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Hypertension literacy: Concept analysis

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Abstract

Aim: Analysis of the concept of hypertension literacy to ensure clarity, reduce ambiguities and promote consistency in usage.

Design: Walker and Avant's concept analysis method was adopted.

Methods: Searched four electronic databases using keywords combined with the appropriate Boolean operators. After removing duplicates, thirty titles were identified, and ten articles met the basic criteria for inclusion. The analysis was done using a convergent synthesis design to integrate results and transform them into qualitative descriptions.

Results: Hypertension literacy's defining attributes were hypertension information search skills, comprehension of numeracy associated with blood pressure and medication and utilization of hypertension prevention information. The identified antecedents were formal education and improved cognitive, social, economic and health-related experiences. Consequences of hypertension literacy included improved self-reported and increased health awareness. Hypertension literacy allows nurses to assess and accurately improve knowledge and facilitate people to adopt prevention behaviours.

KEYWORDS
concept analysis, health literacy, hypertension, hypertension knowledge, hypertension literacy, nursing

1 | INTRODUCTION

The growing burden of non-communicable diseases, and specifically hypertension, is a major concern to healthcare practitioners, researchers and policymakers. The negative outcomes associated with complications that arise from hypertensive diseases have necessitated the implementation of stringent assessment of the risk factors and the implementation of measures for its prevention and control (Afrifa-Anane et al., 2015; Boateng et al., 2017; Valerio et al., 2016). Health information about the natural history of a disease is usually referred to as 'health awareness.' Targeted health awareness is one means to facilitate efficient control of a particular disease. The availability of health information may be insufficient to prevent a disease without additional efforts to control risk. Researchers generally agree that increasing health literacy about hypertension may be a panacea to reducing hypertension prevalence and related diseases (Afrifa-Anane et al., 2015; Boateng et al., 2017). The concept of health literacy has received increasing attention within the last few decades, but its tailored use in specific disease situations and subsequent translation to care and prevention of disease has not yet been exploited. There have been some attempts, however, to delineate the concept of health literacy (Du et al., 2018; Garner et al., 2020; Kim et al., 2012; Park et al., 2018), it has been limited to specific populations without encompassing the entire antecedents of the concept. Hypertension literacy is critically important for people to be empowered to control the disease (Miranda et al., 2020). A multiplicity of different issues have been associated with hypertension literacy, including the relationship between anthropometric, lifestyle,

socio-cultural and demographic domains. A precise definition will enable scholars to reflect accurately on the theoretical basis of the concept of hypertension literacy as strides are made to inform operationalization. In this paper, we undertake a concept analysis of hypertension literacy to clarify, reduce related ambiguity and promote consistency, informing the use of hypertension literacy in nursing literature and practice. We employed Walker and Avant's concept analysis method to analyse the concept of hypertension literacy to clarify and reduce ambiguities associated with the concept as it applies in nursing and disease prevention (Walker & Avant, 2019).

2 | BACKGROUND

Cardiovascular disease (CVD) accounts for almost half of Non-Communicable Disease (NCD) related deaths (Boateng et al., 2017). There is an increasing concern about the incidence of hypertension, especially among younger people (Afrifa-Anane et al., 2015; Boateng et al., 2017; Valerio et al., 2016), and CVD remains the leading cause of death among women in the United States (Barnes, 2013). In 2008, more than 400,000 women died of CVD (Barnes, 2013). One of the antecedents and a main consequence of CVD is hypertension, which is considered the leading risk factor for CVD, myocardial infarction and stroke (Valerio et al., 2016).

Hypertension is becoming increasingly problematic in the Ghanaian community, is prevalent among a substantial proportion and it is a leading cause of hospital admissions attributable to NCD (Boateng et al., 2017; Bosu & Bosu, 2021; Koopman et al., 2014). Hypertension was noted as the third leading cause of all hospital admission (4.7%) and responsible for 15.3% of gross deaths (Ghana Health Service, 2018). The risks factors associated with hypertension, which are increasing among Ghanaians, include high-fat diet patterns, smoking, alcohol use, stressful work conditions, socioeconomic conditions and illicit drug (Koopman et al., 2014; Tagoe et al., 2019; Valerio et al., 2016). The prevalence of risk factors of hypertension among the Ghanaian population ranged from 13.3% to 67.2% among rural and urban populations, respectively (Tagoe et al., 2019). Issues related to poor knowledge about the risk factors, a lack of a supportive environment, poverty, cultural beliefs and lay knowledge have been associated with these risk factors and consequently increase the prevalence of hypertension in the region (Agyemang et al., 2018; Amponsem-Boateng et al., 2019; Bosu & Bosu, 2021; Nyaaba et al., 2018). Cultural beliefs also have an important role in the prevalence of hypertension; for example, high body weight and consuming a diet high in cholesterol, salt and sugar is seen to be socially desirable because it indicates improved socioeconomic status (Afrifa-Anane et al., 2015; Nyaaba et al., 2018).

