CHAPTER II

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The scope of research related to doctor-patient communication is wide. The available literature relates to doctor-patient communication in the context of a number of health problems such as terminal illness like cancer, Invasive Medical procedure like cardiac surgery, pediatric illness like asthma and chronic illness like hypertension. Studies, particularly Indian studies are very few on these aspects, and particularly on a sample of primary HTN. The review of literature presented here is divided into three main sections viz. research studies on Health Communication, studies on Patient Adherence Behavior, and Health Communication and Adherence in the context of Hypertension. The section of Health Communication discusses the concept of Health Communication as a process with its aims and objective and role of communication in health care with specific focus as doctor-patient communication in health care and the impact of effective doctor-patient communication. The review also includes predictors and measurement of doctor-patient communication. The section on adherence discusses the concept of adherence and non-adherence, prevalence of adherence, barriers to adherence, interventions to improve adherence and measurement of adherence. This is followed by a section that emphasizes the relationship between doctor-patient communication and adherence in the context of the NCD namely, HTN. The literature concludes with a brief summary of studies reviewed.
Health Communication

The term ‘Health Communication’ has multiple connotations. The meaning of Health Communication varies from context to context and assumes significance according to its functionality, leading to various definitions. Communication in the context of health that pertains to sharing meanings or exchanging of information, informing & influencing individuals or communities, motivating people to change behaviors, and that supports and sustains the change, forms the crux of health communication. With the growing importance of Health Communication (Parrott, 2004), numerous definitions of health communication, were proposed by many researchers and organizations. Centers for Disease Control and Prevention and National Cancer Institute (n.d), have defined health communication as “the study and use of communication strategies to inform and influence individual decisions that enhance health”.

In addition to informing and influencing, the process of health communication aims at changing the behavior of the individuals and communities with the aim of improving their health. A definition by Clift and Freimuth (1995) captures this in their statement that “Health communication, like health education, is an approach which attempts to change a set of behaviors in a large-scale target audience regarding a specific problem in a predefined period of time”.

In order to bring about a change at the behavioral level, motivating individuals and communities is an important aspect of health communication. This is reflected in the definition given by Ratzan, Sterans, Payne, Amato, and Madoff (1994). They stated that health communication is “the art and technique of informing, influencing and motivating individual, institutional, and public audiences about important health
issues. Its scope includes disease prevention, health promotion, health care policy, and business, as well as enhancement of the quality of life and health of individuals within the community.”

The purpose of health communication is to make the people aware about the concept of health and diseases. For this, the sharing and exchange of health related information is required. The very essence of health communication is two-way dialogue and is more common in one-on-one context which applies appropriately in a doctor-patient communication set-up where the interchange of information benefits the doctor in his/her diagnosis and the patient by facilitating appropriate medical advice.

**Doctor-Patient Communication in Health Care**

The objective of health care service system is to provide the best possible care to its patients. In today’s age where the medical technology has advanced and holistic health is promoted in a big way, where patients as health seekers have every right to demand best possible care in hospitals, the onus of providing the above becomes the responsibility of the health care professionals. The relationship between patients and doctors forms the crux of every health care delivery system. The life-line of the doctor-patient relationship is the communication between the doctors and the patients which has to be effective and precise. Effective and active communication from the patient to doctor about the symptoms, discomfort, pain, and intensity is important for the doctor to decide the line of investigation for diagnosis. The communication from the doctor to the patient cannot be undermined. The treatment adherence of patient and disease prognosis to a large extent is determined by patients’ understanding of the severity of the problem and significance of adherent behavior, which needs to be
communicated by the doctor. In other words the health communication between the doctor and the patient has to be complete and effective, taking the bio-psychosocial framework into consideration during the consultation or treatment process. Literature has shown that effective communication in medical treatment leads to improved health, functional and emotional status, adherence to treatment regimen, doctors’ satisfaction, and reduced medical malpractice risk (Wong & Lee, 2006). Effective doctor-patient communication is also essential for exchanging information so that both parties understand each other and the nature of the situation, develop a therapeutic relationship which fosters mutual honesty and trust, and make treatment decisions that are in the best interest of and are acceptable to the patient (Allen Petrisek, & Laliberte, 2001)

Various reports show the growing emphasis on the need for the health care professionals to have effective communication skills in rendering their services. Medical programmes are known to include courses that train the doctors in communication skills to deal with the patients. Communication Skills Training is now considered to be a core subject in medical school curricula (Laidlaw, Mac Leod, Kaufman, Langile, & Sargeant, 2002; Shapiro, Lancee, & Richardson-Bentley, 2009). In a review by Asnani (2009), it was reported that having medical knowledge alone is not sufficient to help the patient and that effective communication skills are found to be lacking in the physicians. Tongue et al. (2005), in a study on orthopedic surgeons found that the patients rated the surgeons high on their operating skills but were low on listening and communication skills. The researchers stressed on the improvement of the communication skills of the doctors. Effective communication skills are required for a patient-centered approach, emphasizing on building rapport through the use of empathy, listening skills and non-verbal communication skills (Platt & Gordon,
Lewis, Pantell, and Sharp (1999) conducted a study to investigate the effectiveness of an educational intervention to promote effective doctor-patient communication and see its impact on health outcomes in the patients. This randomized trial of the intervention required the doctors to share more medical information with the pediatric patients and their parents, to encourage more participation of the children and make more efforts to build rapport with the children and reduce their anxiety. It was seen that the children of the intervention group i.e. the doctors who were trained, reported greater satisfaction and a preference for active health role. However the same results were not reported for the control group doctors who did not receive the training.

A similar study was conducted to see the effects of a continuing medical education programme in interpersonal communication skills on doctor practice and patient satisfaction in Trinidad and Tobago (Roter, Rosenbaum, de Negri, Renaud, Diprete-Brown, & Hernandez, 1998). It was reported that the trained doctors encouraged their patients to involve themselves in the health care service through improved facilitation and more of open ended questions. The results revealed that the patients of the trained doctors reported greater satisfaction with the doctors and found the doctors to be more friendly, responsive and understanding compared to the doctors who were not trained.

Several studies have reported that training the doctors in communication skills to meet the biopsychosocial needs of the patients is imperative (Chatterjee & Choudhury, 2011). The Medical Council of India stresses on the importance on communication skills training of the doctors in its report titled, Vision 2015 (Medical Council of India, 2011). The need of the hour is acknowledging and training the health care professionals in effective communication skills leading to improved health
care system. The positive impact of effective doctor-patient communication has been studied and proved by past researches.

**Impact of Doctor-Patient Communication**

Doctor-patient communication has been known to influence health and its related aspects in a variety of ways. Doctor-patient communication has a strong impact on health outcomes, even to the extent of the outcomes evident through basic physiological changes (Stewart, 1995).

**Impact on Physical and Psychological State**

Active doctor-patient communication facilitates communication of doctor’s empathy to the patient. This lays the foundation for the trust in the relationship, while it also helps the patients in ventilating his/her fears, anxiety, and apprehension. Such interaction provides a scope for the doctor to effectively address the patients’ emotions. This process helps in easing the emotional state of the patient. Further, the effective communication of the doctor, through information exchange enhances the knowledge base of the patient about the disease, adherence requirements, etc. which in turn helps in giving desirable direction to the health behavior of the patient. While the doctor’s communication skills contributes in the ways described above, it is also true that equal participation of the patients creates a sense of partnership and involvement in decision making. This in turn contributes to the internal locus of control. Once the internal locus of control is stimulated and reinforced the adherence behavior is likely to be high and sustained. The following review supports the arguments presented above.

The communication between the doctors and the patients has been seen to be significantly associated with the health status, psychological outcomes, quality of life,
work disability, and emotional status of patients. Effective doctor-patient communication is where the physicians encourage patients to actively participate in the decision making process related to the treatment process. Adams, Smith, and Ruffin (2001) in their study on asthma patients reported that physicians who scored high on participatory decision style had patients who were more satisfied with the treatment regimen. They also found that patients who scored the physicians low on the participatory decision style, reported significantly lower quality of life. In another study by Fallowfield, Hall, Maguire and Baum (1990) on breast cancer patients, it was reported that the patients of the surgeons who were offered a choice in deciding whether to go for lumpectomy or mastectomy and actively participated in the decision making process are reported to have better health outcomes in terms of lower levels of depression than those patients who were not given a choice. A study conducted by Hall, Horgan, Stein, and Roter (2002), revealed that the sample of diabetic patients’ self-reported health behavior and a positive affective state was significantly associated with their liking the physicians. It was also reported that the patients liked physicians who communicated in an optimal way. Patient centered communication is associated with improved health status in terms of better mental health, less discomfort, less concerns (Stewart et al., 2000).

Effective communication has been shown to manage post-operative pain in surgical patients (Sugai, Deptula, Parsa & DonParsa, 2013). In the study of two groups, the experimental group of surgical patients received pre-operative oral and written forms of patient education on how the body responds to pain, how the endorphins work like natural analgesics and also the negative effects of narcotics on the production & mechanism of endorphins in the body, as well mechanisms of non-opioid analgesics. The control group did not receive any patient education. The results
revealed that 90% of the experimental group patients did not take narcotics to manage the pain while 100% of the control group patients filled their complete prescriptions of painkillers. The control group patients also reported average pain scores that were significantly greater than the experimental group patients and also a significantly longer duration of the pain. The study brilliantly demonstrates the importance of communication in health care.

