Int. j. adv. multidisc. res. stud. 2026; 6(3):692-697

Received: 01-04-2026
Accepted: 10-05-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

SiAbai Application-Based Detection of Elder Neglect in Family-Cared Older Adults with Cardiovascular Disease

[1] Lola Felnanda Amri, [2] Efitra, [3] Idrawati Bahar

[1, 2, 3] Department of Nursing, Padang Health Polytechnic, Ministry of Health, Padang, West Sumatra, Indonesia

DOI: https://doi.org/10.62225/2583049X.2026.6.3.6348

Corresponding Author: **Efitra**

Abstract

This Elder neglect among family-cared older adults with cardiovascular disease represents a significant but under-detected public health challenge in Indonesia. This study aimed to develop and validate the SiAbai online application as an instrument for early detection of neglect risk in elderly patients with cardiovascular disorders cared for by their families. A Research and Development (R&D) design was employed across two phases (2021–2022) in three villages within the Puskesmas Nanggalo Community Health Center working area, Padang, West Sumatra. A total of 108 families caring for elderly individuals with cardiovascular conditions participated in the second-phase data collection. Instrument validity and reliability were assessed using factor analysis, including Kaiser Meyer Olkin (KMO) sampling adequacy, Bartlett's Test of Sphericity, Anti-image Matrices, Communalities, Total Variance Explained, Scree Plot, Component Matrix, and Rotated Component Matrix. Results confirmed that all 49 question items loaded satisfactorily (KMO = 0.601 > 0.50; Sig. = 0.0001 < 0.05; extraction values > 0.50), yielding 15 interpretable factors that collectively explained 73.95% of total variance. Descriptive analysis revealed gaps in family health task performance across five domains: recognizing cardiovascular health problems, deciding on appropriate care actions, providing physical care, modifying the home environment, and utilizing health services. The SiAbai application demonstrated feasibility and validity for real-time, community-based neglect screening and offers practical utility for primary healthcare workers in early identification and intervention. Widespread deployment of this tool could substantially reduce preventable disability and mortality among vulnerable elderly populations.

Keywords: Elder Neglect, Cardiovascular Disease, Siabai Application, Family Health Tasks, Neglect Screening, Elderly Care

Introduction

The global elderly population is expanding rapidly. The World Health Organization (WHO) projects that the proportion of individuals aged 60 years and above will double from 12% to 22% between 2015 and 2050 [1]. In Southeast Asia, the elderly constitute approximately 8% of the population, or around 142 million people [2]. Indonesia is no exception: by 2020, the elderly population had reached approximately 80 million individuals, or 11.34% of the total population, and projections indicate a threefold increase by 2025 compared to 2023 [2].

Aging is invariably accompanied by a decline in functional capacity. As older adults become increasingly dependent on family and caregivers for basic activities of daily living, unmet care needs can escalate into neglect, defined as a caregiver's failure to meet an elderly person's physical, emotional, psychological, or financial needs, thereby causing potential harm [3]. National data from BPS (Statistics Indonesia) indicate that 9.55% of Indonesian elderly are classified as neglected, 23.52% as at-risk of neglect, and only 66.94% as not neglected [3]. These figures almost certainly underestimate the true burden, as neglect is frequently undetected and underreported.

Neglect is particularly consequential when it intersects with chronic disease. Cardiovascular disease (CVD), encompassing hypertension, coronary heart disease, and stroke, accounts for 71% of non-communicable disease (NCD) mortality globally and 35% of all deaths in low- to middle-income countries [4]. In Indonesia, hypertension alone affects nearly one-third of the adult population, and prevalence escalates markedly with age [5]. Elderly individuals with CVD who experience concurrent neglect face compounded risks: poorly controlled hypertension, missed medications, delayed emergency recognition, and inadequate environmental safety modifications collectively accelerate disability and premature death [4, 6].