Gaps in knowledge about hypertension and risk factors in the general population are important indicators of effective prevention and treatment. Knowledge is critical for the adoption of preventive health measures, leading to the reduction of disease in the future. For the successful implementation of any health promotion initiative, specific context, information, awareness, perception and knowledge of the target population are essential; this is scientifically referred to as 'health literacy' (HL). Since the inception of the concept, HL has grown to be a critical tool for preventing, controlling and treating chronic diseases (Speros, 2005), including hypertension. Having HL is noted to have an influence on an individual's ability to adopt prevention behaviours and utilize avoidance actions to control diseases (Kim et al., 2012). While the concept of HL has been espoused in various publications, it is general (Kim et al., 2012; Parnell et al., 2019); and the specific concept of hypertension literacy has not yet been analysed. It is imperative that the concept of HL with respect to hypertension is empirically defined and determined, especially in the Ghanaian context. The prevention and control of hypertension are further complicated because inadequate HL is pervasive globally in all segments of society (Kim et al., 2012; Speros, 2005). In the last two decades, researchers have identified the essential role of HL in the total control of hypertension and other NCDs (Kim et al., 2012; Nguyena et al., 2017; Speros, 2005). In Ghana, the younger population is particularly at risk of hypertension because they often engage in activities that may increase their predisposition for hypertension (Afrifa-Anane et al., 2015; Bosu & Bosu, 2021; Oyekale, 2019). Several interventions have been proposed with the goal of mitigating the increasing impact of hypertension, yet HL is not among them (Adler et al., 2020). Issues related to healthcare access and cost as barriers to health have been discussed in detail, but little attention has been given to the more pervasive problem of inadequate HL. Health literacy is a concept for navigating the healthcare system and functioning successfully in a healthcare consumer role (Adler et al., 2020), and it increases the capacity of an individual to adopt prevention measures. Understanding hypertension literacy is one avenue for exploring and evaluating the initiation and utilization of this concept in the total control and prevention of the disease.

3 | AIM

This concept analysis aims to develop an explicit, comprehensive and practical definition of the concept of hypertension literacy.

4 | METHODS

4.1 | Literature search

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework were used for the search, identification and screening of articles (Moher et al., 2015; Shamseer et al., 2015). A comprehensive search of the literature was performed as free text, MeSh terms or associated derivatives combined with the appropriate Boolean operators in four electronic databases in April 2021, and the following keywords were used as follows: 'concept analysis' OR 'concept development' OR 'concept clarification' AND 'Health literacy'. The search yielded 60 articles from PubMed (17), CINAHL (11), Web of Science (9) and Google Scholar (23). A further

two titles were identified via a manual search of the references of the identified articles. No output was obtained when the concept of HL and hypertension was combined with concept analysis, concept clarification or concept development using the appropriate Boolean operators as free text or with Mesh terms.

4.2 | Exclusions and inclusion criteria

The inclusion criteria include:

- Articles that dealt with concept analysis, concept clarification or concept development.
- Articles that specifically dealt with HL (regardless of the type of concept analysis method).
- English based articles (written in English).

  The exclusion criteria were:

- Articles that analysed or validated an HL measurement scale/tool.
- Non-scientific papers that analysed health literacy

4.3 | Data extraction

Each study was read critically to identify the analysis's pattern, sequence and context. A matrix was developed and used to extract relevant information from the studies, including strategy (type) of concept analysis, main defining attributes, major antecedents and consequences of HL.

4.4 | Data analysis

A convergent synthesis design was adopted to integrate the results from all the concept analysis procedures and further transform them into specific qualitative descriptions (Pluye & Hong, 2014) of the concept of HL and its application in hypertension. The attributes, antecedents and consequences were then viewed within the context of hypertension literacy. A thematic approach was used to synthesize key defining characteristics, including the attributes, antecedents and consequences as they apply to HL and subsequently transpose to hypertension literacy. In doing this thematic analysis, researchers independently used line-by-line coding of the individual analysis (results) to enhance the identification of free codes. The final themes and subthemes were then developed from the free codes generated.

5 | ORIGIN OF THE CONCEPT

The concept of HL originated in the last decade of the 20th century. Throughout the 1980s and 1990s, reading ability and literacy level as they relate to health education strategies and client comprehension

ability were the focus of patient and health education research (Speros, 2005). It was a common assumption that literacy ability (reading and comprehending numerals) directly translated to HL. In this era, the extent to which an individual's literacy ability could directly be translated to their tendency to understand health-related literature was not deeply explored nor deemed to be very relevant.

The defining attributes of HL are an individual's capacity to comprehend prescriptions, and labels of medications, keep appointments and abide by healthcare instructions (including medication instructions). Health literacy may be statistically significantly elevated or worsened by the level of general literacy (Kim et al., 2012). However, an individual's HL may be worse than their ability to read and comprehend other forms of written information (Speros, 2005). Indeed, while a person may be literate within the context of familiar terms and content, they may not be able to comprehend and use unfamiliar health-related vocabulary and concepts used in healthcare settings (Kim et al., 2012; Speros, 2005). The concept of HL was born when discrepancies were identified when people assimilate, comprehend and utilize health information. It has become imperative to note and describe disease-specific HL-hypertension literacy.

6 | WALKER AND AVANT'S CONCEPT ANALYSIS METHOD

This analysis follows the guidelines for concept analysis proposed by Walker and Avant (2019), which describe a concept analysis as a 'strategy that allows researchers to examine the attributes or characteristics of a concept'. Walker and Avant insist that concepts are the building blocks of theory construction and are made of attributes that can be described as unique or derivative from other concepts that lack clarity, are ambiguous or are generally difficult to operationalize or measure. The concept of HL has received increasing attention even though its specific application and utility in hypertension have not yet been explored. Thus, this concept analysis is imperative as it allows for examining the basic elements of hypertension literacy to provide clarity and empirical jurisdiction, which will eventually aid in developing a tool to measure hypertension literacy.

