TABLE 1. Characteristics of published studies on health literacy in relation to health outcomes in hypertension.

Reference, year of publication	Country	Study Type	Sample (N, Sex, Ethnicity)	Measurement of Health Literacy	Results
Williams et al., 1998	USA	Cross-sectional	402 patients with hypertension	Test of FHL in Adults (TOFHLA)	Low-literate patients had higher SPB while no association was found between literacy level and DBP
Gazmararian et al., 2003	USA	Cross-sectional	653 patients who had asthma, diabetes, congestive heart failure, and/or hypertension	Short test of FHL in adults (S-TOFHLA)	Patients with inadequate HL knew significantly less about their disease than those with adequate literacy
Persell et al., 2007	USA	Cross-sectional	119 adults with hypertension	Short version of the Test of FHL in Adults (S-TOFHLA)	Patients with inadequate HL were less able to name any of their antihypertensive medications compared to those with adequate HL
Powers et al., 2008	USA	Cross-sectional	1224 patients with hypertension	Rapid Estimate of Adult Literacy in Medicine (REALM)	When compared to patients with adequate literacy, the predicted mean SBP for patients with limited literacy was higher. However, this interaction was not statistically significant for DBP
Pandit et al., 2009	USA	Cross-sectional	330 hypertensive patients form six primary care safety net clinics	Short version of Functional HL in Adults (S-TOFHLA)	Both lower educational attainment and more limited literacy were found to be significant independent predictors of poorer HK and control
Shibuya et al., 2011	Japan	Cross-sectional	320 Japanese adults (139 women and 181 men) who received an annual health check-up at an urban clinic in Japan	FHL and CHL were assessed using structured questionnaires based on TOFHLA	Lower HL and HK were associated with a poor health status and BP level in middle-aged participants
Aboumatar et al., 2013	USA	Cross-sectional	41 primary care physicians and 275 of their patients with hypertension	Rapid Estimate of Adult Literacy in Medicine REALM	A lower percentage of patients with low versus adequate literacy had controlled BP
Ingram et al., 2013	USA	Cross-sectional	121 African American participants	REALM	Most of the participants had inadequate HL. No statistically significant association was found between HL and adherence, but regression analysis showed that age and health status significantly predicted adherence
Ko et al., 2013	Singapore	Cross-sectional	306 patients with hypertension	The Short Test of Functional HL in Adults, Singapore version (STOF-HLA Singapore)	The HK scores were significantly associated with HL level. The achievement of target BP was not associated with HL
Willens et al., 2013	USA	Cross-sectional	10,644 patients with hypertension	Brief Health Literacy Screen (BHLS)	Independent of educational attainment, 3-point increases in HL scores were associated with 0.74 mmHg higher SBP and 0.30 mmHg higher DBP
McNaughton et al., 2014a	USA	Cross-sectional	46,263 hospitalized patients with hypertension	Brief Health Literacy Screen (BHLS)	Low HL was associated with extremely elevated BP and elevated BP among those without diagnosed hypertension
McNaughton et al., 2014b	USA	Cross-sectional	423 urban, primary care patients with hypertension and coronary disease	REALM	Adjusting for age, gender, race, employment, education, mental status, and self-reported adherence, low literacy was associated with uncontrolled BP
Perez 2015	USA	Cross-sectional	144 Hispanic adults	Newest Vital Sign (NVS)	There were significant weak to moderate relationships among acculturation, HL, and several illness perceptions
Ahn et al., 2016	Korea	Cross-sectional	289 patients with hypertension	Rapid estimate of adult literacy in medicine (REALM-R)	Those with higher HL and higher self-efficacy scores were more likely to have higher HRQL
Halladay et al., 2017	USA	Non-randomized prospective cohort trial	525 adult patients English-speaking referred with uncontrolled hypertension	The Short-Test of FHL in Adults (STOFHLA)	At 12 months, the low and higher HL groups had statistically significant decreases in mean SBP but the between group difference was not significant
Naimi et al., 2017	Iran	Cross-sectional	400 patients with hypertension	HL for Iranian Adults (HELIA)	There was positive and significant correlation between HL and HRQL
