



Analysis of Healthy Lifestyle Adherence with Tricky Card Games Based on Social Cognitive Therapy in Elderly People with Hypertension

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ARTICLE INFO ABSTRACT

Hypertension is a very common clinical condition in the elderly that can pose a great risk of cardiovascular disease and loss of quality of life. Some elderly people reason that they do not seek treatment directly or go to health services because they avoid interactions with health workers who are likely to have the opportunity to be exposed to Covid-19 and carry diseases that will affect and even aggravate the elderly's illness. If it is still done, it will actually trigger anxiety levels and will greatly affect the blood pressure of the elderly. Tricky card games are one of the new breakthroughs as games that can provide knowledge to the elderly regarding information about hypertension. The purpose of this study was to determine the effect of the application of tricky card games on lifestyle compliance of elderly people with hypertension based on social cognitive therapy at Putra Mandiri Foundation. Type of pre-experimental research one group pretest posttest. The population is elderly people with hypertension at Putra Mandiri Foundation in 2023 who meet the inclusion criteria, namely cooperative in the research process, and have the ability to read. sampling using purposive sampling. The results showed that there was an effect of the Application of Tricky Card Games on Elderly Lifestyle Compliance with Hypertension Based on Social Cognitive Therapy at Putra Mandiri Foundation.

Keywords: Tricky Card; Knowledge; Attitude; Compliance

Backgrounds

The increase in the number of elderly people in Indonesia occurred within 50 years. During this period, the proportion of elderly people in Indonesia doubled compared to the previous period. In 2021, the proportion of the elderly reached 10.82% with a range of 29.3 million. This number shows that Indonesia has entered an aging population structure phase which is characterized by the proportion of the population aged 60 years and over in Indonesia which has exceeded 10% of the total population (Central Statistics Agency, 2021). Based on the results of research by Setiati et al., (2019) Indonesia is the eighth largest elderly population in the world and the fourth largest in Southeast Asia with around 21 million elderly (8.2%). Basically, the aging process of the elderly has an impact on various aspects of life, both social, economic and health. In terms of health, the increasing age of the elderly will make them vulnerable to various physical complaints both due to natural factors and due to disease (Ministry of Health of the Republic of Indonesia, 2014).

According to Riskesdas (2018), degenerative diseases, especially in elderly health problems, often occur with a prevalence of 63.5% in hypertension, 57% in DM patients, 4.5% in heart disease, and 4.4% in stroke. As one of the diseases related to social life, the occurrence of hypertension is closely related to the lack of adherence to a healthy lifestyle. Chinese hypertension guidelines suggest that lifestyle is the basis for the treatment of diseases, especially hypertension. Currently, several guidelines are planned to emphasize the importance of nonpharmacological strategies as a first-line approach to lower blood pressure in hypertensive disease (Umpierre et al., 2019).

Several interventions have been developed for hypertension control including distraction techniques that are used as a medium to reduce anxiety, pain, and stress in the elderly such as relaxation techniques, massage therapy, ice and heat therapy, and play therapy. Over the years, the game industry has grown rapidly with advances in interactive technology, and games today no longer target adolescents, but are designed for a wider

age group including the elderly population. Light to frequent intensity exercise is recommended for older adults to maintain good health status and provide sufficient exercise for the elderly body.

However, currently the elderly often do not have adequate access to exercise and refrain from outdoor exercise (Li et al., 2021). Based on the results of interviews with the management of Putra Mandiri Foundation, it was found that the elderly had been given non-pharmacological treatment interventions such as the implementation of elderly exercises, slow deep breathing and laughing exercises. However, many elderly people also do not take treatment both pharmacologically and non-pharmacologically. Some elderly people argued that they did not seek treatment directly or go to health services because they avoided interactions with health workers who most likely had the opportunity to be exposed to Covid-19 and carry diseases that affected and even exacerbated the elderly's illness.

