Men and Hypertension: An Integrative Review

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Abstract

Purpose: To synthesize the evidence as it pertains to hypertension in men.

Design: An integrative literature review was conducted. This review included both qualitative and quantitative studies that focused on hypertension in men. A search for relevant literature published from 2007 to 2017 was undertaken using PubMed, CINAHL, Ovid MEDLINE, and EBSCO databases and by examining relevant bibliographies. Seven studies (n = 7) formed the basis of this review. Findings from the identified research literature were analyzed and described using conventional content analysis.

Main findings: Five main categories emerged from the content analysis: 1) understanding symptoms of hypertension; 2) knowledge regarding consequences of hypertension; 3) adherence to a healthy lifestyle and medical treatment; 4) self-management; and 5) interventions that were designed to improve blood pressure control.

Conclusion and recommendations: Experiencing symptoms and viewing themselves as being at risk seem to be essential for male hypertensive patients to seek health care. Future research should explore and explain clearly how male hypertensive patients develop a sense of risk, what factors can contribute to a sense of risk and how the sense of risk motivates male hypertensive patients to change behavior.

Keywords: hypertension, men

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ผู้ชายกับความดันโลหิตสูง: การทบทวนบูรณาการ

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาความดันโลหิตสูงในผู้ชายจากหลักฐานเชิงประจักษ์

รูปแบบการศึกษา: เป็นการทบทวนวรรณกรรมแบบผสมผสาน โดยการศึกษางานวิจัยเชิงคุณภาพและเชิงปริมาณที่เกี่ยวกับความดันโลหิตสูงในผู้ชาย มีการสืบค้นหลักฐานเชิงประจักษ์ที่ตีพิมพ์ตั้งแต่ปี ค.ศ. 2007 ถึง 2017 จากฐานข้อมูล PubMed, CINAHL, Ovid MEDLINE, EBSCO และข้อมูลอ้างอิงที่เกี่ยวข้อง จำนวน 7 เรื่อง จากนั้นนำมาวิเคราะห์และอธิบายโดยใช้การวิเคราะห์เนื้อหาแบบดั้งเดิม (conventional content analysis)

ผลการศึกษา: จากการวิเคราะห์เนื้อหา พบ 5 ประเด็นหลัก คือ 1) ความเข้าใจเกี่ยวกับอาการของโรคความดันโลหิตสูง 2) ความรู้เกี่ยวกับภาวะแทรกซ้อนของโรคความดันโลหิตสูง 3) ความร่วมมือเกี่ยวกับวิถีสุขภาพที่ดีและการรักษาด้วยยา 4) การจัดการตนเอง 5) โปรแกรมที่ออกแบบเพื่อส่งเสริมการควบคุมความดันโลหิต

สรุปและข้อเสนอแนะ: การมีประสบการณ์เกี่ยวกับอาการ และการมองว่าตนเองมีภาวะเสี่ยงเป็นสิ่งสำคัญสำหรับผู้ชายที่มีความดันโลหิตสูงในการแสวงหาการดูแลสุขภาพ การวิจัยในอนาคตควรศึกษาและอธิบายให้ชัดเจนเกี่ยวกับการพัฒนาการรับรู้ความเสี่ยงของตนเองของผู้ชายโรคความดันโลหิตสูง ปัจจัยที่สามารถมีส่วนให้เกิดการพัฒนาการรับรู้ความเสี่ยง และการรับรู้ความเสี่ยงกระตุ้นให้ผู้ชายโรคความดันโลหิตสูงมีการเปลี่ยนแปลงพฤติกรรมอย่างไร

คำสำคัญ: ความดันโลหิตสูง ผู้ชาย

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Introduction

Hypertension is an extremely common and serious chronic disease among adults and older people[1]. Hypertension is a major risk factor for coronary heart disease, stroke, and chronic kidney disease[2]. Globally, hypertension is estimated to cause 7.5 million deaths as a consequence of severe complications and lack of adequate control[1]. The worldwide prevalence of hypertension was 1.39 billion persons in 2010[3]. The prevalence of hypertension increases with age and occurs more frequently in men than women[4,5].

