Jurnal Keperawatan Suaka Insan (JKSI)
Volume 10, No 2, Juli-Desember 2025
P-ISSN : 2527-5798, E-ISSN : 2580-7633

ACTIVITY PATTERNS AND HYPERTENSION IN THE ELDERLY WITHIN THE WORKING AREA OF HALONG COMMUNITY HEALTH CENTER BALANGAN, INDONESIA

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Article Info

Article history:

Received April 11, 2025
Accepted August 11, 2025

Keywords:

Correlational Study
Elderly
Hypertension
Physical Activity
Public Health

ABSTRACT

Hipertensi merupakan masalah kesehatan yang prevalen pada populasi lanjut usia (lansia) dan seringkali diasosiasikan dengan rendahnya tingkat aktivitas fisik. Kondisi ini dapat menurunkan kualitas hidup dan meningkatkan risiko komplikasi lebih lanjut. Penelitian ini bertujuan untuk menganalisis hubungan antara pola aktivitas fisik dengan kejadian hipertensi pada lansia. Sebuah studi kuantitatif dengan desain korelasional dilakukan di wilayah kerja Puskesmas Halong, Kabupaten Balangan. Sebanyak 91 responden lansia berpartisipasi dalam penelitian ini, dipilih menggunakan teknik simple random sampling. Analisis data menggunakan uji korelasi Spearman Rank untuk menguji hubungan antar variabel. Hasil penelitian menunjukkan bahwa mayoritas responden memiliki pola aktivitas dalam kategori baik (57,1%) dan menderita hipertensi derajat I (44,0%). Analisis bivariat membuktikan adanya hubungan negatif yang signifikan secara statistik antara pola aktivitas dengan kejadian hipertensi (p = 0,017). Disimpulkan bahwa terdapat hubungan yang signifikan antara pola aktivitas dan kejadian hipertensi pada populasi lansia yang diteliti, di mana aktivitas yang lebih baik berkorelasi dengan kejadian hipertensi yang lebih rendah.

Hypertension is a prevalent health issue among the elderly population and is often associated with low levels of physical activity. This condition can diminish quality of life and elevate the risk of further complications. This study aimed to analyze the relationship between physical activity patterns and the incidence of hypertension in the elderly. A quantitative study with a correlational design was conducted within the working area of the Halong Community Health Center, Balangan Regency. A total of 91 elderly respondents participated in this research, selected using a simple random sampling technique. Data were analyzed using the Spearman Rank correlation test to examine the relationship between variables. The results indicated that the majority of respondents had a good activity pattern (57.1%) and suffered from stage I hypertension (44.0%). Bivariate analysis confirmed a statistically significant negative correlation between activity patterns and the incidence of hypertension (p = 0.017). It was concluded that there is a significant relationship between activity patterns and the incidence of hypertension in the studied elderly population, wherein better activity levels are correlated with a lower incidence of hypertension.

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Introduction

The aging process, definitively commencing at the age of 60, is a biological phenomenon characterized by the progressive decline of organ and tissue functions. Concurrently with the global increase in life expectancy, the elderly population is growing exponentially. Projections from the World Health Organization (WHO) indicate a surge in the elderly population from 600 million to 2 billion by 2050. Indonesia faces a similar demographic trend, with data showing an increase in the percentage of its elderly population from 9.92% (26.82 million people) in 2020, to 10.82% in 2021, and reaching 11.75% in 2023 (Lumowa & Rayanti, 2024).

Although this increase reflects successes in health development, this demographic transition also presents significant challenges, particularly within the health sector. The elderly are a vulnerable group for non-communicable diseases (NCDs), with hypertension being one of the most common and primary conditions of concern (Sudayasa et al., 2023). Data from the 2018 Basic Health Research (RISKESDAS) consistently identifies hypertension as the disease with the highest prevalence among the elderly, caused by structural changes and increased arterial stiffness.

One of the most crucial lifestyle factors in modulating blood pressure in the elderly is physical activity. Numerous studies have consistently demonstrated a strong relationship between regular physical activity and a reduced risk of hypertension (Hafni, et al., 2021; Laili, et al., 2020). Structured physical activity, such as exercise, is proven to decrease arterial stiffness and enhance cardiorespiratory endurance (Suarayasa et al., 2023). Conversely, a sedentary lifestyle is a major risk factor; one study revealed that 75.4% of elderly individuals with hypertension do not exercise regularly (Agustina et al., 2014). Interventions that promote physical activity, even in mild forms like progressive muscle relaxation, have proven effective in controlling blood pressure and improving the quality of life for the elderly (Sari & Putri, 2023).

