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Health Communication for Effective Management: A Case for Hypertension

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Effective health communication is vital in enhancing patient comprehension, knowledge, medication adherence and treatment outcomes in a chronic condition like hypertension. This review presents the various forms of health communication, which are effective in enhancing hypertension related knowledge and management. Various factors related to reaching out to the patient through health communication are identified in the current review. The studies related to methods and strategies for improving hypertension related health communication have been highlighted. The review clearly suggests that health communication that considers the biopsychosocial context of the patient, optimizes health outcomes in a chronic illness like hypertension. Research indicated the efficacy of a holistic approach tailored in accordance with models advocated by Health Psychology such as Health Belief Model, Trans theoretical Model of Behavioural Change or Social Cognitive Theory are brought to light. The review compared different methods of health communication in reaching out to patients. These studies provided adequate evidence that since treatment of primary hypertension involves lifestyle changes, communication that addresses the biopsychosocial aspects brings the desirable results.

Keywords: Health Communication, Hypertension, Knowledge, Doctor-Patient Communication, Counseling Methods.

Assessment of knowledge in hypertension and knowledge interventions in hypertension assume significance on the logic that the treatment/ management of hypertension demands changes in lifestyle which effectively changes behaviour. Any behavioural change will be effective and sustainable only when it is built upon a substantial cognitive base with relevant knowledge as content. Knowledge in turn is imparted or acquired through communication. Hypertension is a chronic condition in which the blood vessels have persistently elevated blood pressure and is defined as having a systolic blood pressure of 140 mm Hg or more and a diastolic blood pressure of 90 mm Hg or more. This is of two types: Primary and Secondary. Primary Hypertension is a condition where the cause of high blood pressure is unknown. It is asymptomatic and is accidentally discovered in significant number of cases. Left untreated it could lead to cardiovascular diseases (CVD) that may turn fatal. Hence it is called a silent killer. According to WHO reports, a major portion of 45% of deaths are due to heart disease and 51% of deaths are due to stroke, thus accounting for 9.4 million deaths worldwide every year (World Health Organization, 2013). The statistics related to India is worse than the aggregate global scenario.

Research has proved that the prevalence is progressively on the rise in rural India (Gupta, 2004) and is on rapid increase in urban India (Gupta & Gupta 2009). As per the projections of Directorate General of Health Services and Family Welfare, Government of India, the prevalence of hypertension in India by the year 2020 will be 159.46 per 1000 population. While the projected prevalence rate rings an alarm, what triggers a greater concern is the ignorance of their own hypertension condition among the patients. Mohan, Deepa, Farooq, Dutta and Deepa (2007) in their survey in South India found that 67% of those who had hypertension were unaware of their condition, which corroborates with the data of World Hypertension League that states that more than 50% of people

who have hypertension are ignorant of their condition (Witten, Vuuren & Learmonth, 2013; Chockalingam, 2008). If ignored, the condition will lead to Cardio Vascular Disease (CVD) or a stroke. The Indian Council of Medical Research (ICMR) has reported that hypertension was the cause of 16% of ischemic heart disease, 21% of peripheral vascular diseases and 24% of acute myocardial infarction (Subramanian, Soudarssanane, Jayalakshmy, Thiruselvakumar, Navasakthi, Sahai & Saptharishi, 2011). Such consequences are avoidable with timely intervention by implementing appropriate awareness programs relevantly targeted for the population with their sociocultural dynamics in mind.

Hypertension is identified as a lifestyle related disease. Diet high on carbohydrate, fat and salt, sedentary work life and consumption of tobacco and alcohol are found to be associated with the disease. Clinical adherence which refers not only to religiously following prescribed medication, but also complying with the diet and exercise regimen suggested as part of life style changes constitute an important aspect of disease management (Swain, Hariharan, Rana, Chivukula & Thomas, 2015). The fact that lifestyle changes form a significant part of treatment requires special emphasis by the treating physician. This assumes a higher significance for the patients with low health literacy. In this context, it may not be an exaggeration to state that communication to the patient plays a major role in inculcating better adherence and disease management among the patients, which in turn prevents cardiovascular deaths.

This paper reviews the various methods of communication to the patients of hypertension. Twenty years of research findings starting from 1995 to 2015 is brought to light in this review paper. A comprehensive search of the Cochrane Central Register of Controlled Trials, Medline, EMBASE, Research Gate and PubMed databases has been made for this article. The types of health communication have been classified under the following ways - doctor-patient communication, instructions and education material, personalized health communication, story-telling or narratives, creating social support through communication, therapeutic communication, team communication, e-communication and population targeted communication.

Doctor-Patient Communication

The quality of doctor-patient communication was found to directly influence adherence, thereby improving prognosis among hypertensive patients (Swain et al., 2015). Medical jargon used by doctors in their health communication with cardiac patients was found to be poorly comprehended by patients leading to deleterious health outcomes (Thomas, Hariharan, Rana, Swain & Andrew 2014). It is evident from past research that there was better adherence and disease management in hypertension patients when the doctor-patient communication was collaborative, and when the patients actively participated in setting treatment goals and decision making (Naik Kallen, Walder, & Street, 2008). Research evidence points to the importance of collaborative communication, shared decision-making and active involvement of patients in their treatment goals in facilitating improved adherence and control among hypertensive patients (Naik et al., 2008). However, participation in the consultation process demands certain basic patient characteristics. Level of education and language skills seem to play a role in it.