Despite this dual burden, systematic tools for early detection of neglect in family-cared elderly patients with CVD remain

scarce in Indonesian primary healthcare settings. Existing global screening instruments, including the Elder Assessment Instrument (EAI) and the Indicators of Abuse (IOA), were developed for Western institutional contexts and have not been validated for community-based on family caregiving in Indonesia [7]. This gap motivated the development of the SiAbai application (Sistem Abai Neglect System), an Indonesian-language, culturally adapted, online screening instrument grounded in the five family health tasks framework: (1) recognising health problems, (2) deciding on appropriate health actions, (3) providing nursing care, (4) modifying the home environment, and (5) utilising health services [8].

Previous manual instrument work conducted in 2021 demonstrated the construct's preliminary validity but required face-to-face administration, limiting scalability. The 2022 research phase migrated the instrument to a web-based application format, enabling real-time data capture, automated scoring, and remote monitoring by community health workers. This article reports the full development, factor-analytic validation, and field results of the SiAbai application-based neglect detection system, contributing evidence for its integration into routine primary care assessment of older adults with CVD.

Materials and Methods

Study Design and Setting

This study adopted a Research and Development (R&D) design, executed in two sequential phases. Phase 1 (2021) focused on instrument construction and manual validation; Phase 2 (2022) converted the validated instrument into an online application (SiAbai) and conducted field testing. The study was conducted in three villages, Surau Gadang, Kurao Pagang, and Gurun Laweh, within the Nanggalo Community Health Center (Puskesmas Nanggalo) working area, Padang City, West Sumatra Province, Indonesia.

Participants

The target population comprised family caregivers of elderly individuals (aged ≥ 60 years) diagnosed with at least one cardiovascular disorder (hypertension, coronary heart disease, or stroke). Families were eligible if the elderly family member had an active cardiovascular diagnosis confirmed at Puskesmas Nanggalo and resided in one of the three study villages. A total of 108 family caregivers were recruited for the Phase 2 application testing.

Instrument Development

Instrument items were developed in Phase 1 through a systematic literature review and expert consultation, guided by the five family health task domains [8]. Items underwent content validity review by two nursing academics and one community health specialist. Phase 2 expanded and refined items based on Phase 1 factor-analytic results, and the finalized 49-item instrument was embedded in the SiAbai web application. Item formats varied by domain: true/false (domain 1), four-point Likert scale Strongly Agree to Strongly Disagree (domain 2), frequency scale Always/Sometimes/Never (domain 3), yes/no (domains 4 and 5).

Statistical Analysis

Instrument psychometric properties were evaluated using exploratory factor analysis (EFA) in SPSS. Pre-conditions for EFA were assessed with the Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy (threshold > 0.50) and Bartlett's Test of Sphericity ($p < 0.05$). Item adequacy was evaluated via Anti-image Matrices (MSA > 0.50 for retention). Communalities were inspected for factor-explanation capacity (extraction > 0.50). Factor retention followed the eigenvalue-greater-than-one criterion (Kaiser rule), with corroborating visual inspection of the Scree Plot. Orthogonal (Varimax) rotation was applied to the Component Matrix to achieve a Rotated Component Matrix, facilitating conceptual interpretation of factor loadings. Descriptive frequency and percentage analysis summarised family performance across all five domains 3. Conclusion Any comments or suggestions are welcome so we can continually improve this template to meet all authors' research needs.

Results

1. Factor Analysis of the SiAbai Instrument

The KMO value of 0.601 exceeded the minimum threshold of 0.50, and Bartlett's Test of Sphericity yielded a p-value of 0.0001 (< 0.05), confirming that the correlation matrix was suitable for factor analysis. Anti-image Matrices confirmed MSA values above 0.50 for all 49 items, indicating that each item contributed adequately to the shared variance structure. Communalities extraction values exceeded 0.50 for all items, demonstrating that the factors collectively explained a substantial proportion of each item's variance.

The Total Variance Explained output identified 15 factors with eigenvalues greater than 1.0, cumulatively accounting for 73.95% of total variance. This factor structure was corroborated by the Scree Plot, which revealed a clear inflection point after factor 15. After Varimax rotation, the Rotated Component Matrix assigned each item unambiguously to a single factor, confirming construct validity and the absence of problematic cross-loadings. All 49 items were therefore retained for inclusion in the SiAbai application.