However, the narrative regarding physical activity becomes more complex within the specific socio-economic context of Indonesia. Contrary to the general depiction of the elderly as non-productive, national data indicate a rising trend of elderly individuals remaining in the workforce, increasing from 47.48% in 2014 to 53.93% in 2023 (Directorate of Social Welfare Statistics, 2023). This phenomenon is often not a matter of choice but a necessity driven by the absence of adequate pension security.

The activity performed by these working elderly is not structured exercise for health, but rather labor-intensive physical work, such as factory labor, farming, or construction work (Utomo, 2017). This type of activity is often accompanied by physical and psychological stressors, including financial pressure to not burden their families (Ramadhayanty & Murlianti, 2023) and the occupational stress itself. Chronic stress is known to trigger the release of adrenaline, which directly increases heart rate and blood pressure (Suarayasa et al., 2023). This creates a paradox: on one hand, these elderly individuals are physically "active," yet on the other, this activity could potentially be a source of stress that exacerbates their hypertension.

This phenomenon is highly relevant to the conditions in the working area of the Halong Community Health Center, Balangan Regency. Preliminary study data collected from October to December 2024 showed a significant number of outpatient visits by elderly individuals with hypertension, with a total of 911 elderly persons identified across 17 villages. Field observations also confirmed that a majority of the elderly in this region remain actively employed in the agrarian sector as farmers and small traders, occupations that are physically demanding yet unstructured.

Although the general relationship between physical activity (as exercise) and hypertension has been extensively researched, a profound gap in understanding exists regarding how patterns of intensive, daily-labor activity, driven by economic necessity, influence hypertension status in this unique rural elderly population. It remains unclear whether this type of activity confers the same protective effects as structured exercise, or if it instead becomes a risk factor due to the accompanying physical and financial stress.

Therefore, this research is both important and urgent to conduct in this specific location. Its purpose is to deeply analyze the relationship between daily activity patterns (including occupational work) and the incidence of hypertension among the elderly in the working area of the Halong Community Health Center, in order to provide contextual and relevant empirical evidence for the development of local public health programs

Methods

Research Design

This study employed a quantitative method with a correlational design, aiming to identify the relationship between physical activity patterns and the incidence of hypertension among the elderly in the working area of Halong Community Health Center, Balangan Regency. The research was conducted from February to April 2025.

Population and Sample

The target population for this study comprised all elderly individuals registered in the working area of Halong Community Health Center, totaling 911 people.

The sample size was determined using the Slovin's formula with a margin of error (e) set at 10% (0.1), a common precision level in public health research. The calculation was as follows:

$$n=1+Ne2N=1+911(0.1)2911=10.11911≈90.1$$

Based on this calculation, the minimum sample size was 90.1, which was rounded up to 91 respondents to account for potential incomplete data or dropouts. The sample was selected using a simple random sampling technique.

Research Instruments

The instruments used in this study consisted of two parts:

1. Physical Activity Pattern: This was measured using the Physical Activity Scale for the Elderly (PASE) questionnaire, which has been adopted and validated in numerous studies, including one by Esat (2023). The PASE instrument is specifically designed to assess the physical activity level of the elderly over the last seven days. It has demonstrated good reliability, with a Cronbach's Alpha coefficient reported in the literature to be approximately 0.75, indicating acceptable internal consistency.
2. Hypertension Status: Blood pressure data were collected through direct measurement following a standardized procedure.
    a. Instrument: A routinely calibrated digital sphygmomanometer (Omron HEM-7121) was used.
    b. Measurement Procedure: Measurements were taken by a trained researcher. Respondents were asked to sit quietly for 5-10 minutes prior to measurement. Blood pressure was measured twice on the right arm with a 2-3 minute interval between readings. The average of the two readings was recorded as the final value.
    c. Classification: Hypertension status was classified according to the Joint National Committee 8 (JNC 8) guidelines as follows: Normal (<120/80 mmHg), Prehypertension (120-139/80-89

mmHg), Stage 1 Hypertension (140-159/90-99 mmHg), and Stage 2 Hypertension (≥160/100 mmHg).

Data Analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS). Univariate analysis was performed to present frequency distributions and descriptive statistics for each variable. To test the hypothesis of a relationship between physical activity patterns and hypertension, bivariate analysis was conducted using the Spearman Rank Correlation Test, as the data did not meet the assumption of normality.