The method of concept analysis proposed by Walker and Avant (2019) uses the following eight steps: (1) selecting a concept, (2) stating the purpose of the analysis, (3) identifying the uses of the concept, (4) describing the defining attributes, (5) constructing a model case, (6) constructing a borderline and contrary case, (7) identify the antecedents and consequences and (8) defining the empirical referents. In line with this method, the concept of hypertension literacy and its attributes and consequences, were derived from HL (Table 2).

7 | RESULTS

A total of 62 titles were identified from the search and transported to endnote version 20. After 32 duplicate articles were removed,

30 titles remained. All the non-duplicates were screened for appropriateness. Only articles that conducted a concept analysis or dealt with concept clarification or concept development in relation to HL were included. After screening titles and abstracts, 14 articles were identified as suitable for full-text screening. During the full-text screening, non-English-based articles (written in other languages either than English) and articles that tested the feasibility, reliability and validity of HL tools were excluded, leaving 10 articles that were selected for inclusion in this analysis.

The studies used various terms to describe a concept analysis (Table 1). The studies included those that analysed HL (Mancuso, 2008; Parnell et al., 2019; Speros, 2005), critical HL (Sykes et al., 2013), lay worker HL (Cadman, 2017) and HL in relation to health outcomes (Sierra & Cianelli, 2019), shaping alcohol HL (Okan et al., 2020), HL in patients with multiple sclerosis (Dehghani, 2021), HL in older adult populations (Oldfield & Dreher, 2010) and concept analysis of HL for patients with CVD (Sim & Hwang, 2019). The concept analysis methods included the hybrid method (Sim & Hwang, 2019), Roger's method (Dehghani, 2021; Mancuso, 2008), Walker and Avant's method (Oldfield & Dreher, 2010; Parnell et al., 2019; Sierra & Cianelli, 2019; Speros, 2005), the evolutionary method (Okan et al., 2020; Sykes et al., 2013) and Wilson's methods (Cadman, 2017).

7.1 | Selection of the concept

The burden associated with hypertension and its related risk factors is even more critical in situations where there is limited knowledge about prevention and control. This is further aggravated in vulnerable populations (Barnes, 2013) who generally have inadequate or variable HL. Within the paradigm of HL and as it relates to hypertension, several concepts are yet to receive clarification and definition with clearly delineated empirical definitions and measurements. The concept of hypertension literacy was chosen over other concepts such as lifestyle changes, locus of control, self-efficacy, modifiable risk factors, e-health literacy and access to social support systems because hypertension literacy serves as a core construct from which the other concepts are derived. Also, hypertension literacy is basic and self-encompassing, and an analysis will be cardinal in determining the knowledge levels for efficient control of hypertension. The concept of HL has received some prominence in recent times, many publications have focused on analysing the concept among the general population or among health consumers only (Cadman, 2017; Sierra & Cianelli, 2019), and no cultural, geographic, situation-specific or disease-specific (hypertension) analyses have been published. Those which were conducted on HL used hybrid methods and generally concentrated on the Korean context of people with ischemic heart disease (Sim & Hwang, 2019). Others used Roger's method (Dehghani, 2021; Mancuso, 2008) and the evolutionary methods (Okan et al., 2020; Sykes et al., 2013). However, none of these analyses looked at its applicability in hypertension.

7.2 | Purpose of analysis

This concept analysis aims to develop and explicitly state a comprehensive theoretical and practical definition of the concept of hypertension literacy to serve as a basis for making an operational definition and developing a hypertension literacy tool (Nguyen et al., 2017). Hypertension literacy may be regarded as a highly publicized and politicized concept (Cadman, 2017; Sierra & Cianelli, 2019), especially among scientists studying hypertension. This is because hypertension literacy is often presumed to be natural and universal in methodical and common user settings, and few scientific tools for the measurement of hypertension literacy are available (De Gagnea & Oh, 2012; Nguyena et al., 2017). The concept of HL has received some form of clarification in various geographical jurisdictions. While there are multiple tools for measuring the concept of HL, they are non-comprehensive because each focuses on different facets of the concept (Nguyena et al., 2017; Parker et al., 1995). The concept of HL has varied meanings and interpretations among different cultures and settings (Kim et al., 2012; Nguyena et al., 2017). For example, HL has various meanings in Korea and does not incorporate the individual characteristics of diseases, cultural affiliations and socio-economic variations (Kim et al., 2012). HL can be translated as health knowledge, health awareness or health consciousness in some Ghanaian languages, like Twi and Dagbani.

The lack of these generally accepted definitions makes it imperative that we assess and analyse the concept of hypertension literacy to identify its defining attributes, antecedents and consequences and identify defining afferents. Hypertension literacy encompasses various meanings, and if researchers do not recognize them correctly, it may give rise to problems with the validity and reliability of their research, which may lead to problems in communication among researchers (De Gagnea & Oh, 2012).

7.3 | Uses of the concept of hypertension literacy

People commonly and directly associate HL with academic laurels or formal educational attainment. Despite alluding to formal education, recent development regarding health literacy and proper delineation is not a direct measure of HL (Kim et al., 2012; Speros, 2005). Given the defining attributes of HL (Kim et al., 2012; Mancuso, 2008), it is possible that people with no formal education can be health literate and vice versa. Even though the ability to read may have some influence on some of the defining attributes of HL (Kim et al., 2012). This indicates the need for healthcare improvement through health promotion interventions, regardless of education level. The individual's desire and need to improve their HL is heightened by their ability to function adequately and sufficiently by comprehending and utilizing healthcare information (Speros, 2005). It is imperative that healthcare providers can provide diverse and multilingual healthcare instruction to clients. There are discrepancies in the concept of formal education to a

TABLE 1 Concept of health literacy.

