



Factors Influencing Motivation for Home Blood Pressure Monitor in Elderly with Hypertension

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Abstract

Background: Home blood pressure measurement by hypertensive patients is still very low, even though it is important to help control complications and manage therapy. **Aims:** This study aims to analyze the factors that can influence the motivation of sufferers to measure blood pressure at home. **Method:** This study used an explanatory design, a sample of 30 respondents with a purposive sampling technique. Data was collected using a questionnaire and analyzed using common factor analysis. **Results:** The results of the statistical test obtained the KMO and Barlett Test p values <0.000 and the MSA value > 0.5, which indicates that the variables can be continued for further analysis to determine the most dominant factors by looking at the eigenvalue > 1, with the final results of the five variables (Education, occupation, knowledge, social support, and disease conditions) studied only three variables met the statistical test criteria two variables that did not meet the test, namely Education, and occupation. **Conclusion:** Three main variables influence the motivation of the elderly to measure blood pressure at home, namely knowledge, social support, especially health workers, and disease conditions. It is hoped that health workers will provide advice on the importance of measuring blood pressure at home.

Keywords: Blood Pressure, Elderly, Hypertension, Motivation

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1. BACKGROUND

Hypertension is the leading preventable risk factor for cardiovascular disease (CVD) mortality. Hypertension is also a serious medical condition and can increase the risk of heart, brain, kidney, and other diseases. WHO data in 2018 showed

that almost 1.3 billion people in the world have hypertension, with a classification of less than 1 in 5 people having controlled hypertension.

Hypertension is the leading cause of premature death worldwide, estimated to cause 9.4 million deaths, which is around

23.7% of all deaths and is the most significant percentage (WHO, 2020). Around 25.4% of the adult population in Indonesia aged over 18 years suffered from hypertension in 2013, which increased to 34.1% in 2018, and the elderly in Indonesia experienced hypertension as much as 63.2%. Hypertension sufferers need to know that the higher the blood pressure, the higher the risk of damage to the heart and blood vessels in large organs such as the liver and kidneys. Hypertension sufferers are advised to make efforts to control blood pressure. Uncontrolled blood pressure can cause complications of heart disease, stroke, kidney disease, retinopathy, peripheral vascular disease, and nerve disorders. Previous research results stated that 67% of elderly hypertensive patients do not routinely control their blood pressure (Tukan, 2023).

Routine blood pressure control can help the elderly adhere to therapy programs. The study's results stated that hypertensive patients feel their symptoms have decreased while blood pressure does not necessarily decrease. Therefore, it is necessary to carry out regular blood measurements (Firdaus, Fatmawati, Syabariyah, Yualita, & Yuliani, 2024).

Blood pressure control can be done at home. Re-measuring blood pressure at

home helps narrow blood pressure variability. The habit of controlling blood pressure has a significant impact on uncontrolled hypertension Darussalam (2017).

Measuring blood pressure at home with HBPM (Home Blood Pressure Monitoring) as part of the routine management of hypertensive patients can optimize blood pressure reduction, improve blood pressure control, and reduce target organ damage and the risk of cardiovascular disease (Kario, 2021). Although measuring blood pressure at home is very important, the study's results stated that less than 50% of their patients measure it at home (Takayoshi et al., 2023).

Elderly blood pressure is influenced by several things, including sound knowledge and family support that can motivate the elderly to control their blood pressure (Priyono, 2022). Motivation is the drive to act on a series of human behavioral processes (Apriyanti, 2021). Previous research stated that elderly hypertensive patients with low blood pressure control motivation (70.1%) showed uncontrolled hypertension (Aprilianawati, 2022). The elderly are expected to have high motivation to control blood pressure because motivation is an important determinant of healthy behavior (Maryam

et al., 2018). Based on the description above, researchers are interested in researching factors influencing the motivation to measure blood pressure at home in the elderly with hypertension.

2. METHODS

The research design used is quantitative research with an explanatory research design. The natural population of this study is elderly with hypertension, with 63 respondents, and the research sample is 30 respondents. The sampling technique used is purposive sampling, with the basis of respondents who meet the inclusion criteria. Inclusion criteria in the study: 1) elderly who have > 3 times high blood pressure measurements, 2) elderly who have families, while the exclusion criteria in this study are 1) elderly who are being treated in hospital, 2) elderly who do not come to the integrated health post.