Ethical Considerations

This study received ethical approval from the Research Ethics Committee of the Institute of Research and Community Service (LPPM) at Universitas Sari Mulia, under ethics approval letter No. 025/KEP-UNISM/I/2025. Prior to data collection, the researcher provided a thorough explanation of the study's objectives, benefits, procedures, and the rights of the respondents. Participation was voluntary, and all consenting respondents were required to sign an informed consent form. The confidentiality and anonymity of respondents' identities and data were ensured through the use of codes and secure data storage.

Results

Characteristics of Respondents

Univariate analysis was conducted to describe the demographic characteristics and research variables. The results are presented in Table 1.

Table 1. Frequency Distribution of Physical Activity Patterns and Hypertension Incidence among the Elderly in the Working Area of Halong Community Health Center (N=91)

Variable	Category	Frequency (n)	Percentage (%)
Physical Activity Pattern	Poor Activity Pattern	39	**42.9**
	Good Activity Pattern	52	**57.1**
Kejadian Hipertensi	Normal	9	**9.9**
	Prehypertension	16	**17.6**
	Hipertensi Derajat I	40	**44.0**
	Hipertensi Derajat II	**26**	**28.6**

As shown in Table 1, the descriptive analysis indicates that more than half of the respondents (57.1%) had a good physical activity pattern. Regarding hypertension status, the most prevalent category was Stage I Hypertension (44.0%), followed by Stage II Hypertension (28.6%). Only a small fraction of respondents (9.9%) had blood pressure within the normal range.

Analysis of the Relationship between Physical Activity Patterns and Hypertension Incidence

To test the research hypothesis, a bivariate analysis using the Spearman Rank correlation test was performed. The results are presented in Table 2.

Tabel 2. Correlation Analysis of Physical Activity Patterns and Hypertension Incidence (N=91).

		Physical Activity Pattern	Hypertension Incidence
Physical Activity Pattern	Correlation Coefficient	1.000	-.249*
	Sig. (2-tailed)	.	.017
	N	91	91
Hypertension Incidence	Correlation Coefficient	-.249*	1.000
	Sig. (2-tailed)	.017	.
	N	91	91

* Correlation is significant at the 0.05 level (2-tailed).

The results in Table 2 demonstrate the relationship between physical activity patterns and the incidence of hypertension. For the purpose of this correlation analysis, the hypertension incidence variable was ordinally coded (e.g., 0=Normal, 1=Prehypertension, 2=Stage I Hypertension, 3=Stage II Hypertension), where a higher score represents a greater severity of hypertension.

The analysis yielded a Spearman's correlation coefficient (r) of -0.249 with a significance value (p-value) of 0.017. Since the p-value (0.017) is less than the alpha level of significance ($\alpha = 0.05$), it can be concluded that there is a statistically significant relationship between the two variables.

The negative correlation coefficient ($r = -0.249$) indicates a weak, inverse relationship between the physical activity pattern and the severity of hypertension. This is interpreted to mean that the better or higher an elderly individual's physical activity score, the lower their score for the incidence or stage of hypertension. Therefore, it is concluded that there is a significant negative relationship between physical activity patterns and the incidence of hypertension among the elderly in the working area of Halong Community Health Center.

Discussion

This study confirmed a statistically significant relationship between physical activity patterns and the incidence of hypertension among the elderly in the working area of Halong Community Health Center ($p = .017$). The analysis yielded a Spearman's correlation coefficient of -0.249, indicating a weak, inverse relationship. This suggests that while higher levels of physical activity are associated with a lower severity of hypertension, its overall influence in this specific population is modest. The weakness of this correlation implies that physical activity is not the primary determinant of blood pressure status here, compelling a deeper investigation into the interplay of lifestyle factors.

The most compelling finding of this research lies in a seeming paradox: a majority of the elderly population (57.1%) were found to have good physical activity patterns, yet an even larger majority (72.6%) suffered from either Stage I or Stage II hypertension. This apparent contradiction challenges the conventional wisdom that high activity levels are a robust safeguard against hypertension and raises a critical question: why does being physically active not confer a stronger protective effect in this community?

One potential explanation lies in the nature and context of the physical activity itself. The primary form of activity for this population is agrarian labor, such as farming and gardening. While physically demanding, this type of work is often characterized by sporadic bursts of intense effort rather than the sustained, rhythmic

aerobic exercise known to yield optimal cardiovascular benefits. It is plausible that the "activity" measured, while high in quantity, lacks the specific quality required to significantly impact blood pressure regulation.

