CHAPTER V
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The study was carried with the major objective of finding out the impact of Doctor-Patient Communication on Patient Adherence and Disease Prognosis. It was hypothesized that Doctor-Patient Communication will have a positive impact on Patient Adherence and Prognosis among patients suffering from primary hypertension. This hypothesis was tested with Regression Analyses. The results not only indicated a significant positive impact of the Quality of the Doctor-Patient Communication on Adherence and Prognosis but a pathway was also traced from Doctor-Patient Communication to Prognosis. The findings clearly indicated that the Quality of Health Communication between the doctors and the patients during consultation had a powerful and significant impact on patients’ level of adherence. Patients’ adherence in turn had a strong direct impact on the prognosis.

High Quality of Communication involves a healthy partnership between the doctors and the patients. This can be expected when both the doctor and the patient actively participate in the process of communication. It is very important for the patients to reveal with optimum clarity the symptoms and problems encountered with respect to their health. This constitutes a critical minimum base for the doctor to decide the direction of further medical investigation leading to accurate diagnosis. Similarly it is equally important for the doctor to explain to the patient in simple non-technical language that suits the patient’s comprehension regarding the existing health status, consequences of continuing without any treatment, the need for medication and the role it plays in reinstating normalcy or equilibrium in physical state – the level of BP in this case. There is also a need for the doctor to verify the extent to which this
communication is assimilated by the patient. Such cross-checking should be given due importance because it not only helps in minimizing the misunderstanding or misinterpretation but also functions as a cue, encouraging participation of the patients. Such initiative by the doctor helps in breaking the silence of the patients. This is very essential particularly in the context of Indian culture where the doctor is looked upon as an authority with ultimate competence with the sole responsibility of providing cure and relief to the patient. However, the ideal situation is a collaborative partnership between the doctor and the patient (Emanuel & Emanuel, 1992) where the decision making is an outcome of active interaction between the doctor and the patient. More the patient understands the content and spirit of stringent adherence to medical advice better will be the compliance. To elaborate further, the explanations given by the doctor about the role of anti-hypertensive medications in dilating the blood vessels and the role of diuretics (medicines that are used in treatment of hypertension to reduce the buildup of excessive fluid, increase urine output, reduce the amount of fluid in the blood stream), if prescribed, in bringing down the Blood Pressure, helps in forming a knowledge base in patients that function as a logical foundation for adherence behavior. Further the caution against low/non-adherence communicated by the doctor in terms of consequences including medical emergencies may successfully instill a desirable fear in the patient. This in combination with the knowledge base creates a strong motivation leading to optimal adherence to medication. The prescription of the doctor is not limited to medicines. Medication in isolation may not be successful in optimal prognosis. In case of hypertension, low sodium and low fat diet constitute an essential measure that prevents the condition from aggravating. Similarly the role of regular exercise including the desirable quality and quantity to sustain cardiac health also forms a part of Health Communication.
Only when the patient is given serious and clear instructions on these aspects will s/he be motivated towards a lifestyle change. While informing the patient about medication, diet and exercise, equal prominence should be given to caution the patient about alarm signals and the need for self-monitoring and review visits to the doctor which are helpful in detecting any adversity. This part of the communication must include the symptoms and situation that warrant emergency consultation and hospitalization. Patients who receive all these information on a package are more likely to be optimally adherent. The results exactly confirmed the above by indicating a significant impact of Quality of Communication on Adherence. The results of multiple regressions also indicated that Quality of Communication has an impact on Prognosis. Yet, the strength of this impact is relatively low compared to the impact that Adherence had on Prognosis. Based on this it can be argued that the impact of Quality of Communication on Prognosis is stronger only through an influence on Adherence to the treatment regimen. In other words when doctor-patient communication is of high quality, it ensures high level of adherence which in turn results in good prognosis. Based on these results, the major hypothesis that Quality of Communication will have a significant impact on Adherence and Prognosis in patients with primary hypertension is accepted.