Impact on Doctor’s Diagnostic Accuracy

The skills that the doctors use to communicate with the patients form the most basic tool in eliciting information from the patient about the health concerns of the patient. The skills that the doctors used in taking the medical history of the patient initiate the path to effective doctor-patient communication. To achieve a clear understanding of the health status of the patient and make an accurate diagnosis, the communication between the doctor and patient has to be effective. The process of making a diagnosis involves three sequential and overlapping steps viz. data gathering, data integration and verification of diagnosis (Kuhn, 2002). Data gathering entails collecting critical diagnostic information during a physician–patient interaction primarily through history-taking, physical examination, and review of medical records which necessitates the presence of effective doctor-patient communication skills. Inaccurate data collection would lead to errors in clinical reasoning and subsequently in data integration as well. The third step, diagnosis verification, entails the confirmation or rejection of diagnostic hypotheses by obtaining further data viz. laboratory tests, imaging, or pathology specimens. Thus, all three of the above steps, particularly data gathering and diagnosis verification, rely on good communication in order to improve the process of making a correct diagnosis. Groopman (2007) in his book explains how the communication skills of the doctors can have a profound
impact on the patients’ health. It is also found that a patient on an average is given just 18 seconds, to describe the symptoms before the physician interrupts which greatly increases the scope of doctors making errors in diagnosis and treatment plans. A study by Peterson, Holbrook, VonHales, Smith, and Staker (1992) aimed at quantifying the relative contribution of medical history, physical examination and laboratory testing in diagnosing the patients’ health issues. It was reported that medical history contributed to 76% in diagnosing the health problem, implicating the importance of having effective communication skills to elicit detailed medical history of the patient.

The fundamental prerequisite of effective doctor-patient communication is time. Ineffective communication is increasingly recognized as a preventable factor in medical mishaps including incorrect diagnose. Emerging data suggest a high prevalence of communication breakdowns among physicians, patients, and important members of the health care services who assist with the diagnostic process (Gandhi, 2005; Singh, Arora, Vij, Rao, Khan, & Peterson, 2007; Sutcliffe, Lewton, & Rosenthal, 2004). In a study on patients with abnormal mammograms, it was reported a third of the women studied did not receive any appropriate follow-up (Poon et al., 2004), indicating a communication breakdown.

In a health care process, diagnosis by the doctor forms the basic component of the treatment process leading to the subsequent steps to cure the patient. Hence effective communication between the doctor and the patient is imperative in starting the treatment plan on a correct note.

While initial communication between the doctor and patient has a determining effect on diagnosis, the post-diagnosis communication sets the path for adherence behavior. Behavior is guided by cognitive base and emotional appeal. In the context
of diagnosis leading to treatment, the doctor’s communication needs to enrich the cognition and appeal the emotions of the patient so as to optimize adherence behavior.  

**Impact on Adherence Behavior**

Adherence to the prescribed treatment regimen is the most important outcome of a medical encounter. Doctor-patient communication has a huge influence on the adherence behavior of patients. Communication has been identified as the most important factor in determining patients’ adherence to treatment (Zolnierek, Kelly, & DiMatteo, 2009). Doctor-patient communication, as a component of doctor-patient relationship has been found to be one of the major predictors in adherence to the treatment regimen (Delamater, 2006; Hampson, McKay, & Glasgow, 1996) and better doctor-patient communication is an important factor for improving patient adherence to treatment (Vermeire et al., 2001). In an extensive review to identify the predictors of medication non-adherence, it was reported that the quality of doctor-patient communication is one of the major predictors of non-adherence (Vermeire et al., 2001; Vik, Maxwell, & Hogan, 2004).

In a study Hausman (2001), reported that communication in the form of information exchange, social support and participative decision making, play a significant role in improving patient adherence. The study also emphasized on the notion that for the communication to be effective there needs to be a bi-directional exchange of information and active listening by both the doctor and the patient. Friedman et al. (2008) conducted a study on enlisting the determinants of patients’ adherence to topical ocular hypotensive therapy and included 300 patients and 103 physicians. Out of the 300 patients who participated in the study, it was reported that patients who received less information from their doctors showed poor adherence. These findings indicated that doctor-patient communication is a major factor in
determining the adherence to the therapy apart from the patients’ level of knowledge regarding the medication, the patients’ health related beliefs and potential risks associated with glaucoma that contribute to patient adherence. The researchers also noted that the non-adherent patients who were passive and more dependent on doctors tend to miss the critical knowledge of potential vision loss due to non-adherence.

Adherence or non-adherence to treatment regimen is related to a number of factors including non-health related economic considerations. Unless the doctor is open to listen to all such factors patient adherence may suffer leading to undesirable consequences such discontinuing medication, switching to alternatives or withdrawing from treatment.

Gaps in the doctor-patient communication like one-dimensional decision making, and physicians’ lack of knowledge of patients, indicating sub-optimal communication, lead to non-adherence that adversely affects the health status of patients (Wilson et al., 2007; Safran, Taira, Rogers, Kosinski, Ware, & Tarlov, 1998). Wilson et al. (2007) in their study on elderly chronic patients reported that almost 32% of the patients did not talk to their physicians about their medicines on a 12 month time period. Of the patients skipping doses or stopping a medication because of a side-effect or perceived non-efficacy 27% had not talked with the physicians. Of those reporting non-adherence because of cost-related issues, 39% skipped talking to their physician about it while 38% switched to a lower priced drug without consulting the physician, indicating a gap in the doctor-patient communication.

According to WHO (1993), effective communication facilitates the sharing of relevant health information, and motivating patients to pursue healthier lifestyles, enhancing the doctor’s role in health promotion and disease prevention. In a study by Wong and Lee (2006) receiving an explanation of the symptom, cause, likely
duration, and lack of unmet expectations were found to be the key predictors of patient satisfaction and adherence to medical treatment.

The above studies substantiate the significance of effective doctor-patient communication in improving one of the major health outcomes of treatment process i.e. adherence.

In health set-up where the patient consults a doctor, there may be need for crucial decisions that involves risks, huge expenditure, etc. Such situations can be waded through only when the doctor enjoys the trust of the patient. Trust is a factor that develops through available information about the doctor which is reinforced by the doctor’s communication quality.

*Increased Trust in the Clinician*

Studies have shown that effective doctor-patient communication increases the patients’ trust in their clinicians. In a study by Schattner, Rudin and Jellin (2004), it was reported that 38% of patients selected physicians on the basis of their professional expertise while 30% selected on the basis of physicians’ patience and attentiveness, informing the patient, representing the patient’s interests, being truthful and respecting patient’s preferences. Except the professional expertise, rest of the factors can be translated as outcomes of effective communication between the doctor and the patient.

A study by Thom in association with Stanford Trust Study Physicians (2001) was carried out to assess the relative strength of physician’s behavior in predicting patient’s trust. It was reported that patients’ level of trust was strongly associated with the physicians demonstrating competency and encouraging the patients to ask questions and addressing those questions, indicating effective communication.
The studies cited above broadly indicate that the content of communication assumes significance in establishing the professional competence of the doctor. However, trust is not the byproduct of the single factor related to competence, specifically in the context of health where the doctor is expected to treat the patient as a human being rather than the disease in the patient. In order to instill trust in the patient, the doctor, alongside his/her professional competence also needs to express his concern for the patient and communicate his/her empathy for the patient. This, not only helps in developing trust in the doctor, but also brings a sense of satisfaction in the patient which is an important constituent of wellbeing.

**Doctor-Patient Communication and Patient Satisfaction**

Patient satisfaction is one of the major parameters against which the effectiveness of doctor-patient communication is studied. Studies have shown that effective doctor-patient communication improve patient satisfaction. In a qualitative study by Anden, Andersson and Rudebeck (2005), it was reported that the patients’ perception of the outcome of clinical consultation is greatly determined by the patients’ understanding of communication leading to improved satisfaction. A survey conducted by Davis et al. (2002), revealed that the patient satisfaction with the quality of health care is often associated with the physician-patient communication, indicating the importance of effective doctor-patient communication.

The interaction style between the doctor and the patient is one of the predictors of patient satisfaction with the care received. A cross-sectional observational study conducted on 2881 patients and 138 family physicians found that physicians with person-focused interaction style were rated highest on the quality of physician-patient relationship and patient satisfaction (Flocke, Miller & Crabtree, 2002). The same results were reported in another study by Jackson, Chamberlin and
Kroenke (2001) on 500 adult patients visiting 38 participating clinicians. The results of the study revealed that predictors of satisfaction reflected aspects of doctor-patient communication (receiving an explanation of the symptoms, cause, likely duration, lack of unmet expectations).

A review of 17 studies for examining the impact of interventions that are intended to promote patient-centered care within clinical consultations supported the correlation between patient-centered care and patient satisfaction. The review reported studies revealing that patient-centered care during consultations reported a positive impact of the same on patient satisfaction with the health care received (Lewin, Skea, Entwistle, Zwarenstein, & Dick, 2001).

In a review study of interventions on cancer patients, the results revealed the importance of effective doctor-patient communication in promoting patient satisfaction with the health care (Bredart, Bloulec, & Dolbeault, 2005). The results of the review emphasized on the use of various strategies that improved patient satisfaction and resulted in positive health outcomes, effective doctor-patient communication being one of the major strategy.

The above studies cement the fact that effective doctor-patient communication definitely improves patient satisfaction and closely related to the patient’s satisfaction is the physician’s satisfaction.

*Impact of Communication on Doctors*

Effective doctor-patient communication works both ways in the sense that not only the patients derive benefits from it but also the physicians gain from effective communication. Studies have shown that effective communication leads to increased job satisfaction on the part of the physicians that in turn leads to increased productivity and efficiency. Physician satisfaction more often than not is linked to
patient satisfaction with the health care service that they receive. A study conducted to see the association between patients’ satisfaction and physician satisfaction, reported that physicians who were professionally satisfied with their job had patients who were satisfied with the overall health care service and with their health status (Haas et al., 2000).

Empathy is one of the major components of effective doctor-patient communication that leads to improved patient satisfaction and physician satisfaction. In a theoretical article by Larson and Yao (2005), it was emphasized that empathetic doctors are effective healers.

Suchman, Roter, Green and Lipkin (1993) conducted a study on 124 physicians to investigate the correlates of physician satisfaction. It was reported that physician-patient relationship was the major predictor of physician satisfaction that has been shown to be correlated to patient satisfaction. The researchers emphasized on the improvement of communication skills of the doctors to promote effective communication with the patients that would lead to patient satisfaction and professional satisfaction of the physicians.

