



Intervention Based on Integration of Health Literacy and Health Outcomes in Hypertension “A Systematic Review”

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Abstract

BACKGROUND: Hypertensive patients with low health literacy rarely visit health services, therefore, they have more chances of being hospitalized in comparison with those having a more adequate health literacy.

AIM: This article aims to identify intervention based on integration of health literacy and its outcome in hypertensive patients.

METHODS: Articles were searched using four bibliographic databases, namely, ProQuest, Science Direct, PubMed, and Google Scholar. PRISMA 2015 is used as a guideline for determining which articles are selected, one of the criteria being published on 2011–2021.

RESULTS: A total of 25,264 articles were obtained from the four databases. Seven articles were selected after the extraction and incorporation of the inclusion criteria. The health outcomes of hypertension sufferers after receiving intervention based on integration of health literacy were divided into three groups; medical health outcomes, health literacy skills, and hypertension self-management behavioral.

CONCLUSION: An intervention integrated with health literacy and considering the hypertensive patient health literacy in its own will increase the health outcomes of hypertensive patient.

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Introduction

Hypertension is a major risk factor for cardiovascular disease and a cause of premature death globally [1]. The prevalence of hypertension is projected to increase to 29.2% in 2025 [2]. The direct medical costs of treating hypertension in the world are estimated at \$370 billion per year [3], [4].

There are many interventions have been carried out to control the increasing prevalence of hypertension, either directly given to individuals and the community or through health workers [5]. Nevertheless, the incidence of hypertension is still high, the *World Health Organization* (WHO) data in 2019 show that the number of adults with hypertension is 1.13 billion [6].

One of the risk factors of hypertension is the low health literacy (HL) of the society [7]. HL is a combination of various skills and competencies that people need to find, understand, evaluate, use health information and concepts to make choices, reduce health risks, and improve quality of life [8]. Hypertensive patients with low HL are likely to rarely visit health services resulting in a condition in which they are more

likely to be admitted to the hospital compared to those who have adequate health literacy [9].

Hypertension can be controlled by changing lifestyles through good self-management, therefore, people with hypertension must have health literacy skills to support a healthy lifestyle [7]. HL that supports a healthy lifestyle is through health education. Health education is an effective measure to reduce the prevalence and increase the rate of hypertension control [10]. Health education in this case is a population based, eating habit modification, and lifestyle [11].

The previous studies on hypertension related to health literacy have been carried out but predominantly using an observational design resulting in a less than ideal proof if adequate HL will have a positive impact on reducing the prevalence of hypertension [12], [13].

Other studies related to hypertension control have also been carried out with various interventions, but not all of the interventions carried out are integrated with HL resulting in hypertension being a global problem. Therefore, this literature review aims to identify interventions integrated with HL and health outcomes for people with hypertension.

Methods

The systematic review process follows the 2015 PRISMA/Preferred Reporting Items for Systematic Review and Meta-Analysis Guideline. To identify interventions that are integrated with health literacy and health outcomes for people with hypertension, we look for references using articles published in the past 10 years 2011–2021, which are available on ProQuest, ScienceDirect, PubMed, and Google Scholar. Based on the keyword search, 25,264 articles were found for the 1st time, Google Scholar (18,000), ProQuest (3823), ScienceDirect (3257), and PubMed (184). These articles were then imported to the Mendeley library. The search uses three main keywords, namely, “hypertension, intervention, and health literacy.” We use the terms MeSH, “hypertension” or “high blood pressure” or “HTN.” We use the terms “intervention” or “integrated program” or “community based” or “RCT.” We use the term “health literacy” or “education level.”

Inclusion and exclusion criteria

The inclusion criteria in this review are as follows: (1) A sample of hypertensive patients, (2) a sample in the intervention group received an integrated health education intervention with health literacy, (3) an experimental design (RCT/quasi-experiment), (4) English articles and full text, and (5) open access. The exclusion criteria were as follows: (1) Conference proceedings, (2) study protocol, (3) systematic review/review of literature, (4) sample of intervention group received intervention but not integrated with health literacy, and (5) qualitative study.