Patients with less education and language barriers were found to have trouble comprehending health information and feel a lack of connection with physicians resulting in non-adherence and lowered rates of hypertension control (Jolles, Clark & Braum, 2012). Patients with low literacy are found to ask fewer medical questions and are less able to respond to physician's communication (Kim et al., 2011). Low comprehension and non-adherence among low health literacy groups pose a block to pro-active measures in hypertension care because of which health care is sought as an emergency measure. McCray (2005) found that patients with low health literacy were more likely to seek treatment from intensive care units and less likely to engage in primary prevention.

By and large, general observation reveals that the Indian patient, unlike the West does not perceive his/ her relationship with the doctor as that of a consumer and service provider. He/she holds the doctor in high esteem and thus what the doctor 'tells' is given high importance. However, an assessment of the quality of communication between the doctor and patient as indicated by research is found to be inadequate and poor (Lipkin 1996; Tsiantou Pantzou, Pavi, Koulierakis, & Kyripoulos, 2010; Swain et al. 2015). The reason for this may not be the lack of competence on the part of the doctor but can be largely attributed to constraint of time for the doctor. While the WHO prescribed doctor-patient ratio as 1:1000 (World Health Organization 2017), the ratio in India is 1:2000 (Sharma, 2016). This results in restricted consultation time for the patients. The shorter consultation times carry the concomitant risks of inadequate communication and lack of comprehension by the patient culminating in poor adherence to the treatment regimen.

Studies have shown that general practitioners, who are the first level of contact with patients lack the necessary knowledge, attitudes and competence in the measurement and treatment of hypertension (Prashanth, Annie & Isaac, 2015). Normally, the physician at first level contact is a relatively junior doctor. A study by Hariharan and Padhy (2011) revealed that the doctors with less experience were found to have relatively low emotional intelligence reflecting in their handling of patients. This in combination with other situational factors may be responsible for the quality of service at first contact level. Studies indicated that suboptimal patient-provider interactions in overcrowded outpatient wings has led to poor understanding among patients regarding their health condition and the importance of medication adherence in achieving optimal BP control (Prashanth, Annie, & Isaac 2015; Deshpande et al. 2014). Thus, it may be reiterated that the lack of quality is in fact the result of 'overcrowding' experienced by the doctor rather than total lack of competence in the doctor. Guided by the reality of the health care scenario in the country, there is a need to optimize the communication in the relatively short consultation time. The study by Swain, et al., (2015) has highlighted the close relationship between the quality of doctor-patient communication and effectiveness of disease management in terms of BP control and adherence. In this context it is relevant to mention the efficient and short methods of enhancing the quality of communication. Their study proved that similarity index was a unique method of not only verifying the quality of communication by the doctor, but also measuring it by taking into consideration the intended communication (by the doctor) against the comprehended communication (by the patient). This method is less cumbersome and economical in time yielding efficient results.

Greater participation and involvement of patients in their treatment decisions optimizes prognosis and results in enhanced treatment outcomes among hypertensive patients. Studies evidenced better management of hypertension with two-sided collaborative doctor-patient communication (Naik et al., 2008; Schoenthaler, Allegrante, Chaplin & Ogedegbe, 2012). This included shared decision-making and proactive communication of patients with their physicians and the patients feeling that collaboration was encouraged by their doctors.

One way to ensure effective doctor-patient communication is to mandate assessment of knowledge level of the patients by a Health Psychologist before the patient enters the consultancy room and provide one-on-one education on the lifestyle aspects related to hypertension management. This will equip the patient with basic hypertension related knowledge facilitating effective participation in the consultancy process.

In view of the time constraints mentioned above, alternatives in the form of public health education measures should be properly conceived and designed. Some of such methods whose efficacy is tested are discussed.

Instructions and Education Material

The necessary general information on hypertension in the form of written material

or oral instruction needs to be provided to the patients. Many hospitals display booklets related to various health problems to be picked up by the patients. However, neither a detailed guideline comprising of clear instructions to manage high BP and clear targets for BP control nor educational material such as booklets were found to produce clinically significant improvements in hypertension (McKinstry, Hanley, Heaney, McCloughan, Elton, & Webb, 2006).

Methods that provided scope for interpersonal interaction or innovative participation learning were found to have a better impact. Health information presented in the form of summary information leaflets augmented by presentations and monthly meetings with health care providers significantly contributed to enhanced knowledge about hypertension among hypertensive patients (Magadza, Radloff, & Srinivas, 2009). Health communication in the form of individual nurse counseling, lectures, discussions, video sessions and outdoor activities to educate participants on weight reduction, importance of making positive lifestyle changes comprising of diet control, avoidance of smoking, exercise, and stress management significantly improved knowledge and BP control rates among hypertensive patients in Sweden (Nilsson, Klasson & Nyberg 2001). In view of the increasing prevalence rates of hypertension, the implementation of group educational activities for groups of hypertensive patients, by heath psychologists at regular intervals will serve to enhance knowledge and improve hypertension control rates through participatory learning.

Personalized Health Communication

Personalizing the communication requires some amount of ground work. Personalized messages that have been tailored to incorporate more written and visual forms of communication have been found to improve health literacy, adherence and BP control among hypertensive patients (Jolles, Clark & Braam2012). Personalized patient education often results in better outcomes than a conventional approach (Giuse, Koonce, Storrow, Kusnoor & Ye 2012; Kandula, et al. 2009). While personalizing communication, aspects such as health literacy level and learning styles of the patient may be considered for optimal results. Using a randomized controlled trial, Giuse, Koonce, Storrow, Kusnoor & Ye (2012) sought to determine whether tailoring health communication content to the health literacy level alone or in conjunction with the preferred learning style of patients was effective in enhancing hypertension knowledge, management and control. Results revealed that tailoring information to suit learning styles revealed better results than matching information to health literacy levels. Glasgow et al. (2013) advocated that material designed to match the culture, and literacy level of the patient with personalized behaviour goals clearly spelt out and communicated through website or through interactive voice response system resulted in knowledge enhancement as well as control in BP readings.