Among hypertensive patients, more men were unaware of their condition compared with women[6,7]. Men generally have lower rates of treatment and control than women[8,9]. Poorly controlled hypertension makes male patients more susceptible to having serious health outcomes, such as stroke[10]. If they take their medications as prescribed and follow therapeutic lifestyle changes such as salt restrictions, there would be very few patients with uncontrolled hypertension and its complications[11].

Patients with hypertension are generally treated with pharmacological treatment and lifestyle changes. Lifestyle modification is a non-pharmacological treatment for the control of blood pressure in hypertensive patients and implies a change from an unhealthy to a healthy lifestyle including sodium restriction, physical activity, alcohol restriction, smoking cessation, and weight loss. Previous studies reported that male patients exhibited lower adherence to hypertension treatment both pharmacological and non-pharmacological treatment than female patients did[12]. Adherence to diet and medication has been reported to be lower among men than women[13].

Despite the well-documented risk, the low rate of blood pressure control and compliance with hypertension treatment among men is poorly understood. Decreasing uncontrolled hypertension and increasing adherence to treatment among men would have a direct impact on reducing the risk of stroke, cardiovascular disease, and kidney disease. This integrative literature review was conducted with the aim of synthesizing the available evidence as it pertains to hypertension in men. The study was guided by the following review questions: (a) what kind of experiences do hypertensive men have and (b) what is known about hypertension treatment adherence among male patients.

Design

An integrative review was selected as it accommodates the synthesis of both qualitative and quantitative methodologies to be synthesized; ensuring the most comprehensive inclusion of sources related to patients' experiences. The methodological steps for conducting this integrative review include: (1) identifying the focus and determining the aim of the review; (2) searching the literature; (3) evaluating the quality of the included literature; (4) analyzing data; and (5) presenting the findings[14].

Problem identification

While low rates of adherence to treatment and blood pressure control among men have been documented, there is less clarity about men's experiences of hypertension and whether the research on their experiences can inform us about the level of treatment adherence.

Literature search

Inclusion criteria for reviewed studies were: (i) recruited sample of male patients with hypertension; (ii) published in English; (iii) published between 2007 and 2017 in a peer-reviewed journal; and (iv) qualitative, quantitative and secondary analysis. Studies that pooled men and women were excluded unless they reported findings separately for men. Papers published prior to 2007, opinion papers, policy documents and best practice reports also were excluded.

A comprehensive literature search was conducted using PubMed, CINAHL, Ovid MEDLINE, and EBSCO. A search of the

literature using electronic databases was conducted using keyword combinations, including hypertension; high blood pressure; experience; and men. The reference lists of reviewed articles were also hand-searched.

After the initial search was performed, studies were screened for eligibility. The author and research assistants who were two PhD nursing students independently screened the title and abstract of each study. The articles that did not meet the eligibility criteria were firstly excluded according to their title or abstract. The full-text of studies that appeared to the meet the inclusion criteria were obtained for further screening. The author and research assistants independently conducted preliminary screens of each article, and again determined which ones met the above inclusion criteria. Studies that met the above exclusion criteria were removed. Next, the author and research assistants read the full-text of each study in detail. Both author and research assistants discussed discrepancies and came to a consensus on which studies should be included in the final count.

Data evaluation

Four of the included studies used quantitative approaches and three used qualitative methodologies. The 7 articles were appraised for rigor through the process of critical analysis, to provide final justification for their inclusion in the review. In this integrative review, the Critical Appraisal Skills (CASP) Program[15] was used to evaluate and critically appraise the articles. The CASP verifies trustworthiness and relevance of studies to the review being conducted[15] by querying: is the research valid?, what are the results?, and are the results useful? The CASP tools are free to download and can be used by anyone. The CASP tools provide a comprehensive checklist to enable the author to assess the methodological quality of a paper and make a judgment about its suitability for inclusion in the review. The CASP checklist provided the questions and the guidance on how to assess these things that covered both qualitative and quantitative studies. Thus, the author used question sets from the checklist based on types of studies. Nine questions that enabled appraisal of the rigor of the studies were used (Table 1), which were recorded as " ✔ (yes)", " ✘ (no)" or "can't tell" to the questions.