Data extraction

The study selection process follows the Data Extraction Based on PRISMA 2015 Guidelines in Figure 1 [14].

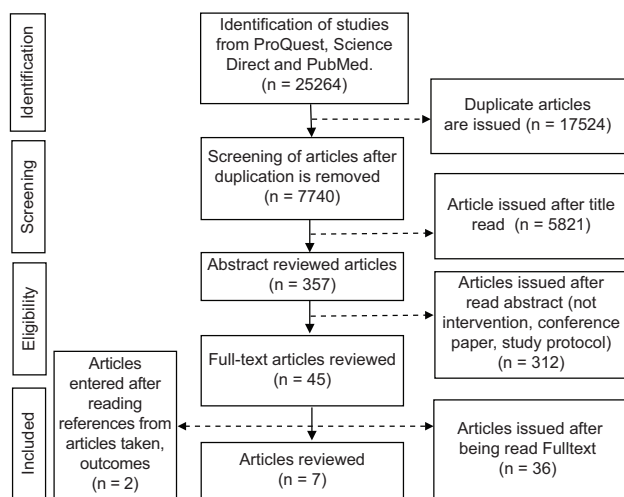


Figure 1: Flowchart literature

Quality assessment

The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used by reviewers to assess article quality [15]. There are 22 assessment items in the STROBE but in this study, only eight criteria were used, including sample size criteria, sampling methodology criteria, control analysis, response rate, outcome measure, study boundaries, ethical considerations, and control for confounding. Studies that scored <3 were considered low quality, 3–6 moderate, and 7–8 as good study quality.

Data analysis

At this stage, an analysis of the data that have been collected from various articles to be synthesized is carried out. The results of the analysis will answer the research questions that have been set. The division of synthesis items based on the topics arranged consists of three parts, namely, (1) instruments and levels of health literacy, (2) types and duration of intervention, and (3) study outcomes.

Results and Discussion

Health literacy and hypertension

Various studies have examined the relationship of HL with the incidence of hypertension related to blood pressure control, medication adherence, and self-management of patients with hypertension. Low HL is independently associated with increased blood pressure [16]. It is very important for health-care professionals to understand the patient's HL before providing intervention or education. Interventions are needed to improve outcomes related to HL [17]. Therefore, it is important to identify people with hypertension at various levels of HL and provide adequate interventions according to their level of health literacy [7].

There are several instruments used to measure literacy in the selected studies and are shown in Table 1. The instruments include the measurement of HL in the community and clinical setting which aims to assess the ability to read health terms [18], [19], assess the ability to understand health information [20], [21], [22], [23], and assess the ability to communicate skills [23].

The selection of the right HL measurement tool is very important because different HL measures and different data collection strategies will be required in certain situations [24]. In this review, there is one study that discusses the effectiveness of the health literacy measurement tools used, namely, research

Table 1: Instruments and levels of health literacy

Author/year	Subject/sample	Age	Instrument of health literacy	Level of health literacy
Ryvicker <i>et al.</i> , 2013	139 hypertensive patients	Average age = 48 years	Instrument used was not explained	Good literacy rate
Kim <i>et al.</i> , 2014	369 patients with hypertension	65.6–76.2 years	HBP-HLS	Functional literacy
Bokhour, Barbara <i>et al.</i> , 2016	618 hypertensive patients	Aged ≥50 years	Short test of functional health literacy	Functional literacy
Visanuyothin <i>et al.</i> , 2018	134 hypertensive patients	Aged 30–70 years	HSRI	Functional, communicator, and critical literacy
Delavar <i>et al.</i> , 2020.	118 hypertensive patients	Average age 64 years	HELIA	Functional literacy
Tavakoly Sany <i>et al.</i> , 2020	240 hypertensive patients and 35 doctors	Hypertensive patient age ≥ 26–51 years	TOHFLA and REALM for hypertensive patients	Functional literacy
Wehkamp <i>et al.</i> , 2021	124 hypertensive patients	Average age = 53 years	HLAQs for physician HLS-EU-Q47	General health literacy

HBP-HLS: High blood pressure-Health literacy scale; HSRI: Health Systems Research Institute; HELIA: Health Literacy for Iranian Adults; TOHFLA: The Test of Functional Health Literacy in Adults; REALM: the Rapid Estimate of Adult Literacy in Medicine; HLAQs: Health Literacy Assessment Questions; HLS-EU-Q47: the European Survey for Health Literacy.

on improving HL specifically in digital-assisted decision-making using the European Survey for Health Literacy (HLS-EU-Q47) questionnaire, comprehensive to measure health literacy; access, understand, assess/process, and apply health-relevant information [21].

