Health Literacy Among Patients With Stage 2 Hypertension: A Survey in Rural Yogyakarta

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ABSTRACT

Stage 2 hypertension is a major risk factor for cardiovascular events and should be treated adequately. Despite the importance of patient health literacy in hypertension management, data from patients living in rural areas are lacking. Objective: This study aimed to measure health literacy levels among patients with stage 2 hypertension in Dlingo subdistrict, Yogyakarta. A cross-sectional observational study was conducted in August–September 2019. Participants (N=108) were members of the Posyandu lansia, aged 45 years or more who were diagnosed with stage 2 hypertension at least 6 months before this study began. The Indonesian Rapid Estimate of Adult Literacy in Medicine (REALM) questionnaire (score range 0–11) and three screening questions (SQs) were used to assess the level of health literacy. All participants had a low level of formal education; none had graduated from junior high school. Most participants (85%) were categorized as having low literacy (REALM score □6). The average REALM score was 2.3 ± 3.3, and 64 patients (59%) had a score of 0. Only 20% of patients felt confident enough to complete health-related forms (SQ1), 77% perceived problems in understanding written materials (SQ2), and 61% needed some assistance for reading health information (SQ3). A higher level of formal education and younger age were associated with a higher REALM score ($p<0.05$). Inadequate health literacy is common among patients with hypertension living in rural areas. Tailored intervention strategies to increase the understandability of health information are needed.

Keywords: health literacy, hypertension, rural, Posyandu lansia

1. INTRODUCTION

Hypertension is a leading cardiovascular risk factor and an important public health problem worldwide, including in Indonesia[1] [2], and affected more than 60 million adult Indonesians in 2018 [2]. However, the control rate of hypertension is very low, and fewer than 15% of Indonesian adult patients achieve their blood pressure (BP) target [3]. Among factors that can lead to nonadherence to medication and poor control of hypertension, low health literacy is considered to be a major predictor [4] [5].

Health literacy is defined as "the degree to which individuals can obtain, process, understand, and communicate about health-related information needed to make informed health decisions" [6]. Recent research on health literacy is not limited to measuring patient skill in reading health-related words or numbers, but instead focuses more on how written materials can changes patients' beliefs and actions, and how patients understand medical instructions [7]. Inadequate health literacy can cause patients to be misinformed and to have difficulty following medical instructions, and is associated with poor health outcomes [8].

Hypertension is classified according to the systolic and diastolic BP as prehypertension, stage 1, and stage 2 hypertension [9]. A large randomized controlled trial of patients with coronary artery disease reported that an increase of 20 mmHg for systolic BP or 10 mmHg for diastolic BP significantly increases the risk of stroke [5]. Initial therapy should be prescribed for patients with stage 2 hypertension and this usually becomes a type of long-term treatment [9]. Given the importance of health literacy in hypertension management, it is important to assess health literacy among patients. Our previous study in Yogyakarta rural areas identified constraints on patients being able to access hypertension medication and to obtain adequate information related to hypertension treatment [10]. This study aimed to measure health literacy among patients in rural areas, particularly those who diagnosed with stage 2 hypertension.

2. METHODS

2.1. Study Design and Setting

This was a cross-sectional study conducted in August–September 2019. Three villages in a public health center (Puskesmas) in Dlingo subdistrict were selected based on the recommendation from the head of the Puskesmas. The inclusion criteria to participate in this study were as follows: a member of Posyandu lansia (Integrated Health Service Post for the Elderly), age ≥45 years, systolic BP ≥160 mmHg or diastolic BP ≥100 mmHg based on their health record in the preceding 6 months, and consent to participate in this study. Approval to conduct this study was obtained from the Health Research Ethical Committee Universitas

Islam Indonesia and the local health district in the area studied.

2.2. Data Collection

We used two instruments to describe the participants' health literacy. First, we used the Indonesian version of the Rapid Estimate of Adult Literacy in Medicine (REALM) adapted from a previous study in Indonesia [11]. The questionnaire comprises 11 medicine words (in Bahasa) such as hormone, herpes, antibiotic, and menopause. Patients received a copy of the REALM word list and were asked to read out loud each word. The score ranges from 0–11, and a score of 11 means that all words could be read correctly. Adequate health literacy was defined as a REALM score of >6 [12].

