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Video Animation: Improving Older Adults Patients Knowledge and Motivation Related to Hypertension Diet

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Abstract

Hypertension is a dangerous medical condition that can increase the risk of heart, brain, and renal problems, among other issues. A balanced diet is an essential hypertension control intervention. This study seeks to examine the efficiency of employing animation media to explain the application of diets that prevent hypertension and boost the understanding and motivation of senior patients at Bahteramas Regional General Hospital. In both the control and intervention groups, a quantitative-quasi-experimental design was adopted, with pre-test and post-tests. Data was obtained via questionnaires from 92 respondents chosen using a purposive sampling approach, with 46 in the intervention group from the cardiac clinic and 46 in the control group from geriatric clinic. The data were analyzed using the paired t-test. The findings of the study indicated that patient knowledge increased significantly (p = 0.007) in the cardiac clinic following the administration of animation media, whereas in the geriatric clinic, no impact was observed (p = 0.000). Patient motivation increased significantly in the cardiac clinic following the administration of animation media (p = 0.003) and in the geriatric clinic in the absence of intervention (p = 0.000). There was no significant difference between the two groups in pretest knowledge (p = 0.666) and motivation (p = 0.747); however, there were significant differences in posttest knowledge (p = 0.015) and motivation (p = 0.026). Patient knowledge was affected by animation media in the cardiac clinic (p = 0.007) and without therapy in the geriatric clinic (p = 0.000). Incorporating animated educational content into routine patient counseling and health education programs can be beneficial in the future.

Keywords: animation media, hypertension diet, knowledge, motivation, video

Abstrak

Video Animasi: Meningkatkan Pengetahuan dan Motivasi Pasien Lanjut Usia untuk Diet Hipertensi. *Hipertensi adalah kondisi medis berbahaya yang dapat meningkatkan risiko masalah jantung, otak, ginjal, dan masalah lainnya. Pola makan yang baik sangat penting sebagai intervensi pengendalian hipertensi. Tujuan penelitian ini adalah menguji efisiensi penggunaan media animasi untuk menjelaskan penerapan diet hipertensi dan meningkatkan pemahaman dan motivasi pasien lanjut usia di Rumah Sakit Umum Daerah (RSUD) Bahteramas. Pada kelompok kontrol dan perlakuan, desain* quantitative-quasi-experimental *diadopsi, dengan* pre-test *dan* post-test*. Data diperoleh melalui kuesioner dari 92 responden yang dipilih dengan pendekatan* purposive sampling*, terdapat 46 orang pada kelompok intervensi di klinik jantung dan 46 orang pada kelompok kontrol di klinik geriatri. Data dianalisis menggunakan* paired T-test*. Temuan penelitian menunjukkan bahwa pengetahuan pasien meningkat secara signifikan (p = 0,007) di klinik jantung setelah pemberian media animasi, sedangkan di klinik geriatri, tidak ada intervensi yang diamati (p = 0,000). Motivasi pasien meningkat secara signifikan di klinik jantung setelah pemberian media animasi (p = 0,003) dan di klinik geriatri tanpa adanya intervensi (p = 0,000). Tidak terdapat perbedaan yang signifikan antara kedua kelompok pada pengetahuan* pre-test *(p = 0,666) dan motivasi (p = 0,747); Namun terdapat perbedaan yang signifikan pada pengetahuan* post-test *(p = 0,015) dan motivasi (p = 0,026). Pengetahuan pasien dipengaruhi oleh media animasi di klinik jantung (p = 0,007) dan tanpa terapi di klinik geriatri (p = 0,000). Menyertakan konten edukasi animasi dalam rutinitas konseling pasien dan program pendidikan kesehatan dapat memberikan manfaat di masa depan.*

Kata Kunci: *diet hipertensi, media animasi, motivasi, pengetahuan, video*

Introduction

Hypertension is defined as an above-normal increase in blood pressure according to two measurements: systolic > 140 mmHg and diastolic ≥ 90 mmHg (World Health Organization [WHO], 2023). Hypertension is a non-communicable disease that can cause serious health problems among older adults. In Southeast Sulawesi, cultural beliefs and local dietary habits significantly impact older adult individuals' adherence to alleviating hypertension. Traditional views often prioritize specific foods for their perceived health benefits or cultural significance, but these are often actually salty or fatty, which may lead to increased sodium and unhealthy fat intake. These dietary preferences can hinder compliance with recommended low-sodium diets necessary for managing hypertension.