No	Author	Title	Strategy	Defining attributes	Main antecedents	Main consequences
1	Parnell et al. (2019)	Health literacy	Walker and Avant's concept analysis	Behaviour or skills for listening, communicating (oral, writing or reading), comprehending, and using healthcare-related information imparted verbally, in written, audio visual or in numbered format (medication or treatment instructions)	Cultural background, race and ethnicity, primary language, educational level, social and economic factors, physical and emotional conditions, self-efficacy, feelings of vulnerability or resiliency, and cognitive and social skills	Enhanced the individual's and families' readiness to engage in conversations with healthcare providers, assume responsibility for care or health maintenance, be discharged home or to another level of care, follow-up with care providers and operationalize information taught or provided by care providers
2	Sykes et al. (2013)	Critical health literacy	Evolutionary concept analysis	Advanced personal skills, health knowledge, information skills, effective interaction between service providers and users, informed decision-making and empowerment	Empowerment through political action	Improves health outcomes, creates more effective use of health services and reduces inequalities in health
3	Cadman (2017)	Lay worker health literacy	Wilson's Concept Analysis	Comprehension of health concepts and health promotion capability	Interpersonal engagement, interest in health, ambition and a learning environment	Enhances decision-making, improved health access, community empowerment and the creation of praxis
4	Sierra and Cianelli (2019)	Health literacy in relation to health outcomes	Walker and Avant's concept analysis	Reading and numeracy skills, oral language and the capability to use information to make sound healthcare decision	Literacy, any health-related experience and interaction with a healthcare worker (oral, written, electronic or remote—telemedicine)	Provides knowledge regarding disease management and use of preventive services, lowers hospitalization, lowers healthcare costs and decreases risk of mortality
5	Okan et al. (2020)	Shaping Alcohol Health Literacy	An evolutionary concept analysis	Attributes relating to critical thinking applied to alcohol, and the reading of alcohol messages	Empowerment and social and political action	Facilitates ability to make judgements and act in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life throughout the course of life
6	Dehghani (2021)	Health Literacy in Multiple Sclerosis patients	Rodgers' evolutionary method of concept analysis	Health information evaluation, understand disease and its related issues, reading skills and capacity to use knowledge	Ability to read and comprehend, interaction with health personnel and interaction with peers	Improves self-care, health promotion, medication adherence and decreases use of healthcare services
7	Oldfield and Dreher (2010)	Health literacy in the older adult population	Walker and Avant's concept analysis	Reading and numeracy skills, comprehension of health information and decision-making	Literacy, health-related experience and self-efficacy	Improves self-reported health status, lowers healthcare costs, increases health knowledge, reduces frequency of use of healthcare services and increases use of preventative health services
8	Speros (2005)	Health literacy	Walker and Avant's concept analysis	Reading and numeracy skills, comprehension of health information, the capacity to use information in healthcare decision-making	Literacy and a health-related experience	Improves self-reported health status, lowers healthcare costs, increases health knowledge, shorten hospitalizations and reduces frequency of use of healthcare services

TABLE 1 (Continued)

No	Author	Title	Strategy	Defining attributes	Main antecedents	Main consequences
9	Mancuso (2008)	Health literacy: A concept/dimensional analysis	Roger's and dimensional analysis	Capacity to behaviour change, comprehension of health information and communication	Skills and abilities that are necessary to attain competence in health literacy	Decreases healthcare costs and provides knowledge of diseases and treatments; self-management skills; and ability to care for chronic increases conditions adherence, reduces medical or medication treatment errors
10	Sim and Hwang (2019)	Concept Analysis of Health Literacy for Patients with CVD	Hybrid method	Individual functional: Literacy skills, health information search ability skills, health information utilization skills Interrogational: Communication with the medical team	Physical factors (objective health status, age and accompanying diseases), emotional factors (health belief, family support and subjective health status) and social factors (culture, education level, occupation and economic level)	Improves adherence with medical instructions (medication adherence and the improvement of medication compliance), management of risk factors (reduction or cessation of smoking, temperance and weight control), management of influencing factors (changes in eating habits and stress control) and interactions with the medical team (outpatient visits, taking regular examinations, participation in educational programs, participation in immunization programs)

person's ability to be hypertension literate. Analysing the concept of hypertension literacy will allow for a clear delineation of the concept, which may facilitate the development of an operational definition with a tool.

7.4 | Defining attributes

Walker and Avant (2019) define the attributes of a concept to refer to those characteristics or issues of the concept that are largely associated with and frequently appear in the literature. The defining attributes of HL that appear consistently in the literature encompass numeracy skills, comprehension, the ability to use healthcare information and instructions in health-related decision-making, and successfully functioning as a health service consumer both for the prevention of disease or receiving adequate comprehensive care (Table 2).