Data analysis

The conventional content analysis was undertaken because that was suitable to use as research on this experience is limited[16]. The author and research assistants first read immersed themselves in the data to obtain a sense of the whole, writing notes as we read through to indicate first impressions. Next, codes we developed that were reflective of the data. Themes were developed by grouping codes based on similarities and differences, and organizing codes into meaningful clusters[16]. Each paper was analyzed by the author and research assistants and the codes agreed through review and negotiation. The author then met with a research assistants to discuss for parsimony, resolving any disagreement through discussion and consensus, and final themes were determined.

Results

Search outcome

The initial search identified 229 studies (Figure 1). After the initial search, 102 duplicates were removed. The titles and abstracts for the remaining 127 studies were screened. A total of 12 studies met the inclusion criteria. Next, 5 studies were excluded due to not meeting inclusion criteria for the following reasons: a) not separating men/women perspective (n = 2); b) lacking men perspectives (n = 2); and c) being grey literature (n = 1). Ultimately, 7 studies were included in this integrative review.

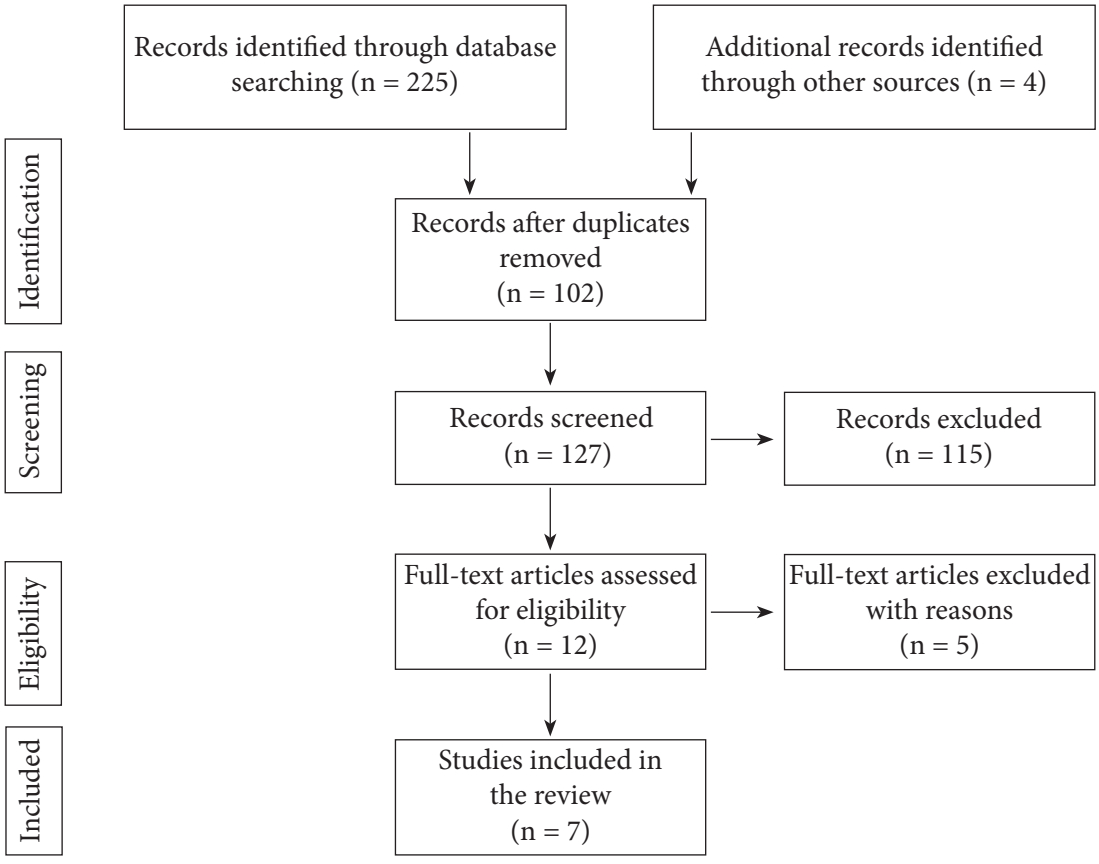

***Figure 1**: Flowchart of the Study Selection Process*

Methodological Quality of the Studies

The methodological quality of qualitative studies was presented in Table 1. The qualitative research designs were considered as appropriate to meet the purposes of the studies. However, the researchers did not address their influence on data collection, seemingly important as these researchers had nursing qualifications. The researchers failed to explicitly detail strategies for self-reflection whereby this method would have enhanced rigor during data collection[17]. A further example was hermeneutic phenomenology[18]; a methodology encompassing that explicitly requires identification of pre-understandings, which were not addressed in this study.

Shown in Table 1, the assessment of methodological quality of the quantitative studies included sampling and sample size. The studies using quantitative research designs were deemed acceptable for obtaining measurable data regarding adherence to treatment. However, small sample sizes[19] and unstated estimates of precision[20-22] (e.g. confidence intervals) resulted in uncertainty over the strength of the findings and methodological quality in a number of the studies.