The second instrument was a set of screening questions (SQs) modified from prior studies [13]–[15]. The following questions were asked. SQ1: How confident are you to complete any medical forms on your own? SQ2: How often do you encounter problems understanding written materials? SQ3: How often do you need assistance to read instructions in pharmacy labels, medication package inserts, or leaflets/banners? Participants were asked to choose one of the options provided: never, rarely, often, or always. Adequate health literacy was defined for each question. Participants who responded "always" or "often" for SQ1 were categorized as having adequate health literacy. Those who responded "rarely" or "never" to SQ2 and SQ3 were classified as having adequate health literacy.

3. RESULTS

One hundred eight participants fulfilled the inclusion criteria and completed the survey. The average age was 67.2 ± 9.0 years. Most were female (87%), had health insurance (91%), and lived □5 km from the Puskesmas (73.1%). All participants had a low level of education; 56% had no schooling or had not finished elementary school, and none had graduated from junior high school.

The average REALM score was 2.3 ± 3.3. More than half of participants (n=64, 59.3%) had a score of 0 because they either skipped or read the words incorrectly (Figure 1). Only 16 of 108 participants (14.8%) were classified as having adequate health literacy. As a health literacy learning tool, the REALM assesses a patient's ability to read, and an illiterate patient s expected to have a low score on this test. We asked the three SQs to examine the health literacy of these participants (Table 1). Most participants were never or rarely confident at being able to complete health-related forms on their own (SQ1; n=86, 79.6%). Eighty-three participants (76.9%) had difficulty understanding written materials (SQ2), and 61.1% of participants required assistance to read pharmacy labels and medication package inserts (SQ3).

Table 2 shows the characteristics of the study participants and the data from the two instruments used in this study. Generally, inadequate health literacy was found in all subgroups (sex, age, educational level, distance from the Puskesmas, health insurance status, and year of

diagnosis). It can be seen that participants with a higher formal educational level (at least elementary school) and younger age group had a higher health literacy score (p<0.05).

Table 1. Distribution of participants' responses to screening questions (n=108)

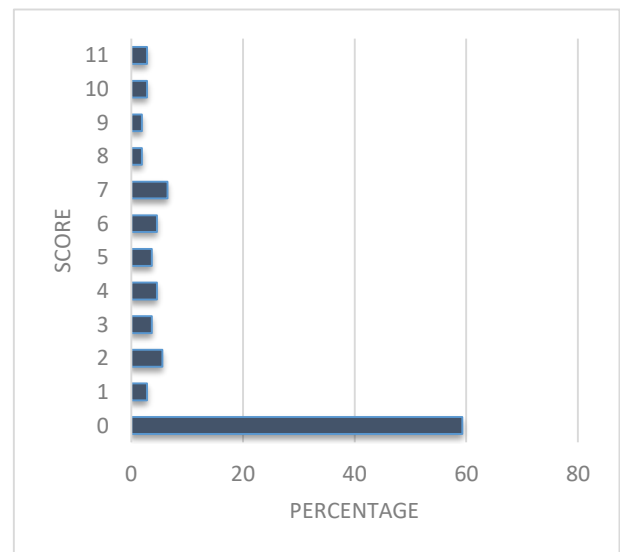| Screening Questions	Never	Rarely	Often	Always
SQ1: How confident are you to complete any health-related forms on your own?	**75 (69.4%)**	11 (10.2%)	10 (9.3%)	12 (11.1%)
SQ2: How often do you encounter problems understanding written materials?	14 (13%)	11 (10.2%)	14 (13%)	**69 (63.9%)**
SQ3: How often do you need assistance to read instructions in pharmacy labels, medication package inserts, or leaflets/banner?	31 (28.7%)	11 (10.2%)	8 (8.3%)	**57 (52.8%)**

Figure 1. REALM score distribution

Table 2. Health literacy among study participants

	REALM	SQ1	SQ2	SQ3
	% of participants with adequate health literacy			
All participants (N=108)	14.8%	20.4%	23.1%	38.9%
Sex				
Female (n=94)	16%	20.2%	24.5%	38.3%
Male (n=14)	7.1%	21.4%	14.3%	42.9%
Educational level	6.6%	14.8%	16.4%	36.1%