The attributes of HL identified in the literature included a set of behaviours or skills for listening (Parnell et al., 2019), communicating (orally or in writing; Parnell et al., 2019; Sierra & Cianelli, 2019; Sim & Hwang, 2019), reading (Dehghani, 2021; Okan et al., 2020; Oldfield & Dreher, 2010; Parnell et al., 2019; Sierra & Cianelli, 2019; Speros, 2005; Sykes et al., 2013), comprehending (Cadman, 2017; Mancuso, 2008; Parnell et al., 2019; Speros, 2005), evaluating health information (Dehghani, 2021) and using healthcare-related information imparted verbally, in writing or audio-visual format (Dehghani, 2021; Parnell et al., 2019; Sierra & Cianelli, 2019; Speros, 2005; Sykes et al., 2013). Also, the ability to comprehend and use numeracy (medication or treatment instructions; Oldfield & Dreher, 2010; Parnell et al., 2019; Sierra & Cianelli, 2019) and to promote individual and community health (Cadman, 2017), including critical thinking in specific situations like alcohol prevention (Okan et al., 2020) were identified as key attributes. Other key attributes of HL include information search ability (Sim & Hwang, 2019; Sykes et al., 2013), advanced personal skills (Sykes et al., 2013), health knowledge (Sykes et al., 2013), informed decision-making and empowerment including taking political action (Sykes et al., 2013).

The World Health Organization (WHO) definition of HL encompasses elements of personal empowerment and action (WHO, 2009). According to the WHO, HL represents the cognitive and social skills that determine the motivation and capacity of individuals to gain access to, understand and use information in ways that promote and maintain good health (WHO, 2009). From this broader perspective, HL is viewed as an outcome of health promotion and health education efforts and has both personal and societal benefits. The concept of HL, as it applies to patients with CVD has two dimensions and five attributes. The dimensions are individual factors and interrelated factors. The individual factors are literacy skills, health information searchability and health utilization ability, and the interrelated dimensions include active communication with the medical team and utilization of health information support resources (Sim & Hwang, 2019). The attributes of hypertension literacy that

TABLE 2 Attributes, antecedents, consequences and empirical referents of health literacy and hypertension literacy.

Factors	Health literacy	Hypertension literacy
Attributes	Reading skills, audio visual comprehension, understand communication	Search and comprehend hypertension health information (health information search skill) for written, oral, audio visual or through other members of the society
	Understand numeracy, read and understand medication labels including dose and dosage	Understand numerical values associated with hypertension measurement and medications dosages (comprehension of numeracy skills)
	Engage in disease prevention activities, health promotion	Utilize health information for the purposes of preventing hypertension or assist others to prevent the disease (application of health information skill)
Antecedents	Formal literacy, formal education	Formal education
	Higher intelligence, family and social support, higher socio-economic status	Improve cognitive, social and economic conditions
	Interaction with healthcare providers through media interaction or utilization of health services	Health-related experience
Consequences	Health screening, disease prevention	Improve self-reported hypertension health status
	Increased health awareness	Increase health awareness about hypertension
	Health education, health promotion	Adopt and assist others to implement hypertension prevention measures
Empirical referents	Test Of Functional Health Literacy in Adults (TOFHL). National Assessment of Adult Literacy (NAAL)	

were commonly referenced in the literature (including the reviewed articles) include:

- Searching and comprehending hypertension health information skills (health information search skill), including written, oral, audio-visual materials or through other members of society.
- Understanding numerical values associated with hypertension measurements and medications dosages (comprehension of numeracy skills).
- Utilizing health information for the purposes of preventing hypertension disease or assisting others in preventing the disease (application of health information skill).

In essence, by making key derivatives and applying the general concept of health literacy, the determining attributes of hypertension literacy include skills related to information searching, comprehension of numeracy and application of health information to benefit self or others.

7.5 | Model cases

Walker and Avant (2019) use cases to provide narrations and give examples of what constitutes or does not constitute the concept of hypertension literacy.

Miss KKB is a slightly overweight female, a 17-year-old senior high school student who lives with her obese grandmother in a remote village in the Northeast region of Ghana. The grandmother is a peasant farmer and convener of the Widows' Association in her community. During the regular meetings, Miss KKB sometimes writes minutes for the Widows' Association (ostensibly for the grandmother). A local NGO sponsors the meals during the meetings, which are mostly pork and a local alcoholic drink ('pito'). Miss KKB and her grandmother enjoy eating 'fufu', a high carbohydrate-containing food and do not engage in physical exercises. A few days ago, the grandmother collapsed and was rushed to the clinic. She was diagnosed with hypertension, given medications and admitted to the hospital for three days. She was advised to reduce stress, decrease her salt intake and exercise daily. Miss KKB searched the internet using her school's computer for information about hypertension and learned that there are basically two forms of hypertension: primary and secondary. She also realized that aside from salt, high intake of fat and oily foods, being overweight and having a sedentary lifestyle increase an individual's risk for hypertension (i.e. *information search skills*). After assisting her grandmother in taking her medications and ensuring the correct dose and time, Miss KKB sends her grandmother to the local drug store to monitor her blood pressure (BP). Miss KKB understands that when the resting BP (i.e. BP measured after resting for 15 min) reading is above 140 mm Hg for the systole and 90 mm Hg for the diastole, her grandmother needs to return to the hospital (i.e. *comprehension of hypertension numeracy skill*). Miss KKB also monitors her own BP and implements all the preventive measures for herself. Over the last 10 weeks, Miss KKB has lost 5 kg, and her grandmother has lost 6 kg of body weight. During the widows' meeting, Miss KKB used 10 min to educate the attendees about hypertension prevention (i.e. *utilize and assist others to utilize hypertension information*). Over the past 4 weeks, all the widows at the Widows' Association have monitored their BP, and they attend scheduled

group physical exercise each Saturday morning. The group also suggested to the local NGO that instead of donating drinks ('pito'), the NGO donate cash for the purchase of first aid equipment for use during the exercise sessions. The Widow's Association also periodically invites a nurse to deliver health lectures.

