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TELENURSING-BASED HEALTH EDUCATION VIA WHATSAPP GROUP FOR ELDERLY WITH HYPERTENSION : A QUASI-EXPERIMENTAL STUDY

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Abstract

One of the most prevalent chronic conditions among the elderly is hypertension, which raises the risk of cardiovascular problems. Using communication tools like WhatsApp groups, telenursing can enhance blood pressure control and health literacy. This study aims to determine the effect of health education through telenursing via WhatsApp groups on the knowledge of the elderly with hypertension. Methods: This study employed a quasi-experimental pretest–posttest control group design. The sample consisted of elderly individuals diagnosed with hypertension, divided into an intervention group and a control group. The intervention group received health education through WhatsApp-based telenursing, while the control group received standard health education provided by the healthcare institution. The data were analyzed using both parametric and nonparametric statistical tests, depending on the distribution of the data. The significance level used was $p<0.05$. Result: The results showed that the knowledge of the intervention group increased significantly (from 6.39±1.32 to 12.14±1.35, $p<0.001$) compared to the control group (from 6.57±1.43 to 9.18±2.02, $p<0.001$). The intervention group experienced a significant decrease in systolic blood pressure (154.36±9.07 to 127.86±10.69 mmHg, $p<0.001$) compared to the control group (158.57±18.36 to 144.89±18.67 mmHg, $p<0.001$); there was a significant difference between groups ($p<0.05$). The decrease in diastolic blood pressure was significant in both groups, but not significant between groups ($p=0.387$). Conclusion: WhatsApp group-based telenursing increased knowledge and decreased systolic blood pressure in the elderly with hypertension. This technique is recommended for further research and community support with longer intervention durations, as well as for cost-effectiveness analyses.

Keywords: Blood pressure, Elderly, Health education, Hypertension, Telenursing.

Abstrak

Salah satu kondisi kronis yang paling sering dialami oleh lansia adalah hipertensi, yang meningkatkan risiko terjadinya masalah kardiovaskular. Pemanfaatan media komunikasi seperti grup WhatsApp dalam telenursing dapat meningkatkan pengendalian tekanan darah dan literasi kesehatan. Penelitian ini bertujuan untuk mengetahui pengaruh pendidikan kesehatan melalui telenursing berbasis grup WhatsApp terhadap tingkat pengetahuan lansia dengan hipertensi. Penelitian ini menggunakan desain kuasi-eksperimen dengan pretest–posttest control group. Sampel penelitian terdiri dari lansia yang didiagnosis hipertensi, yang dibagi menjadi kelompok intervensi dan kelompok kontrol. Kelompok intervensi memperoleh pendidikan kesehatan melalui telenursing berbasis WhatsApp, sedangkan kelompok kontrol memperoleh pendidikan kesehatan standar yang diberikan oleh institusi pelayanan kesehatan. Data dianalisis menggunakan uji statistik parametrik dan nonparametrik sesuai dengan distribusi data. Tingkat signifikansi yang digunakan adalah $p<0,05$. Hasil penelitian menunjukkan bahwa tingkat pengetahuan pada kelompok intervensi meningkat secara signifikan (dari 6,39±1,32 menjadi 12,14±1,35; $p<0,001$) dibandingkan dengan kelompok kontrol (dari 6,57±1,43 menjadi 9,18±2,02; $p<0,001$). Kelompok intervensi mengalami penurunan tekanan darah sistolik yang signifikan (154,36±9,07 menjadi 127,86±10,69 mmHg; $p<0,001$) dibandingkan dengan kelompok kontrol (158,57±18,36 menjadi 144,89±18,67 mmHg; $p<0,001$), dan terdapat perbedaan yang bermakna antara kedua kelompok ($p<0,05$). Penurunan tekanan darah diastolik signifikan pada kedua kelompok, namun tidak terdapat perbedaan yang signifikan antar kelompok ($p=0,387$). Telenursing berbasis grup WhatsApp terbukti meningkatkan pengetahuan dan menurunkan tekanan darah sistolik pada lansia dengan hipertensi. Metode ini direkomendasikan untuk penelitian lanjutan dan dukungan berbasis komunitas dengan durasi intervensi yang lebih panjang, serta untuk analisis efektivitas biaya.

