

Screening and Health Education for Early Detection of Degenerative Diseases Among the Elderly in Nursing Homes, Semarang, Indonesia

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Abstract. The elderly are one of the highest risk groups for developing degenerative diseases such as hypertension and dyslipidemia. This community service is held to promote the early detection of older adults at risk of degenerative diseases and improve knowledge of healthy lifestyles. The activity was held on June 18, 2025, in Wreda Harapan Ibu Semarang Nursing Home, Semarang, Indonesia. A total of 19 older women aged 60 to 90 years were screened for their blood pressure and total cholesterol levels. Study participants were diagnosed with hypertension in 84.2% and with high cholesterol in 63.2% of cases as a result of the examination. Post-examination, participants were provided health education emphasizing the need to control blood pressure and cholesterol through the consumption of healthy diets, light physical activities, and drug adherence. This study has shown the efficacy of combining health checks and education as a promotive and preventive strategy for degenerative diseases in the institutionalized elderly. Early discovery is beneficial for early prevention, and health education plays an important role in helping the elderly remain conscious and independent, thereby maintaining good health. This trend is in line with the paradigm of prevention-oriented healthcare services, promoting and protecting health rather than waiting for illness. The findings from the activity also underscore the need for continuation and sustainability of such programs, given the high prevalence of hypertension and dyslipidemia. Arguably, the disease burden is likely to be greater if not managed in an organized manner.

Keywords: elderly; hypertension; cholesterol; degenerative disease; nursing home

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INTRODUCTION

Nursing homes, which are residential homes for the elderly, pose challenges in the provision of appropriate medical care. The propensity to develop some degenerative diseases (including hypertension and hypercholesterolemia) increases with age for the elderly. These are referred to as 'silent killers' as they can often develop with few warning signs in their early stages but can result in serious complications if left undetected and untreated (Connolly, 2023; Flanagan, 2023).

Panti Wredha Harapan Ibu Ngaliyan, Semarang, Indonesia. Such is a Social care house carrying tens of senior citizens in Semarang, Indonesia. Few civilians have any immediate family members, and their health is in the hands of caregivers and visiting volunteers. Regular monitoring of the health status is often suboptimally performed due to the time- and manpower-consuming examination, and the

individual examination intervals (Hansson, 2023; Wei, 2023).

As part of the national tri dharma of university, research, teaching, and community service, community service is an important responsibility for university lecturers to contribute to the community, including the elderly directly. A group of lecturers from the Faculty of Medicine at Universitas Muhammadiyah Semarang (UNIMUS) performed a community service, namely the blood pressure and cholesterol screening, at Panti Wredha Harapan Ibu Ngaliyan, Semarang, Indonesia.

This program aimed to detect hypertension and high cholesterol risk at an early stage, educate citizens about healthy lifestyle practices, and promote regular health checks. This engagement is anticipated to promote more coordination of academic institutions and society, as well as attract more medical attention to the old populations, which is a vulnerable group needing concrete medical care delivery.

METHODS

The community service was conducted on June 18, 2025, in Panti Wredha Harapan Ibu, Ngaliyan, Semarang, Indonesia, as part of the integration of the Block 17 Geriatrics' learning outcomes for medical students and the service mission of the Faculty of Medicine Universitas Muhammadiyah Semarang (UNIMUS). Students' communication, social care, and empathy towards the elderly, a vulnerable population in need of comprehensive healthcare, will be enhanced as part of the program. The conceptual relevance of combining academic activities with community service is derived from the experiential learning principles that have been claimed to enhance the development of interpersonal and professional skills of medical students in the actual setting of healthcare services.

The implementation process involves three main phases, such as preparation, carrying out activities, and monitoring and evaluation. The preparation phase involves the initial contact with the nursing home administration for consent and scheduling activities. The tasks and roles are divided between the lecturers and students to ensure cooperation. Education materials and health promotion media are particularly tailored to explain such materials to older adults, and medico-sociological appliances such as digital sphygmomanometers and cholesterol inspection tools are available for health inspection.

The procedure is performed on 19 older women aged between 60 and 90 years who live permanently in nursing homes. Blood pressure and total blood profile were performed on each participant, and results were recorded and categorised based on standard protocol (PB PERKENI, 2019; WHO, 2012). After the

examination, health education with pamphlets on low-salt and low-saturated-fat diet, light exercise such as stretching and walking, and encouraging the use of medication and regular check-ups was performed. The material was presented in plain language and with empathic, learning-friendly ways to be understood by older people.