The discussion till now argues with research evidence that the communication between the doctor and patient is very crucial for optimizing health outcomes in terms if adherence behavior, developing mutual trust and satisfaction in health seeker and provider. While the fact is accepted, it calls for understanding the various factors that contribute to effective doctor-patient communication.

*Predictors of Doctor-Patient Communication*

Doctor-patient communication is a complex interactional process that encompasses interplay between various factors, affecting the quality of
communication. The Four Model of Health Care by Ferlie and Shortell (2001) as the name suggests, delineates four models or factors that play a role in the interaction between the doctors and the patients. The four models in the system are the individual patient, the care team that includes professional care providers (e.g. doctors, nurses, pharmacists, family members, etc.), the organization that supports the development and work of care teams by providing infrastructure and complementary resources (the hospitals, clinics, etc.), and the health care system that includes the political and economic environment (e.g., regulatory, financial, payment regimes, and markets), the conditions under which organizations, care teams, individual patients, and individual care providers operate.

Of the four mentioned above the patient and doctor have direct involvement in communication process. Thus, they assume greater significance.

The Patient

The individual patient is the most important stakeholder in the health care system. In this era of globalization where doctors are seen as health care providers and patients as health care consumers, the patients’ needs and preferences are taken into account. Therefore various factors pertaining to the patients influence the basic health care process of doctor-patient communication. In the context of doctor-patient communication, various socio-economic factors like age, gender, and educational qualification are seen to affect the communication.

The age of the patients has been found to shape the doctor’s communication with their patients, how they listen to patients and the degree to which they believe and interpret what patients say to them (Govender & Penn-Kekana, 2008; Bradley, Sparks, & Nesdale, 2001). In a study on elderly patients, it was found that doctors tend to communicate more in a patient-centered style with patients over the age of 65
In the study, the pre and post-visit questionnaire data of 177 patients pertaining to the satisfaction with the communication, were taken. Audio recordings of the doctor-patient encounter were coded and analyzed through the Roter Interaction Analysis System (RIAS), one of the most commonly used methods for coding doctor and patient encounters (Roter & Larson, 2002). The results showed that patient age moderated the association between the doctors’ interaction style and the patient satisfaction.

The influence of gender of the patient on the communication between doctor and patient has not been consistent. However, it has been reported that male and female patients differed in their communicative style. A study conducted by Thorson and Johansson (2004) showed that women patients of low income and status were described as ‘shy’, ‘hesitant’ with ‘limited knowledge in health care seeking matters’ and often ‘not following their doctor’s prescription mainly because of a need to double-check with their husband, family and neighbors. Men in comparison were described as ‘daring and open’, ‘willing to follow directions and prescriptions and, being the primary breadwinners, also have more access to money and have a decision-making power of their own, independent of the rest of the family’ (Thorson & Johansson, 2004, as cited in Govender & Penn-Kekana, 2007).

While the above study reported on differential behavior by patients of two genders, the study by Bertakis, Franks, and Epstein (2009), focused on doctor’s varying style of communication while communicating with male and female patients. The study revealed that with female patients, the doctors were more likely to have patient-centered style of interaction in comparison to male patients, suggesting that, women are more likely than men to express their feelings and talk about psychosocial issues.
Educational level of the patient assumes importance because of its role in gaining knowledge from written documents on health. Patients with a higher educational level have more skills and confidence in talking to their doctors and tend to provide more information, ask more questions and speak longer than other patients (Willems, De Maesschalck, Deveugele, Derese, & De Maeseneer, 2005). The researchers also reported that patients who are educated are found to be more expressive and opinionated and receive more diagnostic and health information than less educated people. They strongly believe in patient involvement and have more knowledge about health issues and medical technology. More educated patients communicate more actively (they ask more questions, are more opinionated) and show more affective expressiveness, eliciting more information from their physician. Because patients with a higher education experience a smaller cultural distance between them and the doctor, they might have fewer difficulties when interacting with the doctor (Street, 1991).

Hence, more educated, higher income, older, and female or male patients may receive more information because they have communicative styles that elicit information from the doctors. They are more assertive, express more concerns, ask more questions, and conceivably elicit more information from doctors than less educated patients do.

Health literacy is another factor that can impact the doctor-patient communication to a great degree. Health literacy is the ability to understand health information and to use that information to make good decisions about one’s health and medical care. Health information can overwhelm even people with advanced literacy skills. It has been reported that patients with inadequate health literacy are more likely to be hospitalized than patients with adequate skills (Safeer & Keenan,
In a recent study on 84 in-patients it was found that hospitalized patients with limited health literacy reported poor communication in the domains of general clarity, responsiveness to patient concerns, and explanations of care compared with patients with higher health literacy (Kripalani, Jacobson, Mugulla Cawthon, Niesner, & Vaccarino, 2010). Research has shown that low health literacy is associated with low self-efficacy (Baker et al., 1996) and less interaction in physician patient encounters (Katz, Jacobson, Veladar, & Kripalani, 2007), which in combination with physicians’ use of complex medical language (Castro, Wilson, Wang, & Schillinger, 2007) may contribute to poor physician-patient communication.

The level of education may not always be a significant determining factor. The personality factors sometimes may play a very dominant role in the quality of communication which may sometimes even camouflage the other factors such as age, gender, education, or socio-economic factors.

The quality of doctor-patient communication is not singularly impacted by the patient. The doctor as the health provider has a significantly high contribution in the quality of communication.

*The Doctor*

The second important factor in the health care system is the doctor who is responsible to great extent for the delivery of effective health care service to the patients. The doctors’ communication style assumes an important role as it is the basic tool with which they have to interact with patients, family members and other health professionals in the delivery of care to the patients. As the primary care givers in the care team, the responsibility of a doctor is to support, encourage, and promote the well-being of a patient with a holistic approach. They are responsible for providing
clinical information to the patients and other care givers, chart out the possibilities for restoring the health of the patient, involve the patient in the health care process and in emergencies, help the patient take critical decisions. The role of the doctor is to provide a patient centered care. To deliver patient-centered care (i.e., care based on the patient’s needs and preferences), the physician must be equipped and educated to serve as trusted advisor, educator, and counselor, as well as medical expert, and must know how to encourage the patient’s participation in the design and delivery of care.

It is not adequate for the doctor to know ‘what’ to inform but, more important factor that contributes to quality of communication is to ‘how’ to deliver the relevant information. This part is very closely related to doctor’s communication style that can range from disease-centered to patient-centered (Byrnes & Long, 1976).

The doctors with disease-centered communication style are more focused on the biomedical aspects of the patient and have a paternalistic approach that is based on the assumption that the doctor is the expert and the patient is expected to cooperate. In patient-centered communication style, doctors facilitate and encourage the patients to participate in the consultation. Patient-centered communication style has been found to be best communication style for doctors (Stewart et al., 2000) and is characterized by high levels of caring and sharing (Emanuel & Emanuel, 1992; Roter et al., 1997). Past literature has shown that caring in the physician’s speech can lead to improved patient satisfaction (Beck et al., 2002), more adherence to treatment (DiMatteo & Lepper, 1998) and better psychological adjustment to illness (Roberts, Cox, Reintgen, Baile, & Gilbertini, 1994). The caring component in doctor-patient communication is visible through the doctors expressing empathy, reassuring, supporting, through positive reinforcements, psychosocial talk, laughing and joking, and courtesy (Beck et al., 2002). Low sharing behaviors on the part of the physician are non-encouragement
for patient’s questions, disregard for the patient’s views, less sharing of medical data with the patient, less discussion of the treatment effects, responding less to the patient’s remarks, more interrupting and more speech directivity (Beck et al., 2002). A recent study conducted on 167 patients who interacted on computer with virtual physicians simulated to show high and low caring, reported the same findings (Cousin, Mast, Roter, & Hall, 2012), where the researchers reported that high caring led to higher patient satisfaction.

The style of communication is not so much a matter related to the time, but a factor linked to attitude. However, on the face, it may appear that the paternalistic model where the doctors play an authoritarian role, less amount of time is consumed in comparison to other models such as the informed model, and the shared model. Such assumptions sometimes may drive the doctors to choose the model based on the workload and time available.

In a recent study, it was reported that doctors’ increased work load and pressure is directly proportional to an increase in hospital mortality (Tarnow-Mordi, Hau, Warden, & Shearer, 2000). The major reason behind the increased work pressure among doctors is the high patient-doctor ratio and the lack of hospital facilities that contribute significantly to poor doctor-patient communication (Kazmi, Amjad, & Khan, 2008). The doctors, more often than not, are deluged with the demands that the patients make on them. Often the patients complain about the duration of consultation that remains inadequate and hurried (Swaminathan, 2007). The pressure is felt more in times when there is a shortage of medical personnel. Given these circumstances, the doctors tend to fasten or even cut down on the consultation time. The lack of time is a constant factor associated with the doctors and unfortunately the patients who consult them are in knowledge of this fact (Pollock &
In this situation, communication is the casualty. Several studies have been conducted to determine the length of the consultations. A study by Deveugele, Derese, van den Brink-Muinen, Bensing, and Maeseneer (2002) revealed the consultation length in six different European countries. From each country, 27 general practitioners with 15 patients each were included in the study. The multilevel analysis reported that in Germany, the mean duration of medical consultation was 7.6 minutes, in Spain it was 7.8 minutes, United Kingdom 9.4 minutes, and for Netherlands it was 10.2 minutes. The doctors from Belgium and Switzerland clocked the maximum consultation length with 15 and 15.6 minutes respectively. On an average European doctors had a consultation length of 10.7 minutes. Studies conducted in United States and Canada, reported a greater consultation length (Wilson & Child, 2002; Cape, 2002). In USA, the mean consultation length of the doctors in 1983 was reported to be 17.6 minutes which came down to 16.7 minutes in 1994. In Canada, the average consultation length was revealed to be 17.6 minutes. Deveugele et al. (2002) also reported that as the workload goes up, the consultation length decreases. A hurried-up consultation can lead to the doctor missing out the psychosocial aspects of the patient’s talk, leaving the patient dissatisfied and left-out. Unfortunately there is no such data base in India.

