a cross-sectional study. A total of 130 respondents who met the inclusion criteria were involved in this research. The development model is proposed with seven variables, namely patient factors, cultural factors, health services factors, maintenance, negotiation, restructuring, and prevention of cardiovascular complications. Data was collected using a questionnaire that had been tested for validity and reliability. Data analysis was carried out using the Structural Equation Modeling - Partial Least Square (SEM-PLS) technique. **Results.** Based on the R-Sqaure test, it was found that patient factors, cultural factors and health service factors contributed 50,4% to maintenance, 34,7% to negotiation, 23,3% to restructuring. Furthermore, maintenance, negotiation, and restructuring contributed 58,7% to prevention of cardiovascular complications in hypertensive patients in the community. The results of the Q2 predictive relevance test (Q-Square) found that the Q2 predictive relevance value was > 0. **Conclusion.** Patient factors, cultural factors, and health service factors influence hypertensive patients to perform maintenance, negotiation, and restructuring in implementing preventive cardiovascular measures in the community. The health behavior model that was successfully built in this study has a good predictive relevance value, meaning that this model is relevant and

promising to be applied in overcoming the problems of hypertensive patients in carrying out preventive measures for cardiovascular complications in the community.

Keywords: health behavior model, hypertension, transcultural nursing, cardiovascular disease

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Introduction

Hypertension is a condition where high blood pressure exceeds normal values reaching > 140/90 mmHg [1]. Hypertension that is not treated properly results in cardiovascular complications such as coronary heart disease, stroke, heart failure and other heart diseases which are the main causes of morbidity and mortality worldwide [2]. Risk factors for cardiovascular complications in hypertensive patients are behavioral factors [3]. Unhealthy behavior is a major risk factor for cardiovascular complications and organ damage in hypertensive patients [4]. Cardiovascular complications are the consequence of behavior that does not met disease management guidelines, and socio-cultural determinants are reported as one of the factors that influence patient behavior towards health measures in the community [5].

The World Health Organization (WHO) estimates that 1,13 billion people worldwide suffer from hypertension [6]. It is estimated that 17,9 million people die from cardiovascular disease and as many as 85 % of these deaths are caused by heart attacks and strokes [7]. Five-year national research in Indonesia found that prevalence of hypertension in Indonesia had increased from 25,8 % in 2013 to 34,1 % in 2018. The prevalence of stroke has increased from 7 % to 10,9 %, and the prevalence of heart disease has reached 1,5 % [8]. East Nusa Tenggara (NTT) Province is one of the provinces in eastern Indonesia which has a fairly high prevalence of hypertension. The highest prevalence was found in Kupang City, namely 8,0 %. Even though the prevalence of hypertension in the region does not exceed the national prevalence (27,7 %:34,1 %), the behavior of hypertensive patients in the local area has a very high risk of cardiovascular complications. The results of Indonesian five-year national health research in 2018 found that the rate of not taking medication in hypertensive patients in the region reached 14,7 %, at national level — 13,3 %, and the rate of not measuring blood pressure was 48,1 % in the region, and 41,0 % at the national level. The prevalence of stroke is 6,06 % and heart disease 0,72 % [9]. Consuming regional alcohol drinks (tuak/moke/sopi/arak) is a lifestyle of some local people which is associated with increased blood pressure and complications [10]. Food consumption patterns were also found to be related to coronary heart disease in the local area [11].

Health behavior and socio-cultural determinants are external factors that can be modified to influence patient awareness of the cardiovascular risk [5]. Prevention of cardiovascular complications in hypertensive patients can be done by modifying good behavior, namely regular health checks, regular medication, and modification of healthy behavior such as diet, physical activity, avoiding stress, smoking and alcohol [3, 12]. Improving the behavior of measures to prevent cardiovascular complications in hypertensive patients still requires a conceptual framework model that continues to be developed so that it can then be utilized as needed. This study aims to develop a new, comprehensive conceptual framework model built from three existing theoretical reviews, namely the transcultural nursing theory by Leininger [13], the PRECEDE-PROCEED theory by Lawrence Green & Kreuter [14], and health belief model theory by Hochbaum & Rosenstock [15].

Transcultural nursing theory is a culture-based nursing theory model that defines nursing with a culture-based approach as essential for the treatment and recovery of health problems in society. According to this theory, behavior and health problems in society are influenced by various cultural dimensions, namely level of education, economics, politics and law, cultural values and lifestyle, kinship and social, religion, and technology [13], and to produce healthy behavior there are three types of efforts that must be made in culture-based care, namely culture care maintenance, culture care negotiation, and culture care restructuring [13, 16] that require theoretical basis. We tried to build this basis for consideration by using the health belief model approach according to Hochbaum & Rosenstock, namely based on perceived susceptibility, perceived severity, perceived benefit, perceived barriers, and self-efficacy [15]. The results of previous studies found that the health belief model construct was significantly effective in increasing the adoption of cardiovascular disease prevention behavior in hypertensive patients [17]. We also realize that apart from cultural dimensions, there are other factors that can also influence the behavior of hypertensive patients in society, including predisposing factors which generally originate from the individual, namely knowledge, beliefs, values, attitudes, etc.