Individualized counseling (Beigi, et al., 2014; Thankappan, et al., 2013; Ogedegbe et al., 2008), setting of lifestyle related individual goals by physiotherapists and dieticians resulted in significant improvements in knowledge and reductions in blood pressure among hypertensive patients (Eriksson, Franks & Eliasson, 2009). Human mind gets attuned to receiving, recording and retrieving information that is given in the form of an interesting story or narration. Personalized communication is effective as there is scope for interaction, clarification of doubts and enhanced accountability for translation into behaviour. This could be because of the importance of self felt by the patient. A situation where a patient can relate himself/herself is likely to be more effective than otherwise because of the operation of the vicarious effect factor. Storytelling and narratives can help such projection and internalization.

Story-Telling or Narratives

Story telling contains an element of personalization because the listener tends to identify with the character in the story. Listening to a story or narrative becomes an integral part of human life right from the childhood. Human mind gets attuned to receiving, recording and retrieving information that is given in the form of interesting story or narration. This was proved in health research.

Emerging evidence suggests that story-telling or narrative communication leads to positive health behaviours in a culturally appropriate context (Houston et al., 2011). Stories can help listeners make meaning of the purpose or essence of their lives (Schulz, Kannan, Dvonch, Israel, Allen, James, & Lepkowski, 2005) and listeners may be influenced if they actively engage in a story, identify themselves with the story-teller and picture themselves taking part in the action (Slater & Rouner, 2002).

Health information presented in the form of a story-telling video intervention comprising of three story-tellers who described living with hypertension, gave lessons on how best they learned to interact with their physicians and offered strategies to improve medication adherence resulted in improved hypertension knowledge rates as compared to a control group who viewed an educational video on “What is blood pressure” and lessons on how to express their questions and concerns to their physicians (Houston et al. 2011). For optimizing the process of identification, cultural similarity and contextual relevance will have to be taken care of. Health information that is grounded in the personal experience of members of a community is more likely to be engaging and less likely to be dismissed (Manuvinakurike, Barry, Bickmore & Ave, 2013). Story-telling involving stories about their own hypertension management narrated by a person from the same ethnic group brought about a positive change in attitude and behaviour of hypertension patients (Manuvinakurike, Barry & Bickmore, 2013). Easy identification with the model narrating their story was found to lower cognitive resistance of hypertensive patients (Slater and Rouner, 2002; Houston et al. 2011). Patients can “enter” the world of the characters and become absorbed in the narrative content, rather than focusing on the embedded subtext of behaviour change (Slater & Rouner, 2002; Green, 2004; Green & Brook, 2000). Going by the interest in watching television serials, this form of health communication, is likely to be effective with the Indian rural, illiterate and semi-literate groups.

Lifestyle changes involve not only oneself, but also the family in which the patient lives. Hence it is desirable to create a family/ social support structure conducive to the optimal management of hypertension.

Creating Family and Social Support Group through Communication

The Social Cognitive Theory posits that to institute behaviour change, the physical and social aspects of the environment need to support the change (Whitt-Glover et al. 2013). Studies in this direction found that communication directed at the family and social support system proved fruitful.

Imparting health and nutritional education in the context of one’s home environment in the presence of immediate family results in improved health outcomes and adherence to nutritional and lifestyle modification. Family support was found to foster adoption and maintenance of positive health behaviours among hypertensive patients (Ribeiro, et al., 2011). Health information imparted during bimonthly home visits by trained volunteers who provided lifestyle and medication adherence counseling resulted in optimal BP control rates among hypertensives in Taiwan (Lin, Chen & Chou 2004). Home based health education from community health workers and training of general physicians resulted in enhanced knowledge, management and control of hypertension (Jafar et al. 2009). This can be implemented through ASHA (Accredited Social Health Activist) workers in rural India.

Group counseling sessions utilize the positive effect of peer group emotional and social support to improve motivation among group members to foster attitudinal and behavioural change. Group counseling sessions aimed at improving health literacy were found to facilitate the uptake of health screening services (Khatib et al. 2014; Murimi & Harpel, 2010). Peer-support and a self-management program were found to achieve optimal BP control (Mosack et al. 2013) and help hypertensive patients gain better knowledge in addition to

self-management skills (Hayes et al. 2010). A group behavioural counseling intervention showed significant reductions in BP levels as well as enhanced adherence to medication and lifestyle recommendations among senior citizens (Fernandez, Scales, Pineiro, Schoenthaler & Ogedegbe, 2008). Health communication comprising of home-based counseling by nurses (Zhu, Xuejiao, Wong & Wu, 2014) trained in preventive care was found to facilitate enhanced self-care management and knowledge among hypertensives (Zullig, Melnyk, Goldstein, Shaw & Bosworth 2013; Clark, Smith, Taylor, & Campbell 2010).

Given a therapeutic direction, communication can be professionalized. This professionalized and personalized communication can optimize the outcome.