This study hypothesized that patients with varying Quality of Communication will also have varying levels of Adherence in general and Adherence to Medication, Diet, Exercise and Self-monitoring individually. Quality of Communication plays a significant role in overall Adherence as well as Adherence to Medication, Diet, Exercise and Self-monitoring. Based on the level of overt and covert participation of doctors and patients (as communicators and listeners) in the Health Communication process, a content matching of intended and received communication was evolved.
Where there is a higher convergence between the two, the Quality of Communication is high. The Quality of Communication varied based on this mutuality. A combination of factors related to the doctor and the patients may operate in the transaction that happens during the consultation process. The Quality of Communication is an outcome of such combined influence. The results that patients belonging to the group of High Quality of Communication showed high levels of Adherence in general and high levels of Adherence to Medication, Diet and Self-monitoring in particular while the reverse is true in case of patients belonging to the low Quality of Communication group, indicated that higher the match between the intended communication of the doctor with the received communication of the patients, higher the adherence. When patients could comprehend the contents of what the doctor communicated regarding Medication, Diet and Self-monitoring, they could translate the same into adherence behavior. On the contrary, higher the mismatch between the communication of the doctor and the understanding of the patient, lower was the adherence. This can be attributed to a low priority attached to the regularity in taking medicine or complying with prescribed diet or being alert to the health condition through regular monitoring as the seriousness of these aspects are either not communicated or not assimilated properly. Thus, when the Quality of Communication is high, therapeutic Adherence was found to be high, while whenever the Quality of Communication was low, the therapeutic Adherence was found to be low. Based on the above, the second hypothesis that Quality of Communication will have a significant effect on the level of Adherence in general and Adherence to Medicine, Diet, Exercise and Self-monitoring is partially accepted. This is because while the results revealed a significant effect of Quality of Communication on Adherence and its three components namely Medication, Diet and Self-monitoring, its effect on Adherence to
Exercise was not significant. The reason could be that sufficient emphasis was not laid on aspects related to exercise during the process of consultation.

It was hypothesized that the Quality of Communication will have a significant effect on Prognosis. Prognosis was assessed in the post-Adherence Phase six weeks after the consultation where the Quality of Communication was measured. Two parameters, viz. doctors’ ratings of Prognosis based on the clinical symptoms and BP readings with a six weeks gap of Adherence Phase were taken to measure Prognosis. The results revealed that patients belonging to High Quality of Communication group were not only rated high by the doctors but also showed a greater improvement in their BP readings in the post-Adherence Phase. On the other hand patients belonging to Medium and Low Communication Quality group were rated by the doctors with relatively lower prognosis and their BP readings in the post-Adherence Phase showed relatively marginal improvements. The Quality of Communication was an index of mutual participation of doctors and patients during consultation. Not all patients treated by the same doctor came under the classification of High Quality of Communication, indicating that patients’ participation accounted equally in deciding the Quality of Communication. This demonstrates the role of patients’ commitment, control and challenge in the entire process. Those patients with high involvement and commitment are more likely to take an active role in the consultation process. The very fact that their involvement is high, suggests an intent of managing and controlling their condition of hypertension which can happen only when they perceive it as a challenge to be met. The active participation in the process of Health Communication equips them with the knowledge of what is an achievable prognosis. This in turn aids their realistic goal setting in management of hypertension. Working towards a definite target through adherence behavior is always easier than blind
adherence to medical prescription. Further, the active participation in consultation process helps the patients of hypertension to remain informed about the measures to be taken to control, manage or subside the clinical symptoms soon after experiencing them. Thus, when they go for a review visit six weeks after the consultation, they go with minimum or no clinical symptoms and more efficiently managed BP. Thus, the Quality of Communication was found to help in better Prognosis. The results of regression analysis and also the results of ANOVA clearly indicated the significant role of Quality of Communication on both measures of Prognosis. Based on this, the hypothesis that the Quality of Communication will have a significant effect on Prognosis is accepted.