No schooling/less than elementary school (n=61) Elementary school n=47)	25.5%*	27.7%	31.9%	42.6%
Age group <65 years (n=39) ≥65 years (n=69)	28.2%* 7.2%	30.8% 14.5%	38.5% 14.5%	43.6% 36.2%
Distance from the *Puskesmas* <5 km (n=29) ≥5 km (n=79)	17.2% 13.9%	17.2% 21.5%	20.7% 24.1%	48.3% 35.3%
Health insurance Yes (n=91) No (n=19)	15.4% 11.8%	22% 11.8%	24.2% 17.6%	41.8% 23.5%
Years of diagnosis <3 years (n=59) ≥3 years (n=49)	8.5% 22.4%	13.6% 28.6%	20.3% 26.5%	42.4% 34.7%

SQ: screening question
*p<0.05

4. DISCUSSION

This rural community-based study examined the extent of inadequate health literacy among Indonesian older adult patients with stage 2 hypertension. The findings support the idea that people with chronic diseases such as hypertension and diabetes may have low health literacy. A recent systematic review of patients with type 2 diabetes reported that only 30% only patients had adequate health literacy [16]. In our study, a high percentage (85%) of patients had inadequate health literacy; this percentage is higher than that in previous studies of hypertensive patients in Indonesia [11].

Both international and national guidelines on hypertension management recommend that patients with stage 2 hypertension should be treated adequately with antihypertensive medication along with lifestyle modifications [9] [17]. Because hypertension usually requires long-term treatment, self-management skills are crucial; therefore, patients should be encouraged to become actively involved in achieving the target BP [18]. However, limited health literacy is closely related to patients' prior knowledge [19] and their self management activities [20]. Patients with low literacy would need more support to be able to follow recommendations about the management of hypertension.

A low level of formal education is associated with limited health literacy [19] [21]. One study that proposed a health literacy model reported a standardized coefficient of 0.3 and concluded that educational background is the most important determinant affecting health literacy [19]. That study also found that age had a strong effect on health literacy score in that the health literacy score was significantly lower in the older age group than in the younger group. It is likely that patients with little or no schooling would have poorer health literacy than those who had graduated from high school.

Our study participants were members of Posyandu lansia, a community-based program for the elderly. They had a low educational level, and none of them graduated from junior high school. We did not assess the patients' economic status although these participants could be designated as low-income individuals. As previously reported, patients who live in rural areas also face constraints in accessing both health information and health-care services [22]. Together, these conditions increase the challenges for the primary health-care system to develop interventions aimed at improving health literacy in residents of rural areas.

Among factors affecting adherence to medication, health literacy is an important determinant [23]. Improving health literacy skills can significantly improve adherence to hypertension medication [24]. Adequate health literacy also has a direct effect on the control of BP [25]. An educational program aimed at improving patients' health literacy could be delivered using various approaches (e.g. face-to-face, telephone). Educational materials required for patients should be carefully developed to include all key pieces of information about hypertension treatment in a way that is easily understood by low-literate patients [24].

Addressing the inequalities in health and health care is important for supporting patients with a low level of health literacy [26]. In Makassar, a city in Indonesia, one study reported on the effectiveness of the precede–proceed education model in improving functional health literacy [27]. However, that study did not provide detailed information about how this education model was implemented among the study participants. Using a similar model, a health literacy-focused self-management program for Koreans with diabetes significantly improved patient knowledge and self-care skills [28]. That program included the following three components: (i) 12 hours of face-to-face education program (2 hours class/week for 6 weeks); (ii) monthly telephone counseling; and (iii) daily home monitoring of blood glucose levels. In Indonesia, one of the approaches proposed for conducting such a self-management program for local people is through the Posyandu lansia [29].

Posyandu lansia has been running in both rural and urban areas for more than three decades [30]. As a community-based program, Posyandu lansia provides various services for the members (aged ≥45 years), including BP checks and medications for lowering BP, and includes active contribution of community health workers [31]. Providing easy-to-understand information for patients with low literacy is one advantage of involving community health workers in the hypertension team [29] [31]. Future studies are needed to determine the effectiveness of tailored community health worker-based interventions in improving health literacy skills.

5. CONCLUSION

The study results show that the rate of inadequate health literacy is high among patients with hypertension living in rural areas. Tailored-intervention strategies are needed to increase understandability of health information, particularly in patients with low literacy.

AUTHORS' CONTRIBUTIONS

RR planned the study design, analyzed and interpreted the findings, wrote and organized the manuscript. JAS and DAFH contributed to the data collection, interpretation of findings, manuscript drafting, and the manuscript review.

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