The model case uses 17-year-old Miss KKB as an example of a person who encompasses all the defining attributes of hypertension literacy. This case clearly delineates how the attributes of information search skills, comprehension of hypertension numeracy skills and utilization of hypertension information can be applied within the concept of hypertension literacy.

7.6 | Constructing borderline and contrary cases

In this section, we outline the other cases, including the borderline and the contrary.

7.6.1 | Borderline case

Mr. TD is an 18-year-old male who has recently completed high school and lives with both hypertensive parents. He is sometimes overwhelmed by his mother's complaints of dizziness and headache. Mr. TD empathizes with his mother and advises her to take her medication. Based on his belief that the hospital will be able to determine the reasons for his parents' headaches, Mr. TD encourages both of his parents to attend their health review appointments (i.e. *use health information for the benefit of others*). It has never occurred to Mr. TD to ask for more information or further explanation about hypertension from the nurse during his mother's health review appointment, although he goes with her to the hospital, and he has not attempted to search for more information about hypertension (*failed- information search skill*). Mr. TD does not know about his parent's specific medications, and he does not know the dosages of their medications. He also does not know the meaning of each BP reading and cannot determine when his parents' daily BP reading requires further action, even though the nurse visits them daily to monitor the parents' BPs (*failed- comprehension of numeracy skills*). Mr. TD learned from the nurse that reducing salt and fat intake, regular exercise and abstinence from alcohol and cigarettes reduce the risk of hypertension. He also understands that hypertension is hereditary, so he is prone to an increased risk for hypertension because both of his parents have the disease. He has taken steps to implement all the nurse told him and encourages his siblings to do the same (i.e. *use health information to benefit others*).

In this borderline case, Mr. TD has information about how to prevent hypertension (provided verbally by the nurse). However, he lacks some of the defining attributes of hypertension literacy, including information search skills and comprehension of numeracy skills. Mr. TD can utilize health information to benefit himself or others (his siblings). This case is a borderline case for hypertension literacy because Mr. TD exhibits only some of the defining attributes.

7.6.2 | Contrary case

Contrary cases usually describe a case that does not have or include the defining attributes of the HL concept and cannot be described as the concept of HL (Walker & Avant, 2019).

Mr. AA is an 18-year-old male living in a peri-urban area in Ghana whose father was recently diagnosed with hypertension. Mr. AA recently decided to stop attending school because he was overwhelmed with his father's care requirements. Mr. AA has limited knowledge about hypertension and has never searched for more information (*failed- information search skill*). He dreads the mention of the disease because a schoolmate told him people with hypertension usually develop stroke and die. Mr. AA's father does not attend review appointments and is treating his new diagnosis spiritually by making sacrifices to the gods (*failed- application of or utilizing health information*). During a recent home visit by health volunteers, Mr. AA's father's BP was 131/81 mm Hg, and Mr. AA became alarmed (*failed*-hypertensive numeracy skills). Disregarding the nurse's assurance that the BP reading was within normal range, Mr. AA immediately visited the fetish priest for advice. Despite several home visits by the community health nurse who encouraged the family to attend review appointments, Mr. AA's father decided not to monitor his BP again.

This contrary case describes what cannot be considered hypertension literacy as Mr. AA appears not to exhibit any of the defining attributes of hypertension literacy.

7.7 | Antecedents and consequences

The antecedents and consequences of the concept under analysis review refer to the conditions that are present for the occurrence of a concept (antecedent) or the outcome or result of the concept (consequence). The antecedents and consequences of hypertension literacy was derived from the selected papers using an integrative synthesis design.

7.7.1 | Antecedents

Walker and Avant (2019) describe the antecedents of a concept to encompass the conditions in place before the occurrence of the concept, and in the case of HL, may include positive and negative and intrinsic and extrinsic factors (Parnell et al., 2019). Some of the intrinsic and extrinsic factors include the individuals' culture, race, ethnicity (Berkman et al., 2011), primary language, educational level, economic situation (IOM., 2004), physical and emotional condition, self-efficacy, feelings of vulnerability and resiliency, and cognitive and social skills (Kim et al., 2012).

The antecedents of HL included the individual's cultural background (Mancuso, 2008; Parnell et al., 2019; Sim & Hwang, 2019), race and ethnicity (Parnell et al., 2019; Sim & Hwang, 2019), primary language (Mancuso, 2008; Parnell et al., 2019), educational

level – literacy level (Dehghani, 2021; Oldfield & Dreher, 2010; Parnell et al., 2019; Sierra & Cianelli, 2019; Sim & Hwang, 2019; Speros, 2005), cognitive, social and economic factors (Parnell et al., 2019; Sim & Hwang, 2019), physical and emotional condition of both the patient and their family (Parnell et al., 2019; Sim & Hwang, 2019), self-efficacy (Oldfield & Dreher, 2010; Parnell et al., 2019), feelings of vulnerability or resiliency (Parnell et al., 2019; Sim & Hwang, 2019), interpersonal engagement (Cadman, 2017), empowerment (Okan et al., 2020), interest in health (Cadman, 2017), ambition (Cadman, 2017), learning environment (Cadman, 2017), health-related experience (Oldfield & Dreher, 2010; Sierra & Cianelli, 2019) and interaction with health information (oral, written, electronic or remote- telemedicine; Dehghani, 2021; Oldfield & Dreher, 2010; Sierra & Cianelli, 2019; Speros, 2005), and the individual perception of economic status including body weight.