More importantly, the weak correlation strongly suggests the dominance of other, more powerful risk factors. The physically demanding lifestyle of these elderly individuals is not a choice made for leisure or health, but a response to economic necessity. This introduces significant psychosocial stressors. Chronic financial pressure and the physical strain of labor are known independent risk factors for hypertension, as they can trigger a persistent stress response that elevates blood pressure. Therefore, it is highly likely that any cardiovascular benefits gained from their physical labor are being negated by the concurrent stress. Furthermore, dietary habits, which were not measured in this study, are a probable confounding variable. As documented in other rural Indonesian communities, diets high in sodium and fat are common and could easily overwhelm the modest benefits of physical activity (Clarisa et al., 2021; Maqfirah et al., 2024).

These findings have significant practical implications for public health interventions at the Halong Community Health Center. The key takeaway is that a holistic approach is essential. Simply encouraging the elderly to "be active" is insufficient and may overlook the root causes of hypertension in this community.

First, health promotion efforts must differentiate between occupational labor and structured, health-enhancing exercise. The health center should champion low-impact, socially engaging activities that are proven to manage blood pressure and reduce stress, such as establishing routine group-based senior gymnastics (senam lansia) or morning walking clubs. Second, and most critically, any program aimed at controlling hypertension must integrate nutritional counseling and stress management. Addressing the community's dietary patterns, particularly the need for a low-salt diet, and providing tools for managing financial and physical stress are likely to be far more impactful than focusing on physical activity in isolation. By tackling these interconnected factors, the health center can develop more effective and contextually relevant strategies to improve the cardiovascular health of the elderly population it serves.

Study Limitations

This study, while providing valuable insights into the relationship between activity patterns and hypertension among the elderly in the working area of Halong Community Health Center, has several limitations that must be acknowledged. First, the correlational research design employed can only identify an association between variables. This design does not permit the establishment of a definitive cause-and-effect relationship; that is, it cannot be concluded whether a poor activity pattern leads to hypertension or, conversely, if a hypertensive condition restricts an individual's ability to be active. Furthermore, the study's focus on a single community health center's catchment area may limit the generalizability of the findings to elderly populations in other regions with different demographic, socio-economic, or environmental characteristics.

A second limitation lies in the data collection methods and the potential for uncontrolled confounding variables. The measurement of physical activity relied on self-reporting, which is susceptible to recall bias and social desirability bias. Moreover, hypertension is a multifactorial condition. Other influential factors such as dietary patterns, genetics, stress levels, and medication adherence were not comprehensively measured in this study, which could have influenced the observed strength of the relationship between activity patterns and hypertension.

To address these limitations, future research is strongly recommended to employ more robust methodologies. The use of a longitudinal design would allow researchers to observe changes in variables over time, thereby providing a better understanding of causal directionality. Additionally, to enhance data accuracy, the measurement of physical activity should not solely rely on questionnaires but should also incorporate objective tools such as accelerometers. Finally, subsequent studies should include a more comprehensive multivariate analysis that specifically measures potential confounding variables like dietary intake and stress levels to obtain a more accurate depiction of the relationship.

Conclusion

Based on a study of 91 elderly individuals in the working area of Halong Community Health Center, Balangan Regency, this research concludes that a significant relationship exists between activity patterns and the incidence of hypertension. This finding underscores the importance of physical activity's role within the context of elderly health, particularly concerning hypertension as a prevalent health issue in this age group. Thus, activity patterns emerge as a factor that warrants attention in the prevention and management of hypertension in this elderly population, indicating the need for the promotion of an active lifestyle as part of public health strategy.

Acknowledgment

The author wishes to thank Mohammad Basit, S.Kep., Ns., MM; Hj. Latifah, S.Kep., Ns., M.Kep; and Cynthia Eka Fayuning Tjomiadi, S.Kep., Ns., MNS, for their invaluable guidance and supervision in the completion of this research.

Conflict of Interest

The authors declare that there is no conflict of interest associated with the research process, authorship, or the publication of this scientific article.

Credit Author Statement

Sahmilni: Conceptualization, methodology**,** Formal Analysis, validation, Project administration, writing-original draft, Investigation, resources, funding acquisition**. Mohammad Basit:** Validation, software, data curation**. Latifah:** Writing-review & editing. **Cynthia Eka Fayuning Tjomiadi:** Supervision, validation, data curation**,** Visualization, funding acquisition.