While the overall Quality of Communication during the consultation process is important in view of Adherence, the doctors’ Quality of Communication is assumed to play a greater role. The study hypothesized that the doctors’ Quality of Communication will have a significant association with the level of Adherence and the disease Prognosis in patients with primary hypertension. Researches in the past have supported the role of doctor in patients’ adherence and prognosis (Hall & Roter, 1988; DiMatteo, 1998; Naik et al., 2008). A number of studies have proved that patients’ satisfaction to a large extent rests on the doctor’s communication skills and bedside behavior (Little et al., 2001; Brédart et al., 2005; Arora, 2003). Patient satisfaction is closely linked to the trust and rapport with doctor. When the patient has high trust on doctor, it has a significant influence on complying with the prescription of the doctor. Thus, patients treated by doctors with high level of professional competence and communication skills are more likely to belong to high adherence levels compared to their counterparts treated by doctors who were inadequate in communication and failed to empathize with the patients. To empathize with a patient,
is to treat the patient as a human being while limiting the communication to informing the diagnosis and writing the prescription, restricts the role of the doctor to treating the disease. Patients treated by the doctor belonging to the second category are likely to be mechanical and casual in their adherence because of lack of accountability as a result of lack of bonding between the doctor and the patient. On the other hand, patients treated by doctors with high quality of communication skills and professional competence, probably receive indications of the doctor’s concern for the well-being of the patient. Such interactions are likely to trigger expectancy effect creating a sense of accountability and motivation for high adherence for better prognosis in patients. The results revealed that a significantly large number of patients treated by doctors having high Quality of Communication belong to High Adherence group and vice-versa. This proved the hypothesis that doctors’ Quality of Communication will have a significant association with the level of Adherence of patients with primary hypertension. Effective communication between the doctor and the patients have been shown to reduce anxiety and psychological distress, pain relief, better functional status and symptoms resolution (DiBlasi, Harkness, Ernst, Georgiou, & Kleinjen, 2001).

According to the results, the association between the Doctors’ Quality of Communication and Prognosis was not found to be significant. This could be because there is no direct association between the doctors’ communication and prognosis. However, the results discussed did indicate a significant role of the overall communication Quality and the Prognosis. If we look at these two together, it gives a clear indication that the doctors’ Quality of Communication alone cannot influence nor have any direct association with the Prognosis unless there is the required comprehension leading to assimilation and practice by the patient.
The study hypothesized that Adherence will have a significant role in Prognosis of primary hypertension. A number of research studies have indicated that patients’ level of adherence will have a significant effect on disease prognosis that leads to better health outcomes (Dragomir et al., 2010; Perreault et al., 2009). For instance in case of diabetic patients, optimal adherence results in better glycaemic control (Liebel et al., 2002; Beckles et al., 1998). Higher the adherence of the patient with medication, diet, exercise, and self-monitoring, higher is the prognosis. This is observed in the sense that better adherence indicates better health care, naturally resulting in a better outcome. In case of patients with primary hypertension, strict adherence to medication has to be given very high prominence. Anti-hypertensive medications are administered to dilate the blood vessels which are otherwise constricted in the patients. The medication will have to be administered everyday religiously at the same time as advised by the doctor. This compliance helps in managing the blood pressure without shooting up. Irregularity in taking the medicine would result in contractions and dilation of blood vessels erratically which is medically undesirable and may lead to consequences such as stroke, heart attack, etc. Poor adherence or low level of adherence has been found to be a major cause behind suboptimal clinical benefit (Rybacki, 2002; Dunbar-Jacob & Schlenk, 2001). It causes medical and psychosocial complications of disease, reduces patients’ quality of life, and wastes health care resources. Erratic schedule of medications will result in bad prognosis, while strict adherence helps in regulating the BP leading to good prognosis. Similarly, reducing the sodium and fat components in diet will be helpful in preventing atherosclerosis in turn reducing the risks of cardiovascular diseases. Further following a regular exercise regimen not only helps in healthy cardiac
functioning but also results in burning the excessive fat which places the patient of hypertension at high risk for arterial blockage, angina and heart failure.