These include enabling factors, namely the availability of health resources, accessibility of health facilities, health laws and regulations, health-related skills, and reinforcing factors, namely the support of family, peers, teachers, health service providers, community leaders, or decision makers by Lawrence Green & Kreuter [18, 19]. Existing studies have found that the level of knowledge, socio-economic status, social support from family, peers, health workers, and hypertension management in primary health facilities can influence hypertension control measures in the community [20–24].

The **aim of this research** is to develop a new health behavior model based on transcultural nursing theory for preventing cardiovascular complications in hypertensive patients in the community.

Material and methods

Research design

The design of this research is cross-sectional.

Study participants

Participants in this study were hypertensive patients in the Kupang City area, East Nusa Tenggara Pro-vince, in eastern Indonesia. The estimated sample size was calculated using rough estimate, namely minimum 5–10 respondents per parameter. Therefore, the sample size in this study was 5 × 26 parameters, namely 130 respondents. A total of 130 subjects were recruited using non-probability sampling, the purposive sampling method. They met the inclusion criteria, namely having hypertension diagnosed by a doctor, aged ≥ 45 years, able to read and write, willing to participate and signing an informed consent. Hypertensive patients who have experienced one type of cardiovascular complication, decreased cognitive function, psychosocial problems, and do not permanently reside in the local area were not included in this study**.**

Variables

The development of this model involves six independent variables, namely patient factors (X1), cultural factors (X2), health service factors (X3), maintenance (X4), negotiation (X5), and restructuring (X6), and one dependent variable, namely measures to prevent cardiovascular complications (Y1). Each variable has its own sub-variables, namely:

1. Patient factors (X1): age (X1.1), gender (X1.2), occupation (X1.3), knowledge (X1.4), beliefs (X1.5), and attitude (X1. 6).

2. Cultural factors (X2): patient education level (X2.1), family economic status (X2.2), political and legal regulations (X2.3), cultural values (X2.4), kinship (X2.5), religious and spiritual (X2.6), and utilization of technology X2.7).

3. Health service factors (X3): availability of health facilities (X3.1), affordability of health facilities (X3.2), health facility policies (X3.3), and the role of community nurses (X3.4).

4. Maintenance (X4) based on a culture that perceived benefits (X4.1).

5. Negotiation (X5) based on perceived obstacles (X5.1) and perceived vulnerabilities (X5.2).

6. Restructuring (X6) based on perceived severity (X6.1) and self-efficacy (X6.2).

7. Prevention of cardiovascular complications (Y1) namely: health check-ups (Y1.1), taking antihypertensive drugs, (Y1.2), healthy lifestyle (Y1.3), and independent self care (Y1.4).

The sub-variables developed in this study were built from various indicators in the transcultural nursing theory or sunrise model by Leininger [13], the PRECEDE-PROCEED theory by Lawrence Green & Kreuter [25], the health belief model theory by Hochbaum & Rosenstock [15], and the program to prevent cardiovascular complications in hypertensive patients by WHO (2007) [3, 26].

Instruments and data collection

The research instrument was a questionnaire that was developed and has undergone validity and reliability tests. Literature search was implemented to compile the questionnaire for 7 variables in this development model [10, 11, 13, 15, 25, 27–34]. The questionnaire included closed questions with the answer choices “yes” and “no”, closed questions with the four-choice Likert scale, namely “always”, “sometimes”, “rarely”, “never”, and closed statements with five answer choices “strongly agree”, “agree”, “less agree”, “disagree”, “strongly disagree”. All answers were calculated and several categories were defined such as “good, enough, less” or “easy, moderate, difficult” or “high, moderate, low” or “appropriate, sufficient, insufficient” or “optimal, acceptable, inadequate” or other categories. These categories were included in the further analysis.

The validity test was carried out using the Pearson test with a significance value of 0,05. The instrument is considered valid if the test result of the calculated r value is > r table, and invalid if the test result of the calculated r value is < r table. The reliability test was carried out using the Cronbach’s alpha test, which is reliable if calculated r > r table 5% [35]. A total of 26 hypertensive patients who were not among the respondents in this study were involved in filling out questionnaires for the validity and reliability testing. Analysis (SSPS 20 software) demonstrated that the questionnaire is a valid tool with p-value < 0,05 and the calculated r

was greater than the r table, namely 0,373, and reliable with the Cronbach's Alpha value > 0,388.

Data collection was carried out in September — November 2022. Data were collected from respondents who met the inclusion criteria. Respondents received explanation of the purpose, benefits and process of data collection. Respondents who were willing to be involved in this study signed informed consent. Respondents filled out the questionnaire by answering each question according to the instructions, and the completed questionnaire was validated, cross-checked for completeness, edited, coded, and tabulated for further statistical analysis.