Kata kunci: *Tekanan darah, lansia, pendidikan kesehatan, hipertensi, telenursing.*

Introduction

Hypertension is one of the most common health problems worldwide, especially among the elderly. About 1.13 billion people worldwide suffer from hypertension, and this number continues to increase as the population ages (WHO, 2021). In Indonesia, the prevalence of hypertension is 34.1%, as many as 13.3% do not take medication, and 32.3% take medication but do not take it routinely. Most people with hypertension don't know they have hypertension (Kemkes RI, 2025). Hypertension that is not properly managed can cause various serious complications, including heart disease, stroke, and kidney failure, which can ultimately reduce the quality of life of the elderly (Kemenkes RI, 2020). Despite its high burden, hypertension management among the elderly remains suboptimal, highlighting the need for effective and accessible educational interventions.

One of the factors that affects blood pressure instability is when a person does not know how to manage hypertension, such as diet, physical activity, and taking medication obediently (Annisa et al., 2024; Rantetondok et al., 2024). Effective health education is important for increasing knowledge and awareness of good hypertension management among individuals, groups, and communities (Restawan, Mutmainnah, et al., 2024; Restawan, Sepang, et al., 2024; Restawan, Sjattar, et al., 2024). The elderly as a vulnerable group often experience limited access to conventional health services due to mobility, distance, or cost problems (Lativa et al., 2021; Puskomedia Indonesia Kreatif, 2023; Wulandari & Laksono, 2019)(Lativa et al., 2021; Puskomedia Indonesia Kreatif, 2023; Wulandari & Laksono, 2019). These challenges underscore the need for alternative educational approaches that are both accessible and tailored to the needs of the elderly population.

Previous research has reviewed health education for hypertension, and this study specifically focused on the elderly, vulnerable groups who have special needs (Apriyeni et al., 2024). The development of information and communication technology in the modern era has opened up new opportunities in the field of health services, one of which is telenursing services (McVey, 2023). Telenursing is a term for a remote care service that provides healthcare, including health education, without requiring direct physical interaction (Amidianski et al., 2024; Mun et al., 2024).

Due to distance constraints, telenursing research has become popular since the Covid-19 pandemic (Nurfallah, 2021). Most patients receiving telenursing are adults (Annisa et al., 2024). Meanwhile, health education to monitor and improve hypertension management should be provided especially to elderly people with special needs (Ismiati et al., 2023). Interventions can be changed and tweaked to be more successful and efficient by taking into account the difficulties and traits of older persons (Izquierdo et al., 2021).

Many people are accustomed to using digital platforms. Therefore, this study offers a novel approach to the digital dissemination of health education resources. This contrasts with the conventional strategy, which frequently depends on in-person interactions and the usage of print media. Therefore, it necessitates more time, money, and mobility for both healthcare professionals and the elderly (Alkhaibari et al., 2024; Khalifa et al., 2025). It has been demonstrated that telenursing via digital media improves patient understanding and adherence to the treatment of chronic illnesses. Additionally, telenursing can reduce expenses associated with monitoring, counseling, assessment, and consulting in the treatment of long-term patients (Haibuan & Nurhidayah, 2023; Nurfallah, 2021).

Information and communication technologies like WhatsApp Group are providing innovative ways to deliver effective health education in the current era (Igiany et al., 2022). The WhatsApp group feature facilitates two-way interaction and communication between health workers and the elderly, as well as the delivery of health information more efficiently (Fakhriyah et al., 2021; Qamarya et al., 2023). However, despite the widespread use of WhatsApp as a communication platform, empirical evidence examining the effectiveness of WhatsApp group–based telenursing interventions for hypertension management among older adults remains limited. Existing studies predominantly report the use of WhatsApp Groups in the context of community service activities rather than rigorously designed experimental research. Furthermore, there is a lack of quasi-experimental studies evaluating not only knowledge and blood pressure outcomes but also the potential benefits of group-based digital interactions in fostering social support among older adults with hypertension.