Table 1 Summary of Critical Appraisal

Checklist questions	Study 1 Bennett[18]	Study 2 Dennison, et al.[22]	Study 3 Elbur, et al.[23]	Study 4 Elder, et al.[20]	Study 5 Fort, et al.[19]	Study 6 Long, et al.[17]	Study 7 Welsh, et al.[21]
1. Is the chosen research method/methodology appropriate for addressing the aims of the study?	✔	✔	✔	✔	✔	✔	✔
2. Is the achieved sample size sufficient for the study aims and to warrant conclusions drawn?	✔	✔	✔	✔	✘	✔	✔
3. Are the chosen data collection strategies appropriate for the research question?	✔	✔	✔	✔	✔	✔	✔
4. How adequate is the description of the data analysis?	✔	✔	✔	✔	✔	✔	✔
5. Is there comprehensive evidence that ethical issues have been taken into consideration?	✔	✔	✔	✔	✔	✘	✔
6. Does the study clearly demonstrate external and internal validity/rigour?	✘	✔	✔	✘	✔	✔	✘
7. Is there a clear statement of the study findings?	✔	✔	✔	✔	✔	✔	✔
8. Are the limitations or weaknesses of the study acknowledged?	✔	✘	✔	✔	✔	✘	✔
9. Is the research valuable (makes valuable contribution/addresses clinical implications)?	✔	✔	✔	✔	✔	✔	✔

Overview of studies

Details related to aim, sample, methods, major findings and limitations of the seven studies reviewed are provided in Table 2. Four of the seven studies used quantitative methods: cross-sectional (n = 3) and randomized control trial (n = 1). Three studies were qualitative in nature, using the following study designs: unspecific qualitative approach (n = 2) and phenomenology (n = 1). All studies focused on at least some portion of the experience of men with hypertension. The sample sizes varied from 17 participants to 309 participants.

The national context can be seen in Table 2, four of the reviewed studies were conducted in the United States, with one study each from Saudi Arabia, Jamaica, and Mexico. Attempts to enhance credibility through investigating different settings were noted with most researchers studying more than one location. With regards to settings, all studies sampled men in urban settings. Impact of context was generally discussed in relatively simple, single factor terms such as; genetics, or country; position towards patient participation. Studies were lacking thick descriptions[17,18,20,21] about the healthcare setting or cultural context. In the term of samples, the participants across the studies ranged in age from 21 to 89 years, with the mean being 53.1 years.