A very crucial factor related to doctors is the use of medical language during consultations. In a clinical setting, it has been seen that the doctors tend to use medical jargons, not only with their counterparts, but also with patients. This phenomenon is known as ‘Doctor-talk” or “Medspeak” (DiMatteo & DiNicola, 1982) that leads to patient dissatisfaction (Philips, 1996). The ability to use and to understand medical terminology demarcates one as a member of the “in group” i.e. the doctors and as someone “in the know” (Christy, 1979). The patients, more often
than not feel left out because of their inability to understand complex medical jargons. In a classic study by Samora, Saunders, and Larson (1961), 125 hospitalized patients were asked to explain the meaning of some commonly used medical terms. It was reported that none of the patients could explain all the words correctly and there were no patients who could define all the words correctly. Hadlow and Pitts (1991), in their research reported that patients correctly interpreted medical words only about 36% of the time. What is more shocking is that, about 30% of the time doctors themselves used words that were technically incorrect. Thompson and Pledger (1993) carried out a study similar to Samora et al., (1961) and Thompson and Pledger, reported that there was not a single word that the 224 adult participants could define correctly. A recent study on 96 perioperative patients revealed similar results (Fields, Freiberg, Fickenscher, & Shelley, 2008). The participants were asked to define 10 terms that were commonly used during the preoperative interview. Out of the 10 terms, only four had a greater than 80% correct response rate and the terms were EKG, IV, general anesthesia and regional anesthesia. Terms like NPO, MI, pulse OX, GERD, hypertension, and intubate were least understood. The findings of this study are consistent with previous studies by Lerner, Jehle, Janicke, and Moscati (2000) and Lehmann, Brancati, Chen, Roter, and Dobs (1997). The usage of jargons distances the doctors from their patients. Fields et al. (2008) suggested that the emphasis should be on interaction with the patients rather than telling the patients.

The use of such language leaves the patient confused and mystified, leading to poor comprehension of the doctor’s instructions and consequently, inappropriate health behavior that may bring about adverse health effects.

The most important ingredient in any communication is the communication skill. Likewise, doctors’ communication skills can predict the quality of the doctor-
patient communication. It has been observed that communication skills tend to decline as medical students progress through their medical education, and over time doctors in training tend to lose their focus on holistic patient care (DiMatteo, 1998). Moreover, the stringent medical training can result in suppressed empathy, where doctors substitute techniques and procedures for talk, and may even result in derision of patients (DiMatteo, 1998). Ineffective communication between the doctor and patient can result in dissatisfied patients and doctors, non-adherence and may lead to therapeutic failure.

Research has shown that apart from the patient and doctor factors, many other phenomena such as patient’s personality factors, doctor’s personality factors, etc. influence the communication between the doctor and the patient, for e.g. the social status of the patient. It is beyond the scope of the present study to enlist all the possible variables involved in this complex process.

What is relevant to this study is the quality of doctor-patient communication in the context of consultation. The most significant concern in this context is the technique of measuring this quality of communication. The literature review threw light on many approaches in measuring doctor-patient communication quality. The following section highlights the methods adopted by few relevant studies.

Measurement of Doctor-Patient Communication

Measuring communication is a challenging task. However, health communication researchers have devised numerous ways to identify, measure, quantify and categorize doctor-patient communication. Doctor-patient communication can be studied using qualitative and quantitative approaches. Quantitative approaches have focused on measuring concepts such as information exchange, shared decision
making, patient enablement, verbal dominance, and communication control (Collins, Britten, Ruusuvori, & Thomson, 2007). In qualitative approaches, the focus is on professional responsibility and behavior, and on details of observed and recorded communication in consultations, as well as on the structure of consultation and its phases (Collins, et al., 2007). Quantitative approaches have used Interaction Analysis System (IAS), also called as observational instruments like the Roter Interaction Analysis System (RIAS), Brown University Interpersonal Skill Evaluation (BUISE), Communication Assessment Tool (CAT), Doctor-Patient Communication Inventory (DPCI), etc. RIAS developed by Roter, Hall, and Katz (1988), facilitates coding medical dialogues during doctor-patient interactions during consultations. It provides reasonable depth, sensitivity, and breadth while maintaining practicality, functional specificity, flexibility, reliability, and predictive validity to a variety of patient and provider outcomes. RIAS was evolved from Interaction Process Analysis (Bales, 1950) that was developed for analysis of small group interactions. In RIAS, each discernible segment of speech or verbal utterance forms a unit of analysis. An utterance conveys only one thought or is related to one item of interest and may vary in length from a single word to a lengthy sentence. Utterances are assigned to one of 34 mutually exclusive content categories like socio-emotional, business category, etc. as laid out in the RIAS manual.

In a study by Kubota et al. (2011), the RIAS was used to measure the clinical communication competence of pharmacy students with simulated patients. The results revealed that the RIAS could assess the socio-emotional aspect of the students’ interview skills. Studies by Ford, Fallowfield, and Lewis (1996), Ishikawa, Takayama, Yamazaki, Seki, and Katsumata (2002), Ishikawa, Roter, Yamazaki, and Takayama (2005) have used RIAS to study doctor-patient interaction. In the study by
Ford et al. (1996), the structure and content of bad news cancer consultations of 117 cancer patients and measured the patient-centeredness of the communication of five oncologists. The RIAS in this study was employed to see whether the doctors addressed the psychosocial concerns of the cancer patients. The style of communication, with small variation among the oncologists was also studied.

BUISE, developed by Burchard and Rowland-Morin (1990), measured the interpersonal skills of surgeons and the appropriateness of physician’s behavior for a particular clinical encounter. The BUISE used the method of coding the videotaped content of clinical encounters. It studied both the verbal and non-verbal behavior of the surgeons. The coding systems provide useful information like, the extent to which patients talk in the consultation, factors influencing the interpersonal effectiveness of the health professional, such as length of consultation or continuity of care, communication competence of the physicians, etc.

The problem with the coding systems is that they fail to convey how the coded actions are related to one another, for example how the doctor’s communication style is related to the patient’s level of information about their diagnosis, prognosis and treatment options, etc. or how the length of the consultation might have influenced the discussion of issues between the doctor and the patient. The foci of these methods are more on the instrumental aspect of the interaction, aiming at the ‘cure’ of the disease. What these methods fail to capture are the functional aspects related to the exchange of information about the present health status of the patient, dosage of medication, adverse effects, alarm signals, etc which contribute to a strong logical base for adherence.

There are also methods which labeled and classified doctors’ communication style. For example, Makoul, Krupat and Chang (2007) by developing the CAT
measured the interpersonal and communication skills of physicians as perceived by patients. The CAT is a 15-items standardized instrument that has been used to measure doctor-patient communication. The patient rates the doctors on a 5-point scale ranging from 5 to 0, with 5 being excellent. The CAT covered aspects like treating the patient with respect, paying attention to the patient, showing care and concern, greeting the patient appropriately, encouraging the patient to ask questions, showing interest in the patient's ideas about his or her health, involving the patient in decisions as much as he or she wanted, etc. This, at best measures patient’s perceptions and satisfaction with the physician and is subjective.

Schneider and Tucker (1992) developed a 28-items DPCI, where the patient was required to respond. The patient gives the response to four aspects – Relationship Maintenance, Professional Competence, Waiting Time, and Social Etiquette of the doctor. This method is certainly an effort at quantification involving certain degree of objectivity. Campbell, Lockyear, Laidlaw, and Macleod (2007) developed a Matched-Pair Instrument (MPI) to measure the communication skills of the doctor in terms of process and content. The MPI is a 19-items Likert scale with the responses ranging from strongly agree to strongly disagree. In a study on physician-patient communication behavior, on HIV patients in Kenya, by Wachira, Middlestadt, Recee, Peng, and Braitstein (2013), reported that the MPI failed to capture the patient’s role in the communication behaviors as usually the case with patient-centered communication measures.

The major qualitative approach for analyzing doctor-patient communication is through the use of content analysis. Conversation Analysis (CA) is one such method of content analysis that measured the communication using themes from the content, for instance, the themes that discussed the interrelationship between the patient’s
concerns and the biomedical agenda. Mishler’s (1984) work in this area is related to the two ‘voices’ in the consultation – one, the voice of the ‘Lifeworld’ that represents the natural attitude of everyday life and the voice of the ‘Medicine’, representing the technical-scientific assumptions of medicine. The qualitative approach basically works towards developing themes from the medical consultations based on these ‘voices’ and how often the doctors and patients used the ‘voices’. Barry, Stevenson, Britten, Barber and Bradley (2001) applied Mishler’s concept and analyzed data that included interviews with patients and doctors and a measure of consultation outcomes. Barry et al. (2001) identified four themes that demonstrated a complex interaction of these two voices. There were interactions that were ‘Strictly Medicine’ in which both doctor and patient used the voice of medicine exclusively. Used mostly in case of acute problems, these consultations were mostly effective, although it sometimes resulted in major misunderstandings on diagnosis and prescription. In the second theme, ‘Lifeworld Blocked’, though the patient revealed his/her concerns, it was not taken up by the doctor. In ‘Lifeworld Ignored’, the voice used was predominantly voice of medicine. The fourth pattern showed that both the doctor and the patient used the voice of the ‘Lifeworld’, having a much more relaxed feel to these consultations.

In CA research, the consultation is regarded as consisting of phases of activities based on video or audio recordings of actual consultations. The phases observed in doctor–patient consultations are the opening of the consultation, the problem presentation, verbal examination (including history-taking), physical examination, discussions of treatment and closing. Various studies have used CA to study doctor-patient communication quality (Gafaranga & Britten, 2003; Heritage & Robinson, 2006). For example, in terms of diagnosis and treatment decisions,
Heritage and Maynard’s (2006) review of the CA literature on patients’ participation in the consultations revealed that patients had less opportunity to participate in diagnosis than in the treatment phase. A study by Stivers (2002) through CA demonstrated that how the particulars of taking turn during the consultation can endanger patient’s participation in treatment decisions. Through CA, the researchers were also able to identify the style of terminating the clinical encounter. The CA research’s predominant focus is in the areas such as primary care and doctors’ consultations, and on activities such as diagnosis and treatment discussion. CA studies concentrate on analyzing the process of interaction and cannot adequately deal with other equally relevant dimensions of the process of patient participation, such as what the patient could not reveal in the consultation, like what the patient said ‘*between the lines*’.