2. Family Ability to Recognize Cardiovascular Health Problems (Table 1)

Domain 1 assessed knowledge of cardiovascular disease management through 16 true/false items administered to 108 respondents. The majority of families demonstrated correct knowledge regarding dietary sodium restriction (94%), adequate rest (97%), and fundamental first-aid protocols such as loosening clothing and assuming a supported position during a cardiac event (94%). However, notable knowledge deficits were observed for: avoidance of alcohol consumption (76% correct), necessity of regular medication adherence (55% correct), recognition of atypical anginal symptoms, including back pain (70%), and appropriate first aid when the elderly patient remains conscious (53%). These gaps indicate that family caregivers are at risk of delayed or incorrect responses during cardiovascular emergencies.

Table 1: The family's ability to recognize cardiovascular health problems

Statement	True (F)	True (%)	False (F)	False (%)	N
Reduce fatty food intake	102	94%	6	6%	108
Restrict dietary salt	102	94%	6	6%	108
Avoid alcohol consumption	82	76%	26	24%	108
Ensure adequate rest	105	97%	3	3%	108
Regular medication intake	59	55%	49	45%	108
Recognise chest discomfort ≥20 min	100	93%	8	7%	108
Recognise cold sweat as heart attack sign	102	94%	6	6%	108
Chest pain as early symptom	102	94%	6	6%	108
Back pain as possible anginal symptom	76	70%	32	30%	108
Call ambulance if unconscious	105	97%	3	3%	108
First aid: give fluid if conscious	57	53%	51	47%	108
First aid: loosen clothing if conscious	102	94%	6	6%	108

3. Family Ability to Decide on Appropriate Health Actions (Table 2)

Domain 2 evaluated decision-making capacity using a four-point Likert scale across 11 items. Overall, 68.6% of responses were Strongly Agree (SA), and 30.6% were Agree (A), indicating generally positive family intention toward care decision-making. However, 3% of respondents expressed disagreement (D) about motivating the elderly to exercise, and 2% disagreed with dedicating time to converse with the elderly. A small but notable 1% of respondents Strongly Disagreed (SD) with motivating exercise, suggesting persistent barriers related to caregiver burden, knowledge, or attitudes. These pockets of non-compliance represent targeted intervention priorities for community nurses.

Table 2: Family's ability to decide on appropriate care actions (n = 108). SA = Strongly Agree; A = Agree; D = Disagree; SD= Strongly Disagree)

Statement	SA (F%)	A (F%)	D (F%)	SD (F%)
Bring to health service for severe chest pain	81 (75%)	27 (25%)	0	0
Seek latest information on CVD care	77 (71%)	31 (29%)	0	0
Educate about smoking avoidance	87 (80%)	20 (19%)	1 (1%)	0
Motivate elderly to exercise	65 (60%)	39 (36%)	3 (3%)	1 (1%)
Accompany for regular health check-up	79 (73%)	29 (27%)	0	0
Monitor medication supply	71 (66%)	35 (32%)	1 (1%)	1 (1%)
Make time to chat with the elderly	70 (65%)	36 (33%)	2 (2%)	0
Monitor blood pressure routinely	77 (71%)	31 (29%)	0	0
Assist in worship activities	74 (69%)	34 (31%)	0	0
Assist in recreation or leisure	68 (63%)	40 (37%)	0	0
Aware of early heart attack signs	69 (64%)	38 (35%)	1 (1%)	0

4. Family Ability to Provide Physical Care (Table 3)

Domain 3 assessed the frequency of care provision using a three-level scale (Always/Sometimes/Never). High consistency was observed for ensuring medication adherence (97% always), assisting with rest (92%), monitoring medication supply (92%), and providing drinking water near the bed (91%). Conversely, only 83% of families consistently provided fresh vegetables and fruit daily, and 76% consistently fed the elderly when they were sick. The 'Sometimes' category, indicating inconsistent care, was most prevalent for dietary provision (17%) and assistance with personal hygiene tasks (17–19%), suggesting caregiver fatigue or resource constraints in these areas.