Data analysis

We performed descriptive analysis of the data, and the model was analyzed inferentially using the Structural Equation Modeling — Partial Least Square (SEM-PLS) approach using Smart-PLS 4.0 software. Inferential statistical analysis with SEM-PLS includes evaluation of the outer model, inner model, and hypothesis testing, as follows:

1. *Outer model evaluation* aims to explain the relationship between latent variables and their indicators. Evaluation of the outer model in this study includes convergent validity test, discriminant validity test, and construct reliability test. Convergent validity test is implemented to determine that the measuring indicators or sub-variables of a latent variable have a high correlation. The convergent validity test considers the loading factor and average variance extracted (AVE) values, where each indicator is declared valid for its latent variable if it has a loading factor and AVE ≥ 0,5 [36]. The discriminant validity test determines that the indicators measuring each latent variable do not have a high correlation with other latent variables. In our study, the discriminant validity test was assessed based on the heterotrait-monotrait ratio (HTMT) value, namely < 0,90 (Henseler et al. (2015) [36]. Construct reliability test determines the accuracy, consistency and precision of indicators in measuring latent variables. The construct reliability test was carried out using the Dillon-Goldstein's method, namely the Cronbach alpha and composite reliability tests, where indicators are considered reliable if Cronbach alpha value is > 0,6 and a composite reliability value is > 0,7 [36].

2. *Inner model evaluation* or structural model evaluation determines causality or cause and effect relationships between latent variables in research. Evaluation of the inner model is carried out by carrying out the R^2 (R-square) or goodness of fit model test, and the Q^2 (Q-square) predictive relevance test. The R^2 model goodness fit test was carried out to predict the contribution of the independent variable to the dependent variable. The Predictive relevance Q^2 test is carried out to measure how good the observation value produced by the model is with a Q^2 value > 0 indicating that the model has a predictive relevance value, while a Q^2 value < 0 indicates lack of predictive relevance [36].

3. Hypothesis testing with a bootstrapping process using the t-statistic test. Hypothesis testing defines whether there is a relationship between the influence of exogenous variables on endogenous variables. The hypothesis test is assessed based on the t-statistic value and p-value, where the exogenous variable is declared to have an effect on the endogenous variable if the t-statistic is > 1,96 and the p-value is < 0,05 [36].

Ethical issues

This research has passed the ethical review by the Health Research Ethics Commission, Faculty of Nursing, Airlangga University (Indonesia) (Ethical approval number No 2640-KEPK). The research was carried out considering ethical issues including anonymity, confidentiality, beneficence and maleficence.

Results

Variable characteristics

Table 1 shows that the majority of patients are 55–65 years old (43,1 %), female (71,5 %), not working (46,9 %), good level of hypertension awareness (74,6 %), high beliefs (84,6 %) and positive attitude of hypertension and complications (76,2 %). Respondents have a secondary education level (44,6 %), family economic status < minimum wage standard (60,8 %), supportive perceptions of political and legal regulations (88,5 %), have moderate cultural values (55,4 %), have good kinship (86,9 %), have sufficient religious and spiritual values (53,1 %), and have poor use of technology for health (53,8 %). The majority of health facilities in the area where respondents live is available (87,7 %) and easy to afford (100 %), perceived health facility policies are good (71,5 %), and the role of community nurses was good (81,5 %). The culture that perceived benefits is mostly good (70,0 %), perceived obstacles are moderate (54,6 %), perceived vulnerabilities are moderate (48,5 %), perceived disease severity is moderate (55,4 %), self-efficacy is high (56,2 %). Considering prevention of cardiovascular complications, the majority of respondents reported insufficient health check-ups (57,7 %), but less than half of respondents reported appropriate intake of antihypertensive drugs (46,2 %), appropriate healthy lifestyle (43,1 %), while optimal independent self-care in preventing complications cardiovascular was reported by 53,1 %.

Table 1

CHARACTERISTICS OF THE STUDIED VARIABLES (N = 130)

No	Latent Variables	Subvariable	Category	f	%
1	Patient Factors (X1)	Age (X1.1)	35–44 years old	14	10,8
			45–54 years old	31	23,8
			55–65 years old	56	43,1
			66–74 years old	23	17,7
			75–90 years old	6	4,6
		Gender (X1.2)	Male	37	28,5
			Female	93	71,5
		Occupation (X1.3)	Employees in government institutions	39	30,0
			Self-employed	30	23,1
			No specific occupation	61	46,9
		Knowledge (X1.4)	Good	97	74,6
			Moderate	9	6,9
			Low	24	18,5
		Beliefs (X1.5)	High	110	84,6
			Moderate	8	6,2
			Low	12	9,2
		Attitude (X1.6)	Positive	99	76,2
			Negative	31	23,8
2	Cultural Factors (X2)	Patient education level (X2.1)	Elementary education level	44	33,8
			Secondary education level	58	44,6
			Higher education level	28	21,5
		Family economic status (X2.2	> minimum wage standard	51	39,2
			< minimum wage standard	79	60,8
		Political and legal regulations (X2.3)	Supportive	115	88,5
			Neutral	15	11,5
			Restrictive	0	0
		Culture value (X2.4)	Good	46	35,4
			Moderate	72	55,4
			Low	12	9,2
		Kinship (X2.5)	Good	113	86,9
			Moderate	6	4,6
			Low	11	8,5