Sometimes, in spite of strict adherence to medication, diet, and exercise the patient encounters medical emergencies because of uncontrolled hypertension related to genetic factors. In order to pre-empt such eventualities, a patient is advised to have a close monitor on the fluctuations of BP which if found alarming should warrant immediate medical consultation. Patients, who comply with such therapeutic medical advice that includes pharmacotherapy supplemented by a healthy lifestyle pattern, are more likely to have better prognosis not only in terms of clinical symptoms but also reflected in controlled level of BP. The results of the present study indicated exactly this. It is of significance to mention here that prognosis was evaluated by blinding the evaluator. In other words the doctors, while rating the prognosis based on the patient’s clinical symptoms, were not aware of their level of adherence. The same doctor recorded the BP of the patients which also was an index of prognosis. The study found that patients who have showed stringent adherence to each of the aspects related to therapeutic advice, have been rated by their doctors high on prognosis. They reported relatively low or no clinical symptoms six weeks after their consultation compared to their counterparts whose compliance levels were lower. The study further proved that the BP readings of patients with high adherence levels dropped significantly between the two consultations with a gap of six weeks. The fact that the BP readings of patients with high level of Adherence was found to be significantly lower between the pre-post Adherence Phase compared to those belonging to lower Adherence group is a testimony of the role of adherence in managing primary hypertension. In a nutshell the study reiterated that adherence is an essential health
behavior for effective management of primary hypertension. The hypothesis that Adherence will have a determining effect on Prognosis is accepted.

When the significance of Adherence is categorically proved time and again by several researchers, it is pertinent to investigate the antecedents of Quality of Communication and Adherence. The results of the study as indicated by regression analyses revealed that out of seven variables tested, only one variable namely, Patient Category was found to contribute significantly to Quality of Communication. Patient Category refers to the time of their first consultation with the doctor i.e. old and new patients. Patients who had already consulted the doctor before the data collection was started in that hospital were called the old patients, while the patients who came for their first consultation after initiating the study in that hospital were called new patients. According to the results, the Quality of Communication was found to be higher in case of new patients compared to those who were already under the treatment of the doctor. This revealed that the parallel scale used for measuring the health communication between doctors and patients worked as an incidental intervention or professional health education tool for the doctors. Probably the Health Communication Checklist that required the doctors to tick the items they covered during consultation sensitized them towards detailed instructions to the patients on every aspect such as medication, diet, exercise, alarm signals, medical emergencies, etc. which they seem to have complied in their consultation with the new patients. A related encouraging finding of this study revealed that patients’ therapeutic adherence is predicted by Patient Category and Quality of Communication in that order. Patient category is found to have significantly contributed to the level of Adherence, once again strengthening the fact that those patients whose consultation started after the doctors started their participation in the study had better Quality of Communication
and hence, showed higher adherence behavior. The second variable that predicted Adherence level is found to be Quality of Communication. This strongly supports the fact that the doctors are trainable in improving their communication quality so as to ensure higher adherence levels in patients. This calls for particular attention in case of doctors treating NCDs where adherence plays a strong role in disease management and quality of life.

As a sequel to the above, the findings of the present study also re-emphasized the fact that Quality of Communication and therapeutic Adherence are significant predictors of Prognosis in patients with primary hypertension. This indicates a logically arranged sequence that starts from high Quality of Communication leading to high Adherence and resulting in good Prognosis. A positive outcome of treatment in terms of effective management of hypertension, according to the study is preceded by optimal adherence and high quality of communication.