Table 3: Family ability to provide physical care to the elderly with cardiovascular disorders (n = 108)

Statement	Always (F%)	Sometimes (F%)	Never (F%)
Provide vegetables and fruit daily	90 (83%)	18 (17%)	0
Feed elderly when sick	82 (76%)	25 (23%)	1 (1%)
Place drinking water near bed	98 (91%)	9 (8%)	1 (1%)
Bathe elderly when sick	88 (81%)	19 (18%)	1 (1%)
Clean up after defecation	87 (80%)	20 (19%)	1 (1%)
Clean up after urination	86 (80%)	21 (19%)	1 (1%)
Assist with rest and sleep needs	99 (92%)	9 (8%)	0
Support health-promoting hobbies	94 (87%)	13 (12%)	1 (1%)
Monitor medication supply	99 (92%)	8 (7%)	1 (1%)
Ensure medication adherence	105 (97%)	2 (3%)	0

5. Family Ability to Modify the Home Environment (Table 4)

Domain 4 used a binary Yes/No format to assess environmental safety adaptation. The most universally performed modification was creating a calm and pleasant atmosphere (100%). Adequate room lighting was ensured by clinical consequences.

Table 4: Family ability to modify the home environment for the elderly with cardiovascular disorders (n = 108)

Statement	Health Services (F%)	Traditional (F%)
Last health check-up venue	108 (100%)	0
Care venue during heart attack	107 (99%)	1 (1%)
Venue for obtaining medication	107 (99%)	1 (1%)
Venue for chest pain/anginal symptoms	107 (99%)	1 (1%)
Venue if elderly faints	107 (99%)	1 (1%)

6. Family Ability to Utilize Health Services (Table 5)

Domain 5 assessed whether families directed the elderly to formal health services (hospitals, health centers) versus traditional or alternative medicine. Across all five scenarios, 99–100% of families utilized formal health services, with only one respondent (1%) reporting use of traditional medicine during a cardiac event and for routine cardiovascular care. This high uptake reflects the relatively accessible public health infrastructure in urban Padang and is consistent with broader findings of increasing formal health service utilization in West Sumatra.

Table 5: Family ability to utilize health services for the elderly with cardiovascular disorders (n = 108)

Statement	Health Services (F%)	Traditional (F%)
Last health check-up venue	108 (100%)	0
Care venue during heart attack	107 (99%)	1 (1%)
Venue for obtaining medication	107 (99%)	1 (1%)
Venue for chest pain/anginal symptoms	107 (99%)	1 (1%)
Venue if elderly faints	107 (99%)	1 (1%)

Discussion

The SiAbai application demonstrated strong psychometric properties: the KMO value of 0.601, Bartlett's test of sphericity ($p < 0.001$), MSA values exceeding 0.50 for all items, and extraction communalities above 0.50 confirm that the 49-item instrument measures coherent, well-differentiated constructs. The 15-factor solution, which explains 73.95% of the variance, compares favorably with published elder neglect screening instruments, which typically explain 60-75% of the variance [7]. These results validate the SiAbai instrument for population-level neglect screening in family-cared elderly with CVD. The instrument development approach in this study also aligns with Indrawan and Yaniawati [26], who emphasize that research instruments are measuring devices that are a critical factor in collecting the expected data in a study.

The knowledge gaps identified in Domain 1, particularly around alcohol avoidance (24% incorrect), medication regularity (45% incorrect), and conscious first aid (47% incorrect), align with findings from Mulia and Madepan [9], who reported that families with poor cardiovascular knowledge showed 65.4% higher hypertension incidence in the elderly compared to families with good knowledge (40.5%). Similarly, Sunandar and Suheti [10] found that 92% of families demonstrated positive health recognition attitudes, but actual behavioral performance lagged behind knowledge, consistent with the well-documented knowledge-attitude-practice gap in the community health literature. National epidemiological data confirm that hypertension is the dominant cardiovascular diagnosis in the elderly Indonesian population [5, 25], reinforcing the urgency of targeted family education on CVD self-management and emergency recognition.