Continuation of the table 1

No	Latent Variables	Subvariable	Category	f	%
2	Cultural Factors (X2)	Religious and spiritual values (X2.6)	Good	47	36,2
			Sufficient	69	53,1
			Poor	14	10,8
		Utilization of technology (X2.7)	Good	0	0
			Moderate	60	46,2
			Poor	70	53,8
3	Health Service factor (X3)	Availability of health facilities (X3.1)	Available	114	87,7
			Partially Available	16	12,3
			Unavailable	0	0
		Affordability of health facilities (X3.2)	Easy	130	100,0
			Moderate	0	0
			Difficult	0	0
		Health facilities Policy (X3.3)	Good	93	71,5
			Moderate	15	11,5
			Weak	22	16,9
		The role of community nurses (X3.4)	Good	106	81,5
			Moderate	14	10,8
			Weak	10	7,7
4	Maintenance (X4)	A culture that perceived benefits (X4.1)	Good	91	70,0
			Fair	28	21,5
			Poor	11	8,5
5	Negotiation (X5)	Perceived obstacles (X5.1)	High	44	33,8
			Moderate	71	54,6
			Low	15	11,5
		Perceived vulnerability (X5.2)	High	60	46,2
			Moderate	63	48,5
			Low	7	5,4
6	Restructuring (X6)	Perceived severity (X6.1)	High	30	23,1
			Moderate	72	55,4
			Low	28	21,5
		Self-efficacy (X6.2)	High	73	56,2
			Moderate	18	13,8
			Low	39	30,0
7	Prevention of cardiovascular complications (Y1)	Health check-ups (Y1.1)	Appropriate	20	15,4
			Sufficient	35	26,9
			Insufficient	75	57,7

Continuation of the table 1

No	Latent Variables	Subvariable	Category	f	%
7	Prevention of cardiovascular complications (Y1)	Antihypertensive drugs intake (Y1.2)	Appropriate	60	46,2
			Sufficient	30	23,1
			Insufficient	40	30,8
		Healthy lifestyle (Y1.3)	Appropriate	56	43,1
			Sufficient	55	42,3
			Insufficient	19	14,6
		Independent self-care (Y1.4)	Optimal	69	53,1
			Acceptable	38	29,2
			Inadequate	23	17,7

Outer model evaluation

Based on the convergent validity test (Fig. 1), several indicators or sub-variables were found to be valid for the patient factor latent variable (X1), namely: X1.4 (knowledge), X1.5 (belief), and X1.6 (attitude). Among cultural factors (X2) the valid ones are: X2.3 (political and legal regulations), X2.4 (cultural values), X2.5 (kinship), X2.6 (religious and spiritual values), and X2.7 (utilization of technology). Among health service factors (X3) the valid ones are X3.1 (availability of health facilities), X3.2 (affordability of health facilities), X3.3 (health facility policy), and X3.4 (the role of community nurses). Valid maintenance variable (X4) includes: X4.1 (culture that perceived benefits). Negotiation factors (X5) are X5.1 (perceived obstacles), and X5.2 (perceived vulnerabilities). Restructuring variable (X6) includes X6.1 (perceived severity), and X6.2 (self-efficacy). Factores related to the prevention of cardiovascular complications (Y1) are Y1.1 (health check-ups), Y1.2 (antihypertensive drugs intake), Y1.3 (healthy lifestyle), and Y1.4 (independent self-care).

Based on the discriminant validity test, all variables had an HTMT value < 0,9 (Table 2) which indicates that this research model has good discriminant validity values.

Table 3 shows that variables X1, X2, X3, X6 and Y1 have a cronbach alpha value greater than 0,6 and a composite reliability value greater than 0,7. These results confirm that the indicators in the latent variables X1, X2, X3, X6 and Y1 are considered reliable, while the indicators in the latent variables X4, X5 cannot be defined in statistical tests and may require further development.

Evaluation of inner models

Based on the R-square test (Table 4), patient factors (X1), cultural factors (X2), and health service factors (X3) contributed 50,4% to maintenance factors (X4), 34,7% to negotiation (X5), and 23,3% to restructuring factors. The culture care maintenance (X4), negotiation (X5), and restructuring (X6) contribute 58,7% to preventive cardiovascular measures in hypertensive patients (Y1).