**Implications**

The method adopted in this study to measure Quality of Communication is a major contribution to the research in the field of Doctor-Patient Communication. Taking into consideration the research gap in quantifying the communication, the study evolved a holistic method in measuring health communication between the doctor and the patient. There is a need to measure and study the Doctor-Patient Communication from the angle of mutuality, where the quality is measured by a composite score which compares the intended content with the comprehended content. All the past studies have taken an approach either from the patient’s point of view or from the doctor’s perspective. Such quantification is incomplete.
Communication between the doctor and the patients is an integral component of the health care system. In the context of health, communication is instrumental in health behavior modification through cognitive mediation. This is achieved through the clarity in the communication between the doctor and the patients. Communication is said to be effective when the receiver i.e. the patient comprehends the message the way the sender i.e. the doctor intended it to be or when the intended communication matches with the comprehended communication of the receiver. Thus it is a two-way process and the importance of either cannot be denied. The method of measuring Quality of Communication by applying similarity index is innovative, holistic and hence is useful for future research.

The findings of the study indicate that primary hypertension can be effectively managed through better quality of communication. If quality of communication is a skill and one can be trained to be competent, attempts will have to be made towards it. One measure that may be adopted by the doctors is to insist on maintenance of an adherence diary by every patient. This can be made mandatory in the treatment package. This diary having column to record adherence to medication, diet and exercise has to be filled every day by the patient. In addition, space to record any significant clinical symptoms, BP reading, etc. would make it more holistic. Examination of this diary at every review visit would equip the doctor with an efficient feedback system. Communication during the consultation can be based on this feedback. The doctor can relate prognosis to specific adherence, low or non-adherence. Such inputs from the doctor may help the patient improve their therapeutic adherence leading to better prognosis.
In view of technological advancement, an electronic feedback system may be evolved between the doctor and the patient, where the doctor is connected to all the patients through a software programme. The patients may automatically receive a reminder message everyday either on their mobile phones or through internet to abide by the medication, diet and exercise. Similarly, the patient may electronically enter his/her adherence on daily basis. This process may continue until an optimum adherence level is achieved. Once this is sustained, it becomes a pattern of lifestyle and no more requires reminders. Such use of electronic communication is adopted in many clinical trials to ensure regularity in medication.

Health Communication, doctor’s bedside manners, and counseling skills will have to be an integral part of medical education. The course, instead of restricted to a particular year must run along all the four years of medical graduation and include not only theoretical inputs but also be enriched with practicum. This alone can ensure both acquisition and practice of communication skills in medical profession. Compared to the estimated outcome in terms of prevention, the cost will be negligible. For instance, poor adherence to medication cost USA $105.8 billion or an average of $453 per person in 2010 (Nasseh, Frazee, Visaria, Vlahiotis, & Tian, 2012). India as a developing nation cannot afford this kind of investment. It is only logical, to work on the prevention, rather than on the cure of the growing problem. With an already burdened health care system, managing the growing disease burden will be a challenging job.