This research gap highlights the need for methodologically robust studies to evaluate the effectiveness of WhatsApp Group–based telenursing interventions in improving knowledge and blood pressure control among older adults with hypertension. Therefore, this study aims to address this gap by examining the impact of WhatsApp Group–based telenursing health education on knowledge and blood pressure outcomes in elderly individuals with hypertension.

Method

Research Design.
This study used *a quasi-experimental* design with *a pretest-posttest control group*, namely an intervention group that received health education through WhatsApp group-based telenursing and a control group that received conventional intervention. The control group received conventional education limited to routine Posyandu Lansia activities, which may differ in intensity and interactivity compared to the structured telenursing intervention. Group allocation was conducted using a non-randomized approach due to practical and ethical considerations in a community-based elderly population. Participants were assigned to the intervention or control group based on eligibility, availability, and their ability to participate in WhatsApp-based activities. To minimize cross-contamination, participants were assigned to a non-contiguous residential cluster. They were instructed not to share study materials with others outside their assigned group. This allocation method is consistent with quasi-experimental designs and was intended to ensure feasibility while minimizing participant burden.

Location and samples.
The population of this study is all elderly assisted by STIKes Bala Keselamatan Palu who suffer from hypertension and are in the working area of the Mabelopura Health Center, Palu city. The determination of the number of samples in this study is determined based on a quantitative approach by considering the analysis of two different tests (independent t-test). Based on Cohen (1988), to detect differences with a moderate effect size ($d = 0.6$), significance level (α) of 0.05, and statistical power of 70% (0.7), the minimum sample required is 25 respondents in each group (intervention and control). These numbers were seen as representative enough to test the effectiveness of the intervention in a quasi-experimental design with two groups. Taking into account the potential for loss of subjects during the implementation (drop out), a reserve of 10% of the total respondents was added, bringing the total recruitment target to 56 respondents (28 people in each group). This determination is also based on the availability of the fostered elderly population of hypertension at the study site and considers similar studies that use a similar sample count (Cohen, 1988). The relatively modest statistical power of 70% is acknowledged as a limitation of this study, as it may reduce the ability to detect smaller effect sizes. However, this level of statistical power was deemed acceptable, considering the small size of the eligible elderly population and the exploratory nature of this quasi-experimental study.
The sample was determined using the purposive sampling technique, namely the elderly (aged ≥60 years) who have been diagnosed with hypertension, domiciled in the area where the research is conducted, able to use or accompanied in using the WhatsApp application, and willing to participate in health education through telenursing during the research period. Exclusion criteria included lack of access or ability to use telenursing media, significant communication barriers, acute or unstable clinical conditions, and severe uncontrolled psychiatric disorders.

Intervention.
This study used a WhatsApp group to provide health education through telenursing for three weeks. The goal was to assess changes in knowledge and blood pressure outcomes among older adults with hypertension. The intervention consisted of six structured educational sessions, with two topics covered each week. Educational materials were delivered in multiple formats, including text-based explanations, infographic posters, short educational videos, and voice notes. These materials were shared directly through the WhatsApp group. This variety of media was intended to accommodate the different literacy levels and sensory limitations commonly experienced by older adults. The educational content covered the following topics: (1) the definition of hypertension, (2) risk factors for hypertension, (3) signs and symptoms of hypertension, (4) complications of hypertension, (5) dietary management of hypertension, and (6) the prevention and treatment of hypertension. Each session began with the distribution of educational materials. Then, interactive discussions were held within the WhatsApp group. This allowed participants to ask questions, share experiences, and receive clarifications from the researcher acting as the telenurse. At the end of each session, participants were encouraged to provide feedback and reflect on the presented material. This interactive, multimodal approach was designed to increase engagement with, understanding of, and retention of health information among elderly participants.

Research Instruments:
Knowledge Instrument

Knowledge of hypertension was assessed using a structured questionnaire developed based on national hypertension guidelines and previous studies. The questionnaire consisted of 14 multiple-choice questions, each with three answer choices, one of which was correct. Each correct answer was scored as 1, while an incorrect answer was scored as 0. This resulted in a total score range of 0-14. This questionnaire was adapted from a previously tested hypertension knowledge questionnaire used in a similar population. Validity and reliability tests were conducted on the questionnaire consisting of 14 valid questions. The results of the reliability test revealed that the calculated r value (0.961) was greater than the r table (0.553), indicating that the questionnaire is reliable.