The antecedents to hypertension literacy were identified to include literacy (formal education); improved cognitive, social and economic conditions; and health-related experience (exposure to hypertension literature through a person, books, the internet and/or observation of others). Literacy is defined as using printed or written healthcare information to function in society, achieve health goals and develop knowledge and potential (Speros, 2005). Hypertension literacy includes meta-cognitive skills associated with reading comprehension and numeracy. Also, some previous experience or knowledge of an experience of hypertension or medical diction is imperative and herein described as experience with health care.

7.7.2 | Consequences

Consequences include all events or incidents that occur because of the occurrence of the concept or as an implication of the occurrence of the concept (Parnell et al., 2019; Walker & Avant, 2019). In this analysis, the consequence of hypertension literacy includes improved self-reported health status, increased health awareness, continuous monitoring of BP status (health examination), a lower family burden of disease (Berkman et al., 2011), increased healthcare knowledge and system usability (Tsai et al., 2016) and shorter and infrequent hospitalizations (Parnell et al., 2019; Speros, 2005).

The consequences of HL are noted to be broad and generally encompass compliance with medical instructions (i.e. medication adherence and the improvement of medication compliance), elimination of risk factors (i.e. reduction or cessation of smoking, temperance and weight control), management of influencing factors (i.e. changes in eating habits and stress control), and interactions with the medical team (i.e. attending outpatient visits, undertaking regular examinations and participating in educational programs and immunization programs; Sim & Hwang, 2019). Others identified the consequences of HL to include reduced healthcare costs, fewer medical or medication treatment errors, increased knowledge of diseases and treatments, self-management skills, ability to care for

chronic conditions and adherence (Mancuso, 2008). Improved HL also allows improved self-reported health status, lower healthcare costs, increased health knowledge, less frequent use of healthcare services and increased use of preventative health services (Oldfield & Dreher, 2010; Speros, 2005).

For the purposes of this analysis, the consequences of hypertension literacy included improved self-reported health status, increased health awareness (especially hypertension knowledge), adoption of preventive measures (including continuous BP monitoring) and assisting others (including family members) in adopting preventive measures.

7.8 | Empirical referents

An empirical referent refers to the classes or categories of an actual situation or case that ought to be present to demonstrate the occurrence of the concept analysed (Walker & Avant, 2019). It encompasses all the tangibles that can be associated with the direct observation of the analysed concept of hypertension literacy (Kim et al., 2012; Speros, 2005). To understand the nature of HL, several studies were conducted to test HL related to the utilization or comprehension of healthcare information. For example, to be able to measure the HL level of individuals, a study was designed to measure a person's ability to successfully complete the basic reading and numerical tasks required to adequately understand the institution of health care (Parker et al., 2003). This test, called the Test of Functional Health Literacy (TOFHL), was developed as a tool to measure the HL of English-speaking adults and native Spanish-speaking adults in America (Parker et al., 2003; Speros, 2005). In those studies, HL was described as an individual's ability to perform health-related tasks requiring reading and computational skills. In line with this, the American Medical Association (AMA) defines HL to include all the constellations of skills, including the ability to perform basic reading and numeracy tasks and the skills required to function in a healthcare environment (AMA, 1999). A broader definition of HL was made when Healthy people 2010 described it as the degree to which individuals can obtain, process and understand the basic health information and services needed to make appropriate health decisions (US department of health and human services, 2000). Finally, another empirical referent of the concept of HL is the one described by the component of the National Assessment of Adult Literacy (NAAL) which the National Centre developed for Education Statistics (2004) of the US Department of Education. The specific clusters of HL that are measured include understanding clinical information, understanding prevention information and navigating healthcare system information. The assessment produces HL index scores that reflect the ability of various US population groups to comprehend basic health-related information (Speros, 2005).

Hypertension literature has also received some attention in developing empirical referents. These were mainly focused on Korean American adults using mixed methods studies that resulted in two domains- print literacy and functional health literacy

(Kim et al., 2012). Other attempts at making an empiric referent were when Garner et al., 2020 showed the effectiveness of mobile health programs in improving hypertension health literacy (Garner et al., 2020). These two attempts have inherent limitations as they were culturally specific and dealt with only aspects of hypertension literacy (Garner et al., 2020; Kim et al., 2012). Creating a comprehensive hypertension literacy tool is, therefore, an imperative.

8 | DISCUSSION

Health literacy has recently received prominent attention (Du et al., 2018; Garner et al., 2020; Park et al., 2018; Speros, 2005). However, the same could not be said about hypertension literacy, as no specific concept analysis was identified. Walker and Avant's (2019) eight-step concept analysis method was applied to the concept of hypertension literacy, drawing inspiration from concept analyses that were done under the broader topic of HL (Walker & Avant, 2019). To the best of our knowledge, primary research on hypertension and HL was limited, focusing on various concept analyses of the broader concept of HL while applying the principles of concept derivation. The knowledge related to hypertension literacy focused on different aspects of the concept that, included developing a tool to measure hypertension health literacy in a specific population (Kim et al., 2012), the influence of health literacy on health outcomes (Du et al., 2018), medication adherence on health literacy and quality of life of hypertension patients (Park et al., 2018) and the impact of a mobile health program on health literacy (Garner et al., 2020). Also, this concept analysis is done in the context of Ghana as the cases were developed in such a context. The specificity of choice of this setting was motivated by the lack of measurement tools that are culturally sensitive to the Ghanaian context. This concept analysis was inspired by the limited information regarding the concept of hypertension literacy (Nguyena et al., 2017; Parnell et al., 2019; Sierra & Cianelli, 2019) and the limited comprehensiveness of the analysed concept (Du et al., 2018; Garner et al., 2020; Kim et al., 2012; Park et al., 2018).