Domain 2 findings on decision-making capacity are consistent with those of Wahyudi *et al.* [11], who noted that CVD-affected family members frequently struggle to balance caregiver role performance with economic and occupational demands. The 3% of families expressing disagreement about motivating exercise and 1% Strongly Disagreeing likely represent households facing high caregiver burden, a recognized risk factor for both unintentional neglect and elder mistreatment [12, 18]. Indonesian-specific evidence from Yustisia *et al.* [16] demonstrates that caregiver burden among families of the elderly with chronic illness is multifactorial, encompassing physical, emotional, and financial dimensions, and that community nursing interventions aimed at reducing burden can meaningfully improve care quality. Proactive identification of such families through SiAbai allows targeted social work and psychoeducational intervention before neglect materializes. A complementary study by Eka Putri *et al.* [17] on dementia caregivers in Java similarly found that perceived social support was a significant protective factor against caregiver burden, suggesting that social support assessment should be integrated alongside neglect screening.

The physical care deficits identified in Domain 3, particularly in dietary provision and hygiene assistance, resonate with findings from Putri Aryati *et al.* [13], who documented physical neglect as the most prevalent neglect theme in their phenomenological study of the elderly in Java. Alqarni *et al.* [19] further demonstrated, in a longitudinal study, that sensitizing family caregivers through structured psychoeducation significantly improved care compliance among neglected elderly over a 24-month period, providing a model for the type of intervention that SiAbai-identified at-risk families might benefit from. This study extends those qualitative insights with quantitative frequency data and provides actionable item-level information that clinicians can use to tailor care plans.

Environmental safety deficits in Domain 4, though small in absolute percentage (2%), are clinically significant. Bathrooms represent the single highest-risk fall location for elderly individuals, and fall-related injuries are disproportionately severe in patients with anticoagulated CVD or post-stroke motor deficits [20]. A scientific statement from the American Heart Association [20] explicitly identifies home environmental hazard reduction as a priority intervention for falls prevention in adults with cardiovascular disease. This is further supported by Mackenzie [21], who demonstrated that systematic environmental screening within primary care settings substantially reduces fall incidence in community-dwelling older adults. The SiAbai instrument's Domain 4 items directly map onto evidence-based home safety modification recommendations, enabling nurses to issue targeted home modification referrals based on individual household

profiles.

The near-universal use of formal health services in Domain 5 (99-100%) is an encouraging finding and contrasts with earlier studies from rural Indonesian settings, where utilization of traditional healers remained substantially higher [13]. This may reflect the urban-peri-urban character of the Puskesmas Nanggalo catchment area and the effectiveness of the Jaminan Kesehatan Nasional (JKN) national health insurance program in reducing financial barriers to formal care [14, 24]. Maulana *et al*. [24] showed that JKN coverage has demonstrably reduced out-of-pocket payments for vulnerable populations, thereby improving access to formal health services. Nonetheless, the one respondent who used traditional medicine during an acute cardiac event underscores that even isolated deviations from formal care pathways during emergencies can be life-threatening.

From an implementation science perspective, the SiAbai application offers several advantages over manual screening: real-time data capture, automated scoring and flagging of at-risk families, remote monitoring by health center supervisors, and scalability across Indonesia's distributed primary healthcare network [6]. Evidence from Purwanti *et al*. [23] demonstrates that Indonesian healthcare workers show positive knowledge and attitudes toward digital mobile technology for elderly health management, suggesting that SiAbai could be readily adopted into existing workflows with appropriate training. Sujarwoto *et al*. [22] similarly highlight that mHealth applications have been successfully deployed for health screening in Indonesia, with the main barriers being device literacy and internet connectivity in remote areas — limitations that are less applicable in urban settings like Padang. Its grounding in the five family health tasks framework, a model widely taught in Indonesian community nursing, ensures conceptual alignment with existing professional practice, facilitating adoption without extensive retraining [8, 15].