The two approaches to measure and study doctor-patient communication can be categorized into two divisions. The quantitative methods with its coding system, focused on information exchange, shared-decision making, and professional behavior, linking it to health outcomes, while sidelining the importance of mutuality in the doctor-patient communication. The qualitative approaches talked about the structure of communication in consultation and details of the interaction and were mute on the related health outcomes. Communication is a two-way process and the degree of the quality of communication is dependent on whether the receiver comprehended the message the way the sender intended it to be. In clinical context, it transforms into whether the patient comprehended what the doctors communicated. In a way, the patient has to validate his/her understanding about the doctor’s instructions. Only a method that matches these two aspects can be considered as the one that is complete and objective. A reliable and valid method for measuring communication is the need
of the hour, in view of the fact that adherence to a large extent depends on the quality of communication.

The direct and major impact of doctor-patient communication is patient’s adherence to treatment regimen. In order to optimize adherence in patients, the doctor has to provide adequate information on the status of the patient’s health, how and why of medication, diet, exercise and monitoring function in preventing adversity by explaining the physiological system, and also drive the point as to how non-adherence may lead to medical emergencies. Such communication in simple, non-technical, effective way not only creates a cognitive base but also fear of consequences of non-adherence. A combination of such cognitive base and emotional appeal leads to positive behavior of high adherence.

Adherence forms the crux of disease management, more so in a chronic illness like HTN. Hypertensive patients are required to strictly adhere to the prescribed treatment regimen. Despite the availability of drugs that effectively treat hypertension, many a time patients fail to follow their doctor-prescribed medication regimens. This behavior, called non-adherence, puts patients at risk for cardiovascular diseases like stroke, paralysis, heart attack, etc. With delayed patient response to the ramifications of the disease, management becomes more complex, necessitating effective communication between the doctors and the patients throughout hypertension diagnosis and treatment (Jolles, Padwal, Clark, & Braam, 2013).

**Patient Adherence Behavior**

Adherence or compliance in terms of health is the extent to which a person’s health behavior coincides with medical or health advice. Adherence to medication is different from therapeutic adherence which means adherence to prescribed diet,
exercise, or lifestyle changes along with prescribed medication (Jin et al., 2008). Non-compliance or non-adherence on the other hand refers to the patient’s ignoring, forgetting, or misunderstanding the regimen as directed by the medical professional and thus carrying it out incorrectly or not at all (Dimatteo & Martin, 2010). With the rising healthcare costs, most healthcare professionals are now advising for therapeutic adherence rather than adherence to medical advice.

Optimal health outcomes require optimal adherence to those treatments. The adherence behavior involves taking medication properly, making and keeping health care appointments, or self-managing other behaviors that influence the onset, course or prognosis of an illness. The emphasis on adherent behavior is to ensure that the treatment for chronic illnesses encompasses behavior that is prescribed. However, many studies have consistently found that levels of compliance or adherence are often far from optimal. Reportedly, in developed countries, patients suffering from chronic illnesses on an average show only 50% adherence (Haynes, 2001). In China, only 43% of the patients with hypertension adhere to the anti-hypertensive medication (Guo, He, & Jiang, 2001). Countries like the Gambia and Seychelles, report all the more adherence rates of 27% (van der Sande, 2000) and 26% (Bovet et al., 2002; Graves, 2000) respectively. Adherence is the single most important modifiable factor that compromises treatment outcome. The best treatment can be rendered ineffective by poor adherence.

With a paradigm shift in the nature of diseases in developing countries from acute to chronic illnesses called NCDs, the treatment demands are long term or lifelong, demanding optimum adherence in order to reap best prognosis.

Medical conditions require correct diagnosis and effective medical treatment and are essential to a patient’s survival and quality of life. Patient non-adherence i.e.
the patient’s failure to follow the recommendations of his or her physician forms a significant barrier to effective medical treatment. Patient non-adherence (sometimes called noncompliance) can result because of poor or wrong understanding of the advice given to patients by their healthcare professionals to cure or control disease, incorrectly following or forgetting the advice, or even completely ignoring the medical advice which happens because the communication is ineffective. Non-adherence brings a huge economic burden resulting in yearly expenditures that is estimated to be in hundreds of billions of US dollars (DiMatteo, 2004). Apart from the most obvious direct costs, non-adherence is also a risk factor for a variety of subsequent poor health outcomes, like mortality (Smith, 1989; Burman et al., 1997; Christensen & Ehlers, 2002; Kane, Huo, Aikens & Hanauer, 2003).

While discussing adherence and non-adherence it is very essential to understand what is called adherence and what is non-adherence in quantitative terms. Total adherence is a conceptual ideal. There may be wide variations in the levels of adherence related to the type of illness. What are the factors that determine levels of adherence? What is the contribution of communication in level of adherence? What percentage of adherence can be considered as acceptable? What is the cut-off to be termed as non-adherence? In order to answer these questions, an attempt was made to review the surveys that studied the measurement, rate and prevalence of adherence.

**Methods to Measure Adherence**

There are many direct and indirect methods of measuring adherence among the patients. Researchers however point out that there is no gold standard to measure adherence. Direct methods to measure adherence includes biological assay where a
metabolite or marker is detected in the bodily fluids like urine or blood. Though it is accurate, the methods are intrusive, expensive and not quite feasible.

The indirect methods of measuring medication adherence are more frequently used in studies and include patient interviews, diaries, self reporting questions, pill counts, pharmacy records, prescription claims, clinical outcomes, and electronic monitoring. Self-reporting measures are prone to underestimation of non-adherence and this underestimation is reported to be over 20% (Haynes et al., 1980). Almost 25.5% of studies on non-adherence have used self-reporting methods to measure non-adherence. Haynes and Sackett (1979) reported that there is considerable agreement between self-report and pill count in case of non-adherers whereas a discrepancy existed between these two measures among adherers. Self-reporting provides a “relative understanding of the patient on the adherence dimension” and is inexpensive (Horne & Weinman, 1999). Moreover, self-reporting is the only method to determine the reason/s why individuals are exhibiting this behavior.

Morisky Adherence Scale (Morisky & Green, 1986), Medication Adherence Scale (Brooks et al., 1994), and Reported Adherence to Medication (Horne & Weinman, 1999) scale are some self-reported instruments to measure adherence. These scales are based on the classification of non-adherence as intentional and unintentional and have only items relating to forgetfulness and carelessness in taking medications and stopping medications when feeling better or worse. The Morisky scale takes only four reasons for non-adherence into consideration while leaving out other reasons such as concerns about side effects, cost of medications, etc. The Medication Adherence Scale is similar to Morisky scale in the sense that it uses the same reasons of non-adherence as in Morisky scale with the time frame as three months. The Reported Adherence to Medication Scale adapted from Morisky scale
uses two reasons of non-adherence viz. forgetfulness in taking medications and altering the medication to suit the patient’s needs, measuring the agreement to these reasons and also the frequency of these reasons.

Pharmacy records and prescription claims are other frequently used indirect methods that are applied to measure adherence and that are economical and feasible (Vik et al., 2004; DiMatteo, 2004b; Morrison & Wertheimer, 2004; Van Wijk, Klungel, Heerdink, & deBoer, 2005; Kripalani, Yao, & Haynes, 2007). However, the disadvantage with this method is that whether the patients actually consumed the medications or not cannot be determined. Pill count is an objective measure of adherence. However, it fails to give any actual consumption of the medication (Vik et al., 2004) and also often overestimates adherence. The Medication Event Monitoring System (MEMS) can estimate the number of tablets missed, frequency and time of opening of medication bottle (Vermeire et al., 2001; Vik et al., 2004). Still, it does not give any indication of the actual consumption of the medication and is also expensive. This method is often adopted in clinical trials to ensure that the patient takes the medicine (Farmer, 1999).

The Hill-Bone Compliance to Hypertension Therapy Scale (Kim, Hill, Bone, & Levine, 2000) is another scale used to measure adherence in hypertensive patients. The Hill-Bone scale is one of the most broadly used scales to measure adherence to anti-hypertensive medications.

While studying and reporting adherence, few studies report the rate of adherence while few others refer to the prevalence. While rate of adherence is important in the context of benefit to the patient, prevalence gains importance from the point of Public Health as it is an index of health communication reaching the public.
Adherence Rate

The rate of adherence is usually measured in terms of percentage of medication actually taken by the patient over a specified period of time (Osterberg & Blaschke, 2005). Non-adherence rates are usually higher in chronic conditions rather than in acute conditions (Jackevicius, Mamdani, & Tu, 2002; Haynes, McDonald, & Garg, 2002). In clinical trials of treatment of chronic conditions, the average adherence rates are reported to be only 43% to 78% (Cramer, Rosenheck, Kirk, Krol, & Krystal, 2003; Waeber, Leonetti, Kolloch, & McInnes, 1999; Claxton, Cramer, & Pierce, 2001). Average rate of non-adherence has been found to be 24.8% of the patients (DiMatteo, 2004b). High rate of adherence were found in cancer patients (80%), followed by cardiovascular diseases, infectious diseases, chronic diseases (75%) and lowest with 51% in chronic obstructive pulmonary diseases (Claxton et al., 2001). Adherence to medication is an ambiguous concept because the rate of adequate adherence differs from condition to condition (Osterberg & Blaschke, 2005). For instance, the adequate rate of adherence in treatment for Human Immunodeficiency Virus (HIV) patients is a mandatory 95% whereas some other treatment manage with 80% of adherence rate (Osterberg & Blaschke, 2005). Hence, it is important to mention here that adherence can vary along a continuum from zero to more than 100% sometimes (Rudd et al., 1988; Pullar, Kumar, Tindall, & Feely, 1989; Spiker, 1991). From various studies it has been found that the adherence rate in hypertensive patients ranges from 9 to 37% (Wetzels, Nelemans, Schouten, & Prins, 2004).