The common use of traditional ingredients, which are high in salt content, also poses a challenge for older adult individuals attempting to follow diets to battle hypertension. A study by Zainuddin and Yunawati (2019) indicated that hypertension among the older people in this region is prevalent, with factors such as low levels of physical activity and increased stress also contributing to the condition. The data suggests that while lifestyle changes are promoted, traditional dietary practices and insufficient awareness of proper hypertension management continue to lead to failure to adhere to a healthy diet. Several factors contribute to this situation, such as insufficient information, limited socialization, or inadequate health education provided by healthcare professionals about hypertension.

Hypertension is also the most common vascular disease in both developed and developing countries and has been classified as a degenerative disease that seriously affects the quality of life and productivity of individuals. It has a high mortality rate (Mayasari et al., 2019), and the term "silent killer" is used to describe hypertension because it often remains undiagnosed. It is a major cause of disability and prevalent throughout the world (Mohsen et al., 2020). For the period 2010–2023, the WHO (2023) estimated that 33% of people worldwide had hypertension.

There are reports of the high prevalence of hypertension among older adults in low- and middle-income countries (32.3% in India, 62.15% in Vietnam, and 77.9% in South Africa). It is more common in women, those in the lowest wealth quintile, heavy alcohol users, and is linked to overweight individuals and those with obesity (Van et al., 2019; Lloyd-Sherlock et al., 2014). Hypertension is one of the top-ten diseases in terms of prevalence over all regions of Indonesia and its incidence is rising annually along with age (Statistics Indonesia *[Badan Pusat Statistik Indonesia; BPS]*, 2018). Statistical data from the Statistics Indonesia (2021b) projected a 14.78% prevalence of high blood pressure in Southeast Sulawesi. Though approximately 2.5% to 12.5% of hypertension sufferers in one region of Southeast Sulawesi Province have received treatment according to standards, this number is still far from the national target of 100% (Health Service of Kolaka Regency, 2019). In the meantime addition, 90.3% of senior citizens in Kendari City the capital of Southeast of Sulawesi had hypertension, females had a higher percentage (63.4%) than males (29.9%) (Ramadhany et al., 2023).

Health education is of the highest priority and is one of the most effective nursing interventions to increase the level of public awareness of the importance of understanding the dangers of hypertension. Knowledge and internal factors such as motivation and willpower are key elements that provide significant benefits for individuals with hypertension in following a proper diet. Following an appropriate diet is very important for hypertension patients to control their blood pressure and prevent complications. Public awareness of the negative impacts of consuming fast food, which is high in calories, fat, sugar and salt but low in fiber, is still low (Mohiuddin & Nasirullah, 2020). This shows an insufficient acknowledgement of the dangers

of hypertension, which ultimately increases the risk of the condition among older adults.

Diet is an approach for controlling hypertension that involves restricting the consumption of specific foods. When adhering to a dietary regimen, intrinsic motivation is the primary determinant of success in attaining the main objecttive. Motivation is a force, either originating from within oneself or from extrinsic sources, that propels someone to engage in specific desired acts or behaviors (Darmawan & Zulfa, 2015). Animated videos are preferred to older adults for their visual appeal and the inclusion of sounds and character images, which aid the older adults in comprehending information and provide a comforting atmosphere while counselling. According to Aisah et al. (2021), regularly providing animated movies can have an impact on a person's attitude, behavior, and habits related to healthy living.

Studies have demonstrated that animated movies such as 3D digital animation videos, interactive animation, virtual reality and augmented reality technology, and motion graphics offer several benefits for older adults. Animated films such as 3D digital videos affect memory and motivation in the central nervous system through several mechanisms: visual and auditory stimulation that improves memory, increased neuroplasticity, the role of emotion in memory retention, and the influence on motivation through activation of the limbic system. They effectively alleviate the reliance on paper-based interaction, while also capturing the attention and focus of older individuals in information transmission (Susanty et al., 2023). Therefore, the utilization of audiovisual recordings is necessary to assist and facilitate the transfer of information to older adults (Ariyanti et al., 2020). The purpose of this study was to examine the impact of utilizing animated videos on the implementation of a hypertension diet to enhance the understanding and motivation of older patients in hospital settings.