Conclusion and Recommendation

The SiAbai application-based instrument is a valid, reliable, and feasible tool for the early detection of neglect risk in elderly patients with cardiovascular disease cared for by their families in community settings. Factor analysis confirmed a 49-item, 15-factor structure explaining 73.95% of total variance, with all items meeting psychometric thresholds. Field application in 108 families in Nanggalo, Padang, identified specific, actionable deficits across all five family health task domains, most critically in cardiovascular knowledge, care decision motivation, and home environmental safety. Integration of SiAbai into routine community health center workflows would enable systematic, scalable identification of at-risk elderly and support timely, targeted nursing and social work interventions. Future research should examine SiAbai's predictive validity against confirmed neglect outcomes and evaluate its effectiveness as a component of multicomponent neglect prevention programs across diverse Indonesian settings.

References

1. World Health Organization. Ageing and health. WHO Fact Sheet, 2022. Online available: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health
2. Huda DN, Aulia L, Shafiyah S, Lestari SI, Aini SN, Dewi SK, *et al*. Effectiveness of Exercise in the Elderly to Reduce Joint Pain: Literature Review. Muhammadiyah Journal of Geriatrics. 2022; 3(1):31-35. Doi: https://doi.org/10.24853/mujg.3.1.31-35
3. Syarafina FZ, Pradana AA. Factors Affecting the Level of Community Knowledge about Elderly Neglect. Forikes Voice ealth Research Journal. 2023; 14(2). Doi: https://doi.org/10.33846/sf14220
4. Rahayu D, Irawan H, Santoso P, Susilowati E, Atmojo S, Kristanto H. Early Detection of Non-Contagious Diseases in the Elderly. Journal of Community Care. 2021; 3(1). http://jurnal.globalhealthsciencegroup.com/index.php/JPM
5. Kementerian Kesehatan RI. Laporan Nasional Riskesdas 2018. Jakarta: Badan Penelitian dan Pengembangan Kesehatan, 2019. Online available: https://www.litbang.kemkes.go.id
6. Jaji Natosba J, Fuji Rahmawati. Analysis of Differences in Neglect Screening Assessments in the Elderly Using Manual with Android Mobile Applications. Sriwijaya Nursing Journal. 2020; 7(2). https://drive.google.com/file/d/1I6tizjgSjOtIl
7. Dong X, Simon MA. Elder Abuse as a Global Public Health Problem: An Overview of Evidence, Risk Factors, Consequences, and Implications for Prevention. Journal of Aging & Social Policy. 2020; 32(4-5):356-383. Doi: https://doi.org/10.1080/08959420.2020.1760772
8. Friedman M, Bowden VR, Jones EG. Family Nursing: Research, Theory, and Practice, 5th Ed. Pearson Education, Upper Saddle River NJ, 2003.
9. Mulia Madepan. Implementation of Family Duties in the Health Sector: Making Decisions Regarding Appropriate Health Actions for the Incident of Hypertension in the Elderly. Panca Bhakti Lampung Health Journal. 2018; 6(2):p. 101. Doi: https://doi.org/10.47218/jkpbl.v6i2.45
10. Sunandar K, Suheti T. Implementation of Five Health Tasks in Families with Hypertensive Clients. Ministry of Health Polytechnic Health Research Journal. 2020; 12(2). Doi: https://doi.org/10.34011/juriskesbdg.v12i2.862
11. Wahyudi Upoyo AS, Kuswati A. Assessment of Five Family Tasks in Families with Family Members Suffering from Pulmonary TB. Soedirman Nursing Journal. 2018; 3(3):144-148.
12. Pillemer K, Burnes D, Riffin C, Lachs MS. Elder Abuse: Global Situation, Risk Factors, and Prevention Strategies. The Gerontologist. 2016; 56(S2):S194-S205. Doi: https://doi.org/10.1093/geront/gnw004
13. Putri Aryati D, Dwidiyanti M, Hadi Widyastuti R. Experiences of Javanese Elderly Experienced Family Negligence: A Phenomenological Study. LPPM Muhammadiyah University Purwokerto. 2019; 4.
14. Agustina R, Dartanto T, Sitompul R, *et al*. Universal Health Coverage in Indonesia: Concept, Progress, and Challenges. The Lancet. 2019; 393(10166):75-102. Doi: https://doi.org/10.1016/S0140-6736(18)31647-7
15. Ardhi MRM, Hidayat AS, Ismaya B. The Influence of Brumbach Forearms Pass-Wall-Volley on Volleyball Bottom Passing Ability. Journal of Education and Counselling. 2022; 4(4).