Tricky card games are one of the new breakthroughs as games that can provide knowledge to the elderly regarding information about hypertension. The *tricky card game* education method includes four core activities including interactive counseling, educational games, providing hypertension-free healthy living guidebooks and measuring blood pressure (Karera Aryatika, 2021). The implementation of the intervention was carried out for 3 weeks. Based on this, it is necessary to carry out non-pharmacological therapy in the form of games that can increase the knowledge of the elderly about hypertension with innovative new breakthroughs.

Method of Research

The research design in this study was pre-experiment one group pretest posttest. The population is the elderly with hypertension in the Putra Mandiri Foundation in 2023 totaling 200 elderly people. The sample that met the criteria was cooperative in the research process, and had the ability to read a total of 35 elderly people. Sampling using purposive sampling techniques

Results

In this study looking at healthy lifestyle adherence of hypertensive patients through the *tricky card game* educational method, at this stage also looks at how knowledge, attitudes to show healthy lifestyle adherence behavior. In addition, the research is based on *social cognitive theory* or behavioral theory.

Table 1. Frequency Distribution of Respondents' Knowledge before and after being given the Tricky Card Game Educational Method

	Minimum	Maximum	Mean	Std. Deviation
Before	2	9	5.89	2,069
After 1	2	10	6.34	1,765
After 2	6	10	8.54	,980

Table 1 shows that the minimum number of respondents' knowledge before the intervention was 2, the maximum number was 9 with a mean of 5.89. After being given the intervention in the first measurement, the minimum value is 2, the maximum is 10 with a mean of 6.34. After being given the intervention in the second measurement, the minimum value is 6, the maximum is 10 with a mean of 8.54.

Table 2. Frequency distribution of respondents' attitudes before and after being given the Tricky Card Game Educational Method

	Minimum	Maximum	Mean	Std. Deviation
Before	22	37	32.17	3,929
After 1	23	36	29.83	3,485
After 2	26	40	36.40	3,089

Table 2 shows that the minimum number of respondents' attitudes before the intervention was 22, the maximum number was 37 with a mean of 32.17. After being given the intervention in the first measurement, the minimum value was 23, the maximum was 36 with a mean of 29.83. After being given the intervention in the second measurement, the minimum value is 23, the maximum is 36 with a mean of 29.83.

Table 3. Frequency Distribution of Healthy Lifestyle Adherence Before and After Tricky Card Game Educational Method

	Minimum	Maximum	Mean	Std. Deviation
Before	1	11	7.49	2,490
After 1	1	14	7.71	3,223
After 2	9	19	12.49	2,215

Table 3 shows that the minimum number of respondents' healthy lifestyle compliance before the intervention was 1, the maximum number was 11 with a mean of 7.49. After being given the intervention in the first

measurement, the minimum value is 1, the maximum is 14 with a mean of 7.71. After being given the intervention on the second measurement, the minimum value is 9, the maximum is 19 with a mean of 12.49.

Table 4. Frequency Distribution of Systolic Blood Pressure of Elderly Patients with Hypertension Before and After being given the Tricky Card Game Educational Method

	Minimum	Maximum	Mean	Std. Deviation
Before	100	200	148.29	19,018
After 1	110	180	145.43	18,840
After 2	100	170	129.43	16,793

Table 4 shows that the minimum number of respondents' systolic blood pressure before the intervention was 100, the maximum number was 200 with a mean of 148.29. After being given the intervention in the first measurement, the minimum value was 110, the maximum was 180 with a mean of 145.43. After the intervention on the second measurement, the minimum value was 100, maximum 170 with a mean of 129.43.

Table 5. Frequency Distribution of Diastolic Blood Pressure of Elderly Patients with Hypertension Before and After being given the Tricky Card Game Educational Method

	Minimum	Maximum	Mean	Std. Deviation
Before	70	100	88.00	8,677
After 1	70	100	83.43	8,726
After 2	70	100	81.43	7,334

Table 5 shows that the minimum diastolic blood pressure of respondents before the intervention, after being given the intervention in the first and second measurements was 70. The maximum value was 100. The mean values were 88.00, 83.43, and 81.43 respectively.