Methods

This study utilized a quantitative-quasi-experimental methodology, employing a pre-test and post-test approach inside a control group design.

Research Setting and Sample. The investigation was carried out at the Geriatric and Cardiac clinics located at Bahteramas Regional General Hospital *(Rumah Sakit Umum Daerah [RSUD] Bahteramas)* in Kendari City, Southeast Sulawesi, Indonesia between January and March 2024. RSUD Bahteramas, as the primary healthcare facility, served a total population of approximately 345,107 in 2020. There were 21,236 (6.15%) older adults, consisting of 50.4% males and 49.5% females (Statistics Indonesia, 2021a).The inclusion criteria in this study were as follows: individuals who are 60 years and above, have a blood pressure reading of > 140/90 mmHg, are enrolled in the geriatric clinic and cardiac clinic, and were willing to participate in the study. The exclusion criteria for this study include physical disabilities such as blindness, deafness, and muteness, as well as mental illnesses. The sample comprised 92 respondents who were selected using a purposive sampling method. They were divided into two groups: the intervention group—consisting of 46 respondents from the cardiac clinic, and the control group—consisting of 46 respondents from the geriatric clinic. This research has received ethical approval from Bahteramas Regional Hospital with reference number: 3/KEP/RSUD/I/2024.

Data Collection Procedures. The eligible older adults were randomly selected by computer after obtaining institutional approval and appointment at the clinics. After that, they gave informed consent and filled out a questionnaire. *Intervention Group.* During the pre-test session, a knowledge and motivation questionnaire was presented to the cardiac clinic group, which was the treatment group. Subsequently, a hypertension diet instruction video was shown, which in-

includes details on the definition of the Dietary Approaches to Stop Hypertension (DASH), dietary guidelines (such as decreasing sodium intake), and healthy practices (e.g., exercise). In this study, the education session was only provided once. There was no follow-up support at home. However, the two minute and forty-six-second video is available to be downloaded for free, and viewers can watch it anytime, in any location, and as many times as they want.

The study assistant aided responders with downloading the video to their smartphones, tablets, and desktop computers. Assistants helping with the study recruiting process were not involved in the delivery of instruction or outcome assessment in order to reduce bias. To evaluate the impact of animated videos on the knowledge and motivation of the older adults' patients in the cardiac clinic, a knowledge and motivation questionnaire was given as a post-test during the last session.

Control Group. Prior to receiving general health information regarding the hypertension diet, participants in the control group (geriatric clinic) completed a pre-test knowledge and motivation questionnaire. After that, participants attended a lecture that lasted for around thirty minutes regarding the topic of diet and healthy by a regular lecture. A post-test questionnaire similar to the pretest questionnaire was also distributed to participants in the last session. When both groups finished the questionnaire, they received gifts and incentives.

Instruments. The questionnaire comprises three sections, encompassing demographic information, questions assessing knowledge about hypertension diet, and questions measuring motivation. The hypertension diet knowledge questionnaire for the older adults comprises 15 questions with answer choices limited to "yes" and "no." The Cronbach's alpha was 0.793. The scoring system ranges from 0 to 15. Respondents who receive a score of 7.5 or higher are categorized as "good," while those who score below 7.5 are categorized as "poor." The questionnaire pertaining to motivation for implementing a hypertensive diet in the older adults comprises 11 questions with response options of "strongly disagree," "disagree," agree," and "strongly agree." The Cronbach's alpha was 0.918. The range from 11 to 44 is classified as "good" if the respondent's answer score is greater than or equal to 27.5, and "poor" if the score is less than 27.

Data Analysis. The data were analyzed using the paired t-test to assess the relationship between variables, and the independent t-test was employed to compare variables between the two groups. The data analysis was conducted using IBM Statistical Package for the Social Sciences (SPSS) version 26.0 for Mac (IBM Corp. Armonk, NY, USA) and considering p-value of less than 0.05.