16. Yustisia N, Sahar J, Nursasi AY. The Burden Experience of Family Caregiver of Older Adults with Chronic Illness. Research in Community and Public Health Nursing. 2023; 34(2):85-95. Doi: https://doi.org/10.12799/rcphn.2022.00304
17. Eka Putri YS, Putra IGNE, Falahaini A, Wardani IY. Factors Associated with Caregiver Burden in Caregivers of Older Patients with Dementia in Indonesia. International Journal of Environmental Research and Public Health. 2022; 19(19):p. 12437. Doi: https://doi.org/10.3390/ijerph191912437
18. Hernandez Chilatra JA, Patrician PA, Fazeli PL, Pickering CEZ. Neglect of Older Adults Living with Dementia in Family Caregiving: A Dimensional Concept Analysis. Journal of Psychosocial Nursing and Mental Health Services, 2024. Doi: https://doi.org/10.1177/00912174241272615
19. Alqarni MA, Mattoo K, Dhingra S, Baba SM, Al Sanabani F, Al Makramani BMA, *et al*. Sensitizing Family Caregivers to Influence Treatment Compliance among Elderly Neglected Patients: A 2-Year Longitudinal Study. Healthcare. 2021; 9(5):p. 533. Doi: https://doi.org/10.3390/healthcare9050533
20. Denfeld QE, Turrise S, MacLaughlin EJ, *et al*. Preventing and Managing Falls in Adults with Cardiovascular Disease: A Scientific Statement from the American Heart Association. Circulation: Cardiovascular Quality and Outcomes. 2022; 15:p. e000108. Doi: https://doi.org/10.1161/HCQ.0000000000000108
21. Mackenzie L. Falls Prevention for Older People in Primary Care Settings. Frontiers in Public Health. 2022; 10:p. 1106121. Doi: https://doi.org/10.3389/fpubh.2022.1106121
22. Sujarwoto S, Augia T, Dahlan H, Sahputri RAM, Holipah H, Maharani A. COVID-19 Mobile Health Apps: An Overview of Mobile Applications in Indonesia. JMIR mHealth and uHealth. 2022; 10(5). Doi: https://doi.org/10.2196/36995
23. Purwanti OS, Handayani F, Nurhidayati T, *et al*. The Role of Digital Mobile Technology in Elderly Health Management among Health Care Workers in Indonesia: Analysis of Knowledge, Attitudes, and Practice. Digital Health. 2022; 8. Doi: https://doi.org/10.1177/20552076221102771
24. Maulana N, Soewondo P, Adani N, Limasalle P, Pattnaik A, Farooqui HH, *et al*. How Jaminan Kesehatan Nasional (JKN) Coverage Influences Out-of-Pocket Payments by Vulnerable Populations in Indonesia. PLOS Global Public Health. 2022; 2(7):p. e0000203. Doi: https://doi.org/10.1371/journal.pgph.0000203
25. Hussain MA, Mamun A, Peters SAE, Woodward M, Huxley RR. Determinants of Cardiovascular Diseases in the Elderly Population in Indonesia: Evidence from Population-Based Indonesian Family Life Survey (IFLS). Vascular Health and Risk Management. 2022; 19:905-914. Doi: https://doi.org/10.2147/VHRM.S390734
26. Indrawan R, Yaniawati RP. Research Methodology. PT. Refika Aditama, Bandung, Indonesia, 2014.