Based on the predictive relevance Q2 (Q-square) test (Table 5), the value of Q2 predictive relevance is > 0 which indicates that the developed model has good predictive relevance or is relevant to be applied in different areas (Fig. 2).

Hypothesis testing

(Table 6.) ***Final model***

Based on the results of various statistical tests (Fig.3), the prevention of cardiovascular complications (Y1) in hypertensive patients are influenced by the maintenance variables (X4), negotiation (X5), and restructuring (X6). The maintenance variable (X4) is influenced by patient factors (X1) and cultural factors (X2). The negotiation (X5) is influenced by patient factors (X1), cultural factors (X2), and health service factors (X3). The restructuring variable (X6) is influenced by patient factors (X1) and cultural factors (X2).

The description of the model (Fig. 4) explains that the prevention of cardiovascular complications in hypertensive patients is influenced by maintenance, negotiation, and restructuring variables. Maintenance is based on culture that perceived benefits by the patient. Negotiation is based on the obstacles felt by the patient. Restructuring is based on the patient's perceived severity and self-efficacy. Maintenance is influenced by patient factors and cultural factors, negotiation is influenced by patient factors, cultural factors, and health service factors, and restructuring is influenced by patient factors and cultural factors. Patient factors con-

Table 2

RESULTS OF DISCRIMINANT VALIDITY TEST WITH HETEROTRAIT-MONOTRAIT RATIO

	X1	X2	X3	X4	X5	X6	Y1
X1							
X2	0,413						
X3	0,733	0,731					
X4	0,583	0,671	0,597				
X5	0,483	0,498	0,596	0,545			
X6	0,491	0,510	0,512	0,493	0,583		
Y1	0,714	0,753	0,838	0,726	0,744	0,727	

Table 3

RESULTS OF CONSTRUCT RELIABILITY TESTS

	Cronbach's alpha	Composite reliability
X1	0,880	0,926
X2	0,843	0,892
X3	0,841	0,892
X6	0,703	0,871
Y1	0,782	0,860

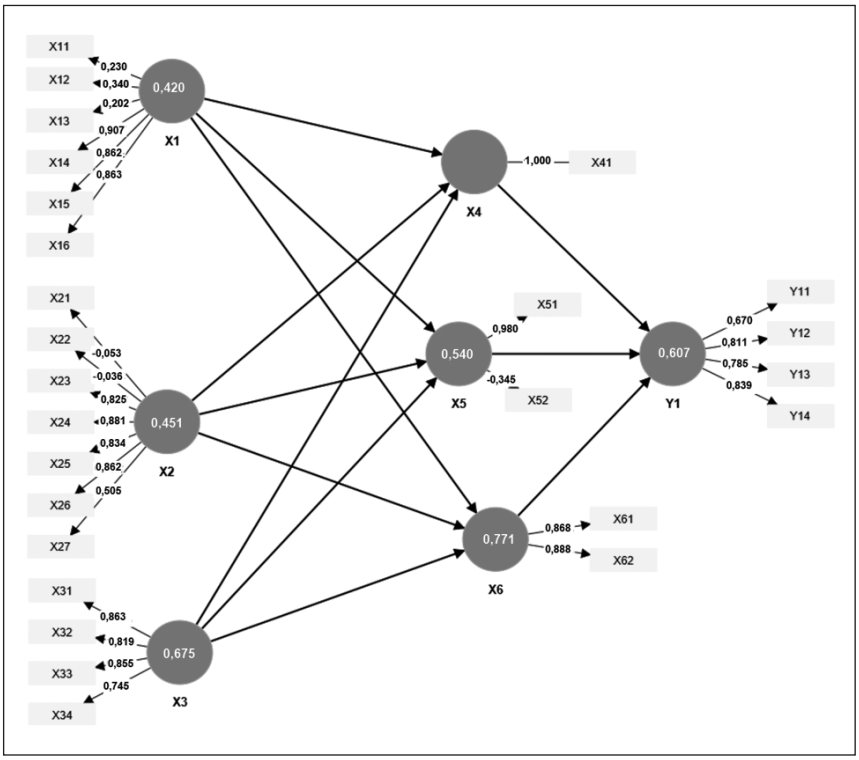

Figure 1. Construct model (outer model) of health behavior model based on transcultural nursing for preventing cardiovascular complications in hypertensive patients in the community

Table 4

R-SQUARE TEST RESULTS

Variable	R-square	R-square adjusted
Maintenance (X4)	0,504	0,492
Negotiation (X5)	0,347	0,332
Restructuring (X6)	0,233	0,214
Prevention of cardiovascular complications (Y1)	0,587	0,578

Table 5

Q-SQUARE TEST RESULTS

Variable	Q^2 predicted	RMSE*	MAE**
Maintenance (X4)	0,483	0,735	0,601
Negotiation (X5)	0,318	0,837	0,644
Restructuring (X6)	0,195	0,911	0,735
Prevention of cardiovascular complications (Y1)	0,517	0,707	0,584