Data collection using questionnaires with interview techniques. The questionnaire has been tested for validity and reliability with two revisions. The analysis test of the research results uses common factor analysis. Data was collected by visiting the elderly integrated health post in the Bandung Village area. The researcher was assisted by three enumerators who had been briefed before data collection. The enumerators were 7th semester nursing students.

3. RESULTS

The results of the analysis of this study have several important findings regarding factors that influence the motivation of blood pressure control at home in elderly with hypertension. The results of the statistical tests from stage to stage can be seen in the following summary:

Table 1. Anti -Image Matrices (Continue to page 308)

	Educati on	Job	Lenght of Ht	Know- ledge-1	Know- ledge-2	Know- ledge-3	Know- ledge-4	Know- ledge-5	Support -1	Support -2	Support -3	Support -4	Support -5	Condi- tion-1	Condi- tion-2	Condi- tion-3	Condi- tion-4	Condi- tion-5	
Anti- image	Education	-.242	-.066	.135	-.073	-.008	-.001	.016	-.016	.000	.001	-.013	.000	-.001	.053	.019	-.017	-.040	-.001
	Job	-.066	.278	-.071	-.057	.069	-.004	.087	-.071	.001	.001	-.050	.000	-.001	.072	-.064	.143	-.090	.016
	Lenght of Ht	.135	-.071	.224	-.031	-.040	-.002	-.058	-.062	.000	5.445E- 006	.016	.000	-.001	.021	.085	-.070	-.021	-.060
	Knowledge-1	-.073	-.057	-.031	.313	-.048	.003	-.021	.023	-.001	-.001	.055	.001	.002	-.066	-.028	-.087	.057	.062
	Knowledge-2	-.008	.069	-.040	-.048	.066	-.004	.083	-.023	.001	.002	-.035	-.001	-.002	-.001	-.046	.062	-.053	.021
	Knowledge-3	-.001	-.004	-.002	.003	-.004	.007	-.003	-.011	-.001	-.002	-.006	.001	.003	.002	.008	-.004	.003	-.006
	Knowledge-4	.016	.087	-.058	-.021	.083	-.003	.212	.031	.001	.002	-.033	-.001	-.002	.024	-.100	.032	-.084	.087
	Knowledge-5	-.016	-.071	-.062	.023	-.023	-.011	.031	.336	.002	.004	-.046	-.001	-.006	-.063	-.062	-.064	.015	.100
	Support-1	.000	.001	.000	-.001	.001	-.001	.001	.002	.000	.000	.001	.000	.000	.000	-.001	.001	-.001	.001
	Support-2	.001	.001	5.445E- 006	-.001	.002	-.002	.002	.004	.000	.001	.002	.000	-.001	-.002	-.004	.002	-.002	.003
	Support-3	-.013	-.050	.016	.055	-.035	-.006	-.033	.046	.001	.002	.045	-.001	-.003	-.031	.008	-.047	.030	.008
	Support-4	.000	.000	.000	.001	-.001	.001	-.001	-.001	.000	.000	-.001	.000	.000	.000	.001	-.001	.001	-.001
	Support-5	-.001	-.001	-.001	.002	-.002	.003	-.002	-.006	.000	-.001	-.003	.000	.002	.002	.004	-.001	.001	-.003
	Condition-1	.053	.072	.021	-.066	-.001	.002	.024	-.063	.000	-.002	-.031	.000	.002	.198	-.001	.042	-.055	-.002
	Condition-2	.019	-.064	.085	-.028	-.046	.008	-.100	-.062	-.001	-.004	.008	.001	.004	-.001	.107	-.043	.003	-.077
	Condition-3	-.017	.143	-.070	-.087	.062	-.004	.032	-.064	.001	.002	-.047	-.001	-.001	.042	-.043	.255	-.041	-.043
	Condition-4	-.040	-.090	-.021	.057	-.053	.003	-.084	.015	-.001	-.002	.030	.001	.001	-.055	.003	-.041	.276	-.046
	Condition-5	-.001	.016	-.060	.062	.021	-.006	.087	.100	.001	.003	.008	-.001	-.003	-.002	-.077	-.043	-.046	.113