The dimensions of HL have been categorized by several experts including Nutbeam classified HL into three categories, namely, functional health literacy, communicative HL, and critical HL [25]. All studies measure HL, but only five studies categorize them into functional, communicative, and critical [18], [19], [20], [22], [23]. Ryvicker *et al.* measured HL but not explain the measuring instrument used and neglected to categorize it, the majority (85.6%) of the subjects had an adequate level of HL [26]. One study measured specific HL skills after receiving an online information presentation intervention to aid medical decision making [21].

Research subjects are patients with primary hypertension whose blood pressure is not controlled with an average age of 50 years [18], [19], [20], [21], [22]. Only one study examined hypertensive patients aged 18 years [23]. Hypertension is a very common condition experienced by the community and its prevalence is increasing in older adults [27].

Type and duration of intervention

The types and duration of interventions in this systematic review are shown in Table 2. There are several types of interventions provided; web-based interventions, training-based interventions, health education-based interventions, one-component interventions (DVD aids), and multicomponent interventions including training sessions, workshops, counseling, and health education.

Table 2: Types and duration of intervention

Intervention	Design	Follow-up	Quality	References
Multicomponent program	Randomized clinical control trial	12 months	8	[19]
Electronic-based health education	Randomized controlled trial (RCT)	6 months	7	[27]
Behavioral change support apparatus	Randomized clinical trial	6 months	7	[20]
Multicomponent program	Quasi-experimental	3 months	7	[21]
Multicomponent program	RCT	1 month	8	[23]
Training-based intervention	RCT	6 months	8	[24]
Web-based intervention	RCT	Assessment on the next consultation visit	7	[22]

Some interventions are multicomponent [18], [20], [22]. One study fully describes the interventions carried out, namely, 6 weekly educational sessions on developing hypertension management skills, including HL training followed by telephone counseling and home blood pressure (BP) monitoring for 12 months [18]. Web-based interventions with evidence-based patient decision aids (EbPDAs) improve the health literacy of hypertensive patients to make the right medical decisions regarding their health [21].

Health education-based interventions are basically carried out by all researchers but with different approaches. The integrated program with blood pressure monitoring at home and village health volunteers is plausible to be implemented well because it is supported by health education about self-management of hypertension [20]. Self-management education adapted to health literacy was shown to increase medication adherence ($p < 0.05$) although it was not significant in lowering BP ($p > 0.05$). Electronic-based health education is suitable to be applied to patients from the emergency department who are often not aware of suffering from hypertension, they need regular monitoring to control their blood pressure and other clinical effects [21].

Health education can result in lifestyle modification and increase adherence to antihypertensive drugs to improve effective BP control in hypertensive patients [11]. Interactive education workshops may be the most effective strategy in a community-based health promotion education program for hypertensive patients in increasing patient knowledge about hypertension and reducing clinical risk factors to prevent hypertension-related complications [28].

The timing of the intervention follow-up affected the final outcome of each study. The average length of intervention was 6 months. Overall, patients who completed the 6-month study protocol achieved a significant reduction in systolic blood pressure from baseline to 180 days of follow-up (159 mmHg vs. 131 mmHg; $p < 0.001$), although the difference in reduction between the two groups was not statistically significant [26]. HL scores showed no difference

between the two groups at 6 months, but there were significant differences in print and functional HL scores at 12 and 18 months after the intervention; scores for the intervention group were much higher [18]. Intervention and a short follow-up period, for example, 1 month may be factors that influence the insignificant change in post-test systolic and diastolic blood pressure in the intervention group [22].