Results

Demographic Characteristics of Study Participants. According to the data in Table 1, the majority of respondents in the cardiac clinic are 60 years old and above, with a total of (n = 24 [50.2%]). Whereas, in the geriatric clinic, the most common age group is over 60 years old. Comprising 60.9% of the group, there were a total of 28 individuals. Regarding gender distribution, the cardiac clinic had a majority of male responses, with 31 individuals (67.4%), while the geriatric clinic similarly had a higher proportion of male (n = 28 [60.1%]). Regarding recent schooling, the cardiac clinic had a majority of respondents with a high school education (n = 18 [39.1%]). On the other hand, the geriatric clinic had a majority of respondents with a bachelor's degree education (n = 16 [34.8%]).

Descriptive Analysis. Table 2 shows the results of the pre-test knowledge given at the cardiac clinic (treatment group). Of the 46 respondents, 20 (43.5%) had good pre-test results and 26 respondents (56.5%) had poor pre-test results. Meanwhile, the post-test results showed that 35 (76.1%) respondents had good post-test results, and 11 (23.9%) respondents had

Table 1. Distribution of Respondents Based on Respondent Characteristics

Respondent Characteristics		n	%	Total
Intervention Group (Cardiac Clinic)				
Age	60 years	24	52.2	46
	> 60 years	22	47.8	
Gender	Male	31	67.4	46
	Woman	15	32.6	
Education Level	High school	18	39.1	46
	Diploma	4	8.7	
	Bachelor	16	34.8	
	Magister	3	6.5	
	Other	5	10.9	
Control Group (Geriatric clinic)				
Age	60 years	18	39.1	46
	> 60 years	28	60.9	
Gender	Male	28	60.1	46
	Woman	18	39.1	
Education Level	High school	12	26.1	46
	Diploma	4	8.7	
	Bachelor	16	34.8	
	Master	8	17.4	
	Other	6	13	

Table 1. Frequency Distribution Based on Pre-test and Post-test Knowledge and Motivation of Intervention and Control Groups

Variable	Pre-test	n	%	Post-test	n	%
Intervention group						
Knowledge	Good	20	43.5	Good	35	76.1
	Poor	26	56.5	Poor	11	23.9
	Total	46	100	Total	46	100
Motivation	Good	20	43.5	Good	27	58.7
	Poor	26	56.5	Poor	19	41.3
	Total	46	100	Total	46	100
Control group						
Knowledge	Good	11	23.9	Good	18	39.1
	Poor	35	76.1	Poor	28	60.9
	Total	46	100	Total	46	100
Motivation	Good	22	47.8	Good	26	56.5
	Poor	24	52.2	Poor	20	43.5
	Total	46	100	Total	46	100

poor post-test results. In the motivation group, the pre-test results were good (43.5%) and poor (56.5%), while for the post-test it was 58.7% (good) and 41.3% (poor).

In the control group, the pre-test knowledge results from 46 respondents were 23.9% good, and 76.1% had poor knowledge. The post-test results showed 39.1% (18 respondents) with good results and 60.9% with poor knowledge test results. The motivation in the pre-test in this group was 47.8% of respondents with good test results, while the remaining 52.2% had poor results. On the motivation post-test, 56.5% had good results and 43.5% had poor results.

From Table 3 shows that the independent samples t-test sig value is 0.666. Because the p-value is > 0.05, it can be said that there is no difference in the pretest level of knowledge regarding

Table 3. Differences in Levels of Knowledge and Motivation regarding Implementation of a Hypertension Diet

Variables	F	Sig.	t	95% CI	Mean (d)	df	Sig (2 tailed)
Pre-test							
Knowledge	2.362	.128	.433	-.624 – .972	.174	90	.666
Motivation	13.769	.000	.324	-1.005 – -1.396	.196	90	.747
Post-test							
Knowledge	.784	.378	-2.468	-2.001 – -.216	-1.109	90	.015
Motivation	2.163	.145	-1.545	-2.186 – .273	-.957	90	.026

Table 4. Changes in Knowledge Before and After Viewing Animated Videos on Implementing a Hypertension Diet

Variables	F	Sig.	t	95% CI	Mean (d)	df	Sig (2 tailed)
Pre-test and Post-test Intervention group							
Knowledge	-1.239	2.998	.442	-2.129 – -.349	-2.804	45	.007
Motivation	-1.630	3.555	.524	-2.686 – -.575	-3.111	45	.003
Pre-test and Post-test Control group							
Knowledge	-2.522	.937	.138	-2.800 – -2.244	-18.260	45	.000
Motivation	-2.783	3.620	.534	-3.858 – -1.707	-5.213	45	.000

the implementation of the hypertension diet in the intervention and control groups. There was no difference in pretest motivation regarding the implementation of the hypertension diet in the intervention and control groups (0.747). There was a post-test difference in the level of knowledge regarding the implementation of the hypertension diet in the intervention group and the control group, with a sig value of 0.015 ($p < 0.05$). There was a difference in post-test motivation regarding the implementation of the hypertension diet in the intervention group and the control group (0.026) ($p < 0.05$).