Shi et al., 2017	China	Retrospective study	360 hypertensive patients	Chinese HL scale for hypertension (CHLSH)	Patients with high HL have better hypertension control, a lower risk of ischemic cardiovascular disease (ICVD), lower brachial ankle pulse wave velocity values, and better HRQL
Wang et al., 2017	China	Cross-sectional	882 hypertensive patients	Three-item Brief Health Literacy Screening (BHLS)	Age, education level, self-management efficacy and HL were significantly related to the HRQL. HL and Self-management efficacy have a significant impact on HRQL
Yilmazel et al., 2017	Turkey	Cross-sectional	500 volunteer teachers of both genders	The Newest Vital Sign Scale (NVS)	Disease knowledge and awareness were low in teachers. The measured HL levels of teachers didn't overlap with their own assessments about HL skills
Chajaee et al., 2018	Iran	Cross-sectional	700 patients with hypertension	HL for Iranian Adults (HELIA)	More than three quarters of participants (75.5%) are inadequate and partially adequate of HL. There was a significant correlation between the BP knowledge and the mean score of HL
Han et al., 2018	USA	Intervention	11 Spanish-speaking Latinos	HL was measured by HBP-health literacy scale (HBP-HLS) and the Newest Vital Sign	Participation in the intervention resulted in improved BP, numeracy, and psychological outcomes. Our findings support HL education as a promising avenue in promoting high BP control among inner-city Spanish-speaking Latinos
Park et al., 2018	Korea	Cross-sectional	160 low-income older people with hypertension registered in 16 public health centers in Busan, South Korea	The Newest Vital Sign (NVS)	Medication adherence and HL were significantly associated with HRQL in vulnerable older people with hypertension
Costa et al., 2019	Brazil	Cross-sectional	392 hypertensive patients 60> years or older, using at least one medication for hypertension daily for at least a year.	The Brazilian 18-item Short Assessment of Health Literacy for Portuguese-Speaking Adults;	Hypertensive elderly people with inadequate HL were more likely to have inadequate BP
Delavar et al., 2019	Iran	Randomized Controlled Trial	118 elderly people with uncontrolled primary hypertension and inadequate HL.	HL determined by a score of less than 66% based on the Health Literacy for Iranian Adults scale	Self-management education tailored to HL significantly promotes medication adherence but has no significant effects on control of BP
Lor et al., 2019	USA	Cross-sectional	1355 Dominican Hispanic adults	HL was measured using the newest vital sign (NVS)	When controlling for age, sex, birth country, education level, recruitment location, depression, anxiety, and sleep disturbance, having adequate as compared to inadequate HL was associated with a higher medication adherence score
Miranda et al., 2019	Amsterdam	Cross-sectional	Dutch (n = 1948), South-Asian Surinamese (n = 2054) and African Surinamese (n = 1932) origin aged 18–70 years	The Rapid Estimate of Adult Literacy which was previously translated to Dutch (REALM-D).	HL is associated with hypertension prevalence in selected ethnic groups.
Warren-Findlow et al., 2019	USA	Intervention	52 mostly female and older than 50 years old patients with hypertension	Newest Vital Sign (NVS) and Test of FHL in Adults	Participants showed improvement on all self-care measures with significant mean differences on diet adherence and weight management activities
Ghaffari-fam et al., 2020	Iran	Cross-sectional	210 patients with hypertension	The HL instrument had o5 domains: Reading health information, Understanding health information, Appraisal of health information, Ability to access health information, Decision making	Significant correlations between HL dimensions and systolic hypertension. The ability to access health information was the statistically significant predictor of systolic hypertension
Persell et al., 2020	USA	Cross-sectional	919 adults with uncontrolled hypertension	Newest Vital Sign	Participants with low HL were less likely to have chronic medications reconciled, know indications for chronic medications and demonstrate understanding of instructions and dosing

Note. FHL = Functional Health Literacy, HL = Health Literacy, BP = Blood Pressure, SBP = Systolic Blood Pressure, DBP = Diastolic Blood Pressure, HK = Hypertension Knowledge, CHL = critical HL, PDM = Participatory Decision Making, HRQL = Health Related Quality of Life