Note: **RMSE (Root Mean Square Error) to measure the average prediction error; ** MAE (Mean Absolute Error) to measure the average absolute difference between prediction and actual data.*

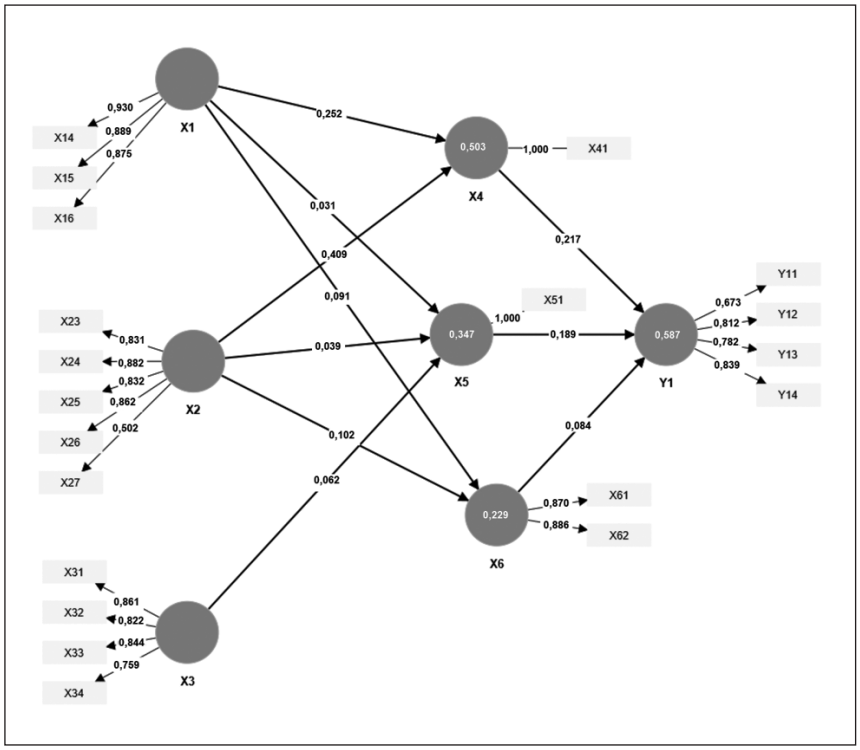

Figure 2. Structural model (inner model) of health behavior model based on transcultural nursing for preventing cardiovascular complications in hypertensive patients in the community

Table 6

HYPOTHESIS TEST OF THE MODEL (INNER MODEL) OF HEALTH BEHAVIOR MODEL BASED ON TRANSCULTURAL NURSING FOR PREVENTING CARDIOVASCULAR COMPLICATIONS IN HYPERTENSIVE PATIENTS IN THE COMMUNITY

Hypothesis	O*	M**	STDEV***	T-statistics	p-value	Status
X1 against X4	0,350	0,351	0,091	3,867	< 0,001	Significant
X1 against X5	–0,183	–0,186	0,084	2,177	0,030	Significant
X1 against X6	0,236	0,234	0,096	2,460	0,014	Significant
X2 against X4	0,456	0,455	0,103	4,431	< 0,001	Significant
X2 against X5	–0,199	–0,199	0,092	2,160	0,031	Significant
X2 against X6	0,256	0,255	0,120	2,125	0,034	Significant
X3 against X4	0,058	0,055	0,113	0,514	0,607	Non-significant
X3 against X5	–0,314	–0,308	0,104	3,003	0,003	Significant
X3 against X6	0,097	0,099	0,131	0,739	0,460	Non-significant
X4 against Y1	0,364	0,365	0,078	4,673	0,000	Significant
X5 against Y1	–0,353	–0,353	0,081	4,403	0,000	Significant
X6 against Y1	0,218	0,221	0,071	3,056	0,002	Significant

Note: **O (Original Sample): the path coefficient value indicates the strength and direction of the direct relationship between variables in the model based on actual data; **M (Mean) is the average of the path coefficients from the bootstrapping process to measure the stability and reliability of the model estimates; *** STDEV (Standard Deviation) indicates the degree of variability of bootstrapping results.*