Therapeutic Communication

Motivational Interviewing and Cognitive Behaviour Therapy are increasingly being used as communication techniques on patients with non-communicable diseases requiring major behavioural changes for better prognosis. They are based on the basic assumptions that resistance to change lifestyle originates either due to lack of motivation or because of inadequacy, absence or faulty cognitions related to the disease.

Behavioural change is an integral part of hypertension management which involves cessation of risk behavior and initiation and sustenance of prescribed dietary and exercise pattern. The disease management in hypertension involving major behavioural changes in diet, exercise and self-monitoring the demands active participation of the patient in treatment process. This calls for self-accountability and sustained motivation levels. Often reasonable lapses in adherence behaviour may lead to a relapse of non-adherence. Motivational Interviewing is emerging as a technique of health communication and behaviour change in hypertension control by moving the individual from the pre-contemplation stage (no intention to elicit behaviour change) to action (making the behaviour change) and maintenance (sustaining the behaviour change for more than a period of six-months). Very often patients are found to exist in the pre-contemplation stage due to their ignorance about the implications of their condition and their unhealthy dietary consumption on their blood pressure control outcomes (Witten, Jansen, Vuuren, & Learmonth, 2013; Dennison, Peer, Steyn, Levitt & Hill 2007; Nkosi & Wright, 2010). Hence, in pre-contemplation stage, the strategies of motivational interviewing must place great emphasis on imparting and creating a strong knowledge base to move individuals to the successive stages of action and implementation (Witten et al., 2013).

Cognitive Behaviour Therapy and motivational interviewing are found to modify dysfunctional cognitions leading to sustainable behavioral change (Witten et al., 2013; White, 2001; Heather, Rollnick, Bell & Richmond, 1996) particularly in low income countries. Explaining the process in initiating and sustaining the behavior change, researchers pointed out that motivational interviewing would increase awareness, and address ambivalence towards the dietary behaviour change and boost motivation to implement this change while Cognitive Behaviour Therapy would provide the necessary skills to maintain this change over long periods of time (Heather et al. 1996; Rollnick & Miller, 1995; White, 2001; William & Garland, 2002).

Xue, Yao and Lewin (2008), found that a group based cognitive behavioural self-management program resulted in significant improvements in blood pressure, physical activity and quality of life as well as significant reductions in weight and blood cholesterol levels among hypertensive patients. They advocated a viable cognitive-behavioural self-management program through brief contacts with a health professional or trained volunteers.

This technique of communication is likely to have desirable effects among Indian patients wherein the common cause of non-adherence and low adherence constitute inertia and a lack of motivation.

Communication on lifestyle changes involving diet, exercise, self-monitoring etc. demands expertise from different sources. Hence team communication may prove effective.

Team Communication

Team-based care models have been found to contribute to a holistic approach to health care by facilitating an augmentation of knowledge provision by various health care specialists with an exclusive expertise in their individual domain areas resulting in enhanced diagnosis and management of the condition (Jolles, Clark, & Braam, 2012).

Health communication involving a collaboration of health professionals who provide recommendations and goals related to lifestyle and medication management has been found to be successful in promoting healthy behaviours and improving BP outcomes among hypertensive patients (Santschi et al. 2014). Team based care involving pharmacist-physician (Carter et al. 2008), nurses, pharmacists within primary care clinics and community pharmacists (Carter, Zillich & Elliott, 2003) was found to significantly improve the control of hypertension among study participants.

Collaboration of local health providers, political representatives, academia and residents working together towards a concerted long-term health promotion initiative was instrumental in facilitating knowledge, attitudinal and behaviour improvements in a community (Lin, Chen & Chou, 2004).

The pre-condition for this approach is a perfect coordination and role clarity among the members. It is worth experimenting in the field by multidisciplinary research organizations in India.

Given the magnitude of prevalence there is a dire need to reach out to large number of patients to inculcate adherence behaviour. For this purpose, taking advantage of technology may produce desirable results.

E- Communication

Generating relevant web based, e-mail based or mobile application-based information for the hypertension patients is not farfetched in contemporary tech-world. This information provides ample scope for both generic and personalized contents.

Informal online communication mediums such as social networking sites, blogs, websites and mobile applications have facilitated the exchange of health-related informational support through informal discussions and experiential reporting leading to motivated health behaviour change (Manuvinakurike, Barry, Bickmore & Ave, 2013). According to Zullig et al., (2013) this would perfectly fit into the patient centered medical home model. Appointment reminder systems and self-monitoring were found to be important adjuncts to enhance hypertension management and control (Glynn, Murphy, Smith, Schroeder & Fahey, 2010).

Logan et al. (2012) have found that hypertension related informational support sent through a smart phone shortly after a home-based BP measurement greatly optimized BP management outcomes among hypertensive patients. Another evolving forum for effective health communication that is rapidly gaining ground in hypertension management is online social media (Shaw & Johnson, 2011). Health communication with health care providers via online, web-based messaging forums and the e-mail is becoming the norm rather than the exception (Katz & Moyer, 2004; McGeady, Kujala & Ilvonen, 2008).

In a similar study, Tayub et al. (2008) showed the effectiveness of a Short Message Service (SMS) intervention where the hypertensive patients received an SMS five minutes prior to the time required to take the medication and were shown an interactive educational session through telecommunications on increasing hypertension knowledge and enhancing medication adherence.

In view of the extensive use of mobile phones by populations belonging to all socioeconomic classes, the mobile app-based communication may be very successful in the Indian context. The inadvertent outcome of this may be a new found motivation for improving health literacy.

Personalized e-communication should go hand in hand with population education.