References

Abdullah, K., Jannah, M., Aiman, U., Hasda, S., Fadilla, Z., Taqwin, Masita, Ardiawan, K. N., & Sari, M. E. (2022). *Metodologi Penelitian Kuantitatif*. Yayasan Penerbit Muhammad Zaini.

Agustin, F. (2023). *Pengaruh Terapi Dzikir Terhadap Tekanan Darah Dan Kualitas Hidup Pada Lansia Hipertensi Di Wilayah Kerja Puskesmas Wana Kecamatan Melinting, Kabupaten Lampung Timur* [Tesis, Universitas Lampung]. Digilib Unila. http://digilib.unila.ac.id/77915/

Agustina, S., Sari, S. M., & Savita, R. (2014). Faktor-Faktor yang Berhubungan dengan Hipertensi Pada Lansia di Atas Umur 65 Tahun. *Jurnal Kesehatan Komunitas*, *2*(4), 180–186. https://jurnal.htp.ac.id/index.php/keskom/article/view/70

Akbar, F., Nur, H., & Humaerah, U. I. (2020). Karakteristik Hipertensi Pada Lanjut Usia Di Desa Buku. *Jurnal Wacana Kesehatan*, *5*(2), 35–42. https://stikessantupaulus.e-journal.id/JWK/article/view/88

Andriyani. (2020). *Determinan Kejadian Hipertensi Lansia Di Rsu Kota Tangerang Selatan Tahun 2019* [Tesis, Universitas Respati Indonesia]. Repository UMJ. https://repository.umj.ac.id/6851/

Badan Pusat Statistik. (2023). *Statistik Penduduk Lanjut Usia 2023*. Direktorat Statistik Kesejahteraan Rakyat. https://www.bps.go.id/publication/2023/12/29/7de98f71933543249765393a/statistik-penduduk-lanjut-usia-2023.html

Diartin, S. A., Zulfitri, R., & Erwin. (2021). Gambaran Interaksi Sosial Lansia Berdasarkan Klasifikasi Hipertensi Pada Lansia Di Masyarakat. *Jurnal Ilmu Kedokteran dan Kesehatan Indonesia*, *1*(3).

Handoyo, L. (2018). *Laporan Pendahuluan Asuhan Keperawatan Pada Klien Lanjut Usia (Lansia) Dengan Masalah Impecunity/Poverty (Penurunan/Tiada Penghasilan)* [Naskah tidak dipublikasikan]. ResearchGate. https://www.researchgate.net/publication/322938911_PAPER_-_ASUHAN_KEPERAWATAN_PADA_LANSIA_DENGAN_IMPECUNITY

Hufadz, M. I. (2023). *Pengaruh Indeks Masa Tubuh, Persen Lemak Tubuh, Aktivitas Fisik, Terhadap Kebugaran Jasmani Siswa Smp Negeri 3 Bandar Lampung* [Tesis, Universitas Negeri Yogyakarta].

Kementerian Kesehatan Republik Indonesia. (2017). *Pedoman Umum Gentas: Gerakan Berantas Obesitas*. Direktorat Pencegahan dan Pengendalian Penyakit Tidak Menular. http://p2ptm.kemkes.go.id/dokumen-p2ptm/pedoman-umum-gentas-gerakan-berantas-obesitas

Kholifah, S. N. (2016). *Keperawatan Gerontik*. Pusat Pendidikan Sumber Daya Manusia Kesehatan, Kementerian Kesehatan Republik Indonesia.

Khotimah, N. K. (2018). *Model Peningkatan Kepatuhan Gaya Hidup Sehat Pada Pasien Hipertensi Berbasis Social Cognitive Theory Di Wilayah Kerja Puskesmas Kota Bima* [Disertasi, Universitas Airlangga]. Repository Unair. https://repository.unair.ac.id/77510/

Lin, X., & Li, H. (2021). Obesity: Epidemiology, Pathophysiology, and Therapeutics. *Frontiers in Endocrinology*, *12*, 706978. https://doi.org/10.3389/fendo.2021.706978

Lumowa, Y. R., & Rayanti, R. E. (2024). Pengaruh Usia Lanjut Terhadap Kesehatan Lansia. *Jurnal Keperawatan*, *16*(1), 363–372. http://journal.stikeskendal.ac.id/index.php/Keperawatan/article/view/1004

Mujiadi, & Rachmah, S. (2022). *Buku Ajar Keperawatan Gerontik*. Penerbit STIKES Majapahit Mojokerto.