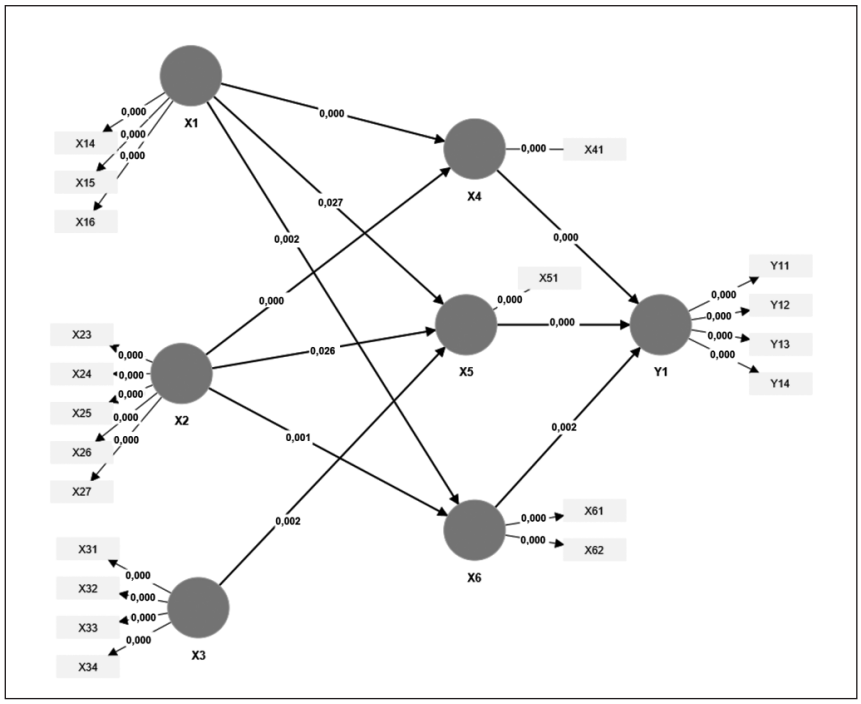

Figure 3. Final health behavior model based on transcultural nursing for preventing cardiovascular complications in hypertension patients in the community

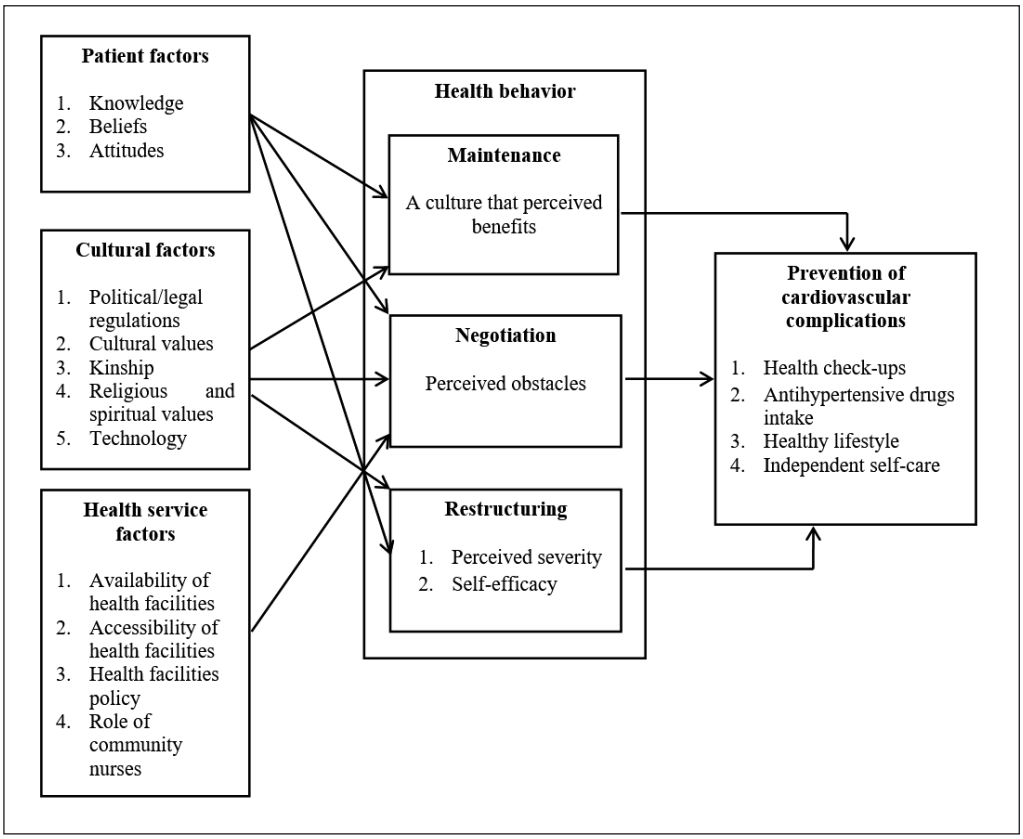

Figure 4. Health behavior model based on transcultural nursing for preventing cardiovascular complications in hypertensive patients in the community

sist of level of knowledge, beliefs and attitudes. Cultural factors consist of political and legal regulations, cultural values, kinship, religion or spiritual life, and use of technology. Service factors include the availability of health facilities, accessibility of health facilities, health facility policies, and the role of community nurses. Measures to prevent cardiovascular complications in patients include health check-ups, antihypertensive drugs intake, healthy lifestyle, and independent self-care.