Blood Pressure Measurement

Blood pressure was measured using an Omron HEM-7130-L digital sphygmomanometer, which had been previously validated for clinical and community use. To ensure measurement accuracy, the device was calibrated according to the manufacturer's recommendations prior to data collection. It met the stringent requirements set by organizations such as the Association for the Advancement of Medical Instrumentation Standards (AAMI) and the European Society of Hypertension (ESH). Blood pressure was measured using standard procedures. Participants rested for at least five minutes, sat upright with back supported, feet flat on the floor, and arms at heart level. Measurements were taken on the same arm for each participant. Two readings were obtained one to two minutes apart, and their average was used for analysis. Blood pressure was recorded in millimeters of mercury (mmHg). All blood pressure measurements were performed by trained nurses or researchers who had received prior instruction in standard blood pressure measurement procedures. This was done to minimize interobserver variability.

Data Analysis

The data obtained from the pretest and posttest knowledge results, as well as the blood pressure measurements, were analyzed using the IBM SPSS program. The analysis was carried out in two stages: descriptive and inferential. The descriptive analysis described respondent characteristics, knowledge scores, and blood pressure in the form of mean values, standard deviations, and percentages. The inferential analysis tested the effectiveness of WhatsApp group-based telenursing interventions. Prior to the inferential analysis, the normality of the data was assessed using the Shapiro-Wilk test. The results indicated that some outcome variables were normally distributed while others were not. Therefore, inferential analyses were conducted using parametric or nonparametric tests, as appropriate. Paired t-tests or Wilcoxon signed-rank tests were applied to make within-group comparisons, and independent t-tests or Mann–Whitney U tests were used to make between-group comparisons. A significance level of $p < 0.05$ was set to determine statistical significance. (Dahlan, 2009; Etikan & Bala, 2017; Sugiyono, 2018).

Health Code of Ethics

This research has gone through a submission process and ethical assessment by the Health Research Ethics Committee (KEPK) of the Palu Ministry of Health Polytechnic. The researcher has obtained an Ethical Feasibility Letter with Number: 002174/KEPK POLTEKKES KEMENKES PALU/2025, which states that all research procedures comply with the principles of research ethics, including respect for the rights of research subjects, data confidentiality, and the principles of benefit and non-maleficence (i.e., not causing harm). Before data collection, the researcher submitted written research information sheets and informed consent forms to all participants. Participation in this study is voluntary, and participants may withdraw at any time without consequence. All data obtained is kept confidential and used solely for scientific purposes.

Results

The results of the study examining the effectiveness of WhatsApp group-based telenursing health education on knowledge and blood pressure among older adults with hypertension are presented below.

Table 1. The Characteristics of the Respondents (n:56)

Characteristics	Intervention groups		Control group		Value *p*
	n	(%)	n	(%)	
Age					
Mean (*SD*)	70.11	(6.59)	71.79	(6.99)	0.757*
Gender					
Man	14	(50.00)	9	(32.14)	0.174**

Woman	14	(50.00)	19	(67.86)	
Education Level					
Elementary school	1	(3.57)	0	(0.00)	
Junior high school	5	(17.86)	7	(25.00)	0.660**
Senior High School	12	(42.86)	13	(46.43)	
College	10	(35.71)	8	(28.57)	
Work					
Not working	5	(17.86)	6	(21.43)	
Housewives	1	(3.57)	9	(32.14)	
Pastor	7	(25.00)	4	(14.29)	0.066**
Self employed	3	(10.71)	2	(7.14)	
Retired civil servants	12	(42.86)	7	(25.00)	
Marital Status					
Unmarried	0	(0.00)	0	(0.00)	
Life/death divorce	8	(28.57)	6	(21.43)	0.537**
Married	20	(71.43)	22	(78.57)	
Knowledge (*SD)*	6.39	(1.32)	6.57	(1.43)	0.628***
Pre Sistol	154.36	(9.07)	158.57	(18.36)	0.623*
Pre Diastol	87.68	(11.97)	90.46	(10.07)	0.350*