The tracking and evaluation occur through the observation of student performance, particularly in terms of communication and interaction with older adults. Once the activity is over, students sit down for a reflection session during which they reflect on what they did, what differences and challenges they encountered, and what were the suggestions in view of the future. The results of the conversation inform follow-up suggestions, such as the sustainability of health monitoring and contact with the nursing home. This reflexive approach is congruent with the principles of competency-based medical education, with its orientation toward formative feedback and the application of formal learning to field practice.

RESULTS AND DISCUSSION

The program was organized on Wednesday, June 18, 2025, at Panti Wredha Harapan Ibu, Ngaliyan, Semarang, Indonesia. The event started at 8:00 AM on local time, starting with the opening session and welcoming remarks by the nursing home representatives and the community service team of the Faculty of Medicine, UNIMUS.

After the start-up phase, all nursing home residents were circumferentially screened alternately for blood pressure and cholesterol, after the initial blood pressure measurement and cholesterol screening of all nursing home residents. Examiners were a group of lecturers supported by



Figure 1. Cholesterol screening for the elderly

Table 1. Result Health Screening

Parameter	Number	Percentage
Blood Pressure		
Normal (120/80 mmHg)	1	5.2
Pre Hypertension (121-139/81-89 mmHg)	2	10.6
Hypertension (>140/90 mmHg)	16	84.2
Cholesterol		
Normal (<200 mg/dL)	7	36.8
High (>200 mg/dL)	12	63.2

Undergraduate medical students who were enrolled in an elderly block problem-based learning (PBL) course. Sphygmomanometers and Autocheck cholesterol instruments were employed in the measurements. Residents received an explanation of the purpose and usefulness of the health checks prior to having one.

19 elderly women, 60-90 years, performed this exercise. The participants were very enthusiastic to engage in a health screening and an educational session, as indicated in Table 1.

Activities Findings showed a very high percentage of hypertension (84.2%) among the elderly nursing home residents. Most of the participants were asymptomatic but had an increased blood pressure. Consistently, hypertension in older people is commonly asymptomatic and mostly detected when screened, pointing to the importance of regular health check-ups (WHO, 2012).

As blood pressure and cholesterol levels are linked to aging, people are at a higher risk of

hypertension and hypercholesterolemia as they age. It may be intensified by an unhealthy lifestyle like a diet rich in saturated fats, a sedentary routine, and a genetic predisposition. Stiffening of blood vessels is a leading cause of age-related increases in blood pressure. Thakur Z (2023) and Wang (2023) study demonstrates that both increased arterial stiffness and inefficient heart pumping in pumping blood are major determinants of hypertension risk among the elderly.

Alterations in lipid metabolism are also responsible for high levels of cholesterol in older people. Diminished fat breakdown capacity results in an elevation of "bad cholesterol" – low-density lipoprotein (LDL). The accumulation of LDL in the arteries could lead to atherosclerosis and increase the incidence of cardiovascular disease. Prior research has reported that older adults (OA) are at risk for an altered distribution of low levels of high-density lipoprotein (HDL) and elevated low-density lipoprotein (LDL), predisposed to the development of coronary heart disease and stroke

**Figure 2.** Personalized health education



Figure 2. Ice-breaking session with residents of the elderly care home

(Alqahtani, 2023; Nowell, 2023; Seo, 2024).

These physical asymmetry test findings are supported by results obtained from community service activities which revealed that 63.2% of the respondents had high total cholesterol levels, placing them at high risk of degenerative diseases such as coronary heart disease, stroke, and vascular dementia (Jimenez, 2023; Krusenstiern, 2023; Levine, 2023; PB PERKENI, 2019). Hypercholesterolemia in the elderly can be attributed to age-related metabolic decline, consumption of diets rich in saturated fat, lack of physical activity, and the coexistence of pathologies like diabetes or hypertension (McNamara, 2023; Patricios, 2023; Shen, 2024).