Table 2 Summary of reviewed studies

Study	Purpose	Sample, setting	Research design analysis	Major result	Limitations
Bennett[18] USA	To explore beliefs and attitudes that influenced medication adherence in African American men	- 17 males - Aged over 45 years - Setting: hospital in a city of Texas	- Hermeneutic phenomenological - Narrative analysis	The data revealed 3 primary themes: 1. Feeling no symptoms: it can't be serious because I feel okay, ignoring or failing to recognize symptoms. 2. Becoming aware of serious complications: heading for something bad, opening up communication with loved ones, watching loved ones die, taking responsibility for my health. 3. Managing HT: affording medicines when I'm poor, tiding myself over until I get my medicine, forgetting, skipping and stopping (severe side effect), and coping with spirituality and religion.	No sample demographics stated. One study location
Dennison, et al.[22] USA	To describe changes in hypertension care utilization, behavioral factors, physiologic outcomes, and mortality during 5 years	- 309 hypertensive African American men - Aged 21-54 years Mean age 41 +/- years - Setting: hospitals inner-city Baltimore	- Randomized clinical trial (educational/ behavioral intervention by nurse practitioners, community health worker, and physician) - t-test, Chi-square, regression	The annual proportion of men with controlled BP ranged from 17% to 44% in the more intensive group and 21% to 36% in the less intensive group. At 5 years the more intensive group had less LVH than the intensive group and 17% of them were decreased primarily due to narcotic or alcohol intoxication (36%) and cardiovascular causes (19%).	One study location. No discussion of limitations
Elbur, et al.[23] Saudi Arabia	Measure adherence to diet, exercise, and medications among hypertensive patients and to identify determinants of adherence	- 144 patients from hospitals age <65 - >65 - Setting: two hospitals in Kingdom of Saudi Arabia	- A cross-sectional study - Descriptive statistics	Rates of adherence to exercise, a healthy diet and medications were 20.1%, 11.8%, and 34.7% respectively. The level of monthly income was found to be strongly associated with adherence to both a healthy diet. Patients aged 65 years were found to be more adherent to a healthy diet, comparing to elderly ones. Only 4.2% (6 patients) were found to be adherent to all studied domains. Adherence to all domains increased significantly with educational level.	Identified results could not be generalized as only male hypertensive patients from only two hospitals in the city. Self-report method on the rate of adherence.

Table 2 Summary of reviewed studies

Study	Purpose	Sample, setting	Research design/ analysis	Major result	Limitations
Elder, et al.[20] USA	To assess the relationship between trust in the medical, medication adherence and hypertension control among Southern African American men	- 235 men with HT - More than 80% of the men were aged 45 years and older - Setting: hospitals in the city of Birmingham	- A cross-sectional - Descriptive statistic and regression	African American men with higher general trust in the medical system were more likely to report better medication adherence (odds ratio [OR] = 1.06), and those with higher self-efficacy were more likely to report better medication adherence and hypertension control.	One study location. Low-income single men. A cross-sectional study cannot glean cause and effect.
Fort, et al.[19] Mexico	To identify barriers and strategies to involve men and engage family members in disease management and risk reduction	- 9 men with HT and/ or diabetes, 6 families, 9 health care providers - Setting: primary care health centers in urban areas of Mexico	- A qualitative study with semi-structured interviews - Thematic analysis	- Internal and external factors which influence men to make a decision to take part in the activities: time, gender roles, age, perception of chronic condition, work, and healthcare services and staffs - Families relationships with disease: different roles, within the family and types of support.	One geographic location. Small sample. No sample demographics stated.
Long, et al.[17] USA	To explore knowledge, attitudes, and beliefs regarding hypertension and hyperlipidemia management	- 34 African-American men with HT and/or hyperlipidemia, - Aged 40-65 years - Setting: two countries in the southeastern	- Focus groups - Content analysis	- Patients had a high level of knowledge about hypertension self-management, but less about cholesterol self-management. - Barriers to self-management included medication side effects and unhealthy dietary patterns. Facilitators included social support, positive healthcare experiences and the value placed on family. Cultural implications highlighted the importance of food in daily life and social settings. Notions of masculinity affected self-management such as feeling less athletic and less in control of their bodies because of their diagnosis and medication use affected their sexual functioning.	No discussion of limitations. No ethics approval stated.