**Independent t-test, **Chi square, ***Mann-Whitney U test*

The demographic characteristics of the elderly respondents (n = 56), consisting of the intervention (n = 28) and control (n = 28) groups, showed good homogeneity between groups. The mean age of the intervention group respondents was 70.11 ± 6.59 years, while the mean age of the control group respondents was 71.79 ± 6.99 years (p = 0.757). The intervention group had an equal proportion of males and females (50% each), while the control group was dominated by females (67.86%). The difference was not statistically significant (p = 0.174). The majority of respondents in both groups had a high school education (intervention: 42.86%; control: 46.43%; p = 0.660). The majority of the intervention group were retired civil servants (42.86%), while the control group was dominated by housewives (32.14%) and retired civil servants (25%). (p=0.066).

The majority of respondents in both groups were married: 71.43% in the intervention group and 78.57% in the control group (p = 0.537). The average initial knowledge score was 6.39±1.32 for the intervention group and 6.57±1.43 for the control group (p=0.628). The average systolic blood pressure of the intervention group was 154.36 ± 9.07 mmHg, while the control group's average was 158.57 ± 18.36 mmHg (p = 0.623). The average diastolic blood pressure of the intervention group was 87.68 ± 11.97 mmHg, while the control group's average was 90.46 ± 10.07 mmHg (p = 0.350). The results of the statistical test showed no significant differences in any of the demographic characteristics between the two groups (all p > 0.05), indicating similar characteristics and allowing for a comparative analysis.

Table 2. Comparison of Knowledge and Blood Pressure Outcomes Before and After the Intervention Between Intervention and Control Groups

Measurement	Group	Mean Pretest ± SD	Mean Posttest ± SD	p-value (paired t-test)	p-value (independent t-test)	Effect Size
Knowledge	Intervention	6.39±1.32	12.14±1.35	< 0.001[a]	< 0.001***	r = 0.686
	Control	6.57±1.43	9.18±2.02	< 0.001[a]		
Sistol	Intervention	154.36±9.07	127.86±10.69	< 0.001[b]	< 0.001*	Cohen's d = -1.120
	Control	158.57±18.36	144.89±18.67	< 0.001 [b]		
Diastol	Intervention	87.68±11.97	80.32±11.61	< 0.001 [b]	0.387*	Cohen's d = -0.233
	Control	90.46±10.07	83.00±11.38	< 0.001 [b]		

*aWilcoxon Signed Ranks Test, bPaired Sample t-test, *Independent t-test, ***Mann-Whitney U test*

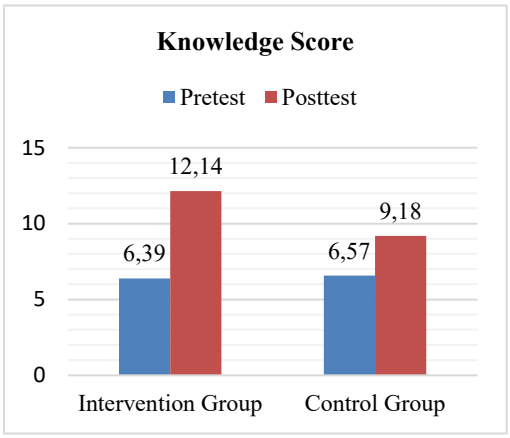

Figure 1. Comparison of Pretest and Posttest Knowledge Scores Between Intervention and Control Groups

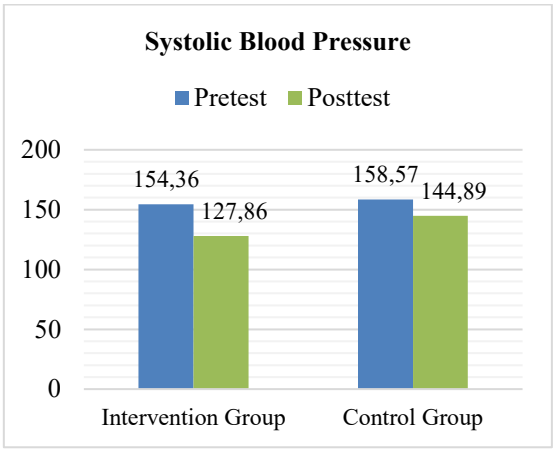

Figure 2. Comparison of Pretest and Posttest Systolic Blood Pressure Between Intervention and Control Groups

