Health Literacy as an Effector on Hypertension Levels and Knowledge
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ABSTRACT:

Background

Hypertension remains an ongoing health issue, contributing to 10 million deaths each year globally. While health literacy is a critical determinant of hypertensive outcomes, current interventions have fallen short in addressing this complex issue comprehensively. This paper aims to explore the role of low health literacy in contributing to hypertensive conditions.

Methods

I searched PubMed to find reputable research papers and studies done with the keywords including "blood pressure control," "hypertension," "health literacy," and "treatment adherence."

Results

Patients with adequate functional health literacy had a mean knowledge score of 16.5± 2.3, while the mean scores for patients with marginal and inadequate literacy were 15.2± 2.2 and 13.2± 3.1, respectively. Apart from literacy, the amount of time of hypertension, years of school completed, and age showed correlations to hypertension knowledge scores in analysis.

Discussion

The demographic distribution revealed a concerning trend, with a large percentage of minorities exhibiting inadequate functional health literacy, further highlighting the prevalence of health literacy disparities. The mostly minority population in the studies, limits the generalizability of findings. Future research should explore these relationships in more general and holistic populations or societies.

INTRODUCTION:

Significance of the Problem

Hypertension, characterized by elevated blood pressure levels and recognized as a primary risk factor for cardiovascular diseases (CVD) and other adverse health outcomes, affects approximately 1.13 billion individuals globally, contributing to nearly 10 million deaths annually [2]. While the intricate physiological mechanisms of hypertension have been extensively studied, an emerging area of focus revolves around the influence of health literacy, or lack thereof, in

exacerbating this condition. Hypertension leads to cardiovascular diseases including heart disease, heart failure, and arrhythmia. On top of that, an elevated blood pressure puts individuals at a much higher probability for stroke as the blood vessels are damaged in the brain, increasing hemorrhaging or clot formation. Kidney failure can also be attributed to chronic hypertension as it can damage the kidneys' blood vessels and impair their filtering ability.

The impact of hypertension transcends geographic boundaries, impacting individuals across diverse socio-economic strata, yet the burden disproportionately affects populations with limited health literacy [7]. Health literacy, defined as an individual's capacity to obtain, process, and understand basic health information and services to make appropriate health decisions, is intricately linked to hypertension management. The correlation involved, intensifies the risk of complications, including heart disease, stroke, kidney failure, and premature mortality. In a study of 402 individuals conducted by Williams et al., found that 55%of patients who had hypertension and diabetes had low health literacy and did not understand that a blood pressure reading of 160/100 mmHg was abnormal, along with 60% of patients who did not know that exercise lowers blood pressure [1].

Despite the recognition of health literacy as a crucial determinant of hypertensive outcomes, existing interventions have fallen short in addressing this complex issue comprehensively. Conventional approaches have predominantly focused on medical management and lifestyle modifications, assuming a high level of health literacy among patients. However, the reality often reveals substantial gaps in understanding, navigating healthcare systems, interpreting medical instructions, and adhering to treatment regimens, particularly among individuals with limited health literacy skills.

Furthermore, these gaps perpetuate disparities in health outcomes, contributing to a cycle of inequities among vulnerable populations. The inadequacy of current strategies in accommodating diverse health literacy levels has underscored the urgent need for interventions that bridge the gap between hypertension management and varying levels of health literacy.

This research aims to explore the multifaceted factors of low health literacy that contribute to hypertensive conditions. By exploring the intricate intersections between health literacy, hypertension management, and health outcomes, this study seeks to uncover the specific challenges faced by individuals with limited health literacy.

METHODS:

In this literature review we conducted a search of the relevant articles published from 1998 to 2024, a broad yet encapsulating timeframe of key changes to the scientific contextualization, which can characterize the different social aspects of health literacy and education.

The search strategy was devised to identify relevant literature addressing the intersection of health literacy and hypertension. Electronic databases including PubMed and Google Scholar were searched using key terms including "health literacy," "hypertension," "blood pressure control," and "treatment adherence." Boolean operators (AND, OR) were employed to refine search queries.

Papers were included if they focused on the direct relationships between health literacy and hypertension and focused on the characterization of linkage between health literacy, education, and CVD. Papers were excluded if they were systematic reviews or meta-analyses.

Initially, titles and abstracts of identified articles were screened for relevance to the research topic. Full-text articles meeting the inclusion criteria were subsequently reviewed to assess their suitability for incorporation into the scoping literature review.

RESULTS:

Williams et al. did a study of individuals with either hypertension or diabetes that delved into the relationship between the patients' health literacy level, 69% of Spanish speaking patients in Los Angeles, 22% of English speaking patients in Los Angeles, and 57% of patients in Atlanta had inadequate functional health literacy [1]. Merely 42% of individuals with insufficient literacy recognized a blood pressure measurement of 130/80 mmHg as normal, while 45% were unaware that a blood pressure reading of 160/100 mmHg indicates high blood pressure [1]. High proportions of patients with inadequate functional health literacy also lacked knowledge about the effect of lifestyle and dietary factors on blood pressure [1]. Among all patients with hypertension, mean scores of knowledge (range, 0-21) were strongly related to literacy [1]. Patients with adequate functional health literacy had a mean ($\pm$SD) score of 16.5$\pm$ 2.3, while the mean ($\pm$SD) scores for patients with marginal and inadequate literacy were 15.2$\pm$ 2.2 and 13.2$\pm$ 3.1, respectively, (P<.001) [1]. Apart from literacy, the duration of hypertension (P<.001), years of schooling completed (P<.01), and age (P<.01) showed notable correlations with hypertension knowledge scores in initial analysis [1]. Upon accounting for these variables, the patient's reading proficiency emerged as the most robust predictor of hypertension knowledge [1]. Despite the strong correlation between inadequate literacy skills and low disease knowledge, there was no found significant relationship between literacy and disease outcomes.