Table 2 Summary of reviewed studies

Study	Purpose	Sample, setting	Research design/ analysis	Major result	Limitations
Welsh, et al.[21] Jamaica	To determine the extent to which the lifestyles of Jamaican men with hypertension met the JNC7	- 48 men with HT at a health center in Jamaica - Aged 35-89 years (mean = 65.2) - Setting: health center in the urban area of Jamaica	- A descriptive cross-sectional design - Descriptive statistics	Men with 33% having blood pressure controlled to 130/80 mmHg. The number of men who met the guidelines were normal weight 23 (47.9%), DASH diet zero, medication 7 (14.6%), exercise 14 (29.2%), alcohol restriction 38 (79.2%), and smoking cessation 40 (83.3%).	Convenience sample. Use of one clinic

Note: BP, Blood Pressure; DASH, Dietary Approaches to Stop Hypertension; HT, Hypertension; LVH, Left Ventricular Hypertrophy

Detailed Results

Five broad themes were discovered inductively in the data, namely 'understanding the symptoms of hypertension', 'knowledge regarding consequences of hypertension', 'adherence to a healthy lifestyle and medication treatment, 'self- management' and 'intervention improving blood pressure control'. These are discussed in more detail in the following sections.

Understanding the symptoms of hypertension

Evidence in the literature suggests that a headache and dizziness were reported as the main clinical manifestations of high blood pressure by men with hypertension. For example, African American men with hypertension described the symptoms of hypertension including dizziness, headache, and fatigue[18]. Moreover, this study found that some participants sought care when those symptoms occurred while others with the same symptoms did not seek treatment until they were severe as they felt at risk. Also, African American men with hypertension identified headaches and dizziness as the symptoms of hypertension[17]. Both studies[17,18] found that African American men could determine when their blood pressure levels were elevated based on intermittent somatic symptoms such as headaches and dizziness. However, the studies did not provide the information on the level of blood pressure reading among male patients.

Knowledge regarding consequences of hypertension

The reviewed studies suggested that men with hypertension are knowledgeable about the consequences of hypertension. A qualitative study[18] found that African American men described serious health consequences associated with hypertension, including myocardial infarction and potential for needing heart surgery. More recently, a qualitative study[17] reported that a sample of 34 African American men living with hypertension who participated in their study was aware of the consequences of their condition including the risk of heart attack, stroke, and death. This study also found that African American men believed that hyperlipidemia was less serious than hypertension and lacked knowledge about the consequences of hyperlipidemia. Moreover, another quantitative study[21] also showed that most Jamaican men with hypertension (93.7%) understood that uncontrolled hypertension could lead to stroke or death.

Adherence to a healthy lifestyle and medication treatment

Adherence to a healthy lifestyle and medication treatment was assessed for medications, diet, smoking and other lifestyle changes that were suggested by health care providers. The research[21,23] measured the level of adherence to therapeutic lifestyle changes including diet, exercise, smoking, drinking, and

maintaining a healthy weight among male hypertensive patients. In Saudi Arabia, only 20.1% of hypertensive men reported adherence to exercise and 11.8% to healthy diet. Moreover, 47.9% of Jamaican men with hypertension who attended an urban public health clinic reported adherence to maintaining a normal weight, and 29.2% to exercising; and none of them used dietary approaches to manage their hypertension (DASH)[21]. However, 83.3% of patients were adhering to smoking cessation and 79.2% of patients were adhering to alcohol restriction. Also, the studies presented the level of adherence to medication treatment among male patients whose compliance rates ranged roughly from 14.6% - 57.3%[20,21,23].