Sustained accumulation of atherosclerotic plaques over time will eventually cause myocardial infarction or ischemic stroke, in particular when other risk factors such as hypertension or diabetes are present (Açar, 2023; Goicoechea, 2023). Elevated levels of cholesterol in the elderly not only pose cardiovascular risk, but also are associated with impaired cognitive function. Multiple pieces of evidence support that hypercholesterolemia is associated with impaired cognition and may act as an independent risk factor for vascular dementia and Alzheimer's disease (AD) (Hata, 2023; Lindner, 2023; Nutma, 2023). Thus, screening for cholesterol could be valuable overall and particularly in the elderly and in nursing homes, with the possibility to prevent by lifestyle modifications or medications (statins) (Nutma, 2023; Palmqvist, 2024; Tijms, 2024).

Health education is essential to improve knowledge, attitudes, and practices of seniors regarding health care. Knowing that hypertension or uncontrolled cholesterol and subsequent complications such as stroke or heart attack discourage treatment compliance, and how to

maintain a proper medication, a healthy diet, and regular light physical activity (Anstey & Peters, 2018; Beer et al., 2025; Bevilacqua et al., 2023; Yadav, 2023). The empathic and simple language-based educational interventions would help improve the elderly's health knowledge, and enhance the emotional involvement of the elderly and professionals that would contribute to the older person's participation in the prevention of diseases (Danner et al., 2024; Drusch et al., 2023; Ekkel et al., 2023).

The first step in evaluating the risk of chronic conditions, such as degenerative diseases, is for an individual to know his or her blood pressure and total cholesterol levels (WHO, 2012). It has been found that a diet with a high fruit and vegetable content, low salt intake, and a balanced protein intake rich in fish and nuts is beneficial in controlling blood pressure, particularly when salt intake is less than 5 g per day (Filippi et al., 2023; Gutiérrez-Abejón et al., 2024; Haïtchi et al., 2023). Those who have high cholesterol levels may be advised to stay away from high-fat, processed, and fried foods, while boosting their intake of soluble fiber from, for example, oats, apples, avocados, and nuts, as well as healthy fats from, for example, olive oil and omega-3 fatty acids (Kruse et al, 2024; Kumar et al, 2023; Shibata et al, 2024).

Post-examination health education sessions focused on dietary change, salt- and saturated fat-restricted diet, regular light-intensity activity, drug compliance in elderly subjects with hypertension or dyslipidemia, as well as regular health monitoring by medical professionals.

With the nursing home residents, trivia questions were used to break the ice, as part of the event, besides the educational session. All things that are necessary to pass the early social filter that allows participants to relax and open up. The study

shows ice-breaking activities enhance participants' confidence, provide security, and create a conducive environment for interaction during health sessions (Shibata et al., 2024; Vega et al., 2021; Whelton et al., 2018; Wilson et al., 2024). Icebreakers have also been found to facilitate stronger group dynamics, greater team unity, and more inclusive and empathic communication (Crisman, 2023; Duan, 2024). An enabling environment capable of active participation enhances the efficacy of health education sessions (Alqahtani, 2023; Connolly, 2023; Hansson, 2023).

Participant and nursing home staff contend that receiving some positive response to such health checks, education, and positive social attention, in the long term, may be a strategy to stimulate the elderly to be more interested in their health. This type of physical activity model is promising to be replicated as a promotive and preventive program for NCD in the older population.

CONCLUSION

Community service examination results indicated that the prevalence of hypertension of elderly residents in nursing homes was as high as 84.2%, and total cholesterol values in 63.2% of the participants were over the normal cut-off point. The results show a high prevalence of degenerative diseases, among which hypertension, stroke, and heart disease are actually growing more in elderly people. This condition emphasises the significance of early detection in routine blood pressure and cholesterol checks as a critical tool to pinpoint health concerns before an advance to critical levels. Early diagnosis has been shown to be essential for the control of degenerative diseases, since it allows interventions to be performed at earlier phases, increasing the administration's chance to control the risk factors. Follow-up activities for follow-up would be routine health monitoring after the initial examination to determine the status of the elderly. It is possible to monitor at regular visits for blood pressure, cholesterol, and lifestyle, and to offer appropriate medical advice or measures based on the evaluation. This sustainable approach is intended to improve the quality of life of the elderly, lower the risk of complications resulting from degenerative diseases, and, at the same time, develop stronger relationships between support personnel, family members, and the elderly care facility.

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