	Education	Job	Length of Ht	Knowledge-1	Knowledge-2	Knowledge-3	Knowledge-4	Knowledge-5	Support-1	Support-2	Support-3	Support-4	Support-5	Condition-1	Condition-2	Condition-3	Condition-4	Condition-5
Anti-image Correlation																		
Education	.755a	-.254	.577	-.265	-.060	-.032	.069	-.058	.076	.036	-.125	-.072	-.057	.241	.117	-.069	-.153	-.004
Job	-.254	.425a	-.284	-.192	.510	-.086	.358	-.231	.086	.089	-.448	-.087	-.039	.306	-.369	.536	-.325	.090
Length of Ht	.577	-.284	.374a	-.117	-.324	-.058	-.264	-.227	.057	.000	.158	-.047	-.058	.100	.550	-.293	-.084	-.379
Knowledge-1	-.265	-.192	-.117	.510a	-.334	.055	-.081	.072	-.106	-.091	.465	.106	.071	-.266	-.152	-.308	.194	.332
Knowledge-2	-.060	.510	-.324	-.334	.525a	-.182	.696	-.152	.255	.288	-.634	-.262	-.207	-.007	-.546	.476	-.388	.248
Knowledge-3	-.032	-.086	-.058	.055	-.182	.098a	-.090	-.225	-.990	-.983	-.360	.989	.992	.051	.316	-.093	.069	-.225
Knowledge-4	.069	.358	-.264	-.081	.696	-.090	.262a	.117	.152	.163	-.338	-.154	-.127	.116	-.664	.138	-.345	.561
Knowledge-5	-.058	-.231	-.227	.072	-.152	-.225	.117	.536a	.239	.245	.377	-.239	-.259	-.244	-.328	-.218	.048	.516
Support-1	.076	.086	.057	-.106	.255	-.990	.152	-.239	.265a	.996	.293	-1.000	-.996	-.077	-.350	.111	-.103	.249
Support-2	.036	.089	.000	-.091	.288	-.983	.163	.245	.996	.339a	.268	-.997	-.991	-.116	-.381	.121	-.106	.271
Support-3	-.125	-.448	.158	.465	-.634	-.360	-.338	.377	.293	.268	.584a	-.287	-.287	-.324	.116	-.437	.268	.114
Support-4	-.072	-.087	-.047	.106	-.262	.989	-.154	-.239	-1.000	-.997	-.287	.287a	.995	.082	.356	-.113	.107	-.254
Support-5	-.057	-.039	-.058	.071	-.207	.992	-.127	-.259	-.996	-.991	-.364	.995	.232a	.103	.333	-.072	.067	-.247
Condition-1	.241	.306	.100	-.266	-.007	.051	.116	-.244	-.077	-.116	-.324	.082	.103	.822a	-.008	.187	-.236	-.014
Condition-2	.117	-.369	.550	-.152	-.546	.316	-.664	-.328	-.350	-.381	.116	.356	.333	-.008	.379a	-.262	.020	-.704
Condition-3	-.069	.536	-.293	-.308	.476	-.093	.138	-.218	.111	.121	-.437	-.113	-.072	.187	-.262	.536a	-.156	-.254
Condition-4	-.153	-.325	-.084	.194	-.388	.069	-.345	.048	-.103	-.106	.268	.107	.067	-.236	.020	-.156	.706a	-.260
Condition-5	-.004	.090	-.379	.332	.248	-.225	.561	.516	.249	.271	.114	-.254	-.247	-.014	-.704	-.254	-.260	.456a

From the 18 variables, the MSA value can then be seen. The variable cannot be analyzed further if an MSA value is below 0.5. Of the 18 variables, the smallest MSA value is the Job factor with an MSA value of 0.425, duration of hypertension (0.374), knowledge 3 (0.098), knowledge 4 (0.262), support 1,2, 4, 5, and conditions 2 and 5.

Therefore, the variable is removed from the factor because it has an MSA value <0.5. After the variables with an MSA value <0.5 are removed from the factor, the next step is to retest the remaining eight variables. To review this, it can be seen from the KMO and Barlett Test values and the MSA value.

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	723
Bartlett's Test of Sphericity	Approx. Chi-Square
	87,055
	df
	28
	Sig.
	,000

The output results in the table show that the KMO and Barlett Test values increased from 0.411 to 0.723 with a fixed significance level (0.000). There is no MSA

value less than 0.5. Therefore, the existing variables and samples can be analyzed further.