The findings of low levels of adherence are significant since treatment adherent has been and continues to be one of the strongest predictors of blood pressure control among men[20]. Factors found to influence treatment adherence for hypertensive men are also reported in the literature. For example, the study assessed the relationships among trust in the medical system, medication adherence, and hypertension control, reporting that a higher trust in the medical system correlated with greater likelihood of medications adherence (OR = 1.06, 95%CI: 1.00 - 1.11) than those with lower trust in a sample of African American men[20]. Another study[23] also found that older patients (age more than 65 years) were less adherent with a healthy diet compared to younger patients. Co-morbidity was a strong predictor of adherence with regular exercise, healthy diet, and medication among male hypertensive patients in Saudi Arabia. Patients suffering from other chronic diseases were found to be more adherent than patients living with hypertension alone. Furthermore, African American males did not have access to medical care, lacked trust in health care providers, and experienced severe side effects of medication leading to high rates of non-compliance to antihypertensive medications[18]. In two reported studies, level of income was a significant predictor of treatment compliance. African American males with low incomes did not take medications due to financial difficulties, leading them to use home remedies[18]. Furthermore, among male hypertensive patients in Saudi Arabia, level of monthly income was the most important predictor of adherence to a healthy diet (OR = 0.4, 95%CI 0.2 - 1.0), which can be explained that low economic status was a barrier to adopting a healthy diet[23].

Self-management

Findings from the studies reviewed suggest that men with hypertension use a variety of strategies to manage their condition. In one qualitative study, African American men with hypertension reported managing high blood pressure by using folk remedies, skipping, and stopping medications, and relying on spirituality and religion[18]. Some of them described using folk medicines such as garlic or lemon to reduce high blood pressure while others did not believe folk remedies were effective. They stopped taking medications due to side effects. They reported intentionally and unintentionally forgetting or skipping medication doses for reasons such as forgetfulness, not having a routine, or job-related reasons. They also described attending church services, listening to spiritual music, and meditation. Other researchers[21] presented similar results from a group of Jamaican men with hypertension who reported taking alternative remedies such as garlic, lime juice, and hibiscus flowers along with their medication whereas others used alternative remedies as substitutes for their medications. Significantly, a healthy diet was not included in their lifestyle. Most Jamaican men (81.2%) reported that their meals were always prepared with salt. Only a third of the participants engaged in exercise. However, the majority described a low alcohol consumption and little current cigarette use.

Interventions improving blood pressure control

Evidence exists in the literature for the success of educational/behavioral interventions designed and implemented in hypertensive urban African American men. The researchers[22] conducted a 5-year randomized control trial to test the effectiveness of educational/behavioral interventions among men aged 21 to 54 years composed of the home visit, counseling, and comprehensive hypertension care by a nurse practitioner (NP)/community health worker (CHW)/physician (MD) team. Hypertensive urban African American men in the intervention group were more likely to improve compliance with hypertension self-care behavior and improve blood pressure control rates, leading to a reduction in some consequences of hypertension, including left ventricular hypertrophy and renal insufficiency in African American men.

A healthy lifestyle intervention was implemented among hypertensive men in urban parts of Mexico. The researchers interviewed 9 hypertensive men, 6 family members, and 9 healthcare providers in Mexico[19]. The researchers concluded that the barriers to men's participation in the intervention could be grouped into two categories: internal and external barriers. Internal barriers included lack of time, older age, gender roles, and perception of chronic conditions. Men highlighted pride and stubbornness as barriers for not participating. When they showed up it was because their wife, son or daughter desired it, but not from their own desire. Getting older was an important barrier as men believed they were too old to learn self-management skills. They did not consider their chronic condition inspiring to be with other patients who had the same problem. They worried that if they had one disease they might have another; and they perceived checkups with a doctor to be sufficient, negating the need to participate in the intervention program. External barriers included conflicting work schedules, type of work, limited staff, and mostly being female healthcare staff. For example, some work schedules conflicted with the timing of the program while some types of work did not allow them to plan when they would be working (e.g. contract or seasonal jobs). Men reported that they might be more likely to attend on weekends but staffs were more limited. Importantly, having more female than male healthcare providers was also a factor discouraging their participation since some men reported not being comfortable talking about their worries or problems with a female nurse.