Wang et al. conducted a cross sectional study from a randomized control trial measuring health literacy and self-management efficacy on the health-related quality of life of hypertensive patients in a western rural area of China [4]. The Health-related Quality of Life (HRQL) scores among all patients were evaluated, alongside an examination of the correlation between demographic traits, health literacy, self-management efficacy, and HRQL. The results obtained through the Chew test revealed a notable trend: as age increased, HRQL scores tended to decrease. Specifically, distinct age groups exhibited significant differences in Mental Component

Summary (MCS) scores (p = 0.05), although no significant variance was observed in Physical Component Summary (PCS) scores [4]. Moreover, discernible differences were evident among various education levels, showcasing an increase in HRQL scores corresponding to higher education levels [4]. Furthermore, PCS scores exhibited significant variance across different levels of hypertension cognition (p = 0.029), whereas MCS scores varied significantly among distinct health literacy levels (p = 0.001) [4]. Conversely, factors such as gender, annual family income, and yearly family medical expenses did not demonstrate a discernible influence on HRQL [4]. The findings depict that patients who had higher health literacy and self-management efficacy get better HRQL [4]. However, patients who are more elderly with lower education levels havelower HRQL.

A trial conducted by Karami et al. investigated the effect of health literacy intervention based on the medication adherence among uncontrolled hypertensive patients using mobile health [5]. Prior to the intervention, the health literacy total scores were 33.34 and 33.14 in the intervention and control groups, respectively [5]. Following the intervention, these scores rose to 40.36 and 34.20 in the intervention and control groups, respectively. The increase was statistically significant within the intervention group (p = 0.01) [5].

DISCUSSION:

Hypertension is the most important modifiable risk factor for all-cause morbidity and mortality worldwide and is associated with an increased risk of cardiovascular disease [6].

The current studies explored the intricate relationship between health literacy levels and the understanding of chronic diseases, particularly hypertension and diabetes, among a predominantly racially minority population. The demographic distribution revealed a concerning trend, with a substantial percentage of Spanish-speaking patients in Los Angeles (69%), English-speaking patients in Los Angeles (22%), and patients in Atlanta (57%) exhibiting inadequate functional health literacy [1]. This highlights the prevalence of health literacy disparities, particularly among minority groups, which can significantly impact the management of chronic conditions.

Consistent with existing literature, our findings underscore a strong correlation between functional health literacy and patients' knowledge of their chronic illnesses [1]. Individuals with inadequate literacy were notably less accurate in responding to knowledge queries, exemplified by their limited understanding of blood pressure readings and the influence of lifestyle and dietary factors. The observed disparities in knowledge scores emphasize the critical role of health literacy in empowering patients with the information necessary for effective self-management.

Despite the robust correlation between inadequate literacy skills and low disease knowledge, intriguingly, no significant relationship emerged between literacy and disease outcomes [1]. This

suggests that while health literacy is a pivotal factor in shaping patient knowledge, other elements may influence the translation of that knowledge into tangible health outcomes. Further exploration is warranted to identify these contributing factors and develop targeted interventions to bridge the gap between health literacy and improved disease outcomes.

The study by Wang et al., conducted in a rural area of China, adds a cross-cultural dimension to our understanding of the impact of health literacy [4]. The findings revealed age-related trends in health-related quality of life (HRQL) scores, with notable differences across education levels. Higher health literacy and self-management efficacy were associated with better HRQL, emphasizing the global relevance of health literacy in influencing patient-reported outcomes [4]. Interestingly, age and education level were significant determinants of HRQL, highlighting the need for tailored interventions based on demographic characteristics.

Karami et al.'s trial focusing on mobile health intervention demonstrated a significant improvement in health literacy scores among uncontrolled hypertensive patients [5]. This underscores the potential of technology-driven interventions to address health literacy gaps and empower patients with the knowledge necessary for effective self-management [5]. The study provides valuable insights into the feasibility and effectiveness of mobile health platforms in enhancing health literacy, thereby contributing to improved medication adherence among hypertensive individuals [5].

Limitations and Future Directions

While these studies contribute to our understanding of the complex interplay between health literacy, disease knowledge, and outcomes, several limitations must be acknowledged. The predominantly minority population in our study limits the generalizability of findings. Future research should explore these relationships in more diverse populations. Additionally, the focus on short-term outcomes in the mobile health intervention study calls for longitudinal studies to assess the sustainability of health literacy improvements over time.

Conclusion

In conclusion, our study, complemented by findings from diverse settings, reaffirms the pivotal role of health literacy in shaping patient knowledge and influencing health-related outcomes. Addressing health literacy disparities is crucial for empowering patients with the information necessary for effective self-management. Future interventions should consider demographic variations, cultural nuances, and the potential of technology-driven approaches to bridge the health literacy gap and enhance the overall well-being of individuals with chronic conditions.

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