Conclusion

The quality of communication is found to have a critical role in management of primary hypertension for positive outcome. This finding has to be viewed as a
silver lining to a number of researches that showed a progressive increase in the prevalence and incidence of primary hypertension among Indian population. Against the high projection for future, where large proportion of population are likely to be affected, and more cardiovascular deaths are seen as probability, the silver lining is the fact that quality of communication plays a significant role in promoting adherence and prognosis. This gives a hope of prevention that can happen through effective communication with quality training. India is identified as the world capital for diabetes. The increase in the incidence of primary hypertension is likely to place India at a top level with regard to this NCD too. The etiology of it can be traced back to a shift from affiliation-need to achievement-need among Indians which may be due to the impact of globalization. Having to live in the reality of highly competitive academic and occupational environment, disintegration of social support system that was natural to Indian culture, a paradigm shift in lifestyle and many environmental, social and cultural factors contributed to enhanced stress levels and increase in the incidence of primary hypertension. Studies have showed an increasing trend of primary hypertension, particularly among the age group of 20-60 years of population. Yavagal et al. (2013) reported that almost 45% in urban population Chennai (47.4%), W.B (50%), Kerala (44.3%) are pre-hypertensive. The progressive increase in the incidence rings the alarm for two reasons. First, the very fact that an increasing number of people from productive age group are affected by the disease thus enhancing the disease burden on the nation is disturbing and a matter of great national concern. High blood pressure increases the risk of overall cardiovascular complications by 2- to 3-fold (Berenson et al., 1998). The incidence of stroke increases approximately 3-fold in patients with borderline hypertension and approximately 8-fold in those with definite hypertension (Thompson & Furlan, 1996).
It has been estimated that 40% of cases of acute myocardial infarction or stroke are attributable to hypertension (al Roomi, Heller & Wlodarczyk, 1990; Borghi et al., 1999; Marmot & Poulter, 1992). Primary hypertension is one of the leading causes of Coronary Artery Disease (CAD). CADs refers to heart diseases owing to narrowing of heart arteries due atherosclerosis. Coronary Artery Disease (CAD) is a disease condition whose prevalence is found to be several folds higher in developing countries than in industrialized nations. The Global Burden of Diseases (GBD) study reported that the mortality rate estimated from CAD in India was at 1.6 million in the year 2000. (Gupta, 2005) and is predicted to increase by almost 75% in the global cardiovascular diseases burden. More alarming than this is the fact that when hypertension is progressively affecting a larger percentage of the population, the natural response towards the disease tends to be one of complacency, thus diluting the seriousness it demands. To elaborate further when the social environment around the patients has more and more people diagnosed with primary hypertension, patients tend to assume that it is not very uncommon to have hypertension which then becomes a natural part of life that does not demand special attention and care. The only way of breaking this undesirable disposition is through an unlearning and reorientation process initiated during the consultation. Hence the treating physician has the responsibility of orienting the patient to the dangerous repercussions of this asymptomatic silent killer. The Global Burden of Disease (2010) report has stated that hypertension is the single leading risk factor and it ranks six among the risk factors attributable by Disability Adjusted Life Years (DALYs) (Lim et al., 2013). Associated complications like premature death, disability, personal and family disruption, loss of income, and healthcare expenditure take a toll on the family and national finances (WHO, 2013b). Over the period 2011-2025, the cumulative lost
output in low and middle income countries associated with non-communicable diseases is projected to be US$ 7.28 trillion (WHO, 2011a). The annual loss of approximately US$ 500 billion due to major non-communicable diseases amounts to approximately 4% of gross domestic product for low- and middle-income countries. Cardiovascular disease including hypertension accounts for nearly half of the cost (WHO, 2011b). Considering that in many countries poorly controlled blood pressure represents an important economic burden (e.g. in the United States the cost of health care related to hypertension and its complications was 12.6% of total expenditure on health care in 1998, Hodgson & Cai, 2001), improving adherence could lead to health and economic improvement, from the societal (Piatrauskene, 1991), institutional (McCombs et al., 1994) and employers’ point of view (Rizzo, Abbott, & Pashko, 1996). If the trend of prevalence and incidence continues in the same lines, the disease burden is likely to increase by 36% by 2025. Further, the number of cardiovascular deaths (strokes), where the origin is primary hypertension is found to be 57% in 2009. It is estimated to be 23.3 million by 2030. Majority of these are preventable if only the adherence is increased which as we found in this study can be attained through quality doctor-patient communication. In view of this, education and training to the medical professionals in health communication skills will have to be introduced as in-service program. The curricular reforms in medical education must incorporate communication skills at various levels as a continuous course throughout the entire period of graduation. The financial implications of introducing communication training will certainly be marginal when compared to the disease burden and cardiovascular deaths that can be prevented. Thus, the findings of this study strongly advocate pre-service and in-service training in communication skills for the doctors as an effective intervention measure towards optimal adherence and prognosis.
Limitations

The limitation of the study is the restriction of the sample to one capital city. Secondly, the design would have been stronger if the sample were limited only to the patients contacting doctors for first consultation. In such cases the follow-up for prognosis would have been more scientific. Finally longer follow-ups would have thrown light on the sustainability of the impact of quality of communication.