Mulyono, D. P., & Indriani. (2022). Hubungan Karakteristik Lansia Dengan Status Kesehatan Di Wilayah Kerja Puskesmas Godean 2 Yogyakarta. *Jurnal Ilmiah Fisioterapi Muhammadiyah*, *2*(2), 16–27. https://journal.um-surabaya.ac.id/Jar/article/view/16718

Paramita, R. W. D., Rizal, N., & Sulistyan, R. B. (2021). *Metode Penelitian Kuantitatif*. Widya Gama Press.

Priadana, H. M. S., & Sunarsi, D. (2021). *Metode Penelitian Kuantitatif*. Pascal Books.

Putri, F. Z., Afnibar, Jemkhairil, & Yanti, F. (2023). Problematika Lansia Rentan Yang Bekerja Di Sektor Informal. *Tathwir: Jurnal Pengembangan Masyarakat Islam*, *14*(1), 20–35. https://ejournal.uinib.ac.id/jurnal/index.php/tathwir/article/view/5144

Ramadhayanty, T., & Murlianti, S. (2023). Kemandirian Pekerja Lansia Dalam Memenuhi Kebutuhan Hidup Di Tengah Penurunan Fisik Dan Sosial Di Kecamatan Bontang Utara Kota Bontang. *eJournal Pembangunan Sosial*, *12*(3), 171–182. https://ejournal.ps.fisip-unmul.ac.id/site/index.php/JPS/article/view/8098

Rumawas, M. E. (2021). Pengukuran Kualitas Hidup Sebagai Indikator Status Kesehatan Komprehensif Pada Individu Lanjut Usia. *Jurnal Muara Medika Dan Psikologi Klinis*, *1*(1), 71–78. https://doi.org/10.24912/jmmpk.v1i1.12088

Sari, M. T., & Putri, M. E. (2023). Pengendalian dan Pencegahan Komplikasi Hipertensi pada Lansia Melalui Pendidikan Kesehatan Perilaku Patuh dan Teknik Relaksasi Otot Progresif. *Jurnal Abdimas Kesehatan (JAK)*, *5*(1), 145–151. https://doi.org/10.36565/jak.v5i1.483

Soesana, A., Subakti, H., Karwanto, Fitri, A., Kuswandi, S., Sastri, L., Falani, I., Aswan, N., Hasibuan, F. A., & Lestari, H. (2023). *Metodologi Penelitian Kuantitatif*. Yayasan Kita Menulis.

Suarayasa, K., Hidayat, M. I., & Gau, R. (2023). Faktor Resiko Kejadian Hipertensi Pada Lansia. *Jurnal Medical Profession (MedPro)*, *5*(3), 113-119. https://jurnal.fk.untad.ac.id/index.php/medpro/article/view/1151

Sudayasa, I. P., Oktavia, A. R., Salim, N. A., Damayanti, N., Yusnayanti, C., Sriwaty, I., Harianti, R., Saltar, L., Puyri, M., Marlina, Jitowiyono, S., & Suharni. (2023). *Kesehatan Usia Lanjut*. Eureka Media Aksara.

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Utomo, A. S. (2017). Status Kesehatan Lansia Yang Bekerja. *Jurnal Informasi Kesehatan Indonesia*, *3*(1), 8–13. https://ojs.poltekkes-malang.ac.id/index.php/JIKI/article/view/44

Verdyan, N. P. (2023). *Hubungan Aktivitas Fisik Dengan Tekanan Darah Tinggi Pada Pasien Hipertensi Di Puskesmas X Kabupaten Bekasi* [Naskah tidak dipublikasikan].

Wicaksono, A., & Handoko, W. (2021). *Buku Aktivitas Fisik dan Kesehatan*. IAIN Pontianak Press. https://www.researchgate.net/publication/353605384_Buku_Aktivitas_Fisik_dan_Kesehatan

Wulandari, S. R., Winarsih, W., & Istichomah. (2023). Peningkatan Derajat Kesehatan Lansia Melalui Penyuluhan dan Pemeriksaan Kesehatan Lansia di Dusun Mrisi Yogyakarta. *Pengabdian Masyarakat Cendekia*, *2*(2), 58–61. https://stikes-yogyakarta.e-journal.id/PMC/article/view/449

Zainuri, H., Subakti, H., Suttrisno, Saftari, M., Sari, A. C., Simarmata, J., Silaban, P. S. M. J., Yuniwati, I., Riana, L. W., & Lotulung, C. V. (2024). *Desain Penelitian Kuantitatif*. Yayasan Kita Menulis.