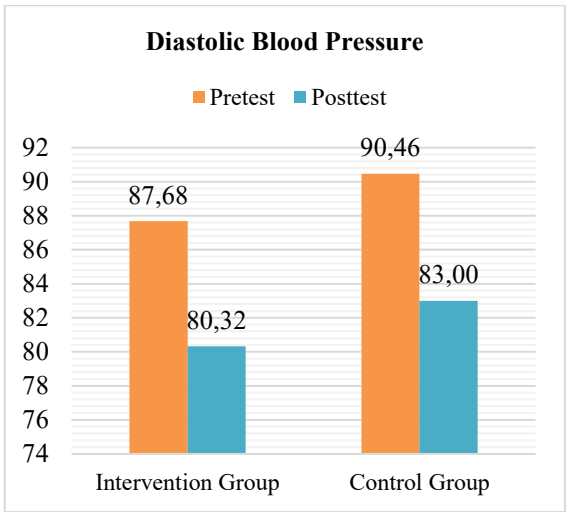

Figure 3. Comparison of Pretest and Posttest Diastolic Blood Pressure Between Intervention and Control Groups

As shown in Table 2 and Figure 1, both groups demonstrated improvements in their knowledge scores following the intervention period. However, the increase was substantially greater in the intervention group. The mean knowledge score increased from 6.39 ± 1.32 to 12.14 ± 1.35 ($p < 0.001$) in the intervention group, whereas the control group showed a smaller increase, from 6.57 ± 1.43 to 9.18 ± 2.02 ($p < 0.001$). A between-group comparison revealed a statistically significant difference ($p < 0.001$, $r = 0.686$), indicating that WhatsApp group-based telenursing is more effective than conventional education in improving hypertension-related knowledge among older adults. The large effect size ($r = 0.686$) demonstrates a strong practical significance of the intervention's impact on knowledge improvement.

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In contrast, although diastolic blood pressure decreased significantly in both groups (see Table 2 and Figure 3), no significant difference was observed between the two groups ($p = 0.387$). The intervention group's diastolic blood pressure decreased from 87.68 ± 11.97 mmHg to 80.32 ± 11.61 mmHg ($p < 0.001$), and the control group's decreased from 90.46 ± 10.07 mmHg to 83.00 ± 11.38 mmHg ($p = 0.001$). The small effect size (Cohen's $d = -0.233$) confirms that, while both educational approaches effectively reduced diastolic blood pressure, WhatsApp group-based telenursing did not produce a clinically meaningful advantage over conventional education for this outcome.

Discussions

This study demonstrates that health education using WhatsApp group-based telenursing can enhance knowledge and reduce systolic blood pressure in older adults with hypertension. These findings support the growing body of evidence on digital health literacy, which emphasizes the role of digital technologies in improving health-related knowledge and self-management among vulnerable populations (Ban et al., 2024). The effectiveness of the intervention appears to be driven primarily by increased engagement, continuous access to educational content, and interactive communication between nurses and participants, rather than by technology use alone.

The significant improvement in knowledge scores among the intervention group suggests that WhatsApp-based group telenursing is an effective method of delivering structured health education to older adults. Compared to conventional education delivered during routine Posyandu Lansia activities, the WhatsApp-based intervention offered repeated exposure, interactive clarification, and multimedia learning materials, which may account for the larger effect size observed in this study. Similar findings have been reported in studies involving older adults with hypertension, where digital, group-based education has been shown to result in greater knowledge gains than traditional, face-to-face education (Oudkerk Pool et al., 2021; Pilus et al., 2022; Suprayitno et al., 2023). These results are consistent with adult learning theory, which suggests that learning is more effective when content is relevant, contextualised, and accessible for repeated review (Muijsenberg et al., 2023).