From Table 4 above, it is clear that the paired t test value with a value of $p = 0.007$ shows an effect on knowledge when comparing before and after viewing an animated video on implementing a hypertension diet at the heart clinic ($p < 0.05$). There was also an effect of increased motivation when comparing before and after being given animation media at the heart clinic, $p = 0.003$. In addition to this, there was an increase in knowledge before and after no treatment at the geriatric clinic ($p = 0.000$), and there was an increase in motivation before and after no treatment at the geriatric clinic ($p = 0.000$).

Discussion

Pretest and Post-test Level of Knowledge regarding the Implementation of the Hypertension Diet in the Intervention Group and Control Group. The research shows no difference in the pretest levels of knowledge regarding the implementation of the hypertension diet between the intervention group and the control group at RSUD Bahteramas, with many respondents unable to answer the questions before receiving education on the diet. This aligns with findings from Kalibalangan Public Health Center, North Lampung Regency in 2021, where 44.6% of older adults lacked knowledge about the hypertension diet, showing a relationship between knowledge and hypertension diet attitudes (p-value 0.003, gamma coefficient 0.606 or 60.6%) (Oktaria et al., 2023).

Post-test results revealed a significant knowledge disparity (p-value 0.015) between the groups after using an educational animated video. Similar findings were observed among seniors aged 60–79 in Buntu Buda Village, where higher levels of relevant education correlated with strong diet adherence (Darmarani et al.,

2020). Studies indicate that health education enhances understanding and adherence to dietary recommendations, with non-adherence leading to hypertension recurrence in older adults (Putri et al., 2014). Enhancing awareness and societal support for a hypertension diet among older adults is crucial for managing hypertension.

Differences in Pretest and Posttest Motivation regarding Implementation of the Hypertension Diet in the Intervention Group and Control Group. The research shows no significant difference in pretest motivation regarding the hypertension diet between the intervention and control groups at RSUD Bahteramas (p-value = 0.666). This aligns with a study by Masnah et al. (2023), which used a similar methodology with 60 participants in each group, and with Sukwatjanee (2014), who found variations in motivation over time in a study in Thailand.

Orizani et al. (2023) also found that 65% of participants had lower levels of motivation before intervention. Motivational programs are crucial for fostering cooperation and healthy dietary habits among seniors with hypertension, as increased motivation can mitigate the severity of the condition. Post-test results in the current study revealed significant differences in motivation between the groups, aligning with Sukwatjanee (2014). Orizani et al. (2023), found a 100% increase in motivation post-intervention using the current-mode synthetic control technique.

Wahyudi (2020) highlighted the significant role of dietary knowledge and motivation in preventing hypertension, emphasizing the need for novel approaches to enhance motivation and improve the quality of life for older adult individuals with hypertension. In the control group in our study, there was also an increase in knowledge and motivation post-test compared to pre-test. Even though they did not receive a specific intervention, control group participants could still experience an increase in knowledge and motivation simply because they were exposed to the material during the pre-test. Repeated exposure to information can strengthen understanding.

The results of the intervention group compared to the control in terms of knowledge show that the intervention group has a relatively more significant increase than the control group because it received special material or interventions designed to improve understanding of hypertension diets for older adults. While the control group also experiences an increase in knowledge, this is not as large as the intervention group, because it only receives exposure through the tests and indirect access to information. Likewise in the motivation group, the intervention group experienced a higher increase in motivation because of the approach used during the intervention, such as the use of media that can increase interest and encourage involvement. While the control group may experience a lower increase in motivation. However, some participants can show an increase due to external factors such as the effect of the test or intrinsic motivation.