Population Targeted Communication

Population education, designed with complete understanding of the characteristics of the target population is likely to fetch desirable results. Health communication for hypertension delivered through mass media campaigns, public health education discourses at schools, colleges and organizations, mass media including newspapers, magazine articles, radio and distribution of health education leaflets in a particular community have met with considerable success.

Population based strategies comprising of a series of health education classes focusing on the need for controlling hypertension and its risk factors by prominent professors of cardiology and public health professionals showed remarkable improvements in hypertension related knowledge, control and treatment rates in a community of Kerala (Thankappan et al., 2013).

Population-based health communication comprising of hypertension education classes and lectures for hypertensive and normotensive populations four times a year combined with weight reduction and smoking termination sessions reinforced by informational support by local newspapers and cable television concluding with competitions organized to motivate the general community to fill in health related questionnaires was found to be successful in improving BP knowledge and control rates in a community (Lin, Chen & Chou, 2004). Such programs of awareness involving all possible social groups and designed to reinforce the information, qualifies as campaign mode and is likely to fetch desirable results.

Collaborations between mass media initiatives including TV, radio, and newspapers, key health care providers including general practitioners, nurses, public health personnel, community health and social workers, business representatives of restaurants, shops and markets as well as local political representatives resulted in enhanced knowledge and optimal BP control rates in a community (Sarrafzadegan et al., 2013).

Conclusion

The review systematically identified and analyzed the tried-out methods of communication that aimed to optimize the disease management of hypertension. Overall the current review suggests that the most effective forms of health communication for hypertension consider the biopsychosocial and socio-cultural context of the patient. Tailoring and personalizing the health-related information to suit the individual factors like literacy level and sociocultural factors such as the affiliation of communication agents were found to successfully circumvent the psychosocial barriers such as resistance to change, thus enhancing the outcomes.

Hypertension is a condition that requires behavioural change for effective management and control. Hence interventions designed in accordance with certain prominent models of health psychology such as the social cognitive theory, health belief model and the transtheoretical model of behaviour change were found to yield optimal results in terms of BP control and management. In view of vast cultural diversity in India, the 'model-fit' should also consider the 'culture-fit' while planning content, form, quantity, place and timing of communication. Focusing on the appropriate factors such as health risk behaviours in geographical areas where tobacco consumption is rampant, risks of sedentary lifestyle when the target is urban IT employees and overall education on management of hypertension targeting the children and youth would be meaningful and productive. Designing population specific and culturally suitable health communication calls for the expertise of Health Psychologists, dieticians, social workers, community volunteers and local leaders, spiritual leaders, political leaders, school and college level teachers, authors and text book writers, media persons to team up with doctors and nurses to evolve efficacious health communication for hypertension. The role of local leaders and community volunteers is crucial in making health communication effective in translating to lifestyle changes.

It is time that the Ministry of Health views the projections for future years not merely as figures, but as alarm signals demanding preventive action. If the projection of hypertension for India in 2020 is 159.46 per 1000, the Health Care Sector should take the essential input from the past research and gear up for preventive action. One such preventive action suggested by research in the past two decades is to enhance health communication both in quality and quantity. This, as suggested by this review is possible through a campaign mode consisting of multiple methods.

References

Andrew, A., Kallavarapu, V., Thomas, M., & Swain, S. (2014). Doctor-Patient Communication in Health Care: Issues and Challenges. *Journal of Indian Health Psychology, 9*(1), 21-36.

BabaeeBeigi, M. A., Zibaeenezhad, M. J., Aghasadeghi, K., Jokar, A., Shekarforoush, S., & Khazraei, H. (2014). The Effect of Educational Programs on Hypertension Management. *International Cardiovascular Research Journal, 8*(3), 94–98.

Carter, B. L., Bergus, G. R., Dawson, J. D., Farris, K. B., Doucette, W. R., Chrischilles, E. A., & Hartz, A. J. (2008). A Cluster-Randomized Trial to Evaluate Physician/Pharmacist Collaboration to Improve Blood Pressure Control. *Journal of Clinical Hypertension (Greenwich, Conn.), 10*(4), 260–271.

Carter, B. L., Zillich, A. J., & Elliott, W. J. (2003). How pharmacists can assist physicians with controlling blood pressure. *Journal of Clinical Hypertension, 5*, 31–37.

Carver, M. C., & Jessie, A., (May 31, 2011) "Patient-Centered Care in a Medical Home. *The Online Journal of Issues in Nursing, 16*(2), 4.

Chockalingam, A. (2008). World hypertension day and global awareness. *Canadian Journal of Cardiology, 24,* 441-444.

Clark, C. E., Smith, L. F. P., Taylor, R. S., & Campbell, J. L. (2010). Nurse led interventions to improve control of blood pressure in people with hypertension: systematic review and meta-analysis. *The BMJ, 341,* c3995.

Cuffee, Y. L., Hargraves, J. L., Rosal, M., Briesacher, B. A., Schoenthaler, A., Person, S., … & Allison, J. (2013). Reported Racial Discrimination, Trust in Physicians, and Medication Adherence Among Inner-City African Americans With Hypertension. *American Journal of Public Health, 103*(11), e55–e62.

Dennison, C. R., Peer, N., Steyn, K., Levitt, N. S., & Hill, M. N. (2007). Determinants of hypertension care and control among peri-urban black South Africans: the HiHi study. *Ethnicity and Disease, 17*(3), 484-491.

Deo, M. G. (2013). Doctor population ratio for India-the reality. I*ndian Journal of Medical Research, 137*(4), 632-635.