Table 6 Data Normality Test Results

	Before	After 1	After 2
Knowledge	0.056	0.020	0.002
Attitude	0.100	0.000	0.001
Healthy Lifestyle Adherence	0.009	0.072	0.010
Systolic Blood Pressure	0.003	0.031	0.082
Diastolic Blood Pressure	0.000	0.000	0.000

Based on table 6, all data were not normally distributed ($P < 0.05$) so that the use of the paired t test statistical test did not meet the requirements and the test used was the Wilcoxon statistical test.

Table 7. Effect of Tricky Card Game Educational Media on Increasing Knowledge, Attitude and Adherence to a Healthy Lifestyle.

	P Value	
	First Measurement	Second Measurement
Knowledge	0.113	0,000
Attitude	0.011	0,000
Healthy Lifestyle Adherence	0.645	0,000

Based on table 7 above, the results of statistical tests on the first measurement resulted in a P value of knowledge of 0.113 and healthy lifestyle compliance of 0.645 (> 0.05) so that there was no effect of tricky card game education media on increasing knowledge and healthy lifestyle compliance. The P value of the respondent's attitude is 0.011 (< 0.05) so that there is an effect of tricky card education on changes in the respondent's attitude. In the second measurement, all of them are 0.000 (< 0.05) so that there is an influence of educational media tricky card game on the level of knowledge, attitude and healthy lifestyle compliance.

Table 8. Effect of Educational Media Tricky Card Game on Blood Pressure of Elderly Patients with Hypertension

	P Value	
	First Measurement	Second Measurement
Systolic Blood Pressure	0.517	0,000
Diastolic Blood Pressure	0.007	0.002

Table 8 shows the p value of systolic blood pressure in the first measurement is 0.517 (> 0.05) which means there is no effect of educational media tricky card game on systolic blood pressure and in the second examination is 0.000 (< 0.05) which means there is an effect of educational media tricky card game on systolic blood pressure. The P value of diastolic blood pressure at the first examination was 0.007 (< 0.05) and

the second examination was 0.002 (<0.05), which means there is an effect of educational media tricky card game on diastolic blood pressure.

Discussion

The characteristics of the respondents showed that most of them were aged 56-65 years (late elderly) as much as 65%, the last education of the respondents was mostly elementary school (77%), almost all respondents were female (97%), most of the respondents did not work (60%), the respondents' economy was mostly low (91%), most of the respondents had more than 2 children (66%) and the respondents had families with hypertension were 66%.

Respondents in this study were elderly and most of the late elderly (56-65 years) as much as 65% while 35% were seniors (>65 years). Hypertension is one of the most common non-communicable diseases suffered by the community, especially the elderly. With increasing age, the body becomes increasingly vulnerable to health problems due to the decline in organ functions. Most of the respondents' last education was elementary school (77%), education is one of the factors that influences the level of knowledge and attitudes, but not an absolute factor. Besides being influenced by education, knowledge and attitudes are also influenced by experience. Research (Putri & Supartayana, 2020) showed that most respondents had elementary school education but had a good level of knowledge after being given health education. The economic level of respondents is mostly low or a month earns less than Rp. 1,500,000 as much as 91%. Most respondents have more than 2 children (66%), the number of children is closely related to the number of dependents, if the number of dependents is large, it will affect the client's economic level which will affect the respondent's health condition. Respondents who have a family history of hypertension are 66%. (Zhang et al., 2022) (Zhang et al., 2022) stated that genetic factors are independently associated with blood pressure in European descent. Research (Setiani & Wulandari, 2023) states that there is an association between genetic factors and the incidence of hypertension. Genetic factors with the incidence of hypertension were found to be four factors, namely heredity, DNA, genetic factors, and body mass index.

The Effect of Tricky Card Game Educational Media on Increasing Knowledge, Attitudes and Adherence to a Healthy Lifestyle.