All reviewed studies used an experimental design. There is one study that uses a quasi-experimental design, where the research sample is given the choice to be involved in the intervention program [20]. The other six studies used a randomized controlled trial design [18], [19], [21], [22], [23], [26]. A review of the literature on the quality of randomized controlled trials in health literacy described areas of experimental design strength in good randomization and allocation concealment [29].

Study outcomes

The literature review on outcome studies is shown in Table 3. Outcome studies in seven studies can be categorized; medical outcomes health (reducing systolic and diastolic blood pressure, lowering body mass index BMI) [18], [20], health literacy skills [18], [21], [23], and hypertension self-management behavioral (intentions, knowledge, blood pressure control, and medication adherence) [18], [19], [20], [21], [22], [23], [26].

Table 3: Study outcomes

Aims	Study outcomes	References
Testing intervention effect	Significant	[18]
Researching efficacy and education moderator intervention	Non-significant	[26]
Grading the effect of hypertension effect to intention	Significant	[19]
Knowing the effectivity of an integrated program	Significant	[20]
Evaluating the effect of self-management education	Significant	[22]
Understanding the effectivity of communication skills training on the outcome of hypertension	Significant	[23]
Understanding the effect of evidence-based patient decision aids (EBPDAs)	Significant	[21]

The seven articles that have been reviewed, only one article shows that the outcome study results from the interventions that have been carried out in the study are not significant, even though the level of BP control that has been used is not significant. This high level was achievable overall because the study aim was to examine the efficacy and moderator of an educational intervention in an RCT on BP control at 180 days post-intervention [26]. While the outcome study showed significant results [18], [19], [20], [21], [22], [23], the intervention objectives were said to have been achieved.

Various intervention objectives have been discussed in the study, such as a study on the effect of community-based self-help multimodal behavioral intervention in the elderly which aims to examine the effect of the intervention on (i) high blood pressure (HBP) management as the main outcome and (ii) health literacy, self-efficacy, medication adherence, and psychological status. (depression) as a secondary outcome [18].

Studies on the effect of interventions are also discussed by a study conducted on the elderly in Iran with the aim of knowing the effect of digital evidence-based patient decision aids (EbPDAs) for hypertension on HL [21] not only the effect of intervention but other studies also discuss the effectiveness of the intervention [20], [23], such as in this study aims to determine the effectiveness of an integrated program with home blood pressure monitoring (HBPM) and village health volunteers (VHVs) in supporting the target population [20] and to gauge the effectiveness of physician communication skills training on hypertension outcomes and HL skills, self-efficacy, and medication adherence in patients with uncontrolled BP [23]. To affirm the impact and evaluate the effect of the intervention, the objectives of the study on African-American patients were to evaluate the effect of self-management education tailored to health literacy on medication adherence and blood pressure control [19] and to evaluate the effect of self-management education tailored to health literacy on medication adherence and BP control [22].

Based on the literature study, from the six studies, the aims are seen effectiveness, effect, and impact of interventions that produce significant outcome studies.

The effect of the intervention was significant in improving hypertension control by taking medication, significantly reducing systolic and diastolic BP, increasing HL scores, indicators of self-efficacy, and knowledge about hypertension [18]. Another effect, the intervention significantly increased the ability of specific HL about hypertension [21]. The effectiveness of the intervention succeeded in significantly lowering BP and BMI, and increasing knowledge and self-management behavior among urban patients with uncontrolled BP [20] and significantly effective in changing physician communication skills, patient's health literacy, medication adherence, and self-efficacy [23]. The efficacy of systolic and diastolic blood pressure of patients also significantly increased adherence to hypertension treatment but was not effective on blood pressure control behavior, decreased diastolic and systole blood pressure in the intervention group but the difference with the control group was not significant [22]. To assess the impact of the intervention in the outcome study, it showed that the results were significantly more likely to have a much greater intention to carry out healthy lifestyle behaviors in controlling hypertension [19].

Conclusion

Interventions that are integrated with health literacy by considering the health literacy abilities of hypertensive patients will improve the health outcomes of hypertensive patients in medical outcomes health,

health literacy skills, and hypertension self-management behavioral.

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