Deshpande, S., Patel, N., Godbole, V., Champaneri, V., Singh, N., & Patell, R. (2014). Awareness and Approach towards Hypertension Management among General Practitioners of Western Vadodara. *Journal of Clinical and Diagnostic Research: JCDR, 8*(8), MC05–MC08.

Eriksson, M. K., Franks, P. W., & Eliasson, M. (2009). A 3-Year Randomized Trial of Lifestyle Intervention for Cardiovascular Risk Reduction in the Primary Care Setting: The Swedish Björknäs Study. *PLOS ONE, 4*(4), e5195.

Fernandez, S., Scales, K. L., Pineiro, J. M., Schoenthaler, A. M., & Ogedegbe, G. (2008). A senior center-based pilot trial of the effect of lifestyle intervention on blood pressure in minority elderly people with hypertension. *Journal of the American Geriatrics Society, 56,* 1860–1866.

Friedman, R. H., Kazis, L. E., Jette, A., Smith, M. B., Stollerman, J., Torgerson, J., & Carey, K. (1996). A telecommunications system for monitoring and counseling patients with hypertension. Impact on medication adherence and blood pressure control. *American journal of hypertension, 9,* 285–292.

Giuse, N. B., Koonce, T. Y., Storrow, A. B., Kusnoor, S. V., & Ye, F. (2012). Using health literacy and learning style preferences to optimize the delivery of health information. *Journal of Health Communication, 17*(3), 122–140.

Glasgow, R. E., Askew, S., Purcell, P., Levine, E., Warner, E. T., Stange, K. C., … & Bennett, G. G. (2013). Use of RE-AIM to address health inequities: Application in a low-income community health center-based weight loss and hypertension self-management program. *Translational Behavioural Medicine, 3*(2), 200–210.

Glynn, L. G., Murphy, A. W., Smith, S. M., Schroeder, K., & Fahey, T. (2010). Interventions used to improve control of blood pressure in patients with hypertension. *Cochrane Database of Systematic Reviews, 3,* CD005182.

Green, B. B., Cook, A. J., Ralston, J. D., Fishman, P. A., Catz, S. L., Carlson, J., … & Thompson, R. S. (2008). Effectiveness of Home Blood Pressure Monitoring, Web Communication, and Pharmacist Care on Hypertension Control: The e-BP Randomized Controlled Trial. *JAMA: The Journal of the American Medical Association, 299*(24), 2857–2867.

Green, M. C. (2004). Transportation into narrative worlds: the role of prior knowledge and perceived realism. *Discourse Processes, 38,* 247-266.

Green, M. C., & Brook, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*, 701-721.

Greer, T. M. (2010). Perceived racial discrimination in clinical encounters among African American hypertensive patients. *Journal of Health Care for the Poor and Underserved, 21*(1), 251-263.

Gupta, R. & Gupta, V. P. (2009). Hypertension epidemiology in India: lessons from Jaipur Heart Watch. *Current Science, 97*(3), 349-355

Gupta, R. (2004). Trends in hypertension epidemiology in India. *Journal of Human Hypertension, 18*(2), 73-78.

Hariharan, M. & Padhy, M. (2011). Emotional Intelligence of Doctors. *Social Science International, 27*(1), 15-22.

Hayes, A., J., Morzinski, K., Ertl, C., Wurn, L., Patterson, N., Wike, & Whittle, J. (2010). Preliminary description of the feasibility of using peer leaders to encourage hypertension self-management. *Wisconsin Medical Journal, 109*(2), 85-90.

Heather, N., Rollnick, S., Bell, A., & Richmond, R. (1996). Effects of brief counseling among male drinkers identified on general hospital wards. *Drug and alcohol review, 15*(1), 29-38.

Houston, T. K., Allison, J. J., Sussman, M., Horn, W., Holt, C. L., Trobaugh, J., … & Hullett, S. (2011). Culturally Appropriate Storytelling to Improve Blood Pressure: A Randomized Trial. *Annals of Internal Medicine, 154*, 77-84.

Jafar, T. H., Hatcher, J., Poulter, N., Islam, M., Hashmi, S., Qadri, Z., …& Chaturvedi, N. (2009). Community based interventions to promote blood pressure control in a developing country: a cluster randomized trial. *Annals of internal medicine, 151*(9), 593-601.

Jolles, E. P., Clark, A.M., & Braam, B. (2012). Getting the message across: opportunities and obstacles in effective communication in hypertension care. *Journal of hypertension, 30*(8), 1500-1510.

Kandula, N. R., Nsiah-Kumi, P. A., Makoul, G., Sager, J., Zei, C. P., Glass, S., & Baker, D. W. (2009). The relationship between health literacy and knowledge improvement after a multimedia type 2 diabetes education program. *Patient Education and Counseling, 75,* 321–327.

Katz, S. J. & Moyer, C.A. (2004). The emerging role of online communication between patients and their providers. *Journal of general internal medicine, 19*(9), 978–983.

Khatib, R., Schwalm, J. D., Yusuf, S., Haynes, R. B., McKee, M., Khan, M., & Nieuwlaat, R. (2014). Patient and Healthcare Provider Barrier to Hypertension Awareness, Treatment and Follow Up: A Systematic Review and Meta-Analysis of Qualitative and Quantitative Studies. *Plos One, 9*(1), e84238.

Kim, M. T., Han, H.-R., Haley, H., Kim, J., Song, H. J., Kim, K. B., & Hill, M. N. (2011). Tele-transmitted monitoring of BP and bilingual nurse counseling sustained improvements in BP control over 12 months in hypertensive Korean Americans. *Journal of Clinical Hypertension (Greenwich, Conn.), 13*(8), 605–612.