In the post-intervention test results, the intervention group generally showed greater improvements in post-test results compared to the control group, because the animation media intervention was well designed and relevant to the hypertension diet material being tested. Meanwhile, the control group was able to show improved results, but the improvement was not as marked as the intervention group. This is because they did not receive assistance or additional materials specifically targeted by the animation media.

Intervention Group (Cardiac Clinic). The research findings at the Cardiac Clinic of RSUD Bahteramas indicate that the use of animation media for educating individuals about the hypertension diet has a discernible impact on knowledge and motivation levels when comparing before and after the intervention, although changes in knowledge are not significant. Post-intervention, individuals who initially had li-

mited knowledge and inconsistent dietary habits showed significant improvement in their understanding and frequency of correct actions regarding hypertension management. This aligns with some studies who reported improved knowledge, attitudes, and compliance with the DASH diet post-education (Afzal et al., 2021; Gusty, 2023). A separate study was conducted to assess the impact of the DASH programme on self-efficacy in reducing hypertension risk among elderly patients in rural communities in Phayao Province, Northern Thailand.

The findings revealed that 65.7% of individuals aged 60-69 years demonstrated positive results. The intervention resulted in statistically significant reductions in systolic and diastolic blood pressure among the elderly, both immediately after the intervention and at the 3-month follow-up ($p < 0.001$) (Seangpraw et al., 2019). However, Sunarmi and Kurdaningsih (2019), who found no significant impact, our study demonstrated a significant relationship between motivation and adherence to the hypertension diet, as supported by Handayani and Nora (2019) and Darmawan and Zulfa (2015). The paired t-test results from our study confirm that health information promotion through animation media effectively increases motivation, although individual differences in information reception exist, which is influenced by factors such as age and education (Yamashita et al., 2022).

Control Group (Geriatric clinic). The research findings indicate an increase in patient knowledge and motivation regarding the hypertension diet in pre and posttest in the control group at the Geriatric clinic, RSUD Bahteramas, Southeast Sulawesi in 2024. Initially, many respondents lacked adequate knowledge about the hypertension diet and answered the questionnaire incorrectly. However, after receiving diet education, there was a significant improvement in their understanding. The DASH diet education proved effective, emphasizing the consumption of vegetables, fruits, and minerals while limiting sodium intake. This approach not only helps control blood pressure but also reduces cholesterol levels and promotes weight loss in hypertensive patients (Laili et al., 2022). Healthcare workers play a crucial role in promoting health and providing training and counseling to ensure the public understands signs of hypertension, its symptoms, and prevention measures.

In our findings, the paired t-test results ($p = 0.000$) indicate a significant increase in motivation before and after the intervention, supporting the positive impact of health promotion on motivation levels. However, some participants did not show an increase in motivation due to individual differences in processing information. Studies by Su'ud et al. (2020) and Damawiyah et al. (2017) highlight the correlation between motivation and self-care behavior, emphasizing the importance of adhering to dietary habits, physical activity, and medication regimens to prevent complications such as stroke, renal failure, and cardiovascular disease. Education shapes understanding and drive, empowering individuals to maintain a healthy lifestyle and adhere to health principles (Ariyanti et al., 2020; Darmawan & Zulfa, 2015).

In addition, there is an effect of an increase knowledge before and after no treatment in the geriatric clinic ($p = 0.000$), and there is an effect of increased motivation before and after no treatment in the geriatric clinic ($p = 0.000$). Using animated videos in therapy or education for the older adults is beneficial for memory and motivation. The limbic system, which regulates emotions and motivation, is activated when individuals engage in enjoyable or emotionally engaging activities, such as watching animation. When this area is stimulated, individuals will feel more motivated to engage in the same or similar activities, which can trigger a cycle of learning and ongoing cognitive activity. The limitation of this study is its focus on only two clinics at RSUD Bahteramas, limiting the generalizability of the results.

Conclusion

There were no differences in pretest levels of

knowledge and motivation regarding the hypertension diet between the intervention and control groups. However, posttest levels showed significant differences in both knowledge and motivation. Animated media had a positive influence on patient knowledge and motivation regarding the hypertension diet at RSUD Bahteramas in 2024. Incorporating animated educational content into routine patient counseling and health education programs can be beneficial in the future although it takes more time to increase the motivation of older adults. Additionally, implementing similar media-based interventions should be implemented in geriatric settings.

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