Tabel 3. Communalities

	Initial	Extraction
Education	1,000	,565
Knowledge-1	1,000	,810
Knowledge-2	1,000	,800
Knowledge-5	1,000	,698
Support-3	1,000	,876
Condition-1	1,000	,733
Condition-3	1,000	,791
Condition-4	1,000	,752

Extraction Method: Principal Component Analysis

In the table above, the Education variable has a figure of 0.565, this shows that around 56.6% of the variance of the respondent's education variable can be explained by the factors formed, the daily

blood pressure check variable has a figure of 0.810, this shows that 81.0% of the variance of the daily blood pressure check variable can be explained by the factors formed.

Tabel 4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,382	42,270	42,270	3,382	42,270	42,270	3,015	37,692	37,692
2	1,567	19,587	61,857	1,567	19,587	61,857	1,583	19,791	57,484
3	1,077	13,459	75,316	1,077	13,459	75,316	1,427	17,832	75,316
4	,617	7,711	83,027						
5	,496	6,198	89,225						
6	,414	5,172	94,397						
7	,292	3,654	98,051						
8	,156	1,949	100,000						

In the table above, it can be seen that only 3 factors were formed, because they have eigenvalues above one (1), namely 3.382, 1.567 and 1.007.

4. DISCUSSION

The results of this study provide important insights into factors that may influence the motivation of home blood pressure control for elderly with hypertension. By analyzing several factors of education, occupation, knowledge, social support, and disease conditions, we have succeeded in identifying the main variables that may influence the motivation of elderly to measure blood pressure at home.

Previous studies have shown that self-monitoring blood pressure is crucial for service providers (Shimbo et al., 2020). Measuring blood pressure at home can help

the effectiveness of treatment (Sharman et al., 2016). (Aprilianawati, 2022), stated that elderly with high self-motivation have an 8.407 times greater chance of controlling their blood pressure.

The common factor analysis in this study shows that the motivation of elderly to check blood pressure at home is strongly influenced by the level of knowledge, social support, and disease conditions. The respondents' knowledge of the importance of routine blood pressure control without waiting for a check-up schedule at a health service encourages the elderly to visit public places such as herbal medicine sellers or health cadres. Individuals with high knowledge have special attention to maintaining blood pressure within the normal range (Marwan, Rohmawati, & Utami, 2024). A high level of knowledge indicates that a person gets good

information and understanding, greatly affecting attitudes and decision-making when taking certain actions. Lack of exposure to information can reduce motivation, willingness, and hope to maintain a condition (Ovany, Hermanto, & Suprianto, 2023).

The social support factor is the second factor that influences the motivation of the elderly. This social support by researchers means support from family, health workers, and health cadres, in line with previous research, which states that family support and support from health workers have a strong influence on motivation (Taen, Sari, Suryati, & Setyaningrum, 2023). The findings of the study based on the questions asked the most dominant support is support from health workers. Advice or recommendations from health workers to control blood pressure at home can motivate the elderly to measure blood pressure without having to wait for a control schedule.

The third factor that greatly influences the motivation of the elderly is the condition of the elderly's disease. Elderly people whose blood pressure often shows symptoms are more motivated to check their blood pressure at home. As stated by (Anita et al., 2023), the need to recover encourages people with

hypertension to check regularly. The findings in this study also support previous studies, which state that education, knowledge, access to health services, and good family support do more home blood pressure control (Fadillah & Handayani, 2023).

5. CONCLUSION

The main factors that influence the motivation of the elderly to carry out control are knowledge, social support, and the condition of the disease being experienced. These findings can be used to determine the objectives, themes, and health promotion methods to prevent hypertension complications. In addition, it is also information for health workers to always communicate effectively with patients.

AUTHOR CONTRIBUTIONS

The author contribute all research activity. Siswati and Desy Siswi Anjar Sari: Responsible for research design, data collection, data analysis, methodology development, and final editing of the article. Eka Mei Dianita, Supriyah Praningsih, Fitri Firranda N: Contributed to data collection, data analysis, methodology development, and article revision. Siswati and Heni Maryati: Contributed significant input in data

interpretation, data collection, data analysis, and article revision.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the research, writing, or publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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