The results of statistical tests on the first measurement resulted in a P value of knowledge of 0.113 and healthy lifestyle compliance of 0.645 (> 0.05) so that there was no effect of tricky card game education media on increasing knowledge and healthy lifestyle compliance. The P value of the respondent's attitude is 0.011 (<0.05) so that there is an effect of tricky card education on changes in the respondent's attitude. In the second measurement, all of them are 0.000 (<0.05) so that there is an influence of educational media tricky card game on the level of knowledge, attitude and healthy lifestyle compliance.

This research is in line with research (Aryatika et al., 2021) (Aryatika et al., 2021), which states that after being given an intervention through the *tricky card game* there is an increase in knowledge in preventing hypertension (p value < 0.05). Research (Sari et al., 2022) stated that there was an increase in knowledge of hypertension after intervention through a *simulation game* approach.

In providing health education or education, there are several methods, namely lecture methods, guidance methods, counseling, group discussions, and interviews, (Selviani et al., 2021) Other research states that the method that can be applied in providing health education is *simulation games*, (Sari et al., 2022), *Focus group discussion* method according to (Kansil et al., 2019) and the *tricky card game* method according to (Aryatika et al., 2021).

Tricky card game (simulation game) is an educational card game about hypertension. Each theme consists of 4 cards as well as other themes. The cards will be distributed to the elderly, each getting four cards with different themes. Each player or elderly will choose one card or one theme that will be guessed at other players. If the player can guess correctly then the card will belong to the guesser, but before the card is given the card must be explained and listened to by all members of the game. If the player can collect four cards with the same theme, it is declared a win. So that health education about hypertension through games is delivered directly by the elderly to the elderly members of the game.

Hypertension-related themes included in the *tricky cards* are causes of hypertension, risk factors for hypertension, symptoms of hypertension, prevention, management, dangers of hypertension, nonpharmacologic treatment, and healthy lifestyle of hypertensive patients. Healthy lifestyle is related to hypertension diet by (Ministry of Health, 2022) Healthy lifestyle is related to hypertension diet by (Kemenkes RI, 2022), according to the "contents of my plate", daily salt consumption of no more than one teaspoon, consumption of fruits and vegetables about 4-5 servings every day, reducing consumption of saturated fats (skin and offal), not consuming cooking oil that has been used repeatedly, cooking by steaming, boiling or in pepes and reducing artificial flavors that are high in sodium. A healthy lifestyle in addition to a hypertension diet is not smoking, not consuming alcoholic beverages, physical activity for at least 30 minutes every day, and losing weight if overweight, (Kurnia, 2020).

Health education using the *simulation game* method can make the atmosphere relaxed and relaxed so that the information provided will be easily accepted and applied by respondents, (Hermawati & Sastrawan, 2021). The use of this method involves various senses so that the elderly can receive it easily and can apply it,

(Ferawati, Kurniati, 2022). . Educational methods through *games* allow respondents to repeat their knowledge whenever and wherever they want, (Bayram & Çaliskan, 2023). . *Games* show promising strategies to improve adherence and motivate behavior change, (Lamas et al., 2023). .

Research (DA & Hendrawati, 2018) (DA & Hendawati, 2018), obtained an *odds ratio* value of 2.945, which means that hypertensive patients with less knowledge will be at risk of being non-compliant 3 times compared to hypertensive patients with high knowledge . Research (Shim et al., 2020) (Shim et al., 2020), stated that people with good knowledge of hypertension have a 6 times greater chance of being compliant than people with poor knowledge of hypertension (p-value = 0.03).

Knowledge is the result of "knowing" that occurs after sensing a certain object. Knowledge results from sensing, namely the sense of hearing and the sense of sight. Increased knowledge about hypertension and healthy lifestyles, then patients can carry out prevention and management of hypertension properly so that blood pressure can be controlled and avoid complications caused by hypertension. Good knowledge makes patients take preventive measures by carrying out a lifestyle so as to avoid the risk and severity of hypertension.