The unavailability of specific information on hypertension literacy and the lack of translation of HL to specific disease scenarios continue to undermine the level of benefit associated with the concepts in nursing education, health promotion and disease prevention. Understanding health literacy is particularly important as it is a key determinant of adults, including minority groups, being diagnosed with hypertension (Borges et al., 2019; Miranda et al., 2020). People who were said to have higher health literacy concerning hypertension had a reduced risk of hypertension (Miranda et al., 2020). This particularly makes hypertension literacy a key concept to be analysed as a step toward disease control. Various researchers have tried to describe the concept of HL in various contexts, but because the concept is generally generic, how HL can immediately and directly be translated into specific disease prevention and control outcomes is largely unexplored (Nguyena et al., 2017; Parker et al., 2003;

Parnell et al., 2019; Speros, 2005). The role of hypertension literacy has a cardinal influence on the measures that individuals institute to prevent and control hypertension (Kim et al., 2012). Clearly delineating the attributes of hypertension literacy serves as an impetus to the development of an operational definition that describes, explains and delineates hypertension literacy and facilitates the development and testing of empirical tools for measuring the concept. A tool to measure hypertension literacy must take into consideration the various defining attributes, antecedents and consequences and yet will be culturally sensitive to specific populations.

The concept of hypertension literacy has been noted to encompass the ideas of hypertension knowledge and the action of behaviour change, even though knowledge issues are just a subset of literacy (one of the antecedents). Indeed, by assessing and describing hypertension, several researchers have spent different efforts describing the knowledge level of populations, including patients' hypertension levels and knowledge of risk factors, which only barely encompasses awareness (Afrifa-Anane et al., 2015; Agyei-Baffour et al., 2018; Agyemang et al., 2018; Amponsem-Boateng et al., 2019; Bosu & Bosu, 2021; Nyaaba et al., 2018). All these studies failed to clearly delineate the concept of hypertension literacy, which requires a description of both knowledge issues and behaviour change. Understanding population knowledge and awareness may be just a subset of hypertension literacy, but the gamut of events and issues include the eventual practical change in behaviour and assisting others in adopting hypertension preventive actions. It is important that hypertension literacy, just as HL (Speros, 2005), remains an important component to be assessed by nurses in preventive and curative care settings (Du et al., 2018; Kim et al., 2012; Nguyena et al., 2017). A general understanding of these terms will assist in the adoption of pragmatic action that will ensure that health awareness is an antecedent and consequence of HL and is essential for translation to behaviour change and hypertension prevention action. The concept of hypertension literacy is an important component of the prevention and control of hypertension, especially in lower socio-economic settings where HL may also be as low (Afrifa-Anane et al., 2015; Agyei-Baffour et al., 2018; Agyemang et al., 2018; Nguyena et al., 2017: Parker et al., 2003). In a setup where cultural factors, social factors and lay beliefs influence people's health choices, increasing lay knowledge through increasing hypertension literacy is imperative (Nyaaba et al., 2018). Healthcare providers in both the preventive and curative contexts must institute pragmatic measures to increase people's knowledge and ensure higher hypertension literacy (as the concept includes adopting preventive measures and assisting others to adopt the same). Disease prevention has three major levels: primary, secondary and tertiary prevention. Improving hypertension literacy will ensure that hypertension prevention takes place across all three levels.

To the best of our knowledge, this study is the only concept analysis of hypertension literacy that derives the main attributes, antecedents and consequences from the general concept of HL.

This concept analysis shows the utility of HL in a specific disease situation and identifies defining attributes, antecedents and consequences that can form the basis for making an operational definition of hypertension literacy. The limitation of this study is that the research literature used for the concept analysis was related to HL only. The lack of primary research that describes health literacy and hypertension motivated the derivation of hypertension literacy from the broader concept of HL. Therefore, the interpretation of these findings should be noted with caution that primary studies have not yet assessed hypertension literacy in Ghana. No known publications comprehensively assess the concept of hypertension literacy, so further testing and identifying appropriate measurement of hypertension literacy may be required. It is also important that researchers interested in hypertension literacy incorporate health literacy and hypertension-related studies in the concept analysis process. Nonetheless, through deductive reasoning, the use of these methods allowed for the derivation of ideas that make up general HL to the more specific concept of hypertension literacy.

9 | CONCLUSION

This analysis and utilization of hypertension literacy will allow nurses to assess and accurately improve knowledge and encourage patients to adopt preventive behaviours that can control hypertension and its risk factors. Nurses will be able to identify misunderstandings of health information, encourage assimilation of health information and facilitate taking action to improve behaviours through identified scientific recommendations.

Hypertension literacy can be described as an individual's integrated ability to search for, understand, internalize, utilize and support others to benefit from diverse hypertension-related literature, including blood pressure reading and medication dose (attributes), depending on the individual's literacy skills and experiences (antecedents) to enable the individual to develop healthy positive health outcomes (consequences). Hypertension literacy can be defined as an individual's integrated ability to search for, understand, internalize and utilize diverse hypertension-related information to enable the individual to develop a positive health outcome.

AUTHOR CONTRIBUTIONS
KDK, HL and EKC involved in study conceptualisation, design and interpretation of data, KDK involved in literature search, manuscript drafting and data extraction. KDK and HL involved in data analysis and synthesis. HL and EKC involved in critical revision. All the authors approved the final version of the manuscript and agreed to be accountable for questions related to accuracy and integrity.

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