Non-adherence is an important health care problem with as many as 50% of individuals being non-adherent. It has been reported that non-adherence contributes to $100 billion health care costs annually (Sullivan, Kreling, & Hazlet, 1990; Vermeire
et al., 2001; Cleemput, Kesteloot, & DeGeest, 2002; Wroe, 2002; Haynes et al., 2002). The prevalence of medication non-adherence is 8 to 71% and is the cause for 10% of hospital admissions and 23% of admissions to nursing homes (Donovan, 1995; Vermeire et al., 2001). In a study by Bond and Hussar (1991), the prevalence of medication non-adherence was reported to be between 13 to 93%, with an average rate of 40% across different ages and ethnic groups. DiMatteo (2004b) conducted a meta-analysis and reported the average non-adherence rate as 24.8%. In case of acute disease conditions, the non-adherence rate with medications ranged from 23 to 40%, while that with long term or chronic medications, the non-adherence rates ranged from 6 to 67% (Haynes & Sackett, 1979). According to Gladman (1997), it has been estimated that 43% of the general population, 55% of the elderly, and 54% of children and teenagers are non-adherent. The rate of medication non-adherence in elderly population was between 40 and 75% (Salzman, 1995). Among medical professionals, the medication adherence rate was generally higher, with 77% for short term medications and 84% for long term medications (Corda, Burke, & Horowitz, 2000). It is disappointing that Indian health care system has no such database. The variation in non-adherence rate can be due to several reasons such as absence of a single operationalization of the term medication non-adherence, and variation of non-adherence rate with different medications and different populations. Medication non-adherence can lead to serious consequences, including poorer health, additional health care costs and loss of independent living. Medication non-adherence has been linked to poorer outcomes, in that individuals with high medication adherence have 20% better outcomes than individuals with low medication adherence (DiMatteo, Giordani, Lepper, & Croghan, 2002). In addition to reducing treatment benefits, poor prognosis is a major consequence of medication non-adherence (Irvine et al., 1999).
Non-adherence or inability to administer medications is one of the components associated with medication errors, lead to admission to hospitals and long term care institutions, increased physician visits and, in some cases, death (Dennehy, Kishi, & Louie, 1996; Gray, Mahoney, & Blough, 1999; White, Arakelian, & Rho, 1999). Various studies have shown that non-adherence was the cause for 8% of admissions to emergency rooms (63% of it being intentional non-adherence), it attributed to 11% of admissions to acute care hospitals (Col, Fanale, & Kronholm, 1990; Malhotra, Karan, Pandhi, & Jain, 2001). For patients aged 75 years and older, non-adherence leads to 26% of hospital admissions (Chan, Nicklason, & Vial, 2001). Thus, medication non-adherence remains an important issue and understanding the complex predictors of medication non-adherence is imperative (Bharucha, Pandav, Shen, Dodge, & Ganguli, 2004; Ellenbecker, Frazier, & Verney, 2004). The adherence rate among diabetic patients has been found to vary from 65% to 85% for patients taking oral medicines and 60% to 80% for insulin (Rubin, 2005). A research study found the adherence rate for diabetic medication to be better in comparison to lifestyle changes (Anderson, Fitzgerald, & Oh, 1993).

In case of chronic diseases, although adherence to medication is important, adherence to the prescribed diet and physical exercise is equally crucial. Incorporating dietary changes and physical exercise in the treatment regimen is an effective way to improve the disease burden associated with chronic diseases like diabetes and hypertension (Bacon, Sherwood, Hinderliter, & Blumenthal, 2004; Brownell, 1998; Conlin, 1999; Miller et al., 2002; Roberts & Barnard, 2005). Adherence to prescribed lifestyle changes have also been shown to improve glucose levels, to lead to decreased blood pressure and to correct lipid abnormalities which are factors associated with the micro and macro-vascular complications of diabetes (U. S. Dept. of Health & Human
Services, National Center for Chronic Disease and Health Promotion, 1996; Boule, Haddad, Kenny, Wells, & Sigal, 2001). The rates of non-adherence to diet and exercise recommendations were estimated to range from 35% – 75% and 35% – 81% respectively (Cawood, 2006; Wanko et al., 2004). Various studies have reported suboptimal adherence to dietary habits (Denhaerynck, Mañaeve, & Dobbels, Garzoni, Nolte, & DeGeest, 2007; Desroches, Lapointe, Rattè, Gravek, Légarè, & Turcotte, 2013) and physical activity as recommended by the clinicians (Iversen, 2010). In a study by Scotto, Waechter and Rosneck (2011) on 174 cardiac patients, it was reported that in post cardiac rehabilitation phase, the degree of adherence to diet and exercise were found to be suboptimal. Although participants gained and retained knowledge about necessary dietary changes and improved their exercise activity tolerance during the cardiac rehabilitation program, most failed to translate the information into health promoting behavior changes beginning in the immediate discharge period. The take-home message in almost all treatment regimens is not only related to medication taking behavior but the patients are also recommended to lifestyle changes that are crucial in optimizing the health outcomes. More often than not, it has been found that poor adherence to lifestyle recommendations leads to poor control of the condition, especially in chronic conditions, and that as a result lead to complications. In a cross-sectional descriptive study (Ganiyu, Mabuza, Malete, Govender, & Ogunbanjo, 2013) on 104 patients with type II diabetes mellitus, it was reported that the rates of non-adherence to diet and exercise were 37% and 52% respectively. In case of following the prescribed diet, the main reasons for non-adherence were found to be poor self-discipline (63.4%), followed by lack of information (33.3%) and lastly, the tendency to eat out (31.7%). The main reasons for non-adherence to exercise were reported to be lack of information (65.7%), the wrong
perception that exercise exacerbates their illness (57.6%) and lack of an exercise partner (24.0%). In both the cases of non-adherence to diet and exercise, lack of information figures prominently as a reason for non-adherent behavior, highlighting the role of effective doctor-patient communication. The stress on following recommended dietary habits and physical activity are well-documented modifiable risk factors in reducing the complications associated, especially with chronic conditions (Lye, Kuan, Ewe, Fung, & Liong, 2009; Tapsell et al., 2004; Mensink & Katan, 1992). The perceptions of patients that behavioral modifications are less important than medication taking behavior can be one of the major predictors of low rate of adherence to diet and physical activity. In a recent randomized controlled trial on 18909 patients with acute coronary syndrome Chow et al. (2010) found that 28.5% of patients failed to adhere to both dietary and physical activity recommendations, while a 41.6% reported to adhere to either one of two. A mere 29.9% reported to adhere to both diet and physical activity as prescribed. Diet and exercise adherence was associated with a decreased risk of myocardial infarction compared with non-adherence. In case of non-adherence, it was found that risk of myocardial infarction went up to 3.8 fold in comparison to non-smoker patients who were adherent to diet and exercise. In other words, adherence to the diet and exercise regimen, improved the prognosis of the disease (Chow et al., 2010).

Khan, Al-Abdul Lateef, Al Aithan, Bu-Khamseen, Al Ibrahim, and Khan (2012), Misra and Khurana (2008) investigated the predictors behind non-adherence to lifestyle behavior modifications. The identified predictors were found to be lack of information, unwillingness, lack of support from spouse, and/or family, negative health beliefs, and perceptions, etc. which can be dealt with by the doctor during the
consultations itself, requiring effective communication between the doctor and the patient.

**Predictors of Adherence**

In a study Haynes, Ackloo, Sahota, McDonald, and Yao (2008), showed the reasons for non-adherence to medical regimen, few of which are, problems such as adverse effects, poor instructions, poor doctor-patient relationship, inability to pay for the treatment, etc. Pound et al. (2005) explained the various reasons why patients modify regimens including minimizing medication intake, minimizing adverse effects and addiction, making it fit their daily schedule, decreasing costs, and replacing medicines with non-pharmacologic treatments. The most frequently reported reasons for non-adherence as reported by Vik et al. (2004) were adverse effects, forgetting, asymptomatic/thinking the drug is not needed/feeling well without medication, prescription running out, drug is ineffective, taking too many drugs, unclear about proper administration, difficulty in swallowing, problems opening containers, and stopping drug to see whether it is still needed. As evidenced, numerous factors particularly those related to costs of medications, specific disease or functional conditions, characteristics of the medication regimen, and psychosocial issues such as perceived necessity of medications, confidence to take medications as prescribed and acceptance of illness/diagnosis are important in predicting medication non-adherence. What is important to note here is that all these factors leading to non-adherence or poor adherence are factors that can be addressed effectively through improved doctor-patient communication.

Socio-demographic factors like age, marital status, occupation, living arrangements were found to be poor predictors of adherence (Vermeire et al., 2001;
Vik et al., 2004). However gender and age were better predictors of non-adherence among pediatric patients compared to adults (DiMatteo, 2004b). Race has been found to be a significant predictor of medication adherence (Balkrishnan, 1998), with White race more associated with adherence as compared to Blacks. African Americans have been found to be non-adherent due to several reasons such as medication beliefs, low literacy, lack of trust in physicians, and poor access to health care (Vlasnik, Aliotta, & DeLor, 2005). In this context it is relevant to recall that education and literacy were also found to be the predictors of quality of communication. Thus these factors may be the contributors. It is interesting to note that a busy life style and middle age have been reported to be good predictors of non-adherence (Park et al., 1999).