Discussion

This integrated review set out to explore the published literature on the experience of men with hypertension. There is currently little research on men with hypertension. The articles discussed in this review dealt with understanding symptoms of hypertension, knowledge regarding consequences of hypertension, adherence to a healthy lifestyle and medication treatment, self-management, and intervention improving blood pressure control.

In relation to content, the literature indicates that patients had knowledge about complications of hypertension. Showcasing knowledge of consequences and understanding symptoms of hypertension related to seeking health care[18,24]. Generally, men perceived that seeking medical care was unnecessary as they believed that medical problem would improve on their own[11]. They started to seek health care when increasing the perceived severity of symptoms. Regarding knowledge, the relationship between knowledge of hypertension and treatment adherence in these studies was not presented.

Hypertension is characterized by intermittent or absent symptoms. These studies indicated that presence of symptoms in some cases and symptom severity in other cases motivated men to seek treatment[17,18]. However, research has not provided any insight into how

the perception to seek treatment without experiencing symptoms or what their reasons are for not using the knowledge that they have about complications.

The important problem, of course, is patient non-adherence to therapy. The majority of men do not follow healthcare recommendations. Patients are more likely to be adherent to hypertension therapies when they have some tangible sense that the prescribed medication and lifestyle changes are contributing to some positive and relatively immediate outcomes[6,7]. Researchers[25] suggested that men may relate their perceptions of what it means to be a man to the perception of health resulting in their health behavior such as drinking. In addition, gender role perceptions can influence how men respond to their condition[19]. Identifying men's position in society, as the breadwinner, helps us to understand that this gendered role could be competing with behaviors associated with engaging in healthy behavior and seeking help for their condition.

Implications

We have come a long way in men's health care by promoting health to men thus far, and are now starting to recognize the need to study health-related problems specific to men[20]. This review highlights a need for more research on gender-sensitive and specific hypertension management research and interventions. Identifying the gaps, like the lack of published research from developing countries that attempts to explore the experience of men living with hypertension, will help us to understand culture, perception, and behavior. These issues are necessary to design gender-specific and effective interventions to improve the health outcomes of male patients. Moreover, performing studies to address how knowledge of hypertension influences their hypertension management and treatment adherence in order to enhance patient adherence is recommended. It is a responsibility, as a nurse, to be aware of nursing care. The strategies made by men, families, and healthcare providers should be implicated, in order to better reach men and to involve family members both in a role to support patients, and also as a way to increase prevention efforts for those family members who do not already have a diagnosis.

Strengths and limitations of the reviewed studies

The inclusion of only 7 research articles may be viewed as both a strength and weakness. Although only 7 studies were included, they were the most relevant and recently available in the English language for informing this literature review. Key limitations of the reviewed studies involved single locations, limited sample sizes, and rigor of the study that limited confidence and thus generalizability of the findings. While a number of the studies demonstrated these weaknesses, their inclusion in this literature review was warranted due to the limited research available in this field. As a result, cautious conclusions have been drawn from this review.

Conclusion

Men perceived hypertension is a disease with intermittent symptoms. This belief links to ignorance or a delay in managing their condition until having the complications or being at risk even though they know about consequences of hypertension. Hypertensive men are faced with external and internal barriers that resulted in poor adherence to hypertensive treatment, poor self-management, and non-participating in intervention.

We recommend further research on the understanding experience of men related to their sense of risk. Exploring men's experiences of living with hypertension through a masculine lens will illuminate how individual men experience common cultural themes. Moreover, missing from the literature is a description of how men successfully negotiate hypertension management within their daily lives. Giving voice to men's experiences of living with hypertension will provide the basis for new

strategies that promote treatment adherence and health behavior for hypertension management within men population. Interventions that are tailored to the specific treatment adherence, concerns and needs of men, their families, and communities could increase treatment adherence levels and blood pressure control rates.

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