Statistical test results there is an effect of *tricky card games* on changes in elderly attitudes in the first and second measurements, namely <0.05 . Research (Tarigan et al., 2022) (Tarigan et al., 2022) showed that attitude has a positive influence on hypertension diet compliance. Hypertension diet is one of the healthy lifestyles of people with hypertension, the results of the study showed the Exp (B) value: 9.655 which means that respondents who had a positive attitude had 10 times the chance of adhering to a hypertension diet. Research (Baskara et al., 2023) The results showed that 76.5% of respondents checked themselves if there were signs of hypertension, 64.3% of respondents stated that they did not get enough rest, 60.9% of respondents reduced salt consumption. In general, the attitude of hypertensive patients in this study was in the moderate category (53.0%).

Attitude is a positive or negative belief of a person to perform a certain behavior. Attitudes are determined by individual beliefs about the consequences of performing a behavior and evaluations of these consequences, (Nabila, 2023)

Attitude is one of the factors shaping behavior, where attitudes have an influence on the prevention and management of hypertension which makes the behavior of hypertensive patients adopt a healthy lifestyle so that blood pressure becomes controlled. Attitude is the strongest factor, because the attitude of wanting to recover and the desire to maintain a healthy body condition will influence sufferers to control themselves in healthy behavior (Notoatmodjo, 2010). (Notoatmodjo, 2010) .

The results of the statistical test of the level of adherence to a healthy lifestyle at the first examination were 0.645 (>0.05) which means that there is no effect of tricky card game educational media on increasing healthy lifestyle adherence. In the second examination the p value result is 0.000 (<0.05) which means there is an effect of educational media tricky card game on increasing healthy lifestyle compliance. Based on this data, it can be concluded that changing client behavior is not enough in a short time.

Based on the data discussed above, it shows that the knowledge and attitudes of respondents are good. There is a significant effect of *tricky card game* education method on increasing knowledge and attitudes so that respondents show obedient behavior in implementing a healthy lifestyle. Knowledge is one of the important aspects to determine a person's actions, various studies prove that behavior is based on knowledge. Attitude is a positive or negative belief of a person to perform a certain behavior. Attitudes are determined by individual beliefs about the consequences of performing a behavior and evaluation of these consequences.

Good knowledge and positive attitudes of respondents towards a healthy lifestyle make respondents compliant with preventive measures by implementing a healthy lifestyle. Research (Baskara et al., 2023) stated that there was a significant relationship between knowledge and attitude towards respondent compliance.

Other studies have reported that despite good knowledge status and positive attitudes towards healthy lifestyle modification among hypertensive patients, practice is not the case. Therefore, elderly patients require special attention and intervention by non-communicable disease policy makers to improve health education to educate healthy lifestyles to control high blood pressure and its consequences. (Kebede et al., 2022). .

Researchers assume that educational media education tricky card game is effective in increasing client knowledge, increasing the positive attitude of respondents so that they comply in implementing a healthy lifestyle.

This research is based on *social cognitive theory*, there are 3 important components that influence each other in the process of behavior change, namely personal factors, environmental factors and behavior. Personal factors consist of *self-efficacy and self-regulation*, environmental factors consist of family support, friend support and health worker support, (Khotimah et al., 2020) .

Previous research has discussed *social cognitive theory* in improving client compliance. (Islam et al., 2023) (Islam et al., 2023) stated that *social cognitive theory-based* interventions have a positive impact on health outcomes and intervention effectiveness, the importance of incorporating behavioral theory when planning primary care health promotion practices. Research (Ariesti & Pradikatama, 2018) (Ariesti & Pradikatama, 2018), stated that there is a significant effect of *self-efficacy* on elderly hypertension treatment compliance. Research (Prabasari, 2021) states that the quality of life of elderly people with hypertension is determined by *self-efficacy, self-care management*, and compliance in the treatment process. Research (Susanto &

Purwantiningrum, 2022) (Susanto & Purwantiningrum, 2022), states that family support has an important role in increasing the knowledge and attitude formation of people with hypertension.

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Conflict of interest

There is no conflict of interest in this research

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