Economic factors such as cost of medications and health insurance were found to be predictors of non-adherence. Non-adherence in one-fourth of the elderly was reported because of cost of medications (Osterberg & Blaschke, 2005; Safran et al., 2005; Hutchison, Jones, West, & Wei, 2006). Again economic factor such as cost of medication is found to be the predictor of adherence. This can be neutralized with high quality doctor-patient communication following the Shared model where the doctor encourages the patient to actively participate in communication and decision-making. When the patient freely communicates with the doctor, without inhibition, there is every likelihood that the patient informs the doctor about the non-affordability of the medication that triggers the doctor’s plan to consider alternatives which would be less burdensome, thus mitigating the economic factors for low or non-adherence. Researchers have noted that restricting the access to medications to three paid prescriptions per month caused a drop of 30% in the number of prescriptions filled (Soumerai, Avorn, Ross-Degnana, & Gortmaker 1987).
Disease factors like cognitive impairment, increased co-morbidity, poor quality of life, and impaired activities of daily living have been found to have inconsistent associations with non-adherence while there is positive association between depression and non-adherence (DiMatteo, 2004b; Morrison & Wertheimer, 2004; Vik et al., 2004; Osterberg & Blaschke, 2005).

Sabaté (2003) identified four clusters that influence adherence the most: treatment and disease characteristics, intra-personal and inter-personal factors as well as environmental factors. Doctor-patient communication, as a component of doctor-patient relationship has been found to be one of the major predictors in adherence to the treatment regimen (Osterberg & Blaschke, 2005; Delamater, 2006; Hampson et al., 1996). Better doctor-patient communication is an important factor for improving patient adherence to treatment (Vermeire et al., 2001). The barriers to optimal adherence can be dealt by improving the health communication between the doctors and the patients.

Complexities of regimen as well as an increased number of daily doses were strong predictors of medication non-adherence. Use of poly-pharmacy and having multiple prescriptions to drugs was found to be associated with non-adherence and can be due to poor communication between the patient and physician (Vermeire et al., 2001; Vik et al., 2004; Osterberg & Blaschke, 2005). Lau et al. (1996) reported that prescription from a specialist led to greater adherence than when the prescription was by a General Practitioner. Rate of non-adherence was higher with new medications compared to existing medications (Barber, Parsons, Clifford, Darracott, & Horne, 2004). Factors like patient’s unresolved concerns about diagnosis, absence of symptoms, and time between taking the drug and its effect were considerable
predictors of medication non-adherence (Vermeire et al., 2001; Morrison & Wertheimer, 2004; Osterberg & Blaschke, 2005).

Psychosocial factors like beliefs in medications, necessity beliefs (perceived role of medication in protecting against deterioration of the present and future health status of the patient) and concern beliefs (perceived potential for the medication to cause problems for the patient such as developing dependency on the medications) have been identified as a significant predictor of non-adherence (Horne & Weinman, 1999). Patients lay evaluation of medications in intentional adherence was based on whether the treatment regimen will fit their daily schedules, weighing the undesirable effects of the medication to decide whether it is worth continuing, stopping the medicine to see what happens, obtaining information about medicines from others, and using objective indicators such as blood pressure monitoring and subjective indicators such as feeling good or bad (Pound et al., 2005). Identity of the illness, patients' acceptance of illness, patients' perceptions of illness are reported to be reasons for non-adherence (Pound et al., 2005; Morrison & Wertheimer, 2004). Christensen and Smith (1995) reported that personality trait conscientiousness was a predictor of non-adherence. Conscientiousness included will to achieve dependability or self-control. Social factor like positive attitude of others in the community has a positive influence on adherence (DiMatteo, 1994). Self-efficacy, self-regulation, and locus of control are other psychosocial variables that predict non-adherence (Ogedegbea, Mancuso, Allegrante & Charlson, 2003; Kanfer & Goldstein, 1986; Atkins & Fallowfield, 2006). Non-adherence still remains a major contributor to ineffective treatment (Burke, Dunbar-Jacob, & Hill, 1997).
If non-adherence is identified as an important matter of concern in treatment, it is a priority of medical research to indentify the factors influencing non-adherence. They can be called ‘barriers to adherence’.

**Barriers to Adherence**

Optimal adherence is crucial in effective disease management. However, there are many factors associated with poor adherence. A phenomenon referred to as “White-coat adherence” has been reported wherein adherence to medication improves five days before and after the consultation and thereafter declines (Feinstein, 1990; Cramer, Scheyer, & Mattson, 1990).

Adherence is a highly determining factor in management of primary hypertension. The level of adherence depends on three factors namely- the patient factors, doctor factors, and health care system factors. Svensson, Kjellgren, Ahlner, and Saljo (2000), listed out factors both for adherence and non-adherence to anti-hypertensive medication. The major factors for adherence were trust in physician, fear of complications of hypertension, to avoid myocardial infarction and stroke, to keep blood pressure under control. The factors associated with non-adherence were side-effects, or symptoms ascribed to medication, general dislike of drugs, assumed normal blood pressure, etc. In a recent study by Derose et al. (2013), it was seen that non-adherence may also be caused in situations where the doctor prescribes new medications. A review conducted by Osterberg and Blaschke (2005), summarized the barriers under the three inter-dependent factors related to patient, doctors and health care system factors. The main factor in the mutuality of doctor and patient is poor communication. They have laid heavy emphasis on patient’s poor comprehension of disease, benefits of treatment and risks of non-adherence. While these factors have to
be endorsed it is appropriate to mention here that the responsibility of the doctor in making the patient understand also needs to be emphasized.

Since adherence is found to be a determining factor for treatment outcomes, enhancing adherence through appropriate intervention should be given serious consideration.

**Interventions to optimize adherence**

There are many studies which have tested the efficacy of various kinds of interventions to improve the adherence rate of patients. The interventions gave mixed results i.e. while some interventions promoted better adherence, few other interventions did not affect the adherence rate.

Interventions involving care at the worksite, special pill containers, counseling, reminders, self-monitoring, support groups, feedback, reinforcement reported positive effects on adherence and patient outcomes as well (Haynes et al., 1976; Friedman et al., 1996; Rudd et al., 2004; Schroeder, Fahey, Hollinghurst, & Peters, 2005; MarquezContreras et al., 2005, 2006; Lee, Grace, & Taylor, 2006). The interventions which involve patients in the medical decisions making process and followed a dynamic provider-patient interaction helped improve adherence rate among hypertensive patients (Feldman, Bacher, Campbell, Drover, & Chockalingam, 1998; Golin, Dimatteo, & Gelberg, 1996). Simplifying instructions to the patient and medication schedules are also found to be helpful. Further, also minimizing the total number of daily doses has been found to be more important in promoting adherence than minimizing the total number of medications (Eisen, Miller, Woodward, Spitznagel, & Przybeck, 1990; Schroeder, Fahey, & Ebrahim, 2004).
Researches now stress upon the importance of providing multifaceted and tailored interventions to reduce medication non-adherence (Haynes, McKibbon, & Kanani, 1996; McDonald, Garg, & Haynes, 2002; Haynes et al., 2002; Van Wijk et al., 2005). In an Indian study by Palanisamy and Sumathy (2009), it was seen that a mixed intervention program of counseling, medication schedule reminders and telephonic reminder from the pharmacist helped in reducing the baseline blood pressure level of hypertensive patients, from 163/100 mmHg in the pre-intervention period to 141/90 mmHg in the post-intervention period with two-month period gap.

Development of tailored interventions to reduce non-adherence is the need of the hour to understand and manage the issue of non-adherence. Most of the previous interventions studies have involved combinations of behavioral interventions and reinforcements in addition to increasing the convenience of care, providing educational information about the patient’s condition and the treatment, and other forms of supervision or attention. They show a multi-factorial and eclectic approach to improve the adherence rate among patients.

Poor adherence remains a major cause behind worsening of disease, death and healthcare costs contributing to psychosocial and economical burden. There is a pressing need to investigate and evolve holistic interventions to improve adherence. Adherence to the treatment regimen including the diet and physical exercise, ultimately, is the patient’s responsibility. However, the provider i.e. the doctors and other healthcare professionals along with the healthcare system should strive through interventions to inculcate adherence behavior in patients. Here, it is important to mention that doctors play a major role in emphasizing on the value of adherence to medical regimen and motivating and guiding the patient to better adherence. Doctors
with effective communication can inculcate and sustain adherence behavior in patients. Efforts should be made to involve the patients at every level of decision making and medical care. With involvement, comes awareness and internal locus of control in patients which in turn would lead to better adherence. Improving doctor-patient communication would go a long way in maintaining optimal adherence rate. Adherence to treatment regimen results in sustainable improved disease prognosis which is of utmost importance in NCDs like hypertension, diabetes, etc.

The review of studies presented so far has endorsed the significance of doctor-patient communication in ensuring adherence of patients, thereby, a desirable outcome for patients in general. It is of great significance to review studies that have focused on the impact of doctor-patient communication on adherence and prognosis in management of hypertension where the treatment is prolonged. Hence, long term adherence and disease management being concomitant outcomes are to be examined. The following section presents a review of studies related to doctor-patient communication and patient adherence with reference to hypertension.

**Health Communication, Adherence and Prognosis in the context of Hypertension**

HTN is a condition related to blood circulation in the body. When the arterial walls feel the impact of the blood pumped into the blood vessels it is called BP. HTN, or high BP, a chronic illness, is defined as systolic blood pressure (SBP) of 140mm Hg or greater and/or diastolic blood pressure (DBP) of 90mm Hg or greater or any level of blood pressure in patients taking anti-hypertensive medication. According to the Dorland’s Illustrated Medical Dictionary (Saunders, 2012), HTN means high arterial BP. The optimal range of BP is 110/70 mm Hg, while <130/85 mm Hg is considered normal. According to the recent guidelines laid down by Joint National
Commission (JNC 7, Chobanian et al., 2003), if the individual’s BP ranges from 130/85 mm Hg to 139/89 mm Hg, then he/she is pre-hypertensive. There are three stages of HTN. In stage 1 HTN, the BP ranges from 140/90 mm Hg to 159/99 mm Hg; stage 2 HTN, it ranges from 160/100 mm Hg to 179/109 mm Hg, while in stage 3, the BP is above 180/110 mm Hg. Approximately there are 45 million prehypertensives globally (Textor, Schwartz, & Frye, 2003). The objective behind the usage of the term ‘prehypertensive’ is to stress on the importance of making lifestyle changes in order to prevent progression to overt HTN in this large group of people who presently are unaware of this risk (Kottke, Stroebel, & Hoffman, 2003). JNC 7 while laying emphasis on the systolic reading of the BP as studies have reported a greater concordance of uncontrolled SBP reading and cardiovascular risks (Staessen et al., 2001), calls for modifications in lifestyle, food habits, etc. to manage HTN.