Discussion

This study found that measures to prevent cardiovascular complications in hypertensive patients were influenced by maintenance, negotiation and restructuring variables. Measures to prevent cardiovascular complications are taken to ensure that hypertensive patients reduce the risk of rapidly developing complications. Prevention of cardiovascular complications is carried out by changing behavior that needs to be maintained or negotiated to be optimized, such as consuming blood pressure lowering medication, healthy diet, physical activity, reducing stress, and avoiding exposure to tobacco to minimize the risk of cardiovascular disease [37]. Dietary behavior including daily salt intake, physical activities (i.e. walking), reducing consumption of fast food can be negotiated to prevent the risk of cardiovascular complications in hypertensive patients [38]. The use of technology as a treatment intervention is a recently introduced option that can be utilized or restructured because it has a positive impact on supporting self-management, especially medication adherence [39]. Group health education and follow-up via text messages, communication media with the use of technology, on average improves hypertensive patients' lifestyle, adherence to medication intake, adherence to a low-salt diet, ability to control stress [40]. The combination of face-to-face consultation interventions and communication via media improves care performance, health service outcomes, provides information to patients increasing chances to improve blood pressure management [41].

The treatment compliance behavior of hypertensive patients in the community is greatly influenced by beliefs, expectations of treatment, and existing social support [42]. Peer kinship support is a factor that influences health behavior which has a positive impact on treatment regimen compliance behavior in hypertensives [22]. Situational influences, family and friend support can also affect changes in the behavior of hypertensive

patients [43]. The involvement of stakeholders with various health regulations can facilitate improving the implementation of handling hypertension patients in the community [44]. Praying within each religion traditions contributes to the healthier behavior in hypertensive patients [45], increases therapy compliance [46] and awareness in disease control due to the positive power of spirituality [47].

Self-efficacy, perceived benefits, and perceived threats have a positive influence on behavior and prevent blood pressure increase. Perceived barriers can have a negative impact on prevention behavior. Perceived vulnerability, perceived seriousness, and cues to action have an indirect positive effect on high blood pressure prevention behavior [48]. The average score of the health belief model construct is significantly effective in increasing the adoption of cardiovascular disease prevention behavior in hypertensive patients [17].

The availability of good primary health facilities considers the availability of health human resources, medical equipment, infrastructure, medicines, referral systems, and community outreach [49]. Accessibility to primary services encourages hypertensive patients to utilize health service facilities to get health care [50], including meeting the need for treatment and regular health check-up [51]. Community nurses as frontline health workers in primary health facilities support the management of hypertensive patients by maintaining persuasive communication, having enough time for patients to ask questions and get advice and recommendations, and being able to take a responsive approach to individual needs according to their ethnic culture and community [52].

Study limitations

We realize that this research has limitations, namely that it only focuses on the behavior or actions of hypertensive patients. This study has not yet evaluated the impact of these behavioral changes on blood pressure in hypertensive patients. However, the results of this study help us to obtain a new framework model to improve the behavior of hypertensive patients in taking measures to prevent cardiovascular complications in the community.

Conclusion

A health behavior model based on transcultural nursing theory for preventing cardiovascular complications in hypertensive patients has been successfully developed. This model shows that measures to prevent cardiovascular complications in hypertension are influenced by maintenance, negotiation and restructuring variables. Maintenance is based on a culture that perceived benefits by the patient, negotiation is based on patient-perceived barriers, and restructuring is based on patient-perceived severity and self-efficacy. Maintenance is influenced by patient factors and cultural factors, negotiation is influenced by patient factors, cultural factors and health service factors, while restructuring is influenced by patient factors and cultural factors. The suggested model can be a promising new framework in overcoming the behavioral problems of hypertensive patients in taking measures to prevent cardiovascular complications in the community.

Конфликт интересов / Conflict of interest
Авторы заявили об отсутствии потенциального конфликта интересов. / The authors declare no conflict of interest.

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Исрафил Исрафил — разработка общей концепции, дизайна, сбор данных, анализ данных и их интерпретация, написание рукописи; Ах Юсуф — координация работы, критическая оценка интеллектуального содержания рукописи, редактирование рукописи; Ферии Эфенди — координация работы, критическая оценка интеллектуального содержания рукописи, редактирование рукописи. Все авторы внесли существенный вклад в разработку концепции и дизайна исследования, в сбор, анализ и интерпретацию данных, а также в подготовку статьи и написание рукописи. Все авторы прочли, одобрили финальную версию и выразили согласие с подачей ее на рассмотрение в журнал, а также утвердили исправленную версию.

Author contribution

Israfil Israfil — research design, data collection, data analysis, results report, and manuscript writing; Ah Yusuf — research supervision, data correction, results report and manuscript correction, review, and manuscript editing; Ferry Efendi — research supervision, data correction, results report and manuscript correction, review, editing, and proof reading of manuscript. All authors participated sufficiently in the conception and design of the work, collection, analysis and interpretation of the data, as well as the writing of the manuscript. All authors have approved the final version of the manuscript and its submission to the journal, as well as the revised version.

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