Lin, T., Chen, C. H., & Chou, P. (2004). Impact of the High Risk and Mass Strategies on Hypertension Control and Stroke Mortality in Primary Health Care. *Journal of Human Hypertension, 18,* 97-105.

Lipkin, M. (1996). Physician-patient interaction in reproductive counseling. *Obstetrics and Gynecology, 88*, 31s-40s.

Logan, A. G., Irvine, M. J., Mc. Isaac, W. J., Tisler, A., Rossos, P. G., Easty, A., …& Cafazzo, J. A. (2012). Effect of home blood pressure telemonitoring with self-care support on uncontrolled systolic hypertension in diabetics. *Hypertension, 60*(1), 51–57.

Magadza, C., Radloff, S. E., & Srinivas, S. C. (2009). The effect of an educational intervention on patients' knowledge about hypertension, beliefs about medicines, and adherence. *Research in social & administrative pharmacy, 5*(4), 363-375.

Manuvinakurike, R. R., Barry, B., Bickmore, T. W., & Ave, H. (2013, March). Indexing Stories for Conversational Health Interventions. *In AAAI Spring Symposium: Data Driven Wellness.*

McCray, A. T. (2005). Promoting health literacy. *Journal of the American Medical Informatics Association, 12,* 152–163.

McGeady, D., Kujala, J., & Ilvonen, K. (2008). The impact of patient-physician web messaging on healthcare service provision. *International journal of medical informatics, 77*(1), 17–23.

McKinstry, B., Hanley, J., Heaney, D., McCloughan, L., Elton, R., & Webb, D. J. (2006). Impact on hypertension control of a patient-held guideline: a randomized controlled trial. *The British Journal of General Practice, 56*(532), 842–847.

Mohan, V., Deepa, M., Farooq, S., Datta, M., & Deepa, R. (2007). Prevalence, awareness and control of hypertension in Chennai. The Chennai Urban Rural Epidemiology Study (CURES-52). *The Journal of the Association of Physicians of India, 25,* 326-332.

Mosack, K. E., Patterson, A. M., Brouwer, A. R., Wendorf, K., Ertl, D., Eastwood, J., Morzinski, K., Fletcher, K., & Whittle, J. (2013). Evaluation of a peer-led hypertension experiment for veterans: impact on peer leaders. *Health Education Research, 28*(3), 426-436.

Murimi, M. W. & Harpel, T. (2010). Practicing preventive health: The underlying culture among low-income rural populations. *The Journal of Rural Health, 26*(3), 273-282.

Naik, A. D., Kallen, M. A., Walder, A., & Street, R. L., Jr. (2008). Improving hypertension control in diabetes mellitus: the effects of collaborative and proactive health communication. *Circulation, 117*(11), 1361-1368.

Nilsson, P. M., Klasson, E. B., & Nyberg, P. (2001). Lifestyle intervention at the worksite-reduction of cardiovascular risk factors in a randomized study. *Scandinavian Journal of Work and Environmental Health, 27*(1), 57-62.

Nkosi, N. G., & Wright, S. C. (2010). Knowledge related to nutrition and hypertension management practices of adults in Ga-Rankuwa day clinics. *Curationis, 33*(2), 33-40.

Ogedegbe, G., Chaplin, W., Schoenthaler, A., Statman, D., Berger, D., Richardson, T., … & Allegrante, J. P. (2008). A Practice-based Trial of Motivational Interviewing and Adherence in Hypertensive African Americans. *American Journal of Hypertension, 21*(10), 1137–1143.

Prashanth, H. R., Annie, I. K., & Issac, R. (2015). Prevalence of Hypertension and its optimal management issues in Rural India: An unmet health care need. *Indian Journal of Community Health, 27*(1), 03-07.

Ribeiro, A. G., Ribeiro, M. R., Dias, M. G. C., Ribeiro, A. Q., Castro, A. F., Varela, M. S., & Cotta, M. M. (2011). "Non-Pharmacological Treatment of Hypertension in Primary Health Care: A Comparative Clinical Trial of Two Education Strategies in Health and Nutrition." *BMC Public Health, 11*(1), 637.

Rollnick S., & Miller, W.R. (1995). What is motivational interviewing? *Behavioural and Cognitive Psychotherapy, 23,* 325-334.

Rollnick, S. (1996). Behaviour change in practice: targeting individuals. *International Journal of Obesity Related Metabolic Disorders, 20,* 22-26.

Rollnick, S., Kinnersley, P., & Stott, N. (1993). Methods of helping patients with behaviour change. *British Medical Journal, 307*(6897), 188-190.

Santschi, V., Chiolero, A., Colosimo, A. L., Platt, R. W., Patrick, T., Burnier, M., …& Paradis, G. (2014). Improving Blood Pressure Control through Pharmacist Interventions: A Meta-Analysis of Randomized Controlled Trials. *Journal of the American Heart Association: Cardiovascular and Cerebrovascular Disease, 3*, e000718.

Sarrafzadegan, N., Kelishadi, R., Sadri, G., Malekafzali, H., Pourmoghaddas, M., Heidari, K., …& O'Loughlin, J.L. (2013). Outcomes of a comprehensive healthy lifestyle program on cardiometabolic risk factors in a developing country: the Isfahan Healthy Heart Program. *Archives of Iranian medicine, 16*(1), 4–11.

Schoenthaler, A., Allegrante, J. P., Chaplin, W., & Ogedegbe, G. (2012). The Effect of Patient-Provider Communication on Medication Adherence in Hypertensive Black Patients: Does Race Concordance Matter? *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine, 43*(3), 372–382.

Schulz, A. J., Kannan, S., Dvonch, J. T., Israel, B. A., Allen, A., James, S. A., Lepkowski, J. (2005). Social and Physical Environments and Disparities in Risk for Cardiovascular Disease: The Healthy Environments Partnership Conceptual Model. *Environmental Health Perspectives, 113*(12), 1817–1825.

Sharma, N. C. (2016, April 29). *Grim picture of doctor patient ratio, 1 doctor for 2,000 people. Mail Today.* Retrieved from http://indiatoday.intoday.in/story/grim-picture-of-doctor-patient-ratio/1/654589.html.

Shaw, R. J., & Johnson, C. M. (2011). Health Information Seeking and Social Media Use on the Internet among People with Diabetes. *Online Journal of Public Health Informatics, 3*(1).

Slater, M. D. & Rouner, D. (2002). Entertainment-education and elaboration likelihood:

Understanding the processing of narrative persuasion. *Communication Theory, 12,* 173-191.

Songthai, N., Subgranon, R., Kangchai, W., & Rosenberg, E. (2014). Effects of a Peer-support, Self-Management Program on Self-management Behaviour and Blood Pressure of Older Adults with Essential Hypertension. *Chiang Mai University Journal of Natural Sciences, 13*(3), 371-382.

Subramanian, H., Soudarssanane, M.B., Jayalakshmy, R., Thiruselvakumar, D., Navasakthi, D., Sahai, A., & Saptharishi, L.G. (2011). Non-pharmacological interventions in hypertension: A community-based cross-over randomized controlled trial. *Indian Journal of Community Medicine, 36*, 191-196.

Svensson, S., Kjellgren, K. I., Ahlner, J., & Saljo, D. (2000). Reasons for adherence with anti-hypertensive medication. *International Journal of Cardiology, 76*(2-3), 157-163.

Swain, S., Hariharan, M., Rana, S., Chivukula, U., & Thomas, M. (2015). Doctor-Patient Communication: Impact on Adherence and Prognosis Among Patients with Primary Hypertension. *Psychological Studies, 60*(1), 25-32.

Tayub, M., Shaheena, D., Moosajee, A., Tharmohamed, S., Tourbaly, S., & Srinivas, S. C. (2008). Role of Telecommunication in Improving Adherence of Hypertensive Patients. *Indian Journal of Pharmacy Practice, 1*(1), 45-49.

Thankappan, K. R., Sivasankaran, S., Mini, G. K., Daivadanam, M., Sarma, P. S., & Abdul Khader, S. (2013). Impact of a community-based intervention program on awareness, treatment and control of hypertension in a rural Panchayat, Kerala, India. *Indian Heart Journal, 65*(5), 504–509.

Thomas, M., Hariharan, M., Rana, S., Swain, S., & Andrew, A. (2014). Medical Jargons as Hindrance in Doctor-Patient Communication. *Psychological Studies, 59*(4), 394-400.

Tsiantou, V., Pantzou, P., Pavi, E., Koulierakis, G., & Kyripoulos, J. (2010). Factors affecting adherence to anti-hypertensive medication in Greece: results from a qualitative study. *Patient Preference and Adherence, 4,* 335-343.

White, C.A. (2001). Cognitive behavioral principles in managing chronic disease. *Western Journal of Medicine, 175*, 338-342.

Whitt-Glover, M. C., Hunter, J. C., Foy, C. G., Quandt, S. A., Vitolins, M. Z., Leng, I., … & Bertoni, A. G. (2013). Peer Reviewed: Translating the Dietary Approaches to Stop Hypertension (DASH) Diet for Use in Under resourced, Urban African American Communities, 2010. *Preventing Chronic Disease, 10.*

Williams, C., & Garland, A. (2002a). A cognitive behavioural therapy assessment model for use in everyday clinical practice. *Advances in Psychiatric Treatment, 8,* 172-179.

Witten, J., Jansen van Vuuren, A., & Learmonth, D. (2013). Psychological Intervention to Address Hypertension in South Africa's Peri-Urban Settlements. *Online Readings in Psychology and Culture, 10*(1).

World Health Organization. (2000). *A global brief on hypertension: Why hypertension is a major public health issue.* Geneva: World Health Organization.

World Health Organization. (2013). A global brief on hypertension: silent killer, global public health crisis: World Health Day 2013.

World Health Organization. (2017). *Density of physicians* (total number per 1000 population, latest available year). Retrieved from www.who.int/gho/health_workforce/physicians_density_text/en/

Xue, F., Yao, W., & Lewin, R. J. (2008). A randomised trial of a 5-week, manual based, self-management programme for hypertension delivered in a cardiac patient club in Shanghai. *BMC Cardiovascular Disorders, 8,* 10.

Zhu, X., Wong, F. K. Y., & Wu, L. H. (2014). Development and evaluation of a nurse-led hypertension management model in a community: a pilot randomized controlled trial. *International Journal of Clinical and Experimental Medicine, 7*(11), 4369–4377.

Zullig, L. L., Melnyk, S. D., Goldstein, K., Shaw, R. J., & Bosworth, H. B. (2013). The Role of Home Blood Pressure Telemonitoring in Managing Hypertensive Populations. *Current Hypertension Reports, 15*(4), 346–355.

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