Based on the etiology, HTN may be classified as Idiopathic or Essential HTN and Secondary HTN. In 90% of the patients the etiology is unknown making it as idiopathic HTN. Idiopathic HTN is otherwise known as primary HTN. Secondary HTN is due to or associated with a variety of primary diseases such as renal disorders, disorders of the central nervous system, endocrine diseases, and vascular diseases (Saunders, 2012).

Developing countries are home to almost three quarters of people living with hypertension who have a very low awareness of hypertension and poor blood pressure control (WHO, 2002, 2005). There is an increasing trend seen in the prevalence of hypertension, which is predicted to reach 500 million by 2025 (Kearney et al., 2004; Fuentes, Ilmaniemi, Laurikainen, Tuomilehto, & Nissinen, 2000). In India, the prevalence of HTN has increased by 30 times in urban population over 25 years and by 10 times in rural population over 36 years (Padmavati, 2002). The underlying
factors for developing HTN can be categorized into non-modifiable and modifiable factors. Apart from these two, some other factors are associated with HTN. Non-modifiable factors that increase or are associated with high blood pressure are advanced age (Rao, Kamath, Shetty, & Kamath, 2012), genetic predisposition (International Consortium for Blood Pressure Genome-Wide Association Studies, 2011), family history (Rao et al., 2012), susceptible ethnic origin (Harding, Maynard, Cruickshank & Gray, 2006), dark skin color (Burt et al., 1995), etc. Modifiable factors include overweight & obesity (Rao et al., 2012; Doll, Paccaud, Bovet, Burnier, & Wietlisbach, 2002; Abolfotouh, Sallam, Mohammed, Loutfy, & Hasab, 2011), excess visceral/abdominal fat (Rao et al., 2012), excess salt intake (He & MacGregor, 2009; He et al., 1991; Poulter et al., 1990; Rao et al., 2012), unhealthy diet (Johnson et al., 2007), low potassium intake (Krishna, 1990), excess alcohol (Miller, Anton, Egan, Basile & Nguyen, 2005), sedentary lifestyle (Beilin, 1999), reduced physical activity (Sun et al., 2010), psychological stress (BeLue et al., 2009), smoking, urban living (BeLue et al., 2009), migration from rural to urban areas (Poulter et al., 1990), etc. Other factors that may be associated with HTN are dyslipidemia (Dalal, Padmanabhan, Jain, Patil, Vasnawala, & Gulati, 2012; Halperin, Sesso, Ma, Buring, Stampfer, & Gaziano, 2006), increased triglycerides (Laaksonen et al., 2008), hyperuricaemia (Feig, Kang, & Johnson, 2008), increased arterial stiffness (Adji, O’Rourke, & Namasivayam, 2011), under nutrition in childhood (Sawaya, Sesso, Florencio, Fernandes, & Martins, 2005) sleep deprivation (Knutson et al., 2009) and long term exposure to noise (Bodin, Albin, Ardo, Stroh, Oстерgren, & Bjork, 2009).

Most of the hypertensive patients require pharmacological treatment wherein adherence to the prescribed treatment regimen is essential. In hypertension, patients who take 80% or more of their prescribed medication are considered as compliant.
Because it is assumed that the minimum required medication to reduce the blood pressure is 80% of the prescribed dosage (Sackett et al., 1975). It has been reported that 50-70 % of the patients do not take their anti-hypertensive medication as prescribed (Mant & McManus, 2006). The efficacy of non-pharmacological therapy, including reduction in dietary salt intake, weight reduction, moderation of alcohol intake and increased physical activity, in lowering blood pressure has been reported by several studies (Jeffery et al., 1984; Nugent, Carnahan, Sheehan, & Myers, 1984). It has been shown that small, well-supervised and motivated groups of patients when received counseling on moderate salt restriction, most of the patients followed the regimen (Jeffery et al., 1984; Weinberger et al., 1988; Feldman et al., 1998). It may be reiterated here that counseling involves two-way communication resulting in cognitive reorientation and when it is effective it results in behavior change. Thus, the enhanced adherence here may be attributed to effective communication. The incidence of non-adherence or partial adherence is more in a chronic disorder like hypertension because of its asymptomatic nature (Lahdenpera & Kyngas, 2000). According to the WHO (2003), poor adherence is the main cause behind uncontrolled BP. Poor doctor-patient interaction has been reported to be one of the contributing factors in patient non-adherence (Lipkin, 1996; Svensson et al., 2000; Tsiantou et al., 2010).

Although effective medical and life-style management of hypertension can reduce the risk of adverse outcomes, uncontrolled hypertension remains a persistent problem. Positive hypertension self-management includes optimal adherence to prescribed medication regimens and life-style recommendations such as engaging in moderate intensity exercise, reducing smoking, decreasing alcohol intake, reducing sodium and losing weight (Egan et al., 2010).
To promote sustainable behavioral change, researchers stress that the focus should be primarily on the individual, to help them make conscious and intentional choices, so as to modify and adapt health management behaviors within the context of their daily lives (Aarts, Paulussen, & Schaalma, 1997; Chapman & Ogden, 2009; Cohn et al., 2011) People who have chronic illnesses, such as hypertension, are required to make changes to the daily habits and routines they have been following for years. Yet the role of habits and routines is silent in interventions designed to promote self-management of chronic diseases (Charmaz, 2002).

In the effective management of chronic illnesses like hypertension, diabetes mellitus, etc. adherence to the medication plays a crucial role, along with lifestyle changes like diet control and physical exercise. Patient adherence to a large extent is dependent on clarity of the communication between the doctor and the patient. Interaction between the doctor and the patient forms the crux of the treatment process and decides the prognosis as a function of patient adherence. When the communication between the doctor and the patient effectively addresses the significance of necessary treatment regimen, desirable outcomes like better patient adherence is likely to follow. Various interventions introduced to improve patient adherence, draw on the derived benefits of quality doctor-patient communication (Feldman et al., 1998; Golin et al., 1996).

The present study on the impact of doctor-patient communication on adherence and prognosis is conducted on patients diagnosed with primary hypertension.
Summary of Review of Literature

Health communication is a powerful medium for promoting health, addressing health issues and preventing health calamities that plague the population. The importance of communication in health care context is imperative. Effective communication in health care has numerous benefits both for the doctor and the patients. The results are seen in improved health, emotional and functional status, improved health outcomes such as adherence, satisfaction with the health care, etc. and results in job satisfaction in case of doctors. Doctor-patient communication in most studies have been conducted on patients with cancer, AIDS, psychiatric disorders and NCDs. Specific studies on HTN are also conducted. The review presents studies that support the aforementioned statements. Doctor-patient communication is a complex process and is difficult to measure. A certain gap in the literature is that the measurement of doctor-patient communication has always focused on the patient’s perspective in terms of themes and content explored or qualitative analysis. Hence, there is a need to study the quality of communication in a holistic way that is based on the most basic characteristic of communication which is that the communication is a dynamic process and a clear understanding is imperative in making the communication effective. The various instruments used in the measurement of the communication in doctor-patient communication fails to capture the very essence of this aspect of communication. The second missing element that is brought forth by this literature review is a dearth of Indian studies. Further, studies connecting doctor-patient communication with adherence and prognosis are also scarce and untraceable. Though, there are studies related to adherence to medication, diet, exercise, etc. taken up individually, studies designed to examine them as a package could not be located. Indian studies on patients with HTN are found to the
extent of prevalence and rate, establishing the fact that incidence of HTN is on progressive rise. Given this fact, a comprehensive study on Indian sample that focuses on adherence and prognosis as dependent variables is on the right track to provide inputs for effective disease management.

Hence the present study was taken with the following set of Research questions, Hypotheses and Objectives.

**Research Questions**

The study was initiated with the following set of research problems

1. Does Doctor-Patient Communication have an effect on patients’ Adherence to treatment and disease Prognosis in patients with primary hypertension?

2. Does the Quality of Communication between doctors and patients have an impact on level of Adherence and Adherence to Medicine, Diet, Exercise, and Self-monitoring?

3. Does the doctor’s Quality of Communication influence patient Adherence and disease Prognosis in patients with primary hypertension?

4. Is Prognosis a function of therapeutic Adherence in patients with primary hypertension?

5. Does the Doctor-Patient Communication follow a pathway in impacting Prognosis?

6. Is there an objective method of quantifying the Quality of Communication between the doctor and the patient?
Hypotheses

It was hypothesized that

1. Doctor-Patient Communication will have a positive impact on the Adherence and Prognosis on patients with primary hypertension.

2. The Quality of Communication will have a significant effect on the level of Adherence in general and Adherence to Medicine, Diet, Exercise and Self-monitoring in patients with primary hypertension.

3. The doctor’s Quality of Communication will have a significant association with Adherence to treatment and Prognosis in patients with primary hypertension

4. Prognosis will be a function of Adherence to treatment in patients with primary hypertension.

5. The impact of Doctor-Patient Communication on Prognosis will follow a pathway.

Objectives

The study was carried out with the following objectives

1. To find out if Doctor-Patient Communication during consultation process has an effect on Adherence and Prognosis in patients with primary hypertension.

   i. To evolve a method of quantifying the quality of Health Communication between the doctors and patients taking the mutuality into consideration.
ii. To investigate the effect of Quality of Communication between doctors and patients on patients’ Therapeutic Adherence that includes Adherence to Medication, Diet, Exercise, and Self-monitoring.

iii. To examine the influence of Doctor-Patient Communication Quality on Prognosis of primary hypertension.

iv. To find out the effect of Adherence to treatment on Prognosis.

2. To identify factors those contribute to Doctor-Patient Communication Quality.

3. To indentify factors and find out the factors those predict patient Adherence and Prognosis.

4. To explore if the impact of Doctor-Patient Communication on Adherence and prognosis suggests a pathway.