WhatsApp was selected not only because it is widely used, but also because it is functional and suitable for older adults (Balki et al., 2023). The platform allows asynchronous access and simple navigation, and enables the delivery of information in various formats, such as text, images, voice notes, and videos (R.-Y. Wang et al., 2021). This accommodates the different literacy levels and sensory limitations commonly found in elderly populations (Shi et al., 2024). This accessibility likely contributed to sustained engagement among participants throughout the three-week intervention, which is an important mechanism underlying the observed improvement in knowledge. Meanwhile, regular blood pressure monitoring via a WhatsApp group supports continuous monitoring, the early detection of changes in blood pressure, and prompt intervention (Bozorgi et al., 2021). This suggests that telenursing is an effective way of lowering systolic blood pressure, as it increases knowledge and provides regular monitoring and social support, thereby strengthening self-management behaviours in hypertensive patients.

In contrast, diastolic blood pressure significantly decreased within both groups, though there was no significant difference between them. This finding is consistent with previous evidence indicating that the diastolic blood pressure of older adults is less responsive to short-term non-pharmacological interventions due to age-related vascular stiffness (Glazier, 2022;

X. Wang & Cai, 2022). Evidence from meta-analyses indicates that longer intervention durations are often required to achieve meaningful changes in diastolic blood pressure among elderly populations (Teng et al., 2025). The relatively short intervention period of three weeks in this study may therefore have limited the observable effect between groups for diastolic outcomes.

The elderly community has unique characteristics that require a special approach to the implementation of telenursing (Rodrigues et al., 2024). Studies show that older adults use WhatsApp to communicate and obtain health information. They use WhatsApp groups for learning, entertainment, and daily communication (Arjuna & Nurmagandi, 2023). This challenges the misconception that older adults are unable to use digital technology (Cho & Cho, 2023). Gerontological research indicates that older adults are more receptive to technology that offers immediate benefits and is user-friendly. WhatsApp meets these criteria because it enables simultaneous communication with family members and healthcare providers (Balki et al., 2023). This method can help to overcome the geographical and mobility challenges that older adults often face when accessing health information services.

Although seemingly effective, WhatsApp Group-based telenursing has several limitations. Dependence on the internet and smartphones can be a barrier for some older adults with low socioeconomic status. Furthermore, digital differentiation in technological knowledge can impact active participation in groups. Confusion among group members can arise from excessive information if not managed properly. Furthermore, privacy and confidentiality of health information on social media platforms require specific protocols. Research by Chen et al. (2024) found that some older adults experienced technology anxiety when using digital health applications. Therefore, a comprehensive readiness evaluation and training are necessary for effective telenursing implementation.

Several limitations should be taken into account when interpreting the results of this study. Firstly, the lack of non-random group allocation may have introduced selection bias, despite the comparable baseline characteristics of the groups. Secondly, the statistical power of 70% may have reduced the ability to detect smaller effects, particularly concerning diastolic blood pressure. Thirdly, although blood pressure measurements were standardised, they may still be subject to variability, and the presence of a group-based intervention may have introduced a contaminating effect, despite efforts to minimise information sharing between groups. Finally, the short duration of the intervention limits conclusions regarding the long-term sustainability of the observed effects.

Despite these limitations, the findings of this study have important implications for community nursing practice. WhatsApp group-based telenursing is a feasible and scalable approach to delivering health education to older adults with hypertension, particularly in areas with scarce healthcare facilities. However, future studies should include longer follow-up periods, behavioural outcome measures, and economic evaluations to strengthen the evidence base for policy-level implementation.

Conclusion

Health education delivered through WhatsApp Group–based telenursing was associated with a significant improvement in hypertension-related knowledge and a greater reduction in systolic blood pressure among older adults compared with conventional education. In contrast, although diastolic blood pressure decreased significantly within both groups, no statistically significant difference was observed between the intervention and control groups. These findings suggest that WhatsApp group–based telenursing can serve as a feasible and practical approach for community nursing programs to support hypertension education and systolic blood pressure control among older adults. Further studies with longer intervention durations, larger samples, and economic evaluations are warranted to assess the sustainability and cost-effectiveness of this approach.

Conflicting Interest